

РОССИЙСКАЯ АКАДЕМИЯ НАУК
Южный научный центр

RUSSIAN ACADEMY OF SCIENCES
Southern Scientific Centre



Кавказский Энтомологический Бюллетень

CAUCASIAN ENTOMOLOGICAL BULLETIN

Том 18. Приложение

Жуки-стафилины открытых равнин
юга европейской части России:
обзор с определительными таблицами
до родов и аннотированный список видов
(Coleoptera: Staphylinidae)

Vol. 18. Supplement

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of the South European Russia:
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and annotated species checklist
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Ростов-на-Дону
2022

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составление, редактирование
compiling. editing

На титуле оригинальная фотография А. Богри (Amalia Bogri) *Bledius spectabilis* Kraatz, 1857

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Русская электронная версия журнала – http://www.ssc-ras.ru/ru/journal/kavkazskii_yntomologicheskii_byulleten/
English online version – http://www.ssc-ras.ru/en/journal/caucasian_entomological_bulletin/

Издание осуществляется при поддержке Южного научного центра Российской академии наук (Ростов-на-Дону)
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Техническое редактирование и компьютерная верстка номера – С.В. и М.В. Набоженко; корректура – С.В. Набоженко

Rove beetles of the open plains of the South European Russia: a review with the key to genera and annotated species checklist (Coleoptera: Staphylinidae)

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Abstract. Based on the exhaustive literature survey we provide the annotated catalogue with 874 species of Staphylinidae beetles relevant for the fauna of the open plains of the South European Russia (PSER). PSER is a convenience study region with some ecological integrity as it coincides with the Russian part of the Eurasian belt of steppe and semi-desert biomes. Longitudinally it stretches from the border with Donbass in the west to southern Fore Urals in the east. Latitudinally it is extended from the southern border of the forest-steppe zone in the north to the Sea of Azov, Black Sea, northern foothills of the Caucasus, northern shores of the Caspian Sea and the border with Kazakhstan in the south. Along with the zonal grasslands, PSER is a network of intra-zonal riverine woodlands, wetlands, as well as anthropogenic landscapes. It covers, fully or partly, several administrative regions of the Russian Federation. Our review shows the more complete knowledge of the rove beetle fauna for the western areas of PSER and for the Volga River basin, while several large regions like Republic of Kalmykia, Stavropol or Orenburg regions, on the contrary, are extremely poorly known. Taxonomic groups like Paederinae, Oxytelinae or Staphylininae are better explored, while many taxa including entire big subfamilies like Aleocharinae are hardly known in PSER. To facilitate further investigation of the PSER fauna, we provide keys to all rove beetle genera either recorded or expected in this territory.

Key words: Staphylinidae, faunistics, systematics, Russia, plains.

Жуки-стафилины открытых равнин юга европейской части России: обзор с определительными таблицами до родов и аннотированный список видов (Coleoptera: Staphylinidae)

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Резюме. На основании исчерпывающей обработки литературных данных составлен аннотированный каталог 874 видов жуков семейства Staphylinidae фауны открытых равнин юга европейской части России. Рассматриваемая территория полностью или частично охватывает несколько административных субъектов Российской Федерации, в долготном направлении простирается от границы с Донбассом на западе до Южного Предуралья на востоке, в широтном – от южной границы лесостепи на севере до Азовского и Черного морей, северных предгорий Кавказа, северного побережья Каспийского моря и границы с Казахстаном на юге. Так как регион представляет собой часть евразийского пояса степей и полупустынь, он удобен для изучения в силу своей экологической целостности. Наряду с зональными биотопами он включает сеть интразональных ландшафтов, представленных по большей части пойменными лесами или плавнями, а также множеством антропогенных биотопов. Наш обзор показал более полную изученность фауны стафилинид западных частей рассматриваемой территории и бассейна Волги, в то время как некоторые крупные регионы, такие как Республика Калмыкия, Ставропольский край или Оренбургская область, наоборот, изучены крайне слабо. Такие группы, как Paederinae, Oxytelinae или Staphylininae, изучены лучше, тогда как многие таксоны, в том числе отдельные крупные подсемейства, например Aleocharinae, едва затронуты изучением в пределах PSER. В целях активизации изучения фауны стафилинид нами составлены таблицы для определения родов, как уже отмеченных, так и, возможно, обитающих в данном регионе.

Ключевые слова: стафилиниды, фаунистика, систематика, Россия, равнины.

Introduction

Rove beetles (Staphylinidae) are the largest family of living organisms notable in all terrestrial habitats of the globe except the driest deserts, the highest icy mountain peaks or polar areas. They are commonly collected in any biodiversity-related studies, but rarely used in such research. Neglecting this group is unfortunate for science and stems from practical hindrance such as lack of comprehensive identification manuals, up-to-date checklists or regional faunal reviews. Even for Central Europe, which is the only region of the world with a detailed species level overview of the fauna of Staphylinidae such as *Die Käfer Mitteleuropas* series (for the latest edition see Assing and Schülke [2012]), for the very large subfamily Aleocharinae there is neither a key to genera, nor a modern synopsis of species. Outside Central Europe knowledge gaps for Staphylinidae are notably bigger. In the Northern Eurasia, such gap is the entire fauna of Staphylinidae of the territory of Russian Federation. Even for the better-known European Russia there is no accurate modern species checklist of Staphylinidae. With single exceptions for some genera or regions, comprehensive summaries on the taxonomy, distribution and ecology of rove beetle species in Russia are missing. Modern identification keys for Russian Staphylinidae are missing entirely. In the taxon-specific systematic revisions by specialists of a global pool, specimens from Russia are examined much more seldom than material from European countries. Finally, a plethora of the Russian faunistic literature is scattered, often published in the very local hardly accessible outlets, and greatly varies in taxonomic credibility. Related to this credibility is shortage of comprehensive, well-curated and accessible institutional collections to serve as depositories of specimens to voucher faunistic records.

As a result, if a student today wants to study the Russian fauna of Staphylinidae and build a collection, she/he must cope with incomplete and incompatible data sources. For example, in the milestone world Staphylinidae catalogue of Herman [2001] and the Palaearctic catalogue of Schülke and Smetana [2015], information about species in Russia is strongly generalized and incomplete. Data on the material from Russia in the taxonomic revisions of different scope are very patchy. The only broad scale key for the family which is to some extent applicable for the Russian fauna is the abovementioned monograph for Central Europe [Assing, Schülke, 2012].

Therefore, we see a strong need to synthesize all this scattered information. In this paper we do this for the open, non-forested, plain, Southern part of European Russia (for simplicity hereafter abbreviated as PSER). On the bigger geographic scale of Russia PSER appears as a unique flat and “warm” area here. In the west, it is a continuation of the Ukrainian steppe and its limit here is the eastern border of Donbass. From the north, it is roughly outlined by the southern fringe of the extensive Eurasian forest belt. From the south, PSER is outlined by the lower limit of the montane forests that appear in the foothills of Southern Crimea and Russian Caucasus west of the Volga River, and by the state border with Kazakhstan east of the Volga River. In the east, PSER is limited by the

southwards overhang of the forested Southern Urals. As a result, an area covered by this paper (Fig. 1) roughly coincides with the European Russia part of the Eurasian steppe zone (or steppe biome) and includes various azonal landscapes formed by seacoasts, river valleys or other natural or artificial wetlands here. PSER is also an area that underwent very strong impact of agriculture and other anthropogenic factors. It stretches through several administrative units of Russia and embrace them all or in part as explained below. For the mesophilous beetles like Staphylinidae, ecologically all areas of PSER have much in common, but at the same time, there are some regional differences. PSER is by no mean a well outlined fauna, but it is a convenient, ecologically distinct area to embrace a manageable faunistic study within Russia. It also helps to study Staphylinidae of the adjacent regions of Russia, as well as neighboring countries of Ukraine and Kazakhstan.

The core of our paper is a check list of all species hitherto recorded for PSER in literature. For each species, it provides a summary of all essential global and local taxonomic, geographical and ecological information. To make our synopsis of the fauna as complete as possible, we used all literature records from the target and adjacent territories. Because we aim a foundation for a species-level inventory of new material recently sampled or to be collected for the region, also we constructed a key for identification for all genera of Staphylinidae that we know to occur or to be expected in PSER. We hope this paper will serve as a milestone towards a desired more complete knowledge of Staphylinidae of the Russian Federation and thus towards a desired more levelled knowledge of the continuous Eurasian fauna that spans through national borders.

PSER study region, its landscapes and habitats

Informally called the open, non-forested plains of the South European Russia, our study region (Fig. 1), in the west is cut by the administrative border with Donbass. The northern border of PSER is drawn by the area where steppe biome gradually transitions into forest-steppe belt [Mordkovich, Lyubechanskii, 2020]. In the northwest this border roughly coincides with the Don River south from Donetsk Kryazh and then continues in the north-eastern direction towards the city of Saratov on the Volga River and further east to the city of Orenburg and southern foothills of Urals Mountains. The southern border of PSER, from west to east, is defined by the northern foothills of the Crimean and Caucasus mountains which are mainly forested, by the northern coast of the Caspian Sea and by the administrative border between Russia and Kazakhstan.

PSER comprises from west to east: most of the territory of Crimea Republic except its mountains in the south; large, non-montane portion of Krasnodar Region and small northern portion of the Adygea Republic adjacent to the Kuban River; most of Rostov Region except its forest-steppe transition in the north; the northern plain



Fig. 1. Study region.

Рис. 1. Исследуемый регион.

part of Stavropol Region; the entire Kalmykia Republic, Astrakhan and Volgograd regions; the northern, plain parts of Chechen and Dagestan republics; the southern parts of Saratov and Samara regions; and finally a nearly entire area of Orenburg Region eastwards to Orsk and except its northern forested part.

PSER is rather a convenience region. Geo-botanically, it is the part of the Eurasian steppe belt, the latter stretched from Hungarian Plains through central Eurasia to Altai and further through Transbaikalia to Mongolia and North-Eastern China [Wesche et al., 2016]. In PSER natural landscapes are heavily modified by agriculture [Smelyansky, Tishkov, 2012], especially in Krasnodar and Stavropol regions. The original landscapes there turned into arable fields with various crops, pastures, meadows, urban landscapes, artificial lakes and other water reservoirs. Only in the drier regions with poorer soils, such as plains of Crimea and Kalmykia republics, Astrakhan Region or areas east to the Volga River, the original natural landscapes are still clearly traced by significant patches of intact nature. According to the botanical-geographical division [Berg, 1955; Amosov et al., 2012; Petrov, Terekhina, 2013], PSER consists of zonal elements, mainly defined by the degree of precipitation, that form a gradient from more humid meadow steppes to dry deserted steppes.

The **meadow steppes** are dominated by high and brightly coloured grasses such as *Galium verum* L., *Salvia pratensis* L., *Trifolium pretense* L., and some others from the genera *Filipendula* Mill. or *Leucanthemum* Mill. Poaceae

are, on the contrary, represented relatively poorly. Their genera *Poa* L., *Calamagrostis* Adans., *Agrostis* L., *Carex* L., *Stipa* L., *Festuca* L., or *Myosotis* L. form only 40% or less of the flora here. Also, one can meet here some ephemeroïd grasses such as *Iris aphylla* L., *Anemone sylvestris* L., *Adonis vernalis* L., or *Pulsatilla patens* Mill. In addition to the patchy groups or individual maple, elm or ashe trees, tree vegetation of meadow steppes is represented by wild fruit trees from genera *Pyrus* L., *Malus* L., *Padus* L., or *Sorbus* L. and bushes from genera *Rhamnus* L. or *Rosa* L. The meadow steppes occupy the western regions of PSER. In the northern fringe of PSER, for example in the forest-steppe zone of Rostov, Samara and Saratov regions, similar plant communities form steppe meadows.

The **fescue-feather steppes** are less mesophilous than meadow steppes. They are dominated by the poaceans *Stipa lessingiana* Trin. & Rupr., *S. pennata* L., *S. zaleski* Wilenski or *S. tirsia* L., and *Festuca valesiaca* Schleich. & Gaudin. In spring they are defined by blooming ephemeroïds such as *Tulipa gesneriana* L., *Crocus vernus* Hill., *Adonis wolgensis* Steven ex. DC., *Ornithogalum kochii* Parl., and ephemeral species *Holosteum umbellatum* L., *Arenaria serpyllifolia* L., *Veronica verna* L., *Alysum desertorum* Stapf. or *Viola kitaibeliana* Schultes. Examples of the fescue-feather steppes are most widely represented in Rostov Region. To a lesser extent they are found in Crimea Republic (Figs 2A, B, F), Krasnodar (Fig. 2E) and Stavropol regions, and in Volgograd (Figs 2C, D), Samara, Saratov and Orenburg regions (Fig. 2G).

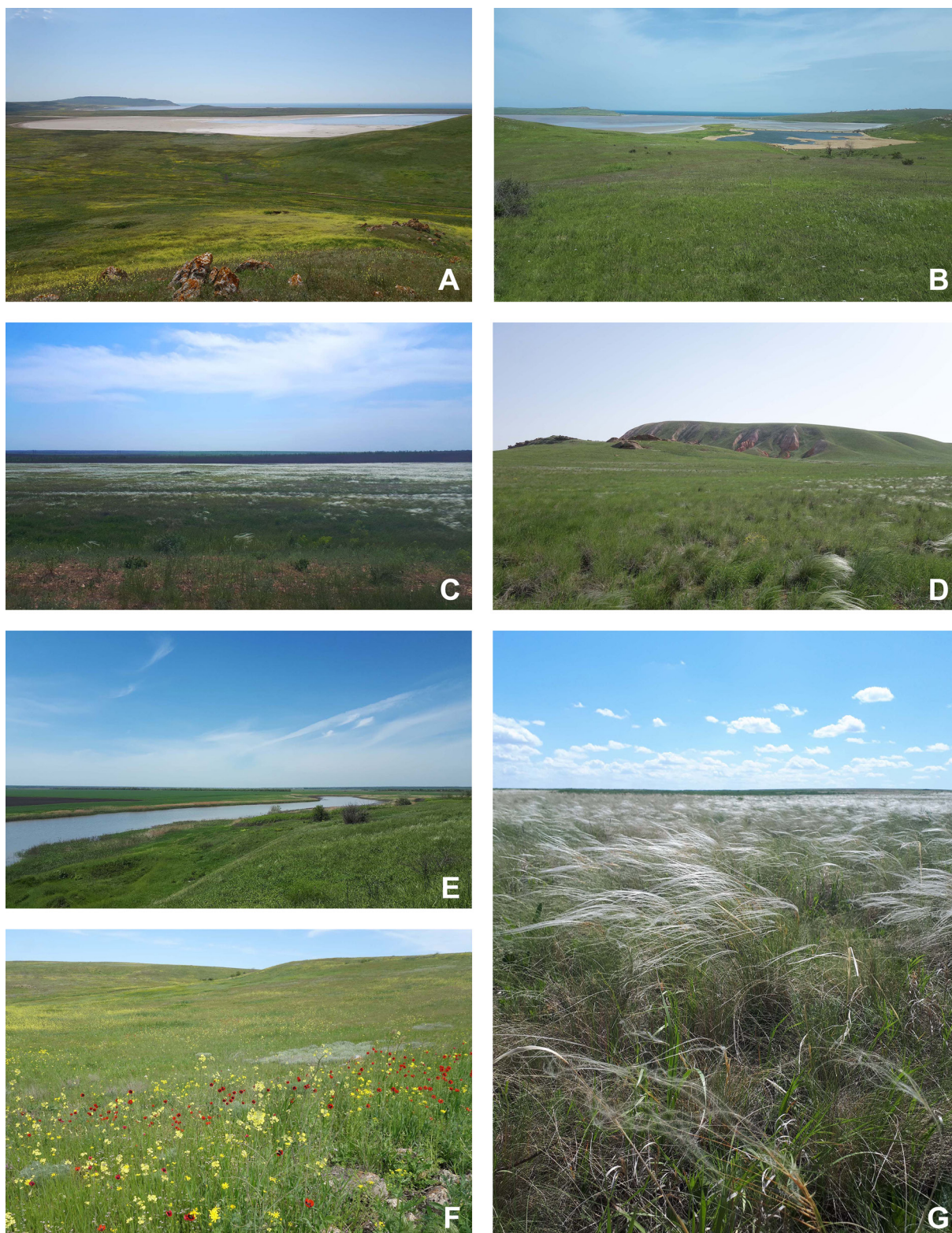


Fig. 2. Fescue-feather steppes.

A–B – Crimea Republic, environs of salt Chokrakskoe Lake at the Sea of Azov shore; C – northern Volgograd Region; D – Volgograd Region, Bogdo-Baskunchak Nature Reserve; E – Krasnodar Region, along the Eya River; F – Crimea Republic, environs of Zavetnoe village at the Black Sea shore; G – Orenburg Region, Akbulak District.

Fig. 2. Ковыльно-типчаковые степи.

A–B – Республика Крым, окрестности соленого озера Чокракское у берега Азовского моря; C – север Волгоградской области; D – Волгоградская область, Богдинско-Баскунчакский заповедник; E – Краснодарский край, берег реки Ея; F – Республика Крым, окрестности поселка Заветное у берега Черного моря; G – Оренбургская область, Акбулакский район.

The **dry fescue-feather steppes** which also comprise *Stipa* L. and *Festuca* L. poacean species, however, are dominated by the xerophilic *Dianthus guttatus* Bieb., *Galatella villosa* (L.) Rchb., *Limonium sareptanum* (A. Beck.), *Goniolimon tataricum* (L.), *Medicago romanica* Prodan or *Artemisia austriaca* Jacq. They are characterized by the same ephemeroïd and ephemeral plants as in fescue-feather steppes but in a larger proportion. The dry fescue-feather steppes are patchily present at the shores of the Sea of Azov and partly Black Sea and, after a significant gap in Krasnodar, Stavropol and Rostov regions, they appear as a more continuous belt from Kalmykia Republic to Orenburg Region. These dry open areas are homogenous and extensive for many square kilometers (Figs 3C–E).

South from the dry fescue-feather steppes the climatic and geographic conditions lead to the gradual desertification and appearance of **deserted steppes** which are characterized by the presence of *Poa-Artemisia* and *Artemisia* plant assemblages and, in case of saline soils, by the halophilic species such as *Salsola tragus* L., *Agropyron cristatum* (L.) Gaertn., *Xanthium strumarium* L., *Alhagi pseudalhagi* (Bieb.) Desv., *Ceratocarpus arearius* L., and *Tamarix ramosissima* Ledeb. In PSER deserted steppes are found in Kalmykia Republic and especially around the Caspian Sea (Figs 3A–B, F).

The borders between all these steppe types are not clear. Due to the local conditions, they often penetrate each other and form various subtypes. More importantly, they are rugged by various non-zonal landscapes such as shores of **saline lakes** widely represented in PSER. These are for example, Chokraskoe Lake in Crimea (Figs 2A–B), Solenoe Lake in Krasnodar Region, lakes Elton (Fig. 3G) and Bulukhta (Fig. 3H) in Volgograd Region, Baskunchak Lake (Fig. 3A) in Astrakhan Region or Razval Lake in Orenburg Region. Similarly, **sea shores, large brackish estuaries** and other **wetlands** (Figs 2B, E; Figs 4A–D, G–H) form unique biotopes very different from adjacent zonal steppe areas. For example, extensive wetlands dominated by reeds are known along the Sea of Azov in Krasnodar Region (the so called “plavni”) or in the delta of the Volga River in Astrakhan Region. Somewhat similar smaller-scale wetlands may occur along the artificial lakes and water reservoirs of PSER.

Also, the steppe landscape is rugged by various areas of bush or forest vegetation. The most significant forest areas in PSER are formed by **ravine forests**. They may deeply cut through the steppe zone along small to large river valleys or seashores. All numerous types of ravine forests of PSER can be grouped in two main types. The first type, the **broad-leaved forests**, occur closely along rivers and expand to floodplains (Fig. 4). Their canopy layer is formed by oak, maple, elm, ash and linden trees, as well as wild fruit trees from the genera *Pyrus* L., *Malus* L., *Padus* L., and *Sorbus* L. Their lower shrub layer is formed by species from the genera *Acer* L., *Populus* L., *Viburnum* L., *Corylus* (L.), *Euonymus* L., *Prunus* L. or *Rosa* L. Their forest floor layer consists of grasses *Elytrigia repens* Desv., *Calamagrostis arudinacea* L. (Roth.), *Bromus hordeaceus* L., *Origanum vulgare* L., and *Phlomis tuberosa* L. and, closer to water, by aquatic plants from the genus *Phragmites* Adans. or various *Cyperaceae* Juss. The broad-leaved ravine forests are well

represented in PSER along the Volga River even in rather dry southern regions as for example Astrakhan (Fig. 4F) and Volgograd regions. Also, they are notable in the lower flow of the Kuban River (Fig. 4A) in the west, along the Ural River in the east, or along various smaller rivers. The second type of ravine forests are **pinewood forests** with more xerophilic pine and oak trees as a dominant element. These forests mostly occur at upper terraces of river valleys with sandy soils (Fig. 4E). Their floor vegetation is poorly developed and formed by grasses from the genera *Cytisus* Desf., *Genista* L., *Calamagrostis* Adans., *Elytrigia* Desv., *Euphorbia* L., *Helichrysum* Mill. and *Centaurea* L. These are for example, forests along the Samara River including Buzulukskiy Bor, one of the oldest and largest natural isolated grooves of high pine trees in the world [Rusanov et al., 2008; Kin et al., 2011].

Various smaller and drier **steppe bushes** are scattered across open steppe territories of PSER everywhere and usually confined to various micro landscape features with the local increase of humidity. These bushes are formed by *Prunus spinosa* L., *Amygdalus nana* L., and mainly species from the genera *Spiraea* L., *Rosa* L., or *Caragana* Fabr.

At the northern border of PSER where the steppe belt transitions into forest zone via the forest-steppe, large fragments of forests may be fully or partly enclaved in PSER. A good example is Krasnosamarskiy Forest in Samara Region, which is an extension of the above mentioned Buzulukskiy Bor along the Samara River deeply in the steppe zone. A similar complex transition between the open and forested landscape is observed in the southern parts of PSER where plain relief is gradually transforming into the mountains of South Crimea or the Caucasus. Fragments of montane bush or forest may appear isolated in the plain, away from their main montane zone. Often, the origin of such patches is unclear, they may be a mix of wide-spread forest tree species and endemics of montane forests. One such example is the large oak-dominated Krasny Les forest on the right bank of the Kuban River in Krasnodar Region.

The PSER relief is generally flat, with exceptional slightly elevated areas like the Opuk Mount in Kerch Peninsula of Crimea, mud volcanoes of Karabet Hills in Taman Peninsula of Krasnodar Region, larger Mount Bolshoe Bogdo in Astrakhan Region or even more pronounced uplands near southern Urals in Orenburg Region. However, none of these are significant enough to form any pronounced altitudinal landscape zonation.

The outlined landscape mosaic of PSER form multiple biotopes and microhabitats for Staphylinidae. As a generally mesophilous group, rove-beetles prefer humid microhabitats, especially in dry biotopes of the open landscapes. Thus, in PSER they are usually found in various crevices in the ground or in tussock, in otherwise moist places such as leaf and grass litter in forest or scrub patches, grass and forest litter in more humid conditions of river valleys, in wet soil or ground-based debris on banks of diverse water bodies including saline lakes. Some species occur under tree bark and inside decaying wood, or inside reed stems, or maybe found on flowers or stems and leaves of vegetation. There are species more or less specialized to the ant nests or underground nests of mammals. A significant number of rove beetle species are

associated with ephemeral patches of decaying substrates such as dung, carrion, fungi or compost. As everywhere else, Staphylinidae in PSER can be collected by various techniques especially by sifting ground-based and other debris, tramping in wet soils, digging burrows, washing dung or sweeping vegetation in the dusk. Contrary to more northern and eastern, forested or colder regions of Russia, light trapping at night is an effective collecting method for many rove beetle groups in PSER.

Material and methods

Classification and synonymies. Our paper is based on the literature published until December 31, 2021. We use higher classification and species level taxonomy for Staphylinidae according to Schülke and Smetana [2015], taking into consideration all relevant papers published afterwards. These are updates at the species level [e.g., Bordoni, 2017; Gildenkova, 2019a, b; Kapp, 2019; Khachikov, 2019; Salnitska, Solodovnikov, 2021, and others] or changes of the higher classification including erection of the subfamilies Xantholininae and Platyprosopinae out of Staphylininae by Żyła and Solodovnikov [2020] and erection of the subfamily Mycetoporinae out of Tachyporinae by Yamamoto [2021]. Synonymy for each species is not provided because it can be found in Herman [2001], Schülke and Smetana [2015] and other literature. Finally, we are aware about consistent resolution of Silphidae as a clade nested within the Staphylinidae in a number of recent phylogenetic studies and its formal downgrading to a subfamily of Staphylinidae in Cai et al. [2021]. Although silphines occur in PSER, they are not included here for practical reasons as the formal change was implemented too close to the submission of this paper.

Workflow/data acquisition. First of all, we compiled a database of all references published by December 31, 2021, which contain any records of Staphylinidae species from PSER from last several decades, i.e. in the period of modern species concepts and currently accepted taxonomic practice. Because many of such works include critical evaluation of older records, we included legacy literature only when it was necessary. Assembly of this literature pool included search for publications in Google Academy [<https://scholar.google.ru/>], eLIBRARY.RU [<https://elibrary.ru>] and other sources. Naturally, that the catalogues of the Palaearctic [Schülke, Smetana, 2015] and World [Herman, 2001] Staphylinidae were also used as great bibliography resources. All published species occurrences were databased using the EarthCape [Meyke, 2019] software via Windows Client installed at several author's computers. All data are stored at the server of the Zoological Institute of the Russian Academy of Science in St. Petersburg. In addition to the direct queries of the database, various export tables in Excel format were used as the main output files for preparing species accounts for the annotated checklist.

The verbal species accounts in the annotated checklist were based on the published distributional and bionomic data. The Herman [2001] and Schülke and Smetana [2015] catalogues were useful starting points to summarize

distributions, while the monograph for Central European Staphylinidae [Assing, Schülke, 2012] and taxonomic revisions by various authors, where available, were instrumental to sharpen distributional data and summarize species bionomics. In our accounts we were able to provide only brief and very general outlines for species distributions, without an attempt to revise them with new material. Since the bionomics of species may vary with geography, we tried to be as clear as possible about the geographic origin and source for the bionomic data.

Identification keys to genera were developed based on the established keys such as Assing and Schülke [2012] for Central Europe or, to lesser extent, Newton et al. [2001] for North America or Koszela et al. [2018] for Denmark as a starting point. Other literature and most importantly a specially prepared synoptic collection of specimens was also used to find novel solutions for the PSER keys. It was decided to include in the keys not only subfamilies and genera recorded for PSER, but also those which may be expected there based on the current knowledge about distributions of widespread species or faunas of the territories adjacent to PSER. This projection is especially relevant for the subfamily Aleocharinae, for which the currently available data from PSER are so negligible that a key to genera that are known there from the published records only would be rudimentary and impractical.

Photography and illustrations. As far as possible we tried to illustrate the habitus diversity of genera and species recorded in PSER. Unfortunately, it was not always possible to have material for a good quality imaging for all interesting species from PSER. Thus, to illustrate a genus that occurs or may occur in PSER, we often used a species widespread in Europe as an example. The main purpose of our habitus figure plates is to aid a beginner with a pool of illustrations to verify the identification process. The beetle habitus illustrations were taken predominantly from The Danish Beetle Bank [<https://danbiller.dk/>] where several images are with Kirill Makarov and Lech Borowiec authorship. All sources for illustrations are properly acknowledged. All schematic line drawings in the identification keys are made free hand. A general map of PSER overlaid with the administrative division of Russia (Fig. 1) was done in QGIS Desktop 3.10.11 with GRASS 7.8.4. The final illustrations editing and design were done in Adobe Photoshop and Adobe Illustrator. All landscape photos are our own except a few made by Roman Dudko.

History of the study of Staphylinidae in PSER, available literature and collections

The earliest record of a rove beetle from PSER is perhaps a description of *Physetops tataricus* Pallas, 1773 by Peter Simon Pallas [Pallas, 1773], who was the first naturalist to travel and systematically explore steppes of the European Russia. Interestingly, *P. tataricus* (Fig. 17D) remains one of the largest species of the PSER fauna which is rarely collected and whose biology is still unknown [Solodovnikov, Grebennikov, 2005]. Other earliest records of the Staphylinidae species, some of which were or could be from PSER, mainly come from the broadly outlined

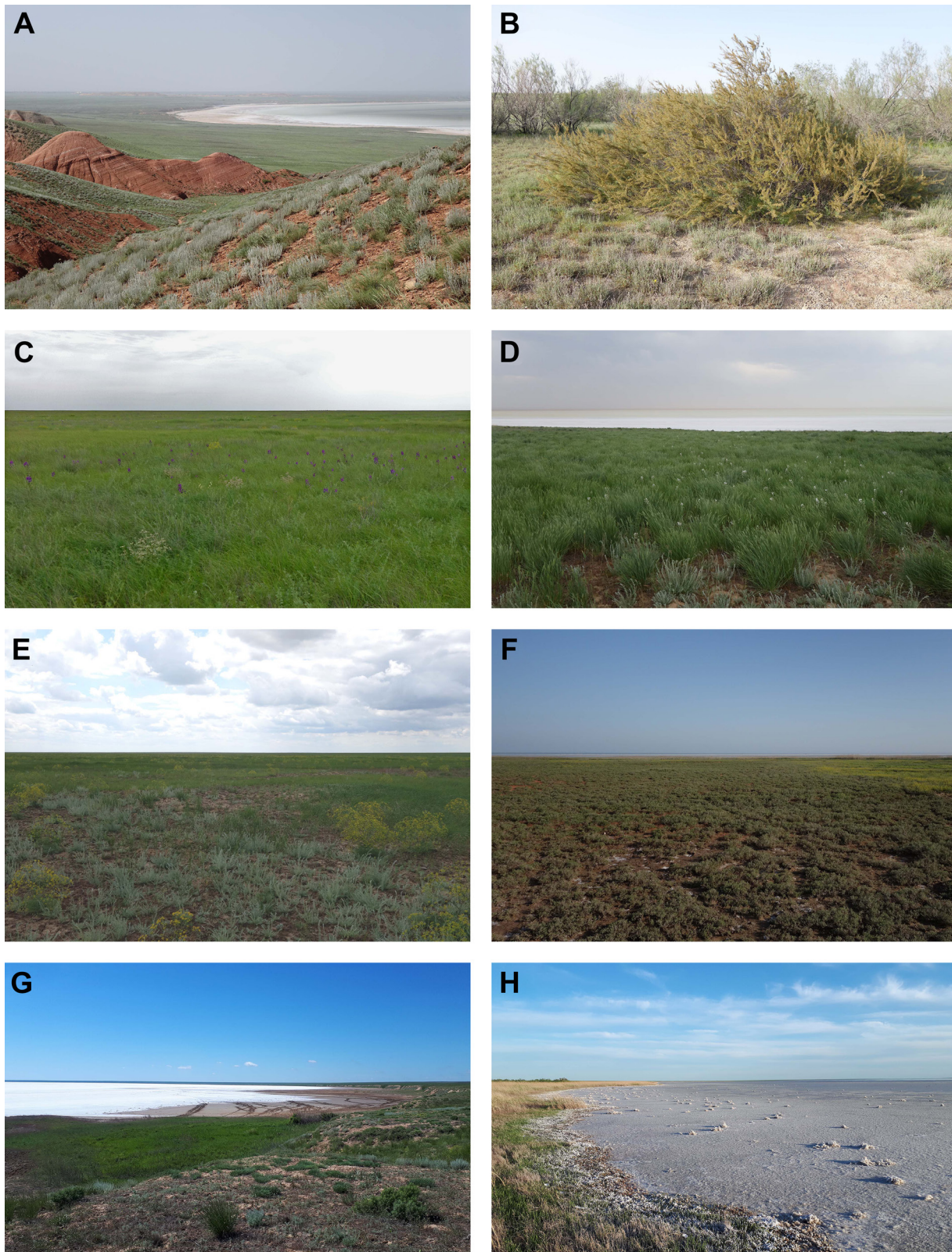


Fig. 3. Dry fescue-feather and deserted steppes.

A–B – Astrakhan Region, Bogdo-Baskunchak Nature Reserve; C–H – Volgograd Region: C – steppes around salt Elton Lake, G – shores of salt Elton Lake, H – shores of salt Bulukhta Lake.

Рис. 3. Сухие ковыльно-типчаковые и опустыненные степи.

А–В – Астраханская область, Богдинско-Баскунчакский заповедник; С–Н – Волгоградская область: С – степи у соленого озера Эльтон, Г – берег соленого озера Эльтон, Н – берег соленого озера Булукта.



Fig. 4. Floodplain forests.

A – Krasnodar Region, Kuban River; B–C – Krasnodar Region, Eya River; D–E – Saratov Region: D – Bolshoy Irgiz River, E – pinewood; F – Astrakhan Region, Akhtuba River; G – Orenburg Region, near village Svetlyy; H – Orenburg Region, Ural River.

Рис. 4. Пойменные леса.

A – Краснодарский край, река Кубань; B–C – Краснодарский край, река Ея; D–E – Саратовская область: D – река Большой Иргиз, E – сосновый лес; F – Астраханская область, река Ахтуба; G – Оренбургская область, у поселка Светлый; H – Оренбургская область, река Урал.

“Caucasus” [e.g., Hochhuth, 1849; Fauvel, 1874] or “Crimea” [e.g., Hochhuth, 1862; Ganglbauer, 1895] areas. These and other first studies were based on material collected nearby the large administrative centers of that time. In PSER these were Sarepta (a historical area in Lower Volga) [Motschulsky, 1860; Solsky, 1864, 1867; Eppelsheim, 1884], Astrakhan [Solsky, 1870, 1871; Eppelsheim, 1884], Samara [Luze, 1900; Scheerpeltz, 1929], Pyatigorsk [Motschulsky, 1860] and Kislovodsk [Luze, 1900; Bernhauer, 1915]. Often, unfortunately, records in the early works lack any exact geographic information and report species in a very general way from “Dagestan” [e.g., Luze, 1902c] or “Caucasus” [Ménétriés, 1832; Hochhuth, 1849; Luze, 1902c]. Some of these works were bigger monographs on Staphylinidae [Kolenati, 1846; Fauvel, 1871; Reitter, 1908a], others were taxonomically restricted to certain genera [Luze, 1901a, b, 1902a, b, c; Reitter, 1905]. Also, there were random contributions reporting new findings [Mannerheim, 1830; Czwalina, 1888, 1889]. This early period of exploration is summarized in the Beetles of Russia and Western Europe by Jacobson [1905]. This outstanding monograph contained identification keys, species accounts with synonymy, geographic records and habitus illustrations. Its bibliography was subdivided into geographic categories two of which, “Caucasus, Transcaucasus” and especially “Southern Russia, Crimea” are relevant to the PSER region. Nevertheless, Jacobson [1905] is the very outdated source of records and was not used here because it is overlaid by many more recent and more precise publications.

After Jacobson [1905], the first half of the 20th century was not rich for publications relevant for the fauna of PSER. Nevertheless, significant contribution to the study of nidicolous Staphylinidae from the southern part of the former USSR relevant for PSER, that included descriptions of new rove beetle species and their new records from mammal burrows, was made by Kirschenblatt [1936, 1938, 1950]. Early in the second half of the 20th century, Coiffait in 1966–1984 published very influential papers and monographs on some subfamilies of Staphylinidae of the Western Palaearctic which included scattered material from the territory of PSER. Finally, in her book on the evolution and ecology of rove beetles, Tikhomirova [1973] published a checklist of Staphylinidae fauna of the USSR mainly based on literature records. This was a milestone reference for a large territory for a long period. However, species distributions there are given in so general terms (Caucasus, Middle Asia, Far East, etc.) that they cannot be useful for our purposes. Taxonomically this checklist is also rather outdated now.

The most relevant for our purposes were publications afterwards, from last decades of the 20th and first decades of the 21st century. That recent literature is a mix of faunistic lists and notes confined to certain geographic or administrative regions; regional faunal investigations restricted to particular habitats and microhabitats; and a number of revisions at various taxonomic levels and geographic scope where material from PSER was examined. Among the faunistic lists there are papers with all material examined data provided in detail [Khachikov, 1997, 1998a, b, 2003; Kovalev et al., 2011; Kurbatov, Egorov, 2012; Grebennikov, 2015; Sazhnev et al., 2017] and papers where

original material examined was generalized into certain geographic or ecological categories [Minoranskiy, Lomakin, 1978; Gusarov, 1989; Solodovnikov, 1998; Goreslavets et al., 2002; Nagumanova, 2006; Makarov et al., 2009; Pushkin, Minav, 2015]. Among papers dedicated to specific (micro) habitats there are those devoted to nidicoles [Sazhnev, Khalilov, 2015], myrmecophiles [Grebennikov, Riga, 2014; Goreslavets, 2016a, b], mycetobionts [Nikitsky, Schigel, 2004; Goreslavets, 2021] and necrophiles [Pushkin, 2015, 2016; Gorkavaya, 2017a, b]. Among the revisionary studies that significantly contributed to the knowledge of PSER fauna, the most notable are for some genera of Paederinae, Aleocharinae and Xantholininae by Assing [1997a, b, 1998, 1999a, b, 2001a, b and others], a monographic work on the Palaearctic *Carpelimus* by Gildenkov [2001, 2015], a revision of the Caucasian *Stenus* by Ryvkin [1990], a review of *Gyrophana* of the similar region by Enushchenko and Semenov [2016], regional synopses on *Quedius* by Salnitska and Solodovnikov [2019, 2021]. Finally, there are single descriptions of new species [Štourač, 2000; Grebennikov, 2001a; Khachikov, 2005, 2013a; Bordoni, 2017].

Herman [2001] and Schülke and Smetana [2015], the recent World and Palaearctic catalogues of Staphylinidae, respectively, are very valuable references to gain general information about the species. However, they did not add much as far as data for PSER are concerned. Herman [2001] uses “Russia” as the most detailed distributional record potentially relevant for our purposes and lacks some big subfamilies. Among the geographic division of Russia in Schülke and Smetana [2015], the ST (Southern Territory of Russia) region is more useful for our work. Unfortunately, the limits of ST are not clearly defined there except a very general Map 2 on the page XVI. Based on that map, ST largely overlaps with our PSER. Unlike PSER however, it does not include Crimea but includes major part of the Caucasus with its rich and peculiar montane fauna, as well as a significant southern portion of the forest zone in the European Russia with many nemoral species that avoid PSER.

Keys to subfamilies and genera of Staphylinidae recorded or expected in PSER

Out of 35 extant subfamilies of the family Staphylinidae globally (according to Thayer [2016] with the latest amendments for the higher systematics of the family here mentioned in the Classification and Synonymies section), 29 subfamilies are found in the Palaearctic within the limits of this region accepted in the most recent catalogue [Schülke, Smetana, 2015]. Of them, 18 subfamilies are found in PSER, the target region of this paper. Eight more subfamilies (Dasycerinae, Leptotyphlinae, Micropeplinae, Osoriinae, Phloeocharinae, Pseudopsinae, Trichophyinae and Trigonurinae) are not recorded in PSER, but their species are found in the Western Palaearctic, sometimes in close geographic and ecological proximity to PSER. Some of them may be found in PSER in the future, with more collecting effort. Even though for some subfamilies occurrence in PSER is unlikely, for practical reasons, here

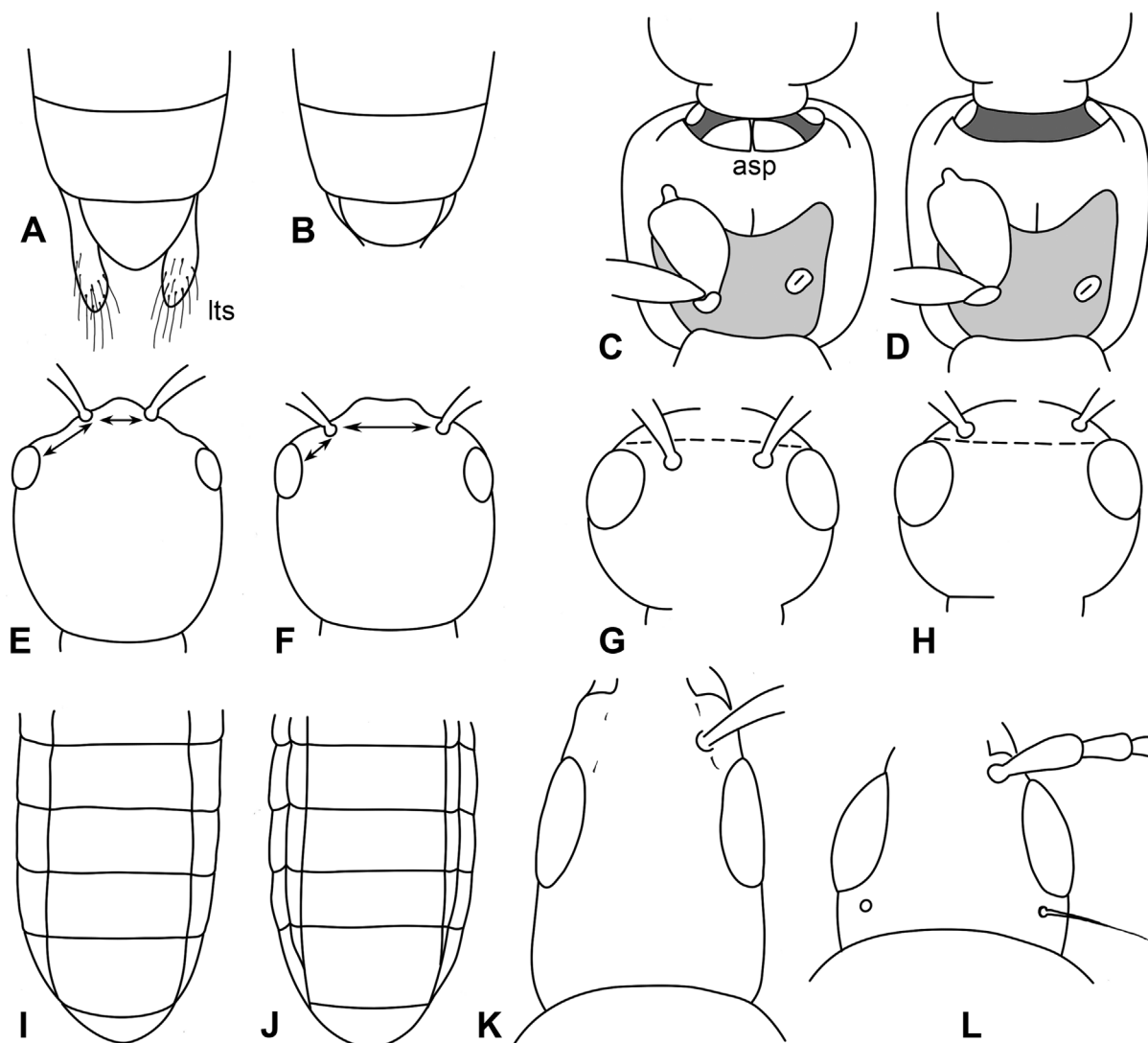


Fig. 5. Details of morphology of Staphylinidae.

A–B – apex of abdomen with different types of lateral sclerites IX; C–D – thorax with and without antesternal plates (asp), respectively; E–H, K–L – head dorsally with various details; I–J – abdomen with one and two pairs of paratergites per segment, respectively.

Рис. 5. Детали строения стафилинид.

A–B – вершина брюшка с разными типами IX латеральных тергальных склеритов девятого сегмента; C–D – грудь с антестеральными склеритами (asp) и без них соответственно; E–H, K–L – голова (вид сверху) с разными признаками; I–J – брюшко с одной и двумя парами паратергитов на сегменте соответственно.

we provide a key to all Staphylinidae subfamilies found in the West Palaearctic region. Subfamilies that are not recorded in PSER are taken in square brackets and supplied with the respective notes.

Key to subfamilies

1. Very slender and small, body no more than 2 mm long, depigmented; blind (without clear eyes), apterous, living in deep layers or soil [Leptotyphinae, in the Palaearctic region known only from south of Central, South-Eastern and Southern Europe; not found in PSER or Russia in general, but maybe expected]
 - Normally larger or significantly larger than 2 mm, not so depigmented, normally with clear eyes, of various body

shape, not very slender and not strictly specialized to life in deep layers of soil 2

2. Tip of abdomen with pair of protruding elongate and inflated (not flat) lateral tergal sclerites (Fig. 5A, lts), prothorax without heavily sclerotized postcoxal process or antesternal plates; antennae inserted directly on frons, their base not hidden under lateral margins of frons; beetles seldom smaller than 5 mm, usually larger or sometimes very large, up to 20 mm or bigger Staphylininae, go to key to genera
 - Tip of abdomen without protruding lateral tergal sclerites (Fig. 5B); if with those (*Paederus* and *Paederidus* of Paederinae) then body brightly coloured, prothorax with heavily sclerotized postcoxal process and antennae inserted under lateral margins of frons 3

3. Prothorax ventrally with two clear antesternal plates (Fig. 5C, asp); antennae inserted close to each other, distance between their insertions shorter or at most as long as distance from antennal insertions to eyes (Fig. 5E), often antennae geniculate; neck always distinct; anterior tarsi never very broad; body slender Xantholininae, go to key to genera
- Prothorax ventrally without antesternal plates (Fig. 5D); distance between antennal insertions usually bigger than distance from antennal insertions to eyes (Fig. 5F); neck maybe distinct or not, shape of anterior tarsi and body varies 4
4. Antennae inserted posterior to imaginary line connecting anterior margins of eyes, i.e. antennae inserted between eyes (Fig. 5G) 5
- Antennae inserted anterior to imaginary line connecting anterior margins of eyes, i.e. antennae inserted in front of eyes (Fig. 5H) 7
5. Elytra long, exposing at most two complete apical abdominal terga Scaphidiinae, go to key to genera
- Elytra short, exposing five to six abdominal terga 6
6. Eyes very large, bulbous; body black with roughly punctated or sculptured surface; procoxae enclosed within prothoracic sclerotization; hind coxae separated Steninae, in PSER only the genus *Stenus*, see species checklist
- Eyes variable but not very large and bulbous; body surface and colouration varies, mainly not with rough punctation or sculpture; procoxae not enclosed within prothoracic sclerotization; hind coxae contiguous Aleocharinae, go to key to genera
7. Elytra not shortened, covering entire abdomen 8
- Elytra shortened, leaving five to six abdominal terga exposed 9
8. Elytra smooth, without granulose longitudinal ridges and sculpture Scydmaeninae, go to key to genera
- Elytra with strong granulose longitudinal ridges and sculpture Dasycerinae [a single genus *Dasycerus*, occurs in the West Palaearctic but not found in PSER]
9. Abdomen cylindrical, its segments as rings, not divided into terga and sterna, without paratergites [Osoriinae, in the Palaearctic region occur only in warmer and humid areas, not found in PSER]
- Abdomen with segments divided into terga and sterna, with paratergites 10
10. Elytra with sharp longitudinal costae (ribs), often pronotum and abdomen are with such costae too 11
- Elytra, pronotum and abdomen without sharp longitudinal costae 12
11. Antennae 9-segmented, clubbed. Body small (not longer than 2.7 mm) [Micropeplinae, in the West Palaearctic region only two genera, none of them found in PSER]
- Antennae 11-segmented, not clubbed. Body larger, 3.5–4 mm long [Pseudopsinae, in the West Palaearctic region only one genus, not found in PSER]
12. Body small, normally smaller than 4 mm, of yellowish to brown colouration, with deep conical foveae on vertex and usually other parts of the body, mostly with very distinct large maxillary palps Pselaphinae, go to key to genera
- Body without deep conical foveae on vertex and other parts, of diverse size and appearance 13
13. Antennae with long erect setae and characteristic shape: first two segments distinctly thicker, all other segments similar to each other forming filiform flagellum; small beetles with body not longer than ca. 4 mm 14
- Antennae of different shape, without conspicuously long erect setae; small to large beetles 15
14. Body smooth and glossy Habrocerinae, a single genus *Habrocerus*, see species checklist
- Body finely but distinctly punctate and setose [Trichophyinae, a single genus *Trichophya*, occurs in the West Palaearctic but not found in PSER]
15. Head with two ocelli; abdomen with one pair of paratergites per segment (Fig. 5I); body not longer than ca. 8 mm, mainly smaller than that Omaliinae, go to key to genera
- Head without or at most with one ocellus; number of paratergites and body size varies 16
16. Head with one ocellus [Proteininae: genus *Metopsia*, occurs in the West Palaearctic but not found in PSER].
- Head without ocelli 17
17. Abdomen with one pair of paratergites per segment (Fig. 5I). Body not longer than ca. 8 mm 18
- Abdomen with two pairs of paratergites per segment (Fig. 5J). Body length strongly varies 19
18. Body small, not longer than ca. 3 mm; pronotum wider than long, at base as wide as elytra Proteininae, go to key to genera
- Body larger, 7–8 mm, pronotum not transversal, at base more narrow than elytra Oxytelinae: genus *Deleaster*, see species checklist
19. Antennae with 2-segmented club. Anterior, middle and posterior tarsi 4-segmented (tarsal formula 4-4-4). Body very small, not longer than ca. 2 mm Euaesthetinae, few genera in the West Palaearctic, in PSER only the genus *Euaesthetus*, see species checklist
- Antennae without clear 2-segmented apical club, if somewhat clubbed, then more than two segments enlarged. Tarsal formula mostly 5-5-5 (with lesser segments in some Oxytelinae, see below), body mostly larger than 2 mm 20
20. Last labial palpomere large, semilunar. Head wider than pronotum with sharp and large mandibles. Body large, ca. 10 mm long, glossy, black or bicoloured. Living in mushrooms Oxyporinae, in the West Palaearctic and PSER only the genus *Oxyporus*, see species checklist
- Last labial palpomere never large and semilunar. Body proportions different, mandibles smaller. Biology varies 21
21. Antennae very long, significantly longer than half of body length. Body dorso-ventrally flattened. Elytra with longitudinal striae Piestinae, in the West Palaearctic and PSER only the genus *Siagonum*, see species checklist
- Antennae not very long, usually shorter than half of body length. Body shape varies, only rarely strongly dorso-ventrally flattened. Elytra without longitudinal striae, at most with longitudinal rows of punctation 22

22. Elytra distinctly elongate, nearly 2 times as long as pronotum, with longitudinal striae of punctures. Pronotum ca. two times as broad as head. Neck constriction distinct [Trigonurinae, a single genus *Trigonurus*, occurs in the West Palaearctic but not found in PSER]
- Elytra less elongate, or without longitudinal striae of punctures. Pronotum less than two times as broad as neck. Neck constriction present or absent 23
23. Neck constriction distinct, or antennae geniculate 24
- Clear neck constriction absent, antennae not geniculate 25
24. Abdomen with fully developed sternite II, i.e. with seven visible sternites. Tarsi often with less than five segments. If sternite II reduced (*Coprophilus*), then anterior and middle tibia with spines Oxytelinae, go to key to genera
- Abdomen with reduced sternite II, i.e. with six visible sternites. Tarsi with five segments (tarsal formula 5-5-5). Anterior and middle tibia never with spines Paederinae, go to key to genera
25. Anterior tarsi very broad. Large beetles, body length 120–140 mm Platyprosopinae, in the West Palaearctic and PSER only the genus *Platyprosopus*, see species checklist
- Anterior tarsi never as broad. Body smaller or much smaller 26
26. Body very small, not longer than 1.5 mm. Eyes positioned in posterior part of head, closer to indistinct neck region than to base of mandibles. Last two segments of antennae distinctly larger than preceding segments, so antennae look slightly clubbed. Body distinctly evenly setose [Phloeocharinae, in the West Palaearctic only the genus *Phloeocharis*, not found in PSER]
- Body mostly larger or significantly larger than 1.5 mm. Eyes positioned in anterior part of head, closer to base of mandibles than to indistinct neck region. Body rarely evenly setose 27
27. Pronotum widest in the middle, narrowing basad; elytra slightly longer than pronotum, with longitudinal irregular sculpture; eyes distinctly protruding over head contour in dorsal view [Olisthaerinae, a single genus *Olisthaerus*, occurs in the West Palaearctic but not found in PSER]
- Pronotum widest behind the middle; elytra vary in length and never have longitudinal irregular sculpture, only rows of setae sometimes; eyes at most slightly protruding over head contour in dorsal view 28
28. Head short, distinctly transversal, usually with midcranial suture, without complete ridge below eye. Body usually sub-limuloid. Elytron with epipleural keel folded inward. Abdominal segment VIII frequently with peculiar apical lobes Tachyporinae, go to key to genera
- Head elongate (Fig. 5K) or at least as long as wide (Fig. 5L), with distinct and complete ridge below eye. Body slender and fusiform. Elytron with epipleural keel not folded inward. Abdominal segment VIII simple, without peculiar apical lobes Mycetoporinae, go to key to genera

Subfamily Aleocharinae Fleming, 1821

This key includes all tribes of Aleocharinae that occur in the Palaearctic region except the following tribes that are neither found or not expected in PSER: Actocharini, Diestotini, Dimonomerini, Dorylophilini, Eusteniamorphini, Himalusini, Hoplandriini, Leucocraspedini, Liparocephalini, Masuriini, Mesoporini, Pediculotini, Philotermitini, Pygostenini, Sahlbergiini, Termitohospitini, Termitopaedini and Trichopseniini. For practical reasons the key is divided into three parts. The Key 1 is to all tribes and to the genera from most of the tribes except Oxypodini, Tachyusini, Athetini, Geostibini and Taxicerini. The Key 2 is mainly to genera of Oxypodini and some Tachyusini. The Key 3 is to the genera of Athetini, Geostibini, Taxicerini and some Tachyusini. Genera that were included in the key on the assumption that they may occur in PSER are taken in square brackets with respective notes.

Aleocharinae Key 1

(main key to start with;
most of the genera from most of the tribes)

1. Head with elongate “snout”; inner lobes of maxillae very narrow, weakly sclerotized; maxillary palps very long and narrow 2
- Head without elongate “snout”; inner lobes of maxillae only partly weakly sclerotized; maxillary palps less elongate 6
2. Pronotum much wider than long, widest at base. Larger; body length 3–5.5 mm 3
- Pronotum at most slightly wider than long. Smaller; body length 1.2–3.2 mm 4
3. All tarsi 5-segmented (5-5-5). Larger; body length 5–5.5 mm [*Gymnusa* Gravenhorst, 1806 (Gymnusini); two widespread species in the Palaearctic, potentially can be found in PSER]
- All tarsi 3-segmented (3-3-3). Smaller; body length 3–3.5 mm [*Deinopsis* Matthews, 1838 (Gymnusini) (Fig. 11A)]
4. Pronotum widest anterior to (before) its middle, strongly tapering posteriad. Posterior margin of elytra straight, not or only slightly sinuate [*Diglotta* Champion, 1887 (Diglottini), seashore inhabiting genus not found in Russia; based on known distribution unlikely at the Black Sea or Sea of Azov coasts of PSER, but one species, *D. mersa* Haliday, 1837, is subject to introductions]
- Pronotum widest at or near its base, not or hardly tapering posteriad 5
5. Body dull, finely and densely setose; abdomen strongly tapering posteriad. Anterior and middle tarsi 4-segmented, posterior tarsi 5-segmented (4-4-5) [*Myllaena* Erichson, 1837 (Myllaeini) (Fig. 9Q)]
- Body more or less glossy and densely setose; abdomen parallel-sided along most of its length. Anterior tarsi 4-segmented, middle and posterior tarsi 5-segmented (4-5-5) [*Pronomaea* Erichson, 1837 (Pronomaeini)]
6. At least posterior tarsi 5-segmented, if posterior tarsi not 5-segmented (Falagriini, part) pronotum with distinct longitudinal middle line 7

- All tarsi 4-segmented 41
- 7. Fourth (apical) segment of maxillary palps with small apical pseudosegment 8
- Fourth (apical) segment of maxillary palps without small apical pseudosegment 9
- 8. All tarsi 5-segmented (5-5-5). Larger; body length 2–8 mm
 *Aleochara* Gravenhorst, 1802 (except the subgenus *Tinotus* Sharp, 1883; Aleocharini) (Figs 8A–B)
- Anterior tarsi 4-segmented, middle and posterior tarsi 5-segmented (4-5-5). Smaller; body length 1.5–2.5 mm [*Aleochara* (*Tinotus*) (Aleocharini); considered as a separate genus in Schülke and Smetana [2015], but as subgenus in Yamamoto and Maruyama [2016] and Klimaszewski et al. [2018]. The widespread *A. (T.) morion* Gravenhorst, 1802, potentially can be found in PSER]
- 9. All tarsi 5-segmented **go to Aleocharinae Key 2**
- At least anterior tarsi 4-segmented 10
- 10. Head with narrow neck which is at most 1/3 times as wide as head. Posterior margin of elytra not or only slightly sinuate 11
- Head with wider neck which is at least 1/2 times as wide as head. Posterior margin of elytra strongly sinuate 18
- 11. Elytra without grooves or each elytron only with one groove. Pronotum posteriorly without longitudinal grooves laterally from midline 12 (Falagriini)
- Each elytron with two deep grooves or with only one groove. Pronotum posteriorly with two longitudinal grooves connected by transversal basal groove
 [*Autalia* Leach, 1819 (Autaliini); widespread *A. impressa* (Olivier, 1795) recorded from ST in Schülke and Smetana [2015] (Fig. 8C)]
- 12. All tarsi apparently 4-segmented (in fact middle and posterior tarsi 5-segmented but their first (basal) segment very small, indistinct). Head and pronotum with complete midline. Small, body length 1.4–1.6 mm [*Bohemiellina* Machulka, 1941 (Falagriini). A single widespread species, *B. flavipennis* Cameron, 1920, potentially can be found in PSER]
- Middle and posterior tarsi clearly 5-segmented, their first segment longer than second. Head at most in front with central groove; otherwise larger species, body length 2.2–2.5 mm 13
- 13. Head matt, chagrined; neck ca. 1/3 as wide as head. Body rather flat, 2.2–2.5 mm long
 *Myrmecopora* Saulcy, 1865 (Falagriini) (Fig. 8J)
- Head and usually also pronotum glossy; neck ca. 1/4 as wide as head. Body rather convex 14
- 14. Pronotal sides and posterior margin not angular. Each elytron with small, distinct pit between shoulder (humerus) and scutellum. Body length 2.3–2.5 mm
 *Cordalia* Jacobs, 1925 (Falagriini) (Fig. 8V)
- Pronotal sides and posterior margin finely angular. Elytra without pits between shoulder (humerus) and scutellum 15
- 15. Pronotum bulbous (spherically arched), without or only with weak central furrow. Body length 1.6–1.8 mm
 *Anaulacaspis* Ganglbauer, 1895 (Falagriini) (Fig. 8E)
- Pronotum somewhat cordate (heart-shaped), with deep longitudinal middle furrow 16
- 16. Scutellum without longitudinal central furrow. Body length 2.5–3.4 mm
 *Falagrioma* Casey, 1906 (Falagriini) (Fig. 8D)
- Scutellum with sharp-edged longitudinal central furrow 17
- 17. Posterior angles of pronotum distinct but not sharply pointed. Body length 2–2.5 mm
 *Falagria* Leach, 1819 (Falagriini)
- Posterior angles of pronotum distinct, sharply pointed
 [*Myrmecocephalus* MacLeay, 1873 (Falagriini). The widespread *M. concinnus* Erichson, 1839 maybe expected in PSER]
- 18. Middle tarsi 5-segmented (4-5-5) 19
- Middle tarsi 4-segmented (4-4-5) 27
- 19. Maxillary insertions separated from anterior margin of eye by rather wide cheeks. First (basal) segment of posterior tarsi at least as long as second and third segments together; otherwise first three visible tergites of abdomen with brushes of setae 20
- Maxillary insertions separated from anterior margin of eye only by narrow cheeks. First (basal) segment of posterior tarsi usually only as long as second segment. First three visible tergites of abdomen without brushes of setae 25
- 20. First free abdominal tergites without brushes of setae. Pronotal sides not broadly curved upwards 21
- First free abdominal tergites at sides with brushes of yellow setae. Pronotal sides broadly curved upwards ... 24
- 21. Elytra much shorter than pronotum. Head posteriorly significantly constricted, neck only ca. half as wide as head. Body length 4–5 mm *Drusilla* Leach in Samouelle, 1819 (Lomechusini) (Fig. 11I)
- Elytra not shorter than pronotum. Head posteriorly rather weakly constricted at short distance, neck wider than half of head width. Body length 3.5–6.5 mm 22
- 22. Body somewhat glossy, distinctly sparsely punctate and setose, distance between punctures much larger than diameter of punctures
 *Zyras* Stephens, 1835 (Lomechusini) (Fig. 9A)
- Body densely and faintly punctate 23
- 23. Pronotum distinctly more narrow than elytra, widest distinctly anterior to (before) middle of its length, with somewhat sinuate sides and distinct hind angles [*Myrmoecia* Mulsant et Rey 1873 (Lomechusini). The widespread *M. plicata* (Erichson, 1837) is recorded in ST in Schülke and Smetana [2015]].
- Pronotum indistinctly more narrow than elytra, widest at about its middle or only slightly before middle of its length, its sides not sinuate and hind angles not distinct *Pella* Stephens, 1835 (Lomechusini) (Fig. 9E)
- 24. Femora apically densely yellow haired. Pronotal posterior corners not pointed. Body length 5–6 mm
 *Lomechusoides* Tottenham, 1939 (Lomechusini) (Fig. 11F)
- Femora apically not yellow haired. Pronotal posterior corners pointed. Body length 4–5 mm
 *Lomechusa* Gravenhorst, 1802 (Lomechusini) (Fig. 11G)

25. Pronotal setation of type IV (Fig. 6D). Temples with distinct posterior angles. First (basal) segment of posterior tarsi clearly longer than second. Body covered by fine, dense, silky setation [Dacryla Mulsant et Rey, 1873 (Oxyptodini); D. fallax Kraatz, 1856 widespread, potentially in PSER]
- Pronotal setation different; otherwise temples not angled or first (basal) segment of posterior tarsi not longer than second. Body usually less densely setose 26
26. Temples without clear posterior angles. First (basal) segment of posterior tarsi clearly longer than second. Head slightly constricted posteriorly (except Brachyusa Mulsant et Rey, 1873 with very long first metatarsomere). Penultimate segment of maxillary palps not very enlarged **go to Aleocharinae Key 2**
- Temples with clear posterior angles, at least at the back and a bit forwards; otherwise first (basal) segment of posterior tarsi not distinctly longer than second, or head not narrowed posteriorly (in that case first (basal) segment of posterior tarsi only slightly longer than second), or penultimate segment of maxillary palps strongly enlarged **go to Aleocharinae Key 3**
27. Anterior and middle tibia externally with spines [Phytosini; among three Palaearctic genera of this tribe, the genus Phytosus Curtis, 1838 potentially can be found at the Black Sea or Sea of Azov in PSER]
- Anterior and middle tibia externally without spines, only with setae 28
28. First (basal) segment of posterior tarsi at most slightly longer than second; otherwise posterior margin of elytra clearly sinuate (incised) 29
- First (basal) segment of posterior tarsi longer than second and third segments together. Posterior margin of elytra not clearly sinuate (not clearly incised) [Placusa Erichson, 1837 (Placusini). Some widespread species potentially may occur in PSER]
29. Posterior margin of elytra clearly sinuate (incised) near posterior angles; surface of elytra uneven, near suture with more or less elevated longitudinal fold 30
- Posterior margin of elytra not or hardly sinuate (curved) near posterior angles; surface of elytra smooth, without longitudinal fold near suture 35
30. Head posteriorly rather strongly constricted, neck at most clearly 3/5 as wide as head. Body length 3.5–5 mm ... Bolitochara Mannerheim, 1830 (Homalotini) (Fig. 8K)
- Head posteriorly rather slightly constricted 31
31. First (basal) segment of posterior tarsi ca. as long as segments 2–4 together. Antennae and legs long and slender; apical segments of antennae not transversal. Body length 3–3.5 mm [Tachyusida Mulsant et Rey, 1871 (Homalotini). The widespread T. gracilis Erichson, 1837 can be expected in PSER]
- First (basal) segment of posterior tarsi not longer than second and third segments together. Antennae and legs not very long and slender; apical segments of antennae quite strongly transversal 32
32. First (basal) segment of posterior tarsi not clearly longer than second segment. Body length 3.5–4 mm Silusa Erichson, 1837 (Homalotini) (Fig. 8O)
- First (basal) segment of posterior tarsi significantly longer than second segment; otherwise body smaller, body length 2.3–2.5 mm 33
33. Third segment of antennae significantly longer than second segment. Pronotum without side setae. Body length 2.8–3.8 mm Euryusa Erichson, 1837 (Homalotini) (Fig. 8U)
- Third segment of antennae at most as long as second segment. Pronotum with or without side setae. In most cases body length not more than 2 mm 34
34. Pronotum less transversal, no more than 1/2 wider than long, with short side setae. Third antennal segment ca. as long as second. Body length 2.3–2.5 mm [Leptusa Kraatz, 1856 (Homalotini) (Fig. 8W)]
- Pronotum more transversal, about twice as wide as long, without side setae. Third antennal segment significantly shorter than second. Body length 1.5–2 mm [Cyphea Fauvel, 1863 (Homalotini). The widespread C. curtula Erichson, 1837 maybe expected in PSER]
35. Pronotum not or only slightly (1/4) wider than long, its posterior margin extremely finely margined. First four visible abdominal tergites with transversal furrow at base. Body narrow, rather flat 36
- Pronotum considerably, at least 1/2 times wider than long, its posterior margin quite strongly margined. At most first three visible abdominal tergites with transversal furrow at base. Body wider, not flattened .. 38
36. Head slightly narrower than pronotum, temples ca. as long as eyes. Elytra with strong humeral setae. Larger, body length 2.5–3 mm [Homalota Mannerheim, 1830 (Homalotini) Widespread H. plana Gyllenhal, 1810 is recorded in ST in Schülke and Smetana [2015] (Fig. 9L)]
- Head not narrower than pronotum, temples ca. twice as long as eyes. Elytra without clear side setae. Smaller, body length 1.5–1.8 mm 37
37. Punctuation of head strong, much stronger than on pronotum. Sixth visible abdominal tergite behind middle with small long thorn directed posteriad. Body length 1.5–1.8 mm [Anomognathus Solier, 1849 (Homalotini). Widespread A. cuspidatus Erichson, 1839 is recorded from ST in Schülke and Smetana [2015]]
- Punctuation of head fine, not stronger than on pronotum. Sixth visible abdominal tergite simple, without such a thorn. Body length 1.5–1.7 mm [Thecturota Casey, 1894 (Homalotini). The widespread T. marchii Doderer, 1922 maybe expected in PSER]
38. Body very wide, pronotum more than twice as wide as long, widest at rather sharp posterior angles. Abdomen hardly longer than wide. Body length 1.8–2.2 mm [Encephalus Stephens, 1832 (Homalotini). The widespread E. complicans Stephens, 1832 maybe expected in PSER]
- Body elongated, pronotum at most twice as wide as long, widest around its middle, posterior angles broadly rounded, hardly distinct. Abdomen significantly longer than wide 39
39. Elytra about as long as pronotum. Body rather densely covered with long erect setae [Brachida Mulsant et Rey, 1871 (Homalotini). The widespread B. exigua (Heer, 1839) maybe expected in PSER]

- Elytra distinctly longer than pronotum. Body with only single long erect setae 40
 - 40. Pronotum with single deep punctures, often arranged in two longitudinal rows; otherwise it is with distinctly granular sculpture and only slightly narrower and shorter than elytra. Ligula not divided. Body length 0.7–2.7 mm *Gyrophæna* Mannerheim, 1830 (Homalotini) (Figs 8L, M)
 - Pronotum without deep punctures, with barely visible granular sculpture and shorter than elytra. Ligula apically divided. Body length 1–1.2 mm [Agaricochara Kraatz, 1856 (Homalotini). The widespread *A. latissima* Stephens, 1832 maybe expected in PSER]
 - 41. Antennae 11-segmented, only slightly widened apicad. Body flat, larger, body length 2.5–3 mm *Hygronoma* Erichson, 1837 (Hygronomini, in the West Palearctic and PSER only one species *H. dimidiata* Gravenhorst, 1806) (Fig. 8R)
 - Antennae 10-segmented, with three or four segmented apical club. Body vaulted (convex), not flat. Very small, body length 0.7–1.4 mm 42
 - 42. Body usually rather narrow and straight, abdomen only slightly narrowing posteriorly, otherwise (*granaria*), ninth segment of antennae more than 2 times as wide as long. Body length 0.7–1.3 mm [Oligota Mannerheim, 1830 (Hypocyphtini). Some widespread species recorded from ST in Schülke and Smetana [2015] maybe expected in PSER (Fig. 8F)]
 - Body broad, abdomen already from base strongly tapering posteriorly. Ninth segment of antennae at most 2 times as wide as long 43
 - 43. Antennae inserted on top of head, not under side edge of frons. Body length 1–1.2 mm [Holobus Solier, 1849 (Hypocyphtini). *Holobus apicatus* Erichson, 1837 is recorded from ST in Schülke and Smetana [2015] (Fig. 8G)]
 - Antennae inserted on sides of head, under edge of frons. Body length 0.5–1.4 mm *Cypha* Leach, 1819 (Hypocyphtini) (Fig. 8H)
- Aleocharinae Key 2**
(some Aleocharini, Oxypodini and Tachysini)
- 1. Dorsal (upper) side of the first (basal) segment of antennae with deep apical incision for about half of the segment's length. Antennae look robust *Amarochara* Thomson, 1858
 - Dorsal (upper) side of the first (basal) segment of antennae without deep apical incision. Antennae less robust 2
 - 2. Posterior margin of elytra deeply sinuate. Pronotum very broad with posterior margin deeply sinuate and posterior angles pointed. Body length 3.5–5 mm *Dinarda* Leach, 1819 (Oxypodini) (Fig. 11H)
 - Posterior margin of elytra not deeply sinuate. Pronotum not so wide, with posterior margin at most weakly sinuate and posterior angles not pointed 3
 - 3. Smaller, body length 1.2–1.7 mm. Body narrow and straight; head not distinctly narrower than pronotum; eyes small, when seen from side much shorter than temples [Meotica Mulsant et Rey, 1873 (Oxypodini) (Fig. 11L)]
 - Larger, body length at least 2 mm; if smaller then body not straight and head significantly more narrow than pronotum. Eyes usually larger, in lateral view only slightly shorter than temples 4
 - 4. Head distinctly more narrow than pronotum; pronotum distinctly, often strongly transverse, widest behind middle, tapering stronger anteriorly than posteriorly, its setation in the middle pointing backward (type II, Fig. 6B), rarely in a small anterior part directed anteriorly (type III, Fig. 6C) 5
 - Head not or only slightly more narrow than pronotum; pronotum not or only slightly transversal, quite parallel-sided or widest before middle, or otherwise its setation along midline everywhere directed anteriorly (type I, Fig. 6A) 14
 - 5. Antennal segments tightly compressed to each other, without visible stalk at base of segments. Body length 2–3.2 mm *Thiasophila* Kraatz, 1856 (Oxypodini) (Fig. 11C)
 - Antennal segments normally (not tightly) attached to each other, with visible stalk at base of segments 6
 - 6. Anterior and middle tibia with fine thorns among fine setae. Body length 2.5–4 mm *Haploglossa* Kraatz, 1856 (Oxypodini) (Fig. 11E)
 - Anterior and middle tibia with setae only, without thorns 7
 - 7. First (basal) segment of posterior tarsi distinctly longer than fifth (apical) segment, or otherwise body entirely or predominantly reddish-yellow 8
 - First (basal) segment of posterior tarsi not distinctly longer than fifth (apical) segment. Body predominantly dark, brownish or nearly black, sometimes with paler elytra 10
 - 8. Eyes larger, protruding over head contour, much longer than short temples. Posterior margin of elytra only very slightly sinuate. Anterior tarsi 4-segmented (tarsi 4-5-5). Body length 2–2.5 mm *Brachyusa* Mulsant et Rey, 1873 (Tachysini) (Fig. 8Q)
 - Eyes not as large, at least as long as temples, temples not very short. Posterior margin of elytra distinctly sinuate near posterior corners. Anterior tarsi 5-segmented (tarsi 5-5-5) 9
 - 9. Body black, wide, pronotum ca. 2 times as wide as long. Abdomen with not so fine punctation. Body length 2.5–3 mm [Hygropora Kraatz, 1856 (Oxypodini). The widespread *H. cunctans* Erichson, 1837 potentially can be found in PSER]
 - Body not uniformly black; otherwise punctation of abdomen not so fine. Body length 1.8–6.5 mm *Oxypoda* Mannerheim, 1830 (Oxypodini) (Figs 11D, J)
 - 10. Head and pronotum strongly punctate. Body black, antennae and legs dark brown. Small, body length 1.8–2.2 mm [Poromniusa Ganglbauer, 1895 (Oxypodini). Two widespread species in the West Palearctic, potentially can be found in PSER]
 - Head and pronotum finely or rather finely, sometimes indistinctly, punctate. Body entirely or partly paler, antennae and legs yellowish-red 11
 - 11. First four visible abdominal tergites with transverse furrow at base. Pronotum distinctly more narrow than elytra. Body length 2.5–3.5 mm [Ischnoglossa

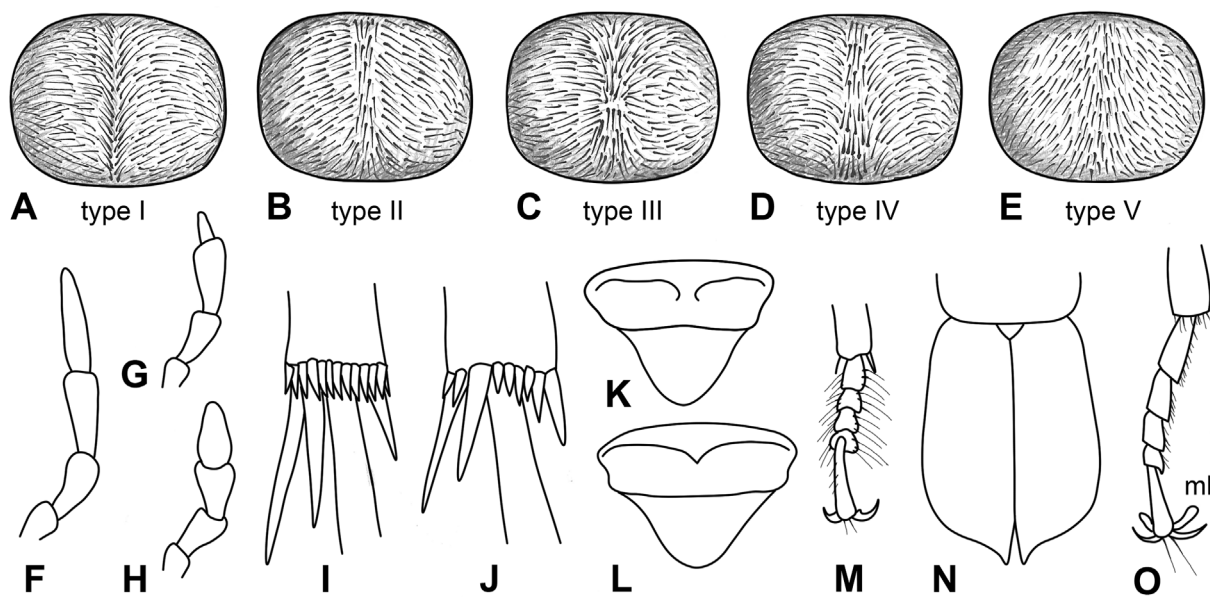


Fig. 6. Details of morphology of Staphylinidae.

A–E – five main types of setation of pronotum in Aleocharinae; F–H – maxillary palpus; I–J – apex of tibia; K–L – mesoscutellum; M, O – tarsus; N – elytra.

Рис. 6. Детали строения стафилинид.

A–E – пять основных типов опушения переднеспинки подсемейства Aleocharinae; F–H – нижнечелюстные щупики; I–J – вершина голени; K–L – мезоскутеллум (щиток); M, O – лапка; N – надкрылья.

- Kraatz, 1856 (Oxypodini). The widespread *I. prolixa* Gravenhorst, 1802 potentially can be found in PSER]
- Only first three visible abdominal tergites with transverse furrow at base. Pronotum hardly more narrow than elytra 12
12. First (basal) segment of posterior tarsi only slightly longer than second segment, distinctly shorter than second and third segments together. Body rather sharply bicolored: head and abdomen black, pronotum and elytra red. Body length 2.5–3.5 mm [Stichoglossa Fairmaire et Laboulbène, 1856 (Oxypodini). The widespread *S. semirufa* Erichson, 1839 potentially can be found in PSER]
- First (basal) segment of posterior tarsi at least as long as second and third segments together. Body differently coloured: pronotum and elytra not or only slightly lighter than head and abdomen 13
13. Pronotum rather finely grain-like punctate, slightly but clearly tapering basad. First (basal) segment of middle tarsi not clearly longer than second segment. Body length 2–3 mm [Dexiogyia Thomson, 1858 (Oxypodini). The widespread *D. corticina* Erichson, 1837 potentially can be found in PSER (Fig. 11N)]
- Pronotum very finely not grain-like punctate, not clearly tapering basad. First (basal) segment of middle tarsi clearly longer than second segment. Body length 2–3 mm [Crataraea Thomson, 1858. The widespread *C. suturalis* Mannerheim, 1830 is recorded from ST in Schülke and Smetana [2015]].
14. Abdomen at base with distinct waist, significantly more narrow than elytra and its own width more apically, first abdominal tergites with deep basal transversal impressions [Tachyusa Erichson, 1837 (Tachyusini) (Figs 8N, P)
- Abdomen at base without so distinct waist, first abdominal tergites without deep basal transversal impressions 15
15. First (basal) segment of posterior tarsi only slightly longer than second segment, distinctly shorter than second and third segments together. Anterior tarsi 5-segmented. Apical segments of antennae strongly transverse. Body length 2.3–3 mm [Phloeopora Erichson, 1837 (Oxypodini) (Fig. 11M)]
- First (basal) segment of posterior tarsi at least as long as second and third segments together, or otherwise anterior tarsi 4-segmented (except *Dasygnypeta* Lohse, 1974) and apical segments of antennae not transverse 16
16. First four visible tergites of abdomen with deep transversal invagination at base 17
- At most first three visible tergites of abdomen with deep transversal invagination at base 18
17. Head and pronotum densely and strongly punctured. Body 3–7 mm long [Ilyobates Kraatz, 1856 (Oxypodini) (Fig. 11K)]
- Head and pronotum weakly or very weakly punctured [Calodera Mannerheim, 1830 (Oxypodini) (Fig. 11Q)]
18. Head rather strongly constricted at base. First (basal) segment of posterior tarsi much longer than second segment, at least as long as second and third segments together 19
- Head not or only slightly constricted at base. First (basal) segment of posterior tarsi only slightly longer than second segment 21
19. Anterior tarsi 4-segmented (4-5-5). Setation of pronotum variable (types I, II, IV or V, Fig. 6). Body length 2.5–4 mm [Ischnopoda Stephens, 1833 (Tachyusini). One of the widespread

- species, *I. umbratica* Erichson, 1837, is recorded from ST in Schülke and Smetana [2015] (Fig. 8X)]
- Anterior tarsi 5-segmented (5-5-5) 20
 - 20. Pronotal sides with single long erect setae, its surface setation at middle line directed anteriorly (type I, Fig. 6A). Abdominal segments with very scattered setiferous punctation. Body length 3.5–5.5 mm *Ocalea* Erichson, 1837 (Oxypodini) (Fig. 11B)
 - Pronotal sides without long erect setae, its surface setation at middle line directed posteriorly (type II, Fig. 6B), sometimes of type III. Abdominal segments with dense setiferous punctation. Body length 3.5–4.5 mm *Parocyusa* Bernhauer, 1902 (Oxypodini) (Fig. 11P)
 - 21. Anterior tarsi 5-segmented (5-5-5). First (basal) segment of posterior tarsi much longer than second segment, about as long as second and third segments together 22
 - Anterior tarsi 4-segmented (4-5-5). First (basal) segment of posterior tarsi only slightly longer than second segment, distinctly shorter than second and third segments together 23
 - 22. Pronotum about as wide as elytra, slightly shiny, with setation of type I (Fig. 6A). Body length 2.5–3 mm [*Mniusa* Mulsant et Rey, 1875 (Oxypodini) (Fig. 11O)]
 - Pronotum distinctly more narrow than elytra, rather shiny, with setation of type II (Fig. 6B). Body length 2–2.5 mm [*Ocyusa* Kraatz, 1856 (Oxypodini), two widespread species maybe expected in PSER]
 - 23. Dorsal side extremely finely and densely “silky” setose; pronotal setation of type IV (Fig. 6D). Antennae slender, apical segments not transversal. Body length 2.5–2.8 mm [*Dacrila* Mulsant et Rey, 1873 (Tachysini), the widespread *D. fallax* Kraatz, 1856 potentially can be found in PSER]
 - Dorsal side less finely and densely, not “silky” setose; pronotal setation not of type IV 24
 - 24. Dorsal side slightly shiny, very densely punctured and setose. Pronotal setation of type II (Fig. 6B). Apical segments of antennae clearly transversal. Body length 2.5–2.8 mm [*Dasygnypeta* Lohse, 1974 (Tachysini). The widespread *D. velata* Erichson, 1837 potentially can be found in PSER]
 - Dorsal side shiny, fairly densely punctured and setose. Pronotal setation of type I (Fig. 6A). Apical segments of antennae not transversal. Body length 2.5–3.5 mm [*Gnypeta* Thomson, 1858 (Tachysini) (Fig. 9N)]
 - Head and pronotum differently coloured. Mesosternum almost always without middle keel. Pronotal setation variable, if it is not of type II, then without oppositely directed setae in the middle of the midline 3
 - 3. Middle setae of posterior tibiae strong and long, more than twice as long as tibial width. Abdominal fifth visible tergite with extremely dense transversal microsculpture. Body length 2.5–2.8 mm *Atheta* Thomson, 1858 (*Coprothassa*) (Athetini)
 - Central setae of posterior tibiae very weak and short; otherwise microsculpture of abdominal fifth visible tergite approximately isodiametric 4
 - 4. Head and pronotum very strongly grain-like punctured; pronotum ca. 2 times as wide as long. Third antennal segment much shorter than second segment. Body length 1.5–1.7 mm *Atheta* (*Pachyatheta*) (Athetini)
 - Head and usually pronotum not very strongly punctured. Pronotum usually less transversal. Third antennal segment almost always as long as second 5
 - 5. Fifth visible abdominal tergite with approximately isodiametric microsculpture, if mesh is slightly transversal, then first (basal) segment of posterior tarsi clearly longer than second segment. Body length 1.5–3.5 mm *Acrotona* Thomson, 1859 (Athetini) (Fig. 9J)
 - Fifth visible abdominal tergite with rather strong transversely meshed or even transversally lineate microsculpture. First (basal) segment of posterior tarsi not longer than second segment *Atheta* (part) (Athetini)
 - 6. Head broadly square, flattened, posterior margin approximately straight cut. Body flattened, 1.5–2 mm long [*Dadobia* Thomson, 1858 (Athetini). The widespread *D. immersa* Thomson, 1858, potentially can be found in PSER]
 - Head differently shaped, posterior margin not cut 7
 - 7. Third (penultimate) segment of maxillary palps strikingly enlarged, fourth (apical) segment very small, conical. Head posteriorly tightly constricted, neck only slightly wider than half of head width. Body length 2.5–5 mm *Callicerus* Gravenhorst, 1802 (Geostibini) (Fig. 8T)
 - Third (penultimate) segment of maxillary palps normal, not strikingly enlarged. Head posteriorly not or slightly constricted 8
 - 8. Elytra distinctly shorter than pronotum. Eyes small, in lateral view much shorter than temples 9
 - Elytra not distinctly shorter than pronotum 10
 - 9. Temples angular. Pronotum ca. 1/3 wider than long, with setation of type II (Fig. 6B). Smaller, body length 1.4–1.6 mm [*Ousipalia* Gozis, 1886 (Athetini). The widespread *O. caesula* Erichson, 1839, potentially can be found in PSER]
 - Temples not angular. Pronotum only slightly wider than long, with setation of type V (Fig. 6E). Larger, body length 3–3.5 mm *Geostiba* Thomson, 1858 (Geostibini) (Fig. 8S)
 - 10. Head roughly punctate. Pronotal setation of type III (Fig. 6C). Body length 3–3.5 mm [*Halobrecta* Thomson, 1858 (Taxicerini). Some widespread species potentially can be found in PSER]
 - Head not roughly punctate; otherwise pronotal setation of different type 11

Aleocharinae Key 3

(Athetini, Geostibini, Taxicerini and Tachysini)

- 1. Pronotal hypomera inflexed, not visible from lateral view, pronotal lateral sides slightly and evenly curved 2
- Pronotal hypomera not inflexed, at least partially visible from lateral view 6
- 2. Head and pronotum black; elytra brownish-yellow, with triangular dark spot anteriorly. Mesosternum with middle keel. Pronotal setation mostly of type II (Fig. 6B), but with setae on a short extension in the middle directed forward. Body length 2.8–3.4 mm *Nehemitropia* Lohse, 1971 (Athetini) (Fig. 9D)

11. First (basal) segment of posterior tarsi clearly longer than second segment. Pronotal setation of type II or V (Fig. 6B or E). Temples entirely or at least posteriorly clearly angular 12
- First (basal) segment of posterior tarsi not clearly longer than second segment; otherwise pronotal setation different and (or) temples entirely not angular 13
12. First three visible tergites of abdomen with transverse carina (weak on second and third tergites), fifth abdominal segment distinctly longer than fourth. Pronotal setation of type II (Fig. 6B). Smaller, body length 2–3 mm [Dilacra Thomson, 1858 (Tachyusini). Some widespread species potentially can be found in PSER]
- First four visible tergites of abdomen with transverse carina (weak on second and third tergites), fifth abdominal segment shorter than fourth. Pronotal setation of type IV (Fig. 6D). Larger, body length 4–5 mm [Alevonota Thomson, 1858 (= Enalodroma Thomson, 1859) (Geostibini). The widespread *E. hepatica* Erichson, 1839 potentially can be found in PSER]
13. First (basal) segment of posterior tarsi clearly longer than second segment. Temples angular. Tibial setae fine and short, at most slightly longer than tibial width 14
- First (basal) segment of posterior tarsi not clearly longer than second segment; otherwise temples clearly angular or middle and posterior tibial setae strong and at least twice as long as tibial width 15
14. Head behind eyes parallel-sided or broadly rounded. Pronotal side setae short, pronotal surface setation of types I or IV (Fig. 6A or D); if pronotal setation different, then elytral setation almost everywhere directed posteriad. Body length 2.9–4.5 mm [Aloconota Thomson, 1858 (s. str.) (Geostibini). Some widespread species recorded from ST in Schülke and Smetana [2015]]
- Head behind eyes tapering posteriad. Pronotal side setae quite long, pronotal surface setation of types II and IV (Fig. 6B, D). Elytral setation directed inwards, obliquely backwards and outwards. Body length 2.5–4.5 mm [Aloconota (Disopora) (Geostibini). Some widespread species recorded from ST in Schülke and Smetana [2015]]
15. First four visible abdominal tergites at base with deep transversal furrow. Pronotal setation of type I (Fig. 6A). Abdomen, at least anteriorly, strongly and densely punctured 16
- At most first three visible abdominal tergites at base with deep transversal furrow; otherwise pronotal setation not of type I or first free abdominal tergites finely punctured 17
16. Temples not angular. Elytra only slightly longer than pronotum. Body length 2–2.5 mm [Pachnida Mulsant et Rey, 1873 (Athetini). The widespread *P. nigella* Erichson, 1837 potentially can be found in PSER]
- Temples angular. Elytra distinctly longer and wider than pronotum. Body length 3–3.5 mm [Alianta Thomson, 1858 (Athetini). The widespread *A. incana* Erichson, 1837 potentially can be found in PSER (Fig. 9I)]
17. Antennal segments rather tightly compressed to each other. Pronotum rather dull. Body length 2.5–2.8 mm [Lyprocorrhe Thomson, 1859 (Athetini) (Fig. 9M)]
- Antennal segments normally attached to each other, not tightly; otherwise forebody glossy. Pronotum sometimes broadly and shallowly imprinted in the middle 18
18. Pronotal setation of type V, its side setae as well as tibial setae hardly visible 19
- Pronotal setation of different type; otherwise its side setae as well as tibial setae distinct 20
19. Body narrow, parallel-sided. Pronotum only ca. 1/4 times wider than long, with sides nearly straight. Elytra only slightly wider than pronotum. Head not extended behind eyes. Body length 1.9–2.1 mm [Tomoglossa Kraatz, 1856 (Athetini). The widespread *T. luteicornis* Erichson, 1837 is recorded from ST in Schülke and Smetana [2015]]
- Body wider, somewhat tapering anteriorly and posteriorly. Pronotum ca. 1/2 times wider than long, with sides distinctly rounded. Elytra somewhat wider than pronotum. Head clearly extended behind eyes. Body length 2–2.5 mm [Pycnota Mulsant et Rey, 1873 (Athetini). The widespread *P. paradoxa* Mulsant et Rey, 1861 potentially can be found in PSER] (Fig. 9G)]
20. Head considerably enlarged behind, of somewhat triangular shape; eyes small, in lateral view much shorter than angular temples. Pronotal side setae barely visible, pronotal surface setation of type II (Fig. 6B). Body length 2–2.5 mm [Amischa Thomson, 1858 (Athetini) (Fig. 9K)]
- Head of normal shape, otherwise temples at least posteriorly angular and side setae of pronotum distinct 21
21. Anterior tibia with spines [Taxicera Mulsant et Rey, 1873 (Taxicerini). Wide spread *T. deplanata* (Gravenhorst, 1802) maybe expected in PSER]
- Anterior tibia without spines 22
22. Abdomen everywhere extremely fine and densely punctate. Temples not angulate. Antennae slender, apical segments at least as long as wide. Tibial setae extremely weak. Pronotal setation of type I (Fig. 6A). Body length 1.4–2.3 mm [Hydrosmeeta Thomson, 1858 (Athetini). Some widespread species recorded for ST in Schülke and Smetana [2015] maybe found at PSER]
- At least fifth visible abdominal tergite less densely punctured. Temples angular; otherwise apical antennal segments clearly transversal. Tibial setae strong or pronotal setation of type V 23
23. Pronotum and elytra with erect setae. Antennae robust, strongly thickened apically, apical segments more than 2 times as wide as long. Eyes as long as non-angular temples. Body length 1.8–2.4 mm [Trichiusa Casey, 1893 (Athetini). The widespread *T. immigrata* Lohse, 1984 can be found in PSER]
- Pronotum and elytra with recumbent setae. Antennae more slender, with very slightly transversal apical segments; otherwise eyes clearly shorter than temples or the latter at least posteriorly angular 24

24. Temples not angular. Pronotal setation of types I or IV (Fig. 6A or D). Third segment of antennae at least ca. as long as second segment. Tibial setae fine and often indistinct, most often as long as tibial width. Body length 3–4 mm *Dinaraea* Thomson, 1858 (Athetini)
- Temples clearly angular, at least posteriorly, otherwise pronotal setation of type V (Fig. 6E), or third segment of antennae clearly shorter than second segment, or setae of middle and posterior tibia much longer than tibial width 25
25. Pronotal setation of type IV. Pronotum ca. 3/4 wider than long. Body length 3–4.8 mm *Thamiaraea* Thomson, 1858 (Athetini) (Fig. 9R)
- Pronotal setation different, otherwise pronotum only slightly wider than long or body smaller (length 2–2.7 mm) 26
26. Pronotal setation of type IV (Fig. 6D). First four visible abdominal segments with deep basal furrow. Head strikingly large, not or only slightly narrower than pronotum. Body length 2–2.5 mm [*Paranopleta* Hansen, 1954 (Athetini). The widespread *P. inhabilis* Kraatz, 1856 can be expected in PSER]
- Pronotal setation different, otherwise only first three visible abdominal segments with deep basal furrow. Head usually distinctly narrower than pronotum 27
27. Pronotum strongly transverse, more than 2 times as wide as long, its setation of type I (Fig. 6A). Third segment of antennae much shorter than second, apical segments about 2 times as wide as long. Setation extremely fine and short. Body length 1.8–2 mm [*Dochmonota* Thomson 1859 (Athetini). Two widespread species potentially can be found in PSER]
- Pronotum less strongly transverse, otherwise antennae different, or setation more pronounced or body larger 28
28. Abdomen with very scattered and extremely fine and indistinct punctuation, straight or slightly expanded posteriorly. Eyes small, in lateral view much shorter than temples. Pronotal setation of type II (Fig. 6B). Body length 2.4–3 mm [*Alevonota* Thomson, 1858 (Geostibini). Some widespread species can be expected in PSER]
- Abdomen at least anteriorly with clear punctuation, otherwise in posterior part it is clearly tapering apicad, or eyes of normal size, or pronotal setation different 29
29. Mandibles, at least left, apically divided into two tips. Pronotal setation of type I or II (Fig. 6A or B). Body length 1.7–3.8 mm [*Schistoglossa* Kraatz, 1856 (Athetini). A few widespread species maybe expected in PSER]
- Mandibles apically simple, with one tip 30
30. Pronotum only ca. 1/5 wider than long, on each side from midline with two, sometimes indistinct, pits or dots, one behind the other, pronotal setation of type II (Fig. 6B). Body length 3.5–5 mm *Liogluta* Thomson, 1858 (Athetini) (Figs 9B, C)
- Pronotum more transversal, without such pits, otherwise pronotal setation different or body size smaller 31
31. Pronotum setation of type II (Fig. 6B). Fourth antennomere clearly longer than wide. Body length 2.8–3 mm [*Atheta* (*Dimetrota* Mulsant et Rey, 1874) (Athetini). A few widespread species can be expected in PSER]
- Pronotum setation different, otherwise fourth segment of antennae clearly longer than wide 32
32. Abdomen rather uniformly punctured, fifth free abdominal segment densely or at least not sparsely punctured. Third segment of antennae as long as, or only slightly shorter than, second segment. Body setation weak. Body length 2–3 mm [*Brundinia* Tottenham, 1949 (Athetini). Some widespread species may be expected in PSER]
- At least fifth visible abdominal segment with punctuation significantly more scattered than on preceding segments, otherwise abdomen tapering apicad and either third antennomere or setation distinct 33
33. Third antennomere significantly shorter than second. Pronotal setation of type I (Fig. 6A). Fifth abdominal segment with strongly cross-meshed microsculpture. Setation of elytra directed obliquely outwards, setation fine or very fine. Small, body length 1.2–2.4 mm [*Atheta* (*Anopleta* Mulsant et Rey, 1873) (Athetini). Some widespread species maybe found in PSER]
- Third antennomere as long as second; otherwise pronotal setation different, not of type I, or fifth abdominal segment with rather isodiametric microsculpture, or elytral setation directed predominantly backwards, or setation very strong 34
34. Pronotal setation of type I (Fig. 6A). Body usually straight, abdomen not tapering posteriorly. Antennae usually slender, with not or only slightly transversal apical segments. Male: penis usually with strongly developed tip. Female: spermatheca membranous. Body length 1.8–4.5 mm [*Atheta* (*Philhygra* Mulsant et Rey, 1873) (Athetini) (Fig 10G, I). Some widespread species maybe expected in PSER]
- Pronotal setation variable; if of type I, then either abdomen tapering posteriorly or antennae usually with distinctly transversal apical segments, or pronotum usually more strongly transversal. Male: penis normal, only rarely with stronger developed tip. Female: spermatheca sclerotized. Body length 1.1–4.5 mm *Atheta* (part) (Athetini)

Subfamily Mycetoporinae Thomson, 1859

(according to Yamamoto [2021],
no subdivision into tribes)

1. Head distinctly elongate (Fig. 5K), with long tempora, lacking ocular setae; antennal insertions distinctly separated from base of mandible by anterior lobe of gena; antennomere 1 very long and slender; maxillary apical and penultimate palpomeres long and slender (Fig. 6F). Large species, body length 6–9 mm, usually with reddish to brownish elytra *Bolitobius* Leach, 1819 (Figs 12A, D)
- Head only weakly to moderately elongate (Fig. 5L), with short tempora, with ocular seta; antennal insertions basally contiguous with base of mandible; antennomere 1 less elongate, thicker; maxillary apical and penultimate palpomeres combined shorter, combined not as slender (Figs 6G, H) 2

2. Apical maxillary palpomere narrow and slender, not more than 1/2 as wide as penultimate palpomere (Fig. 6G) 3
 - Apical maxillary palpomere thicker, more than 1/2 as wide as penultimate palpomere (Fig. 6H) 4
3. Meso- and metatibial apices bordered by ctenidium of evenly arranged dense spines of equal length with two larger and one smaller apical spurs (Fig. 6I); antennae longer than combined length of head and pronotum; scutellum with basal carina linear. Body length about 3.5–5.5 mm *Ischnosoma* Stephens, 1829 (Fig. 12L)
 - Meso- and metatibial apices bordered by more irregularly arranged numerous spines of unequal length (Fig. 6J); antennae shorter than combined length of head and pronotum; scutellum with basal carina acutely pointed medially. Body length 2.5–6.5 mm *Mycetoporus* Mannerheim, 1830 (Figs 12E–F, H)
 - 4. Meso- and metatibial apices with ctenidium of spines of equal length forming a straight edge, plus 2–3 long spurs. Body length 4–7.5 mm *Bryoporus* Kraatz, 1857
 - Meso- and metatibial apices with numerous unequal spines, forming a jagged edge 5
5. Antenna robust, with preapical antennomeres broadly transverse; abdomen sub-parallel sided in basal 2/3 of its length. Body length 5–7 mm *Carphacis* Gozis, 1886 (Fig. 12I)
 - Antenna more slender, with preapical antennomeres not broadly transverse; abdomen gradually tapering towards its apex along its length 6
6. Apical maxillary palpomere shorter than penultimate palpomere; first (basal) labial palpomere very large, longer than second and third labial palpomeres combined; scutellum with basal carina distinctly divided medially (Fig. 6K). Body length 3.5–6.6 mm *Bryophacis* Reitter, 1909
 - Apical maxillary palpomere equal in length or longer than penultimate palpomere; first (basal) labial palpomere large, but shorter than second and third labial palpomeres combined; scutellum with basal carina obtusely convex in middle (Fig. 6L). Body length 2.5–10 mm *Lordithon* Thomson, 1859 (Figs 12B, C)
 - Maxillary palps with last segment as wide as, or at most only slightly more narrow than penultimate segment. Bionomics varies 6
4. Sixth antennomere 1.5 times as wide as fifth antennomere; antennae with long setae, these setae much longer than each of antennal segments 4–10. Head distinctly protruding forward in front of eyes. Body length 2.5–3.5 mm *Xylotiba* Ganglbauer, 1895 (Omaliini)
 - Sixth antennomere 2 times as wide as fifth antennomere; antennae with shorter setae which are about as long as, or only slightly longer than, each of antennal segments 4–10. Head only slightly protruding forward in front of eyes 5
5. Head and pronotum with distinct punctation and microsculpture, but not completely dull; pronotum densely punctated. Body length 2–3 mm *Phloeostiba* Thomson, 1858 (Omaliini)
 - Head and pronotum indistinctly punctated with very dense, regular microsculpture and thus dull. Smaller, body length 1.3–2 mm *Phloeonomus* Heer, 1839 (Omaliini) (Figs 14D, F)
6. Pronotum with pair of longitudinal distinct impressions on disk. Mesothorax ventrally (mesoventrite) keeled *Omaliium* Gravenhorst, 1802 (Omaliini) (Figs 13H, K, L)
 - Pronotum smooth, without impressions or at most with pair of very shallow impressions. Mesoventrite not keeled 7
7. Hind angles of pronotum rounded or at most very blunt. Third antennomere long and club-shaped, with very thin basal part. Microsculpture of pronotum fine, mesh-like; punctation with connecting punctures. Body length 1.8–3.3 mm *Acrolocha* Thomson, 1858 (Fig. 13I)
 - Hind angles of pronotum distinct, pronounced, not blunt. Microsculpture and punctation of pronotum different 8
8. Head without groves in front of ocelli. Lateral sides of pronotum slightly crenulate. Body length 2.2–3 mm *Hapalaraea* Thomson, 1858 (Omaliini) (Fig. 14A)
 - Head with groves in front of ocelli. Lateral sides of pronotum not crenulate. Body length 3–5 mm *Phyllodrepa* Thomson, 1859 (Omaliini) (Fig. 13D)
9. Antennae robust: antennomeres 8–10 and often also antennomeres 5–7 transversal. Body narrow and parallel-sided, length 2.5–3.5 mm *Xylodromus* Heer, 1839 (Omaliini) (Fig. 13J)
 - Antennae thinner, at most only antennomeres 9 and 10 transversal. Body shape different 10
10. Apical (fifth) tarsomere with membranous lobes near base of claw (Fig. 6O, ml). Body length 2.5–7 mm. Often found on vegetation *Anthophagus* Gravenhorst, 1802 (Anthophagini) (Fig. 13M)
 - Apical (fifth) tarsomere without membranose lobes near base of claws. Found in ground-based microhabitats 11
11. Apical segment of maxillary palps relatively very long, few times as long as penultimate segment. Body length 3.5–6 mm. Found in wet water-edge microhabitats *Lesteva* Latreille, 1797 (Anthophagini) (Fig. 13N)

Subfamily Omaliinae MacLeay, 1825

1. Tarsi fringed by very long conspicuous setae (Fig. 6M). Elytra always elongated and often with pointed sutural angle (Fig. 6N). Small, body length 1.5–4 mm. Found mainly on flowers *Eusphalerum* Kraatz, 1857 (Eusphalerini) (Fig. 13C)
 - Tarsi with setae but shorter and not so conspicuous. Elytra not always elongated, never with pointed sutural angle. Bionomics varies 2
2. Posterior tarsi with apical (fifth) tarsomere at least as long as tarsomeres 1–4 together or longer 3
 - Posterior tarsi with apical (fifth) tarsomere shorter than tarsomeres 1–4 together 9
3. Maxillary palps with apical segment distinctly more narrow than penultimate segment. Living under bark 4

- Apical segment of maxillary palps shorter, at most only ca. 2 times as long as penultimate segment. Biology varies 12
- 12. Head with deep invaginations anterior to ocelli. Body length 4–7 mm. Found in wet water-edge microhabitats [*Geodromicus* L. Redtenbacher, 1857 (Anthophagini)] (Fig. 13E)
- Head without deep invaginations anterior to ocelli. Biology varies 13
- 13. Abdomen with rough punctation, interspaces between punctures without microsculpture. Body length 3.8–7 mm
... *Acidota* Stephens, 1829 (Anthophagini) (Fig. 13A)
- Abdomen with fine punctation, interspaces between punctures with microsculpture 14
- 14. Incision (in dorsal view) between antennal insertion and anterior margin of eye very narrow and U-shaped, at most as wide as width of basal (first) antennal segment. Body length 2.5–4 mm
... *Anthobium* Leach, 1819 (Anthophagini) (Fig. 13F, G)
- Incision (in dorsal view) between antennal insertion and anterior margin of eye neither very narrow nor U-shaped, wider than width of basal (first) antennal segment 15
- 15. Head near ocelli with deep tentorial grooves. Body length 3–5.5 mm
... *Arpedium* Erichson, 1839 (Anthophagini) (Fig. 13B)
- Head near ocelli without deep tentorial grooves, at most with shallow impressions. Body length 3.5–6 mm
... *Olophrum* Erichson, 1839 (Anthophagini)
- 6. Antennae geniculate, i.e. their basal (first) antennomere very long, as long as three following antennomeres together or longer. Neck indistinct. Body length 2–8 mm *Bledius* Leach, 1819 (Blediini) (Figs 15I, L)
- Antennae not geniculate, i.e. their basal (first) antennomere distinctly shorter than three following antennomeres. Neck mostly distinct 7
- 7. Body very elongate; pronotum distinctly longer than wide 8
- Body less elongate; pronotum transversal or at most as long as wide 9
- 8. Elytral epipleura separated from elytral disk by punctate stria *Planeustomus* Jacquelin du Val, 1857 (Planeustomini) (Fig. 15E)
- Elytral epipleura without any clear border separating them from elytral disk
... *Eppelsheimius* Bernhauer, 1915 (Blediini)
- 9. Abdominal tergites with oblique sub-basal lines (Fig. 7C, sbl). Pronotum mostly, elytra almost always with rough longitudinal sculpture 10
- Abdominal tergites without sub-basal lines. Pronotum and elytra always without rough longitudinal sculpture 11
- 10. Scutellum with rhomboid impression (Fig. 7D). Tergite II (first visible) with oblique baso-lateral furrow. Tarsi with basal (first) tarsomere longer than second tarsomere. Body length 2.2–5 mm
... *Oxytelus* Gravenhorst, 1802 (Oxytelini) (Fig. 15M)
- Scutellum with three-lobed impression (Fig. 7E). Tergite II (first visible) with straight basal furrow. Tarsi with basal (first) and second tarsomeres of equal length. Body length 1.6–5.3 mm
... *Anotylus* Thomson, 1859 (Oxytelini) (Figs 15A, D)
- 11. Mesocoxae widely separated by metasternal process. Pronotum with sharp middle groove, without lateral invaginations. Elytra mostly appear bare. Body length 2–5.2 mm *Platystethus* Mannerheim, 1830 (Oxytelini) (Figs 15K, O)
- Mesocoxae nearly contiguous. Pronotum at most with middle impression, but with clear lateral invaginations. Elytra punctate and setose. Body length 3.1–4.7 mm
... *Aploderus* Stephens, 1833 (Thinobiini) (Fig. 15H)
- 12. Maxillary palps with large, club-shaped apical segment which is at least as long as penultimate segment. Body length 2.3–4.8 mm
... [*Ochtheophilus* Mulsant et Rey, 1856] (Thinobiini)
- Maxillary palps with small, sometimes difficult to see acuminate apical segment which is shorter than penultimate segment 13
- 13. Elytra without epileural ridge, their sutural angle broadly rounded. Pronotum without distinct impressions. Tarsi 2-segmented. Very small or small species, body length 0.6–3 mm
... *Thinobius* Kiesenwetter, 1844 (Thinobiini)
- Elytra with epileural ridge, their sutural angle not rounded, right. Pronotum often with impressions. Tarsi at least 3-segmented. Body length never smaller than 1.3 mm 14
- 14. Pronotum with a horseshoe-like impression at base. Males with sternite IX. Body length 2.3–3.5 mm
... *Thinodromus* Kraatz, 1857 (Thinobiini) (Fig. 15J)

Subfamily Oxytelinae Fleming, 1821

- 1. Abdomen with one pair of paratergites (Fig. 5I) 2
- Abdomen with two pairs of paratergites (Fig. 5J) 3
- 2. Elytra with deep longitudinal grooves. Small black beetle, body length ca. 2.5 mm
... *Euphantias* Fairmaire et Laboulbène, 1856 (Euphaniini)
- Elytra without longitudinal grooves, smooth. Much larger (body length 7–8 mm) brown-reddish beetle, with darker abdomen
... *Deleaster* Erichson, 1839 (Deleasterini) (Fig. 15J)
- 3. Tarsal formula clearly 5-5-5. Procoxal fissure present (Fig. 7A, pf) 4
- Tarsal formula with lesser number of tarsomeres (truly or appearing such). Procoxal fissure present or absent (Fig. 7B) 5
- 4. Elytra with clear, regular longitudinal striae. Abdomen only with six fully developed visible sternites because morphological sternite II reduced and fused with sternite III. Body length 3.3–7.2 mm
... *Coprophilus* Latreille, 1829 (Coprophilini) (Fig. 15C)
- Elytra slightly irregularly striate, without clear longitudinal striae. Abdomen with seven fully developed sternites because morphological sternite II not reduced, separated from sternite III by membrane. Body length 5.8–7 mm
... *Manda* Blackwelder, 1952 (Planeustomini) (Fig. 15B)
- 5. Pro- and mesotibia with spines 6
- Pro- and mesotibia without spines, only with setae 12

- Pronotum with differently shaped impressions, mostly with two impressions along its middle and posterior margin. Males without sternite IX. Body length 1.3–3.5 mm *Carpelimus* Leach, 1819 (Thinobiini) (Figs 15F, N)

Subfamily Paederinae Fleming, 1821

The mainly tropical tribe Pinophilini which is easy to recognize among all other Paederinae by the abdomen without paratergites, broad anterior tarsi and the large last segment of maxillary palps, has several species reaching the South-Western Palaearctic in Transcaucasia, Middle Asia and Near East [Coiffait, 1978; Schülke, Smetana 2015]. Of them, *Oedichirus reitteri* Bernhauer, 1908 described from Tajikistan and *Pinophilus grandis* Reitter, 1906, described from Turkmenistan, were broadly cited from the “Transcaucasian region” by Coiffait [1978] and *O. rubronotatus* Pic, 1903 recently recorded from Dagestan in Russia [Khachikov et al., 2021] south from PSER.

1. Antennae geniculate, i.e. basal (first) antennal segment as long as at least three following segments together, or even longer 2
- Antennae non-geniculate, i.e. basal (first) antennal segment is distinctly shorter than three following antennal segments together 3
2. Smaller, body notably shorter than 1 cm. Elytra without epipleural carina *Ochtheophilum* Stephens, 1829 (Paederini) (Fig. 16I)
- Larger, body notably longer than 1 cm. Elytra with epipleural carina *Homaeotarsus* Hochhuth, 1851 (Paederini)
3. Neck distinctly narrow, at most as wide as ca. 1/4 of head width, but often really narrow, looking as a short narrow stalk 4
- Neck wide, even when looking narrower, it is not more narrow than 1/3 of maximal head width 7
4. Body surface smooth or punctured, but never roughly punctured, never with rugose surface or umbilicate punctation 5
- At least head and pronotum with strong, often rugose or umbilicate punctation 6
5. Body smaller, at most 5 mm long, mostly pale brown, never black; body surface smooth, at most with faint microsculpture and punctation; neck very narrow, as very narrow stalk *Scopaeus* Erichson, 1839 (Lathrobiini)
- Body larger, at least ca. 7 mm long, mostly black, sometimes with bluish metallic glance; body surface with distinct punctation, neck wider, ca. as 1/4 of head width *Tetartopeus* Czwalińska, 1888 (Lathrobiini) (Fig. 16D)
6. Head longer than wide; mandibles very long and thin, with three teeth of very uneven length, one tooth very long; pronotum with smoothly curved lateral contours *Nazeris* Fauvel, 1873 (Lathrobiini)
- Head about as wide as long or slightly transversal, not oblong; mandibles shorter and more robust with more even and shorter teeth; pronotum with somewhat angulate lateral contours *Rugilus* Leach, 1819 (Lathrobiini) (Fig. 16H)
7. Apical segment of maxillary palps broad and blunt 8
- Apical segment of maxillary palps sharp, conical or aciculate (sometimes very small compared to penultimate segment, seen under higher magnification) 10
8. Penultimate (fourth) tarsal segment bilobbed; body larger (longer than 7 mm), multicoloured; head and pronotum more or less globular 9
- Penultimate (fourth) tarsal segment not bilobbed; body at most bicoloured, head and pronotum oblong, not globular but rather parallel-sided *Leptobium* Casey, 1905 (Paederini)
9. Abdomen distinctly bicolored: basal and middle segments reddish, apical segments black *Paederus* Fabricius, 1775 (Paederini)
- Abdomen unicoloured, all segments black, often with bluish metallic glance *Paederidus* Mulsant et Rey, 1878 (Paederini)
10. Penultimate (fourth) tarsal segment bilobbed, genae and mandibles very long, genae longer than eyes; head, pronotum and elytra with dense and rough punctation forming rugose sculpturation *Astenus* Dejean, 1833 (Lathrobiini) (Figs 16B, C)
- Penultimate (fourth) tarsal segment not bilobbed, genae and mandibles not very long, genae often shorter than eyes; punctation and body surface varies but never rugose 11
11. Basal (first) segment of metatarsus as long as the following second segment 12
- Basal (first) segment of metatarsus longer than the following second segment 15
12. Apical (fifth) segment of metatarsus as long as segments 1–4. Body distinctly dorso-ventrally flattened *Achenium* Leach, 1819 (Lathrobiini) (Fig. 16A)
- Apical (fifth) segment of metatarsus shorter. Body (except *Scymbalium*, see below) at most only somewhat dorso-ventrally flattened 13
13. Large, body length ca. 1 cm or longer, dorso-ventrally distinctly flattened. Body dark brown with reddish tip of abdomen *Scymbalium* Erichson, 1839 (Lathrobiini)
- Body mostly smaller, seldom ca. 1 cm, at most only somewhat dorso-ventrally flattened. Colouration varies, in larger species not dark brown with reddish tip of abdomen 14
14. Pronotum with subequal length and width (from slightly wider than long to slightly longer than wide). Protarsi never strongly dilated, similar to meso- and metatarsi. Body mostly ca. 5 mm long or smaller. Metatibia mostly with apical ctenidium only on posterior surface 15
- Pronotum always distinctly longer than wide. Protarsi often (but not always) dilated, significantly wider than meso- and metatarsi. Body rarely less than 5 mm long, mostly larger. Metatibia with apical ctenidium both on anterior and posterior surface 19
15. Head, pronotum and elytra very finely and densely punctate, without distinct punctures, all three body parts having similar surface; body dull 16
- Head, pronotum and elytra not very finely and densely punctate, with distinct punctures, surface of various body parts may differ; body somewhat glossy 18

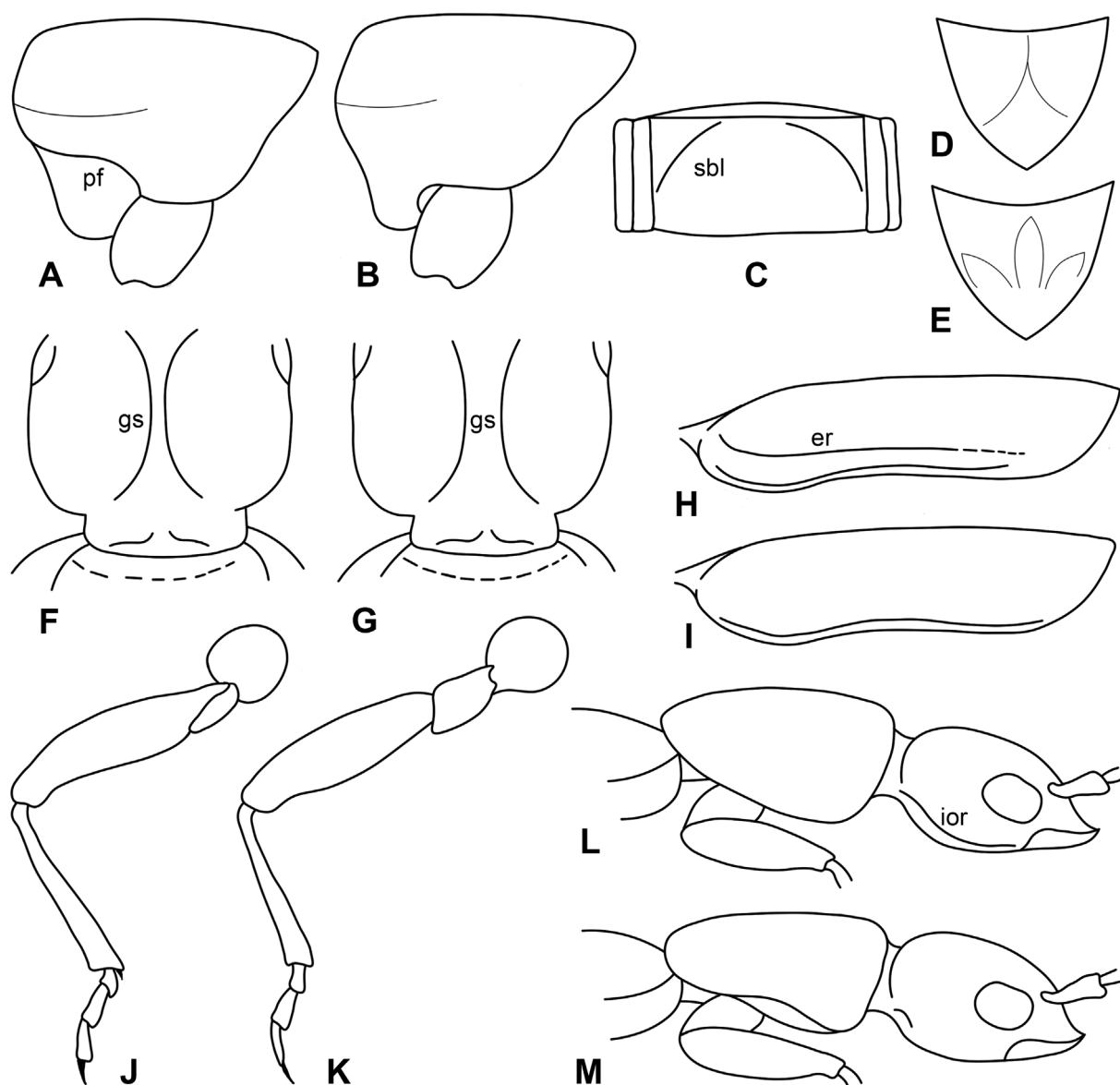


Fig. 7. Details of morphology of Staphylinidae.

A–B – prothorax in lateral view with and without procoxal fissure (pf), respectively; C – abdominal tergite with subbasal lines (sbl); D–E – mesoscutellum; F–G – head ventrally with gular sutures (gs); H–I – epipleural area of elytron with and without epipleural ridge (er), respectively; J–K – leg; L–M – forebody in lateral view with and without well developed infraorbital ridges (ior), respectively.

Рис. 7. Детали строения стафилинид.

A–B – переднегрудь сбоку с прококсальной (переднотазиковой) щелью (pf) и без нее соответственно; C – брюшной тергит с суббазальной линией (sbl); D–E – мезоскутеллум (щиток); F–G – голова снизу с гуларными швами (gs); H–I – эпиплевральная часть надкрылья с эпиплевральным швом (er) и без него соответственно; J–K – нога; L–M – голова и переднеспинка сбоку с хорошо выраженными подглазничными гребнями (ior) и без них соответственно.

16. Eyes larger: temples about as long as eye length. Head (unless teneral) darker than pronotum
 *Lithocharis* Dejean, 1833 (Fig. 16J) (Lathrobiini)
 – Eyes smaller: temples at least 3 times as long as eye length.
 Head and pronotum of same colouration 17
 17. Aedeagus with ventral process distinctly curved or almost angled in lateral view and with pair of massive, projecting, strongly sclerotized latero-apical structures of internal sac. Head with medial dorsal area matt or nearly so
 *Luzea* Blackwelder, 1952 (Lathrobiini)

- Aedeagus of different structure, without massive, projecting, strongly sclerotized latero-apical structures of internal sac. Head surface evenly matt all over
 *Pseudomedon* Mulsant et Rey, 1878 (Lathrobiini) (Fig. 16L)
 18. Gular sutures running close to each other (Fig. 7F, gs). Pronotum of same colour as head. Male sternite VII with secondary sexual structures formed by groups of dark spines *Medon* Stephens, 1833 (Lathrobiini) (Fig. 16E)
 – Gular sutures distinctly separated from each other (Fig. 7G, gs). Pronotum usually reddish, different

- in colour than darker head. Male sternite VII with secondary sexual structures formed by groups of dark spines *Sunius* Stephens, 1829 (Lathrobiini) (Fig. 16F)
19. Protarsi distinctly (strongly) dilated, they look wider than meso- and metatarsi 20
- Protarsi simple, not distinctly dilated, they look similar to meso- and metatarsi 22
20. Elytra with epipleural ridge (Fig. 7H, er), with punctuation more or less arranged in longitudinal rows. Neck about 1/2 times as wide as head *Lobrathium* Mulsant et Rey, 1878 (Lathrobiini) (Fig. 16K)
- Elytra without epipleural ridge (Fig. 7I), neck usually 1/2 times as wide as head but maybe more narrow, about 1/3 times as wide as head 21
21. Neck about 1/2 of head width *Lathrobium* Gravenhorst, 1802 (Lathrobiini) (Figs 16M, N)
- Neck more narrow, ca. 1/3 of head width *Tetartopeus* Czwalina, 1888 (Lathrobiini) (Fig. 16D)
22. Anterior margin of pronotum distinctly wider than posterior, thus lateral sides of pronotum converging basad; body brown *Micrillus* Raffray, 1873 (Lathrobiini)
- Anterior margin of pronotum not wider than posterior, thus lateral sides of pronotum look rather parallel-sided, not converging basad; body yellowish *Throbalium* Mulsant et Rey, 1878 (Lathrobiini)

Subfamily Proteininae Erichson, 1839

1. Head with one ocellus. Anterior margin of head (frontoclypeus) straight, not rounded. Body colouration reddish *Metopsia* Wollaston, 1854 (Proteinini) (Fig. 19L)
- Head without ocelli. Anterior margin of head (frontoclypeus) rounded 2
2. Pronotum with longitudinal midline stria. Posterior angles of pronotum with characteristic incisions *Megarthus* Stephens, 1829 (Proteinini) (Fig. 19K)
- Pronotum without longitudinal midline stria. Posterior angles of pronotum simple, without incisions *Proteinus* Latreille, 1797 (Proteinini) (Fig. 19G)

Subfamily Pselaphinae Latreille, 1802

1. Antennae with six antennomeres, first (basal) antennomere very small and not visible. Head flattened laterally, narrowed, cylindrical, eyes absent. Tarsi with first (basal) and second tarsomere short, with third tarsomere longer. Elytra and first abdominal tergite with yellowish pubescence arranged in bundles. Abdomen dorsally only with three visible segments because of large first segment composed of three fused segments *Claviger* Preysler, 1790 (Clavigerini) (Fig. 14P)
- Antennae with 11 antennomeres, first (basal) antennomere clearly visible. Head flattened dorso-ventrally, not cylindrical, eyes usually present. Tarsi with only first (basal) tarsomere short, with second and third tarsomeres longer. Elytra without bundles of setae, evenly pubescent. Abdomen dorsally with five visible segments 2

2. Trochanter in all legs short, very obliquely attached to femur; femur touching coxae (Fig. 7J) 3
- Trochanter in middle leg always long, more or less club-shaped, less obliquely attached to femur; femur not touching coxae (Fig. 7K) 15
3. First antennomere with apical edge not protruding over base of second antennomere 4
- First antennomere with apex distinctly protruding over base of second antennomere, cup-shaped 14
4. Abdomen elongate, flattened, with seven (in males) or six (in females) visible sternites 5
- Abdomen compact, convex, with five or six visible sternites 9
5. Tarsi with two uneven claws. Hind coxae positioned away from each other, distinctly not contiguous. Pronotum wider than head. Large species, body 3–3.5 mm long *Trichonyx* Chaudoir, 1845 (Euplectini) (Fig. 14I)
- Tarsi with one claw and usually with one setae. Hind coxae almost touching each other 6
6. Antennal club asymmetrical, head and pronotum strongly narrowed, distinctly narrower than abdomen, elytra strongly narrowed anteriorly. Antennae short, last antennomere as long as antennomeres 4–10 combined [*Trimium* Aubé, 1833 (Trichonychini)]
- Antennal club symmetrical, body parallel-sided, head and pronotum as wide as or slightly narrower than abdomen, elytra gradually narrowed anteriorly 7
7. Basal grooves of pronotum not connected by transversal groove, each extended anteriorly with longitudinal groove. Prosternum keeled *Bibloporus* Thomson, 1859 (Trichonychini)
- Basal grooves of pronotum connected by a transversal groove, not extended anteriorly with longitudinal grooves. Prosternum not keeled 8
8. Pronotum without longitudinal grooves and invaginations. Each elytron with three basal grooves. Two first tergites of abdomen with poorly developed keels *Biblopectus* Reitter, 1882 (Trichonychini) (Fig. 14G)
- Each elytron with four basal grooves (except two in *Euplectus validides* Newton, 2015), pronotum with longitudinal grooves or at least invaginations. Two first tergites of abdomen with well developed keels *Euplectus* Leach, 1817 (Euplectini) (Fig. 14H)
9. Maxillary palps well developed, longer than head, base of their apical segment short stalk-like. Abdomen with six visible sternites 10
- Maxillary palps weaker developed, shorter than head, base of their apical segment wide, not stalk-like. Abdomen with five visible sternites 11
10. Penultimate segment of maxillary palps well developed, 2 times longer than wide, with stick shaped base. Basal grooves of pronotum not connected by a transversal groove [*Tychus* Leach, 1817 (Tychini)]
- Penultimate segment of maxillary palps poorly developed, shorter, not stick shaped at base. Basal grooves of pronotum connected by a transversal groove *Bryaxis* Kugelann, 1794 (Bythinini) (Figs 14L, O)
11. Basal grooves of pronotum connected by a transversal groove. Each elytron with one lateral groove and one stria *Rybaxis* Saulcy, 1876 (Brachyglutini) (Fig. 14J)

- Basal groves of pronotum not connected by a transversal grove. Each elytron without lateral grove or stria 12
- 12. Medio-basal impressions of pronotum well developed, as large as lateral (side) impressions
..... *Brachygluta* Thomson, 1859 (Brachyglutini) (Fig. 14N)
- Medio-basal impressions of pronotum poorly developed, much smaller than lateral (side) impressions 13
- 13. Elytra at base with only two basal dimples (impressions)
..... [*Reichenbachia* Leach, 1826 (Brachyglutini)]
- Elytra at base with three basal dimples (impressions)
..... *Trissemus* Jeannel, 1949 (Brachyglutini)
- 14. Pronotum without well developed spines along medio-basal groves. All antennal segments large and almost spherical, not or slightly narrower than 11. Body length more than 3 (3–3.5) mm
..... *Batrisus* Aubé, 1833 (Batrisini)
- Pronotum with spines along medio-basal groves. Antennal segments smaller, from first to fourth longer than wide, from first to tenth narrower than eleven. Body length less than 3 (2–2.5) mm
..... *Batrisodes* Reitter, 1882 (Batrisini)
- 15. Tarsi with one claw only. First visible abdominal tergite much longer than second. Last maxillary palpomere as long as head
..... *Pselaphus* Herbst, 1791 (Pselaphini) (Fig. 14K)
- Tarsi with two almost identical claws. First visible abdominal tergite not longer than second. Last maxillary palpomere shorter than head 16
- 16. Basal groves of pronotum connected by transversal grove. Frontoclypeus without protruding tubercles anterior to eyes. Setation simple
..... *Tyrus* Aubé, 1833 (Tyrini) (Fig. 14M)
- Basal groves of pronotum not connected by transversal grove. Frontoclypeus with pair of protruding tubercles anterior to eyes. Setation of scale-like setae
..... *Ctenistes* Reichenbach, 1816 (Ctenistini)

Scaphidiinae Latreille, 1806

- 1. Body larger, 5–7 mm long. Antennomeres 3–11 robust, symmetrical
..... *Scaphidium* Olivier, 1790 (Scaphidiini) (Fig. 19B)
- Body smaller, maximum 3 mm long. Antennomeres 3–11 thin, flat and asymmetrical
..... *Scaphisoma* Leach, 1915 (Scaphisomatini) (Fig. 19F)

Subfamily Scydmaeninae Leach, 1815

- 1. Basal (first) antennal segment apically with distinct incision *Scydmaenus* Latreille, 1802 (Scydmaenini)
- Basal (first) antennal segment apically without incision ..
..... 2
- 2. Head at base very strongly constricted, neck 1/3–1/4 times as wide as head at level of eyes, not wider than that
..... [*Neuraphes* Thomson, 1859 (Cyrtoscydmini)]
- Head at base not strongly constricted, neck at least 1/2 times as wide as head at level of eyes, not more narrow than that
..... [*Euconnus* Thomson, 1859 (Cyrtoscydmini)]

Subfamily Staphylininae Latreille, 1802

- 1. Head under eyes with infraorbital ridges extended from neck to base of mandibles (Fig. 7L, ior). Pronotal hypomera inflexed, not visible laterally (Fig. 7L) 2
- Head without or maximum with short infraorbital ridges that do not extend far from neck (Fig. 7M). Pronotal hypomera mostly at least slightly visible laterally, usually well visible (Fig. 7M) 5
- 2. Antennae geniculate, their basal (first) antennomere as long as three to four following antennomeres combined. Body length 6–9 mm
..... *Acylophorus* Nordmann, 1837 (Acylophorini) (Fig. 18M)
- Antennae not geniculate. First antennomere at most as long as two following antennomeres combined 3
- 3. Last segment of maxillary palps aciculate. Smaller species, body length 3.5–5 mm
..... *Heterothops* Stephens, 1829 (Amblyopinini) (Fig. 18E)
- Last segment of maxillary palps not aciculate. Larger species up to 14–15 mm 4
- 4. Last segment of maxillary palps fusiform, apically tapering, not truncate. Pronotum with two to four punctures in dorsal row. Elytra usually densely punctated with setiferous punctures, from black to brownish; if glossy and sparsely punctated, then never of bright red cover. Body length mostly from 6 to 10 mm, only seldom slightly smaller or larger
..... *Quedius* Stephens, 1829 (Quediini) (Figs 17K, L, 18F)
- Last segment of maxillary palps not fusiform, apically widened, truncate. Pronotum without punctures in dorsal rows, rarely with inconspicuous punctures near pronotal apical margin. Elytra sparsely punctated, glossy and bright red. Body length 10–12 mm
..... *Astrapaeus* Gravenhorst, 1802 (Cyrtoscydmini)
- 5. Second antennomere as long as and as wide as first antennomere. Whole body finely and densely punctated and setose. Body length 4–8 mm
..... *Erichsonius* Fauvel, 1874 (Erichsoniini) (Fig. 18G)
- Second antennomere always shorter and narrower than first antennomere. Body punctation, setation and size vary 6
- 6. Tarsi with pair of empodial setae. Body large, about 15 mm long or larger, pronotum usually (but not always) densely punctured on most of its surface, without dorsal rows of setiferous punctures 7
- Tarsi without empodial setae. Body often (but not always) smaller than 15 mm long, pronotum usually (but not always) smooth, with clear dorsal rows of setiferous punctures 14
- 7. Head and pronotum disk smooth and glossy, not punctured. Body black, elytra and abdomen with colouration pattern formed by grey and black setation
..... *Creophilus* Leach, 1819 (Fig. 17C) (Staphylinini)
- Head and pronotum disk at least partly punctured, sometimes very densely. Body colouration pattern different 8
- 8. Anterior angles of pronotum very pronounced, sharply pointed forward. Characteristic “military” camouflage body colouration formed by variegate setation all over beetle body. Body length 9–20 mm
..... *Ontholestes* Ganglbauer, 1895 (Staphylinini) (Fig. 17H)

- Anterior angles of pronotum more or less distinct, but never sharply pointed forward. Body colouration different 9
- 9. At least abdomen with segments of variously coloured setae, or at least with flecks of such variously coloured setae; sometimes also head and pronotum with variously coloured setation 10
- Body at most with unicoloured setation, without distinct types or flecks of variously coloured setae 12
- 10. Head roundish in dorsal view, not widened behind eyes. Body black, with patches of coloured setation, elytra reddish. 15–26 mm long
..... *Staphylinus* Linnaeus, 1758 (Staphylinini) (Fig. 17E)
- Head widened behind eyes, somewhat trapezoid-shaped, with pronounced hind angles in dorsal view. Body size and colouration varies 11
- 11. Very large and robust (body length 20–28 mm). Bumble bee-like colouration with black, yellow and grey setae
..... *Emus* Leach, 1819 (Staphylinini) (Fig. 17B)
- Smaller and less robust. Colouration different. Body length 11–20 mm
..... *Platydracus* Thomson, 1858 (Staphylinini) (Fig. 17J)
- 12. Body, especially abdomen, rather cylindrical. Eyes relatively small (temples ca. 2.5 times as long as eyes) but distinctly protruding over contours of head in dorsal view. Body very large, 22–30 mm long
..... *Physetops* Mannerheim, 1830 (Staphylinini) (Fig. 17D)
- Body not cylindrical, somewhat flattened dorso-ventrally. Eyes vary in size but never strongly protruding over contours of head in dorsal view. Body rarely larger than 20 mm 13
- 13. Mandibles thin, long, smooth, without internal teeth or at most with one small tooth. Pronotum mostly parallel-sided or slightly narrowing from anterior to posterior margin. Body 12–15 mm long
..... *Tasgius* Stephens, 1829 (Staphylinini) (Fig. 17I)
- Mandibles more robust with clear internal teeth. Pronotum varies, but often less parallel-sided, with more rounded corners. Body 13–22 mm long
..... *Ocytus* Leach, 1819 (Staphylinini) (Figs 17A, F)
- 14. Anterior tarsi more or less widened, with dense adhesive setae underneath, in width and setation distinctly different from middle and posterior tarsi 15
- Anterior tarsi narrow, without dense adhesive setae underneath, in width and setation not distinctly different from middle and posterior tarsi 21
- 15. Head and pronotum with isodiametric microsculpture, evenly covered with setiferous punctures and at the same time body rather small, 4.5–6 mm long, dark brown to black. Obligate inhabitant of sea shore and saline estuaries
..... *Remus* Holme, 1837 (Staphylinini)
- Either head and pronotum without isodiametric microsculpture, or body at least 10 mm long. Not obligate inhabitants of sea shore and saline estuaries ..
..... 16
- 16. Last segment of labial palps distinctly more narrow than penultimate segment, needle-shaped. Body small, dark brown, elytra maybe with paler and darker colour. Small, less than 5 mm long
..... *Gabronthus* Tottenham, 1955 (Staphylinini)
- Last segment of labial palps not more narrow than penultimate segment, fusiform. Body size and colouration strongly vary 17
- 17. Entire disk of pronotum glossy, without dorsal longitudinal rows of setiferous punctures along its middle. Body ca. 12 mm or larger, dark with green metallic shine
..... *Philonthus* Stephens, 1829 (part) (Staphylinini)
- Disk of pronotum with dorsal longitudinal rows of setiferous punctures along its middle (at least two punctures in a row, usually more), or more or less densely punctate at least at sides. Body size and colouration varies, rarely larger than 12 mm 18
- 18. Abdomen with colour pattern of darker and paler colouration of cuticle and differently coloured setae. Disk of pronotum smooth, with two punctures in dorsal rows along its middle. Sea shore inhabitant.
..... *Cafius* Curtis, 1829 (Staphylinini) (Fig. 18B)
- Abdomen mostly unicolourous, or at least not with pattern of paler and darker spots and with unicolourous setation. Disk of pronotum either at least partly punctured or with more than two punctures in dorsal rows along its middle. Bionomics vary, may occur at sea shores but not obligate sea shore inhabitant 19
- 19. Head and pronotum densely punctated, pronotum without distinct rows of punctures along impunctate midline. Body not longer than ca. 5 mm
..... *Neobisnius* Ganglbauer, 1895 (Staphylinini) (Fig. 18K)
- Head and especially pronotum not densely punctated. If head and pronotum densely punctated, then pronotum with distinct rows of punctures along impunctate midline and body longer than ca. 5 mm 20
- 20. Last segment of maxillary palps fusiform, longer than penultimate. Body size strongly varies from ca. 5 to 17 mm. Body usually dark
..... *Philonthus* Stephens, 1829 (part) (Staphylinini) (Figs 18A, D)
- Last segment of maxillary palps conical, no longer than penultimate. Body not longer than ca. 6 mm, mainly bi-coloured with black and red
..... *Rabigus* Mulsant et Rey, 1876 (Staphylinini)
- 21. Last segment of labial palps distinctly more narrow than penultimate segment. Body on average smaller, body length 3.5–8 mm
..... *Gabrius* Stephens, 1829 (Staphylinini) (Figs 18H, I)
- Last segment of labial palps not so narrow, not more narrow than penultimate segment. Body on average larger, body length 4–9.5 mm 22
- 22. Body not larger than 9.5 mm, usually distinctly smaller
..... *Bisnius* Stephens, 1829 (Staphylinini) (Fig. 18C)
- Body at least 9–10 mm long, usually larger. Rarely collected nidicole of characteristic habitus with long appendages
..... *Jurecekie* Rambousek, 1920 (Staphylinini)

Subfamily Tachyporinae MacLeay, 1825

1. At least elytra pubescent. Third (penultimate) maxillary palpomere setose, longer than fourth (apical) palpomere. Dense and fine recumbent setae of antenna gradually becoming sparse towards base of antennae ...
..... 2

- Forebody including elytra glabrous, not pubescent. Third (penultimate) maxillary palpomere glabrous, shorter than apical (fourth) palpomere. Antenna basally with clear borderline where dense and fine recumbent setation stops 3
 - 2. Forebody densely and entirely pubescent. Protibia with a row of comb-like closely spaced spines along outer margin. Pronotum without arranged macrosetae. Metatarsus very long, much longer than whole length of metatibia. Abdomen without paratergites *Sepedophilus* Gistel, 1856 (Tachyporini) (Figs 12G, P)
 - Forebody not entirely pubescent, usually glabrous on head and pronotum. Protibia without a row of comb-like closely spaced spines along outer margin. Pronotum with arranged macrosetae. Metatarsus long, but clearly shorter than whole length of metatibia. Abdomen with single paratergites *Tachyporus* Gravenhorst, 1802 (Tachyporini) (Figs 12K, Q)
 - 3. Very small, body not longer than 2 mm. Elytra along lateral margin with longitudinal impression, strongly inflexed, their epipleura not visible laterally *Coproporus* Kraatz, 1857 (Vatesini) (Fig. 12J)
 - Larger or much larger species, body at least 3.5 mm long, often distinctly longer. Elytra along lateral margin without longitudinal impression, their epipleura inflexed but mostly at least slightly visible laterally 4
 - 4. First (basal) segment of metatarsus as long as (or nearly so) the following three segments together. Mesothorax ventrally (mesoventrite) with longitudinal keel. Body 1.8–4 mm long *Cilea* Jacquelin du Val, 1856 (Vatesini) (Fig. 12M)
 - First (basal) segment of metatarsus only slightly longer than second segment. Mesothorax ventrally (mesoventrite) without longitudinal keel. Body over 3 mm long, often significantly larger *Tachinus* Gravenhorst, 1802 (Tachinusini) (Figs 12N, O)
- Subfamily Xantholininae Erichson, 1839**
1. Antennae inserted closer to eyes than to each other 2
 - Antennae inserted closer to each other than to eyes 3
 2. Head in dorsal view oblong and oval, longer than wide or nearly as long as wide. Mandibles not protruding anteriad, they are shorter than distance between mandible base to neck. Pronotum with three punctures in dorsal rows situated at same distance from each other. Labrum strongly bilobed, with deep and sharp incision *Othius* Stephens, 1829 (Othiini)
 - Head not oblong, as long as wide. Mandibles noticeably protruding anteriad, they are longer than distance between mandible base to neck. Pronotum only with one puncture in dorsal row situated slightly behind the middle. Labrum bilobed, with shallow and obtuse excision [*Atrecus* Jacquelin du Val, 1856 (Othiini)]
 3. Antennae relatively short and flattened: antennomeres 2–11 combined shorter than 0.7 of head capsule length; antennomeres 4–11 distinctly flattened and very closely attached to each other, their connecting shafts not visible. Head distinctly cylindrical and parallel-sided [*Zeteotomus* Jacquelin du Val, 1856 (Xantholinini)]
 - Antennae distinctly longer and not flattened: antennomeres 2–11 about as long as head capsule; antennomeres 4–11 not flattened and not very closely attached to each other, their connecting shafts visible. Head not distinctly cylindrical and parallel-sided 4
 4. Head with very narrow neck: neck ca. 1/5 of head width. Head very densely uniformly punctate, interspaces between punctures distinctly mesh-like shagreen. Pronotum laterally from impunctate midline also evenly finely and densely punctate, without distinct dorsal rows of punctures along the midline *Stenistoderus* Jacquelin du Val, 1856 (Xantholinini)
 - Neck distinctly wider, ca. 1/3 of head width, and with different punctation and microsculpture. Pronotum laterally from impunctate midline not finely and evenly densely punctate, with distinct dorsal or lateral rows of punctures along the midline 5
 5. Last segment of axillary palps small and aciculate, much more narrow and much shorter than penultimate segment 6
 - Last segment of maxillary palps short, but not aciculate, at base only slightly more narrow than penultimate segment, apically pointed (conical) 7
 6. Dorsal rows of pronotum with 5–7 punctures. Mostly larger: body 6–8 mm long. Aedeagus without parameres *Phacophallus* Coiffait, 1956 (Xantholinini) (Fig. 18Q)
 - Dorsal rows of pronotum with 8–16 punctures. Mostly smaller: body 3.2–6.8 mm long. Aedeagus with thin parameres *Leptacinus* Erichson, 1839 (Xantholinini) (Fig. 18J)
 7. Pronotum without dorsal rows of punctures, only with lateral rows located closer to lateral margins of pronotum than to its midline. Scutellum roughly punctured. Head punctation uneven, with smaller and distinctly larger punctures *Gauropterus* Thomson, 1860 (Xantholinini) (Fig. 18L)
 - Pronotum with dorsal rows of punctures along midline. Scutellum at most with two setiferous punctures 8
 8. Lateral marginal line of pronotum turning down ca. at middle of pronotal length, thus in dorsal view visible only posteriorly *Nudobius* Thomson, 1860 (Xantholinini) (Fig. 18N)
 - Lateral marginal line of pronotum turning down before (anterior to) middle of pronotal length, thus in dorsal view visible not only posteriorly but at least partly in anterior half of pronotal length 9
 9. Large bicoloured beetles: body length 10–16 mm; head, pronotum and abdomen from dark brown to black, but elytra yellow or reddish [*Megalinus* Mulsant et Rey, 1877 (Xantholinini)]
 - If body colouration as above or otherwise bi- or multicoloured then body distinctly smaller, or if body large and bicoloured with red elytra, then pronotum bicoloured, not uniformly dark 10
 10. Body bicoloured, with head and pronotum uniformly dark brown to black but elytra red. Head about as wide as long and very sparsely punctate (interspaces ca. 5 times as large as diameter of punctures) *Hypnogyra* Casey, 1906 (Xantholinini)
 - Body colouration different. If elytra red, then pronotum bicoloured 11

11. Head with distinct hind angles and very distinct, rough, somewhere oblong punctation, with smooth, punctation free area in middle of head disk
Gyrohypnus Leach, 1819 (Xantholinini) (Fig. 18S)
 – Head without distinct hind angles, posteriorly rounded, with much finer, not oblong punctation 12
12. Pronotum with at least 10 punctures in dorsal rows of pronotum. Body mainly larger, 6–14 mm long; brown to blackish, if elytra reddish, then base of pronotum is reddish as well *Xantholinus* Dejean, 1821 (Xantholinini) (Figs 18O, P, R)
 – Pronotum with 5–6 irregular punctures in dorsal row of pronotum. Body colouration different and body not larger than 7.5 mm long
 *Allolinus* Coiffait, 1966 (Xantholinini)

Annotated catalogue of Staphylinidae species of PSER

The annotated catalogue provides the following information for each species: full taxonomic name; list of references that contain records for PSER grouped by administrative regions they belong to, the latter listed alphabetically; general distribution and where available, bionomics; brief summary of the distribution in PSER and, when necessary, taxonomic comments. This annotated catalogue is supplemented by the Table in Supplementary Material. Subfamilies, genera and species are arranged alphabetically. Subgenera are provided only for Aleocharinae genera where necessary.

We have the following conventions:

Species whose names are given without any additional symbols, e.g. *A-us b-us*, are the core PSER species, i.e. they are unambiguously recorded from this area. (Species of this category are marked as “PSER” in the Supplementary Material table).

Species whose names are taken in square brackets without any additional symbols, e.g. [*A-us b-us*], have clear taxonomic status but their occurrence in PSER is uncertain. (Species of this category are marked as “[PSER]” in the Supplementary Material table). Mostly, these are species found at the geographical and ecological borderline between PSER and the forest zone in the north, or between PSER and the forests marking the foothills of the Crimean Mountains and the Caucasus in the south. In addition to the exact geographical records from the areas of naturally diffused borderlines of PSER, we also had to deal with geographically imprecise records. For example, a series of publications by I. Goreslavets recorded species from Samara Region in general. As only the south-eastern part of that province belongs to PSER, all such imprecise records had to be given in square brackets.

Species whose names are taken in square brackets and supplied with the question mark, e.g. [? *A-us b-us*], are taxonomically poorly known species. (Species of this category are marked as “[?PSER]” in the Supplementary Material table). Mostly, but not always, these are species for which we do not know more than their outdated original descriptions based on the unrevised material from “Caucasus” or “Southern Russia”. There is only a probability that such species occur in PSER.

Species whose names are taken in square brackets and supplied with the question and exclamation marks, e.g. [?! *A-us b-us*], are those which are recorded for PSER apparently based on misidentifications. (Species of this category are marked as “[?!PSER]” in the Supplementary Material table).

For all species in square brackets, there is a brief verbal explanation of the status, open questions and reasons for inclusion in the annotated catalogue here. For species widespread in PSER these often mean border records, for example, from the forested foothills of the Crimean Mountains or the Caucasus. Literature records in square brackets with question marks mean for whatever reasons questionable records.

Subfamily Aleocharinae

[*Acrotona pygmaea* (Gravenhorst, 1802)]

Records. ? [Goreslavets, 2021].

Notes. Widespread across temperate zone of the entire Palaearctic region [Schülke, Smetana, 2015]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

[?! *Aleochara (Coprochara) binotata* (Kraatz, 1856)]

Records. Samara Region ? [Goreslavets, 2004].

Notes. Widespread throughout Europe, Russia, Mongolia and Japan [Yamamoto, Maruyama, 2013; Schülke, Smetana, 2015]. According to Welch [1997], *A. binotata* favours coastal localities, at least in Western Europe, where the adults can be found in decaying organic matter. Known as an agent of biological control of various dipteran families [Maus et al., 1998]. The only record from PSER, from Krasnosamarskiy forest, needs to be confirmed, as *A. binotata* shows strong resemblance to *A. bipustulata* and *A. verna*.

Aleochara (Coprochara) bipustulata (Linnaeus, 1761)

Records. Astrakhan Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a]; Rostov Region ? [Minoranskiy, Lomakin, 1978]; Volgograd Region [Grebennikov, 2002a; Makarov et al., 2009].

Notes. Widespread in the Palaearctic, eastwards to the Russian Far East [Maus et al., 1998; Schülke, Smetana, 2015]. According to Welch [1997] and Maus et al. [1998], all records of *A. bipustulata* before Lohse [1986] must be considered doubtful. Found in open landscapes near water bodies; inhabits various decaying organic matter [Andreassen, 2013]. An agent of biological control of the cabbage root maggot, *Delia radicum* (Linnaeus, 1758) [Maus et al., 1998]. In PSER known from the environs of Baskunchak and Elton lakes in Astrakhan and Volgograd regions respectively; record from Rostov Region comes from an old publication and needs to be verified to avoid confusion with *A. verna*.

Aleochara (Xenochara) breiti Ganglbauer, 1897

Records. Kalmykia Republic [Kirschenblatt, 1938]; Volgograd Region [Kirschenblatt, 1936, 1938].

Notes. According to Horion [1967], Likovský [1974], Smetana [2004], Stan and Chimišliu [2005] and Assing [2009a], *A. breiti* is distributed in south-eastern Europe. Nidicolous, collected in mammal burrows [Assing, 2009a]. According to Kirschenblatt [1936], *A. breiti* is common in the burrows of little souslik *Spermophilus pygmaeus* (Pallas, 1778), but also may be found on human feces. Also, Kirschenblatt [1938] mentions this species as common and numerous in the burrows of the European souslik *Spermophilus citellus* (Linnaeus, 1766) and some other mammals (e.g. hamster and rabbit) in the area west of the Volga River. In PSER this species has been recorded in Kalmykia and Volgograd Region.

Aleochara (Xenochara) brevipennis Gravenhorst, 1806

Records. Astrakhan Region [Grebennikov, Komarov, 1998]; Samara Region [Goreslavets, 2014, 2016a, b]; Volgograd Region [Grebennikov, Komarov, 1998].

Notes. Widespread transpalearctic species, eastwards to Central Asia, Siberia, and the Russian Far East [Assing, 2009a; Schülke, Smetana, 2015]. Hygrophilous, typically in Sphagnum or other mosses, at the roots of grasses, or in tussocks [Welch, 1997]; in decaying organic matters [Goreslavets, 2014, 2016a]; in *Formica* Linnaeus, 1758 nests [Goreslavets, 2016b]. Known as a biological control agent, parasitoid of Diptera [Maus et al., 1998]. In PSER known from the Volga River basin, collected on carrion and in anthills during winter diapause.

[*Aleochara (Ceranota) caucasica* Eppelsheim, 1889]

Records. Krasnodar Region ? [Assing, 2009b].

Notes. This species was described on the basis of a single specimen from “Novorossiysk” (a town in the westernmost part of the Caucasus Mountains in Krasnodar Region), without further details on the locality or bionomics. Few other specimens are known from “Circassia” (a vaguely defined historical area in the North-Western Caucasus) and from Georgia [Assing, 2009b]. It is not known yet, whether this species is a montane element of the Caucasus or occurs more widely in PSER.

Aleochara (Heterochara) clavicornis Redtenbacher, 1849

Records. Volgograd Region [Makarov et al., 2009; Grebennikov, 2002a].

Notes. Widespread from Western Europe to Western and Central Asia; also known from Afrotropical and Oriental regions [Schülke, Smetana, 2015]. In Russia only known from the southwestern part including the Caucasus [Makarov et al., 2009; Tronquet, 2009]. Occurs in floodplains in decaying organic matter; larvae are parasitoids and predators of Diptera larvae [Maus et al., 1998]. In PSER so far recorded only from Elton Lake in Volgograd Region.

Aleochara (Xenochara) cuniculorum Kraatz, 1858

Records. Stavropol Region [Pushkin, Maksimova, 2014; Pushkin, Minav, 2015; Pushkin, 2015, 2016]; Volgograd Region [Assing, 2009a].

Notes. Widespread transpalearctic species eastward to the Russian Far East and northern Mongolia [Kascheev, Childebaev, 2000; Schülke, Smetana, 2015]. Nidicolous, associated with subterranean nests of various mammals [Assing, 2009a]; parasitoid of the calliphorid fly *Lucilia sericata* (Meigen, 1826) [Maus et al., 1998]. Recorded in PSER from Volgograd and Stavropol regions, some records from the latter are from the foothills of the North Caucasus.

Aleochara (Aleochara) curtula (Goeze, 1777)
(Fig. 8A)

Records. Krasnodar Region [Pushkin, 2016]; Rostov Region [Minoranskiy, Lomakin, 1978]; Samara Region [Goreslavets, 2004, 2014]; Saratov Region [Sazhnev, 2012, 2013a]; Stavropol Region [Pushkin, Maksimova, 2014; Pushkin, 2015, 2016; Pushkin, Minav, 2015; Gorkavaya, 2017a]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a].

Notes. This is one of the most common *Aleochara* species with nearly worldwide distribution; recorded from nearly all continents [Yamamoto, Maruyama, 2016], adventive in the Nearctic region [Klimaszewski et al., 2020]. Occurs in various biotopes on decaying organic matter. Parasitoid of several dipteran families [Maus et al., 1998]. In PSER relatively widespread and common.

Aleochara (Ceranota) erythroptera Gravenhorst, 1806

Records. Crimea Republic [Assing, 2009b]; Rostov Region [Assing, 2009b, 2018a]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread in Europe and Asia Minor [Assing, 2009b; Schülke, Smetana, 2015]. Collected in dry meadows and forests in leaf litter and other organic decaying matter, also in mammal burrows; found at altitudes up to 2200 m [Assing, 1994, 2007a]. In PSER so far only known from the lowlands of the Crimea Republic, Rostov and Volgograd regions.

Aleochara (Xenochara) funebris Wollaston, 1864

Records. Samara Region [Goreslavets, 2004, 2014].

Notes. Widespread in the Palearctic and Oriental regions [Assing, 2007a]. Known from European Russia and East Siberia [Schülke, Smetana, 2015]. In Europe found in a variety of habitats, mostly on carrion, but also in dung, decaying plant matter, bird and mammal nests, fungi and moss [Welch, 1997]. Parasitoid of the calliphorid fly *Lucilia sericata* [Maus et al., 1998]. In PSER so far known from Samara Region only where it was found near water on decaying matter [Goreslavets, 2014].

Aleochara (Xenochara) gontarenkoi Assing, 2009

Records. Saratov Region [Assing, 2018a].

Notes. Southern species, known from southern and eastern Ukraine, southeastern Poland, Turkey, southwestern Russia; questionable in Romania; inhabitant of mammal burrows [Assing, 2009a], especially marmot nests [Assing, 2018a]. In PSER known from a single

specimen from Sinegorskiy village in Saratov Region next to the border with Kazakhstan.

[?! *Aleochara (Xenochara) haematoptera* Kraatz, 1856]

Records. Rostov Region ? [Minoranskiy, Lomakin, 1978].

Notes. Widespread in Europe and Asia Minor with one record from India [Schülke, Smetana, 2015]. Parasitoid of the calliphorid fly *Lucilia sericata* [Maus et al., 1998]. In PSER known only from an old record from Rostov Region which requires taxonomic verification.

Aleochara (Arybodma) intricata Mannerheim, 1830

Records. Samara Region [Goreslavets, 2004]; Volgograd Region [Grebennikov, 2002a].

Notes. Transpalearctic species eastwards reaching the Russian Far East [Park, Ahn, 2010; Schülke, Smetana, 2015]. According to Welch [1997], in Europe usually found in small amounts in dung, especially horse and sheep dung, also in moss and hay waste, in carrion, and in nests of the robin *Erithacus rubecula* Linnaeus, 1758. Parasitoid of several dipteran families [Maus et al., 1998]. In PSER so far known from Krasnosamarskiy forest in Samara Region and numerous localities throughout Volgograd Region.

Aleochara (Xenochara) laevigata Gyllenhal, 1810
(Fig. 8B)

Records. Samara Region [Goreslavets, 2004, 2014]; Stavropol Region [Pushkin, Maksimova, 2014; Pushkin, Minav, 2015].

Notes. Widespread in the Palearctic, eastwards to the Russian Far East [Schülke, Smetana, 2015]. Due to similarity with other species of the *A. laevigata* group the distribution needs revision [Assing, 2011a]. In Russia usually confused with *A. grandeguttata* [Nikitsky et al., 1998], undoubtedly recorded only from Central European part of Russia (Oleg Semionenko personal communication). Rather polytopic; occurs in decaying organic matter and in animal burrows [Assing, 2009a]. Parasitoid of Anthomyiidae and Calliphoridae flies [Maus et al., 1998]. In PSER found in Samara Region in forests or along river banks during floods [Goreslavets, 2014] and in Stavropol Region near Stavropol [Pushkin, 2014]. Also reported from higher altitudes (2500–2700 m) in Adygea Republic [Pushkin, 2015].

[*Aleochara (Xenochara) lanuginosa* Gravenhorst, 1802]

Records. Stavropol Region ? [Pushkin, Maksimova, 2014; Pushkin, Minav, 2015].

Notes. Widespread and common in the Palearctic, reaching southwestern China in the east [Schülke, Smetana, 2015; Assing, 2018a], introduced in the Nearctic [Schülke, Smetana, 2015]. Found in Europe in all kinds of dung, carrion, flood debris, tufts of grass and reed roots, in leaf litter, on a bracket fungus and on bones of carrion [Welch, 1997]; also, on edges of oak woods, in litter, moss and roots [Assing, 2018a]. Parasitoid of several dipteran families [Maus et al., 1998]. Next to PSER recorded only from

Stavropol Region in the foothills of the North Caucasus [Pushkin, Maksimova, 2014] and higher in the mountains (on mammalian carcasses) [Pushkin, Minav, 2015]. Based on the species overall distribution and bionomics maybe expected in PSER.

[*Aleochara (Aleochara) lata* Gravenhorst, 1802]

Records. Stavropol Region ? [Pushkin, Maksimova, 2014; Pushkin, Minav, 2015].

Notes. Palearctic species, eastwards reaching the Russian Far East [Yamamoto, Maruyama, 2016]; adventive worldwide [Schülke, Smetana, 2015]. Mostly found on carrion, in mown grass and hay waste [Welch, 1997]; parasitoid of the dipteran families Muscidae and Calliphoridae [Maus et al., 1998]. Next to PSER only in Stavropol Region in the foothills of the North Caucasus [Pushkin, Maksimova, 2014]. Based on the species overall distribution and bionomics maybe expected in PSER.

[*Aleochara (Xenochara) lepidoptera* Bernhauer, 1901]

Notes. Described from an unclear locality in the Caucasus region [Bernhauer, 1901], later reported from Central Asia and West and East Siberia [Likovský, 1972, 1981; Assing, 2009a; Schülke, Smetana, 2015]. Reported from altitudes up to 2500 m above sea level [Assing, 2009a]. No records from PSER but included here as the type locality in “Caucasus” is uncertain.

Aleochara (Xenochara) longipes Likovský, 1965

Records. Volgograd Region [Assing, 2009a].

Notes. Known from Central Asia, reaching East Mongolia and altitudes up to 1300 m; in PSER recorded near Volgograd [Assing, 2009a].

[*Aleochara (Xenochara) lygaea* Kraatz, 1862]

Records. Samara Region ? [Goreslavets, 2021].

Notes. Transpalearctic species [Schülke, Smetana, 2015]. Collected from carrion, seaweed, dung, flood debris, in fungus stumps and by sweeping [Welch, 1997]; also in burrows and excrement of steppe marmots [Assing, 2009a]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

Aleochara (Arybodma) milleri Kraatz, 1862

Records. Astrakhan Region [Grebennikov, 2002a]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a].

Notes. Widespread in central and southern Europe, eastwards to East Siberia and Mongolia [Schülke, Smetana, 2015]. Coprophilous, also in decaying plant material [Horion, 1967]. From PSER known from two regions, collected in manure.

Aleochara (Xenochara) moesta Gravenhorst, 1802

Records. Volgograd Region [Grebennikov, 2002a].

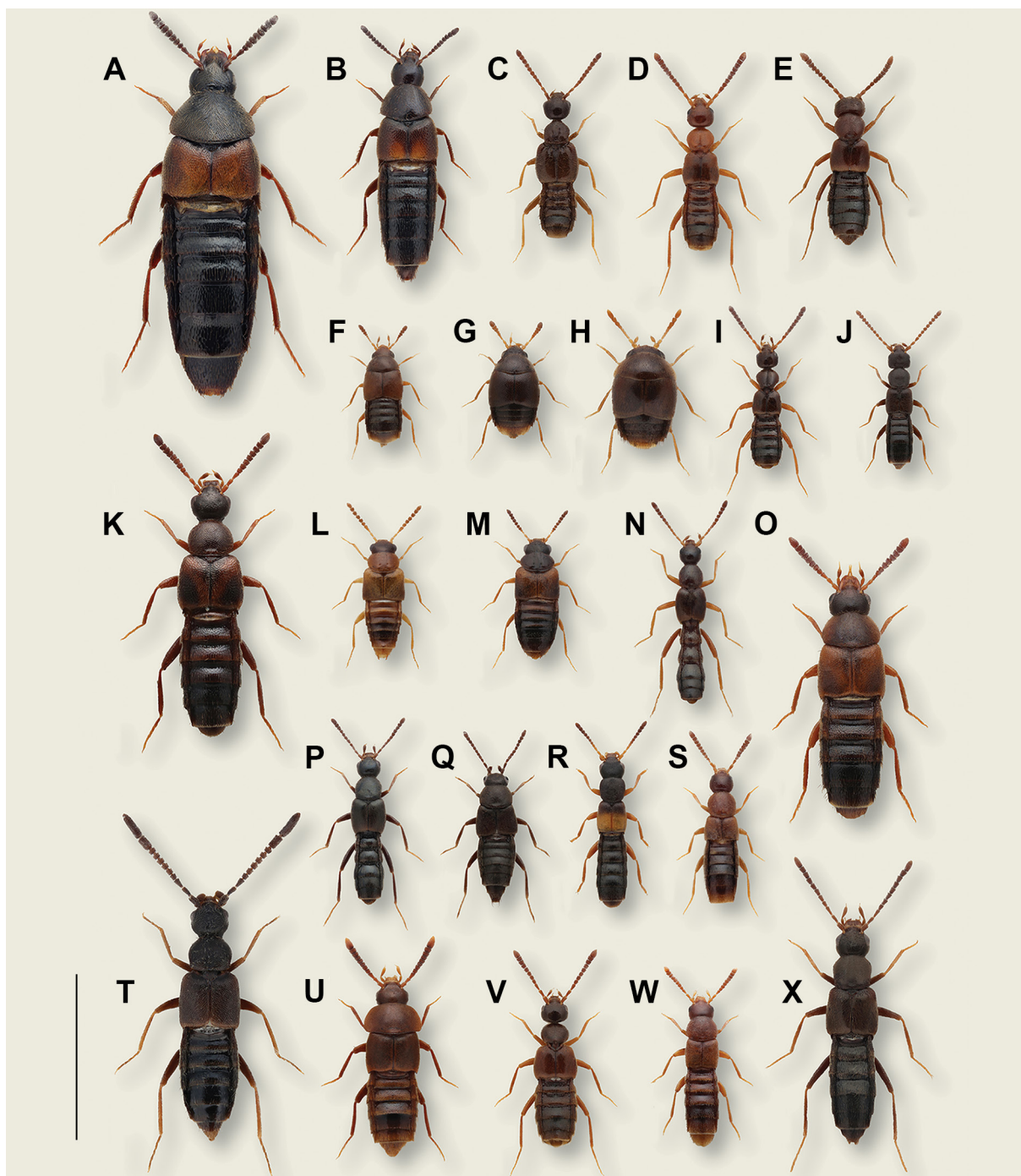


Fig. 8. Diversity of Aleocharinae in PSER and adjacent areas.

A – *Aleochara curtula*; B – *Aleochara laevigata*; C – *Autalia rivularis* (ambiguously recorded in PSER); D – *Falagrioma thoracica*; E – *Anaulacaspis nigra*; F – *Oligota inflata* (Mannerheim, 1830) (not recorded in PSER); G – *Holobus apicatus* (ambiguously recorded in PSER); H – *Cypha seminulum* (Erichson, 1839) (not recorded in PSER); I – *Falagria sulcatula*; J – *Myrmecopora sulcata* (Kiesenwetter, 1850) (not recorded in PSER); K – *Bolitochara obliqua* (ambiguously recorded in PSER); L – *Gyrophaena affinis*; M – *Gyrophaena joyi*; N – *Tachyusa constricta*; O – *Silusa rubiginosa* Erichson, 1837 (not recorded in PSER); P – *Tachyusa coarctata*; Q – *Brachyusa concolor*; R – *Hygronoma dimidiata*; S – *Geostiba circellaris*; T – *Callicerus obscurus* Gravenhorst, 1802 (not recorded in PSER); U – *Euryusa sinuata* Erichson, 1837 (not recorded in PSER); V – *Cordalia obscura* (Gravenhorst, 1802) (not recorded in PSER); W – *Leptusa pulchella* (Mannerheim, 1830) (not recorded in PSER); X – *Ischnopoda umbratica* (Erichson, 1837) (not recorded in PSER). Scale bar 3 mm.

Рис. 8. Разнообразие видов подсемейства Aleocharinae открытых равнин юга европейской части России (PSER) и сопредельных территорий.

A – *Aleochara curtula*; B – *Aleochara laevigata*; C – *Autalia rivularis* (указание из PSER сомнительно); D – *Falagrioma thoracica*; E – *Anaulacaspis nigra*; F – *Oligota inflata* (Mannerheim, 1830) (не указан из PSER); G – *Holobus apicatus* (указание из PSER сомнительно); H – *Cypha seminulum* (Erichson, 1839) (не указан из PSER); I – *Falagria sulcatula*; J – *Myrmecopora sulcata* (Kiesenwetter, 1850) (не указан из PSER); K – *Bolitochara obliqua* (указание из PSER сомнительно); L – *Gyrophaena affinis*; M – *Gyrophaena joyi*; N – *Tachyusa constricta*; O – *Silusa rubiginosa* Erichson, 1837 (не указан из PSER); P – *Tachyusa coarctata*; Q – *Brachyusa concolor*; R – *Hygronoma dimidiata*; S – *Geostiba circellaris*; T – *Callicerus obscurus* Gravenhorst, 1802 (не указан из PSER); U – *Euryusa sinuata* Erichson, 1837 (не указан из PSER); V – *Cordalia obscura* (Gravenhorst, 1802) (не указан из PSER); W – *Leptusa pulchella* (Mannerheim, 1830) (не указан из PSER); X – *Ischnopoda umbratica* (Erichson, 1837) (не указан из PSER). Масштабная линейка 3 мм.

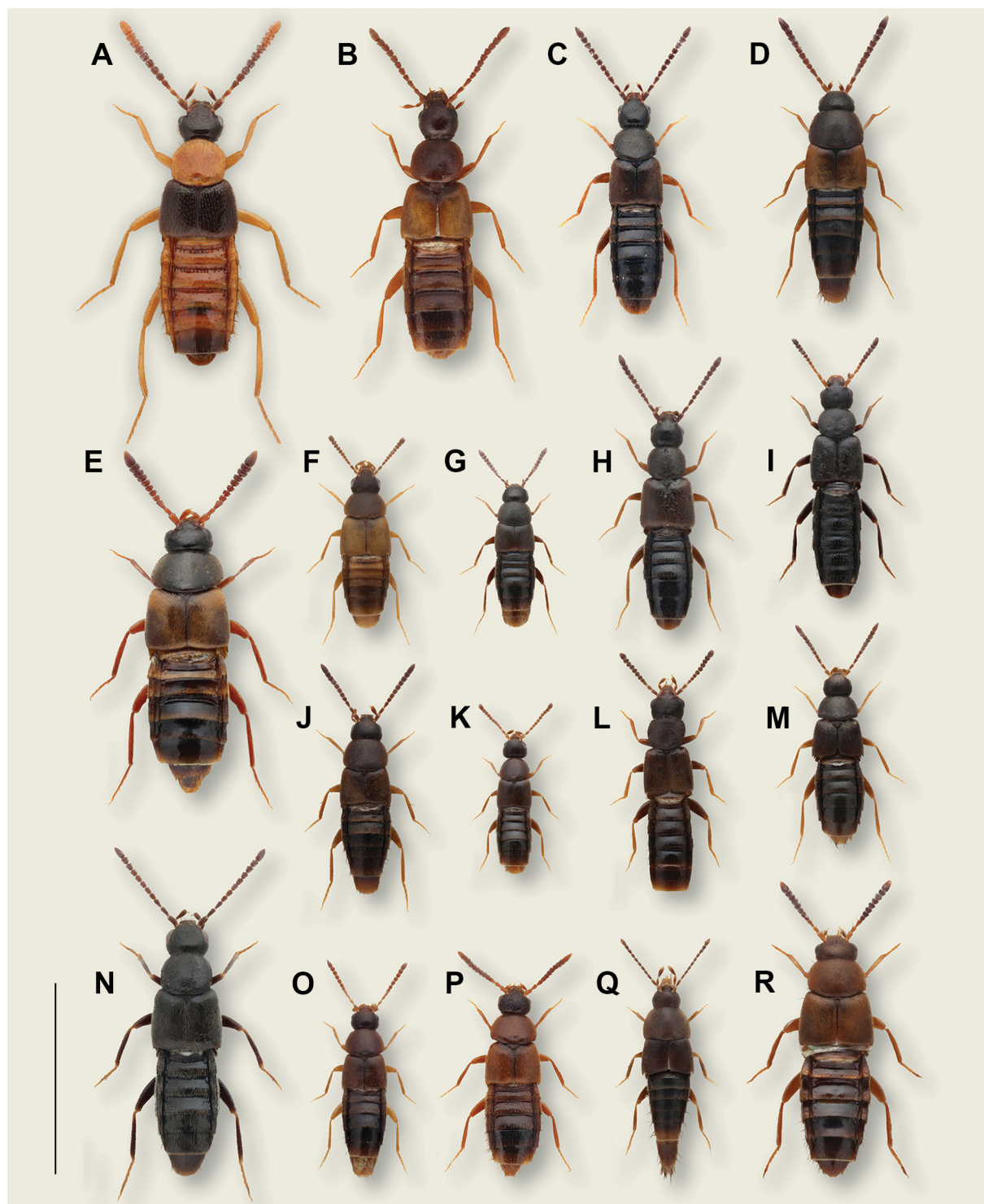


Fig. 9. Diversity of Aleocharinae in PSER and adjacent areas.

A – *Zyras collaris*; B – *Liogluta granigera* Kiesenwetter, 1850 (not recorded in PSER); C – *Liogluta microptera* (ambiguously recorded in PSER); D – *Nehemitropia lividipennis*; E – *Pella lugens*; F – *Placusa tachyporoides*; G – *Pycnota paradoxa*; H – *Atheta ravilla* (ambiguously recorded in PSER); I – *Alianta incana* (ambiguously recorded in PSER); J – *Acrotona pseudotenera* (Cameron, 1933) (not recorded in PSER); K – *Amischa analis*; L – *Homalota plana*; M – *Lyprocorrhe anceps* (ambiguously recorded in PSER); N – *Gnypeta carbonaria* (Mannerheim, 1830) (not recorded in PSER); O – *Mocyta fungi*; P – *Notothecta confusa*; Q – *Myllaena intermedia*; R – *Thamaraea cinnamomea* (Gravenhorst, 1802) (not recorded in PSER). Scale bar 3 mm.

Рис. 9. Разнообразие видов подсемейства Aleocharinae из PSER и сопредельных территорий.

A – *Zyras collaris*; B – *Liogluta granigera* Kiesenwetter, 1850 (не указан из PSER); C – *Liogluta microptera* (указание из PSER сомнительно); D – *Nehemitropia lividipennis*; E – *Pella lugens*; F – *Placusa tachyporoides*; G – *Pycnota paradoxa*; H – *Atheta ravilla* (указание из PSER сомнительно); I – *Alianta incana* (указание из PSER сомнительно); J – *Acrotona pseudotenera* (Cameron, 1933) (не указан из PSER); K – *Amischa analis*; L – *Homalota plana*; M – *Lyprocorrhe anceps* (указание из PSER сомнительно); N – *Gnypeta carbonaria* (Mannerheim, 1830) (не указан из PSER); O – *Mocyta fungi*; P – *Notothecta confusa*; Q – *Myllaena intermedia*; R – *Thamaraea cinnamomea* (Gravenhorst, 1802) (не указан из PSER). Масштабная линейка 3 мм.

Notes. Thermophilic species, widespread in the southern Palaearctic, Afrotropical, and Oriental regions [Schülke, Smetana, 2015]. Occurs in decaying plant material [Horion, 1967; Maus et al., 1998]. Parasitoid of the fly *Physiphora alceae* Preyssler, 1791 (Diptera: Ulidiidae) [Maus et al., 1998]. Found in manure, compost, decaying matter, fungi, etc. [Horion, 1967]. In PSER known only from Volgograd Region, collected in manure.

Aleochara (Xenochara) parvicornis Fauvel, 1900

Records. Kalmykia Republic [Kirschenblatt, 1938]; Saratov Region [Assing, 2018a]; Volgograd Region [Kirschenblatt, 1938; Grebennikov, 2002a]; Samara Region [Assing, 2009a]; Volgograd Region [Fauvel, 1900].

Notes. Originally described from “Sarepta”, presumably in Volgograd Region of PSER. Also known from Armenia, West Siberia, and Mongolia [Schülke, Smetana, 2015]. Associated with burrows of steppe marmot and therefore rarely collected species that probably has a larger range [Assing, 2009a].

Aleochara (Xenochara) pernigra Schubert, 1906

Records. Samara Region [Goreslavets, 2016a].

Notes. Known from Middle Asia, West Siberia, and Mongolia [Schülke, Smetana, 2015]. In PSER known from a single specimen collected in Krasnosamarskiy forest in Samara Region, attracted by a trap with fermented sap; presumably more widespread here.

Aleochara (Xenochara) rutilipennis Kraatz, 1859

Records. Astrakhan Region [Grebennikov, 2002a]; Volgograd Region [Grebennikov, 2002a; Makarov et al., 2009].

Notes. Thermophilic species occurring in Egypt, European Russia, and Western and Central Asia; also recorded from the Afrotropical, Australian and Oriental regions [Schülke, Smetana, 2015]. In PSER known from various localities of Astrakhan and Volgograd regions.

Aleochara (Xenochara) sparsa Heer, 1839

Records. Samara Region [Goreslavets, 2004].

Notes. Widespread in Europe and Western Asia [Schülke, Smetana, 2015]. In Europe found in a wide range of habitats like carrion (most commonly), dung, decaying plant debris, bird and mammal nests, fungi and moss [Welch, 1997]. In PSER known from Krasnosamarskiy forest in Samara Region.

Aleochara (Xenochara) tenuicornis Kraatz, 1856

Records. Astrakhan Region [Assing, 2009a].

Notes. Widespread from North Africa and southern Europe, through South European Russia to Middle East and Middle Asia [Assing, 2009a; Schülke, Smetana, 2015]. In PSER so far known only from a series of specimens collected in Astrakhan Region, east of Volgograd.

Aleochara (Xenochara) tristis Gravenhorst, 1806

Records. Astrakhan Region [Grebennikov, 2002a; Pushkin, 2015, 2016]; Samara Region [Goreslavets, 2004]; Stavropol Region ? [Pushkin, Maksimova, 2014; Pushkin, Minav, 2015]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread, almost cosmopolitan species [Assing, 2009a; Schülke, Smetana, 2015]. In Europe usually found singly or in very small numbers in dung or carrion, but also flood debris, on decaying sappy wood [Welch, 1997]. In PSER known from Samara, Astrakhan and Volgograd regions, and nearby from the foothills of the North Caucasus in Stavropol Region.

[Aleochara (Coprochara) verna Say, 1833]

Records. Samara Region ? [Goreslavets, 2014].

Notes. Distributed in Europe, Russia, Western and Central Asia, eastwards as far as the Russian Far East; also known from the Nearctic region [Schülke, Smetana, 2015]. *Aleochara verna* lives in similar habitats with closely related and very similar *A. bipustulata* (Whitehead, 1999). Thereby most of the records of *A. verna* need to be verified including a record from an unspecified locality in Samara Region.

[Alianta incana (Erichson, 1837)]
(Fig. 9I)

Records. Samara Region ? [Goreslavets, 2014].

Notes. Widely distributed across Europe, eastwards to European Russia [Schülke, Smetana, 2015]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

Amischa analis (Gravenhorst, 1802)
(Fig. 9K)

Records. Saratov Region [Sazhnev, 2013a].

Notes. Widespread in the Palaearctic, eastwards to the Russian Far East; introduced in the Nearctic and Australian regions [Leschen, Newton, 2015; Schülke, Smetana, 2015]. Found in open and forested habitats, pastures and meadows (often collected by sweeping grasses), on coastal dunes amid vegetation, river margins in flood debris, swamps in wet peat moss, and red spruce forests in pitfall traps [Klimaszewski et al., 2020]. In PSER so far only recorded from Engels District in Saratov Region, near lakeshores along the floodplains of the Volga River.

Amischa nigrofusca (Stephens, 1832)

Records. Astrakhan Region [Grebennikov, 2002a]; Krasnodar Region [Assing, 2021].

Notes. Widespread in the Western Palaearctic; adventive in New Zealand [Assing, 2021]. Fairly rare, occurs in various non-forested habitats; like *A. analis*, it has been recorded in forests exclusively in the colder seasons and not during the reproductive season [Assing, 2021]. From PSER it is known from one specimen collected in an agricultural field in Krasnodar Region and one from a riverbank in Astrakhan Region.

Anaulacaspis gratilla (Erichson, 1839)

Records. Samara Region [Goreslavets, 2004, 2014].

Notes. Fairly common in Eastern Europe (Ukraine), the East Caucasus (Azerbaijan) and West and Middle Asia, where it occurs at altitudes ranging from 1200 to 2040 m [Schülke, Smetana, 2015; Assing, 2016a, 2020]. In PSER currently known only from Krasnosamarskiy forest and unspecified localities at lakeshores of Samara Region.

Anaulacaspis laevigata (Eppelsheim, 1883)

Records. Samara Region [Goreslavets, 2004, 2014]; Volgograd Region [Grebennikov, 2002a].

Notes. Rare south European species, eastwards reaching Middle Asia [Schülke, Smetana, 2015; Assing, 2016a, 2020]. According to Assing [2016a], this species is collected on the banks of rivers and streams, mostly on gravel, whereas Horion [1967] states that *A. laevigata* lives in marshes. In PSER known from Krasnosamarskiy forest and lakeshores of Samara Region and Kalach-na-Donu town in Volgograd Region.

Anaulacaspis nigra (Gravenhorst, 1802)
(Fig. 8E)

Records. Samara Region [Assing, 2016a; Goreslavets, 2016b].

Notes. Widespread throughout Europe (except southwest and British Isles) eastward to Kyrgyzstan and East Siberia [Schülke, Smetana, 2015; Assing, 2016a, 2020]. Collected in various types of grasslands (steppe, calcareous grasslands, mountain slopes), fallows, sandy river banks, at cave entrances and nests of mice and wood ants [Assing, 2016a]. In PSER currently known only from the environs of Samara city [Assing, 2016a] and from ant nests in unspecified localities in Samara Region [Goreslavets, 2016b].

Anomognathus cuspidatus (Erichson, 1839)

Records. Samara Region [Goreslavets, 2004]; Volgograd Region [Grebennikov, 2002a].

Notes. Widely distributed in Europe, introduced in North America [Schülke, Smetana, 2015; Klimaszewski et al., 2018]. Found in forests under fungusy tree bark of logs and branches [Brunke et al., 2021]. In PSER recorded only from Krasnosamarskiy forest in Samara Region and Kalach-na-Donu in Volgograd Region.

Atheta (Atheta) boletophila (Thomson, 1856)
(Fig. 10A)

Records. Samara Region ? [Goreslavets, 2021 (as *A. boletophila* Brundin)].

Notes. Widespread in Europe including European Russia [Schülke, Smetana, 2015]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

Atheta (Atheta) britanniae Bernhauer et Scheerpeltz, 1926
(Fig. 10H)

Records. Stavropol Region (Pushkin, Maksimova, 2014; Pushkin, Minav, 2015).

Notes. Widespread in Europe including European Russia [Schülke, Smetana, 2015]. Common in rotting fungi, old hay, tree sap, droppings, compost, etc. [Palm, 1970]. In PSER so far found only near Stavropol.

Atheta (Datomicra) canescens (Sharp, 1869)
(Fig. 10E)

Records. Samara Region ? [Goreslavets, 2021].

Notes. Widespread in Europe, eastwards to East Siberia, Mongolia, and China [Schülke, Smetana, 2015]. Collected in wooded areas where it is commonly found in various types of droppings, in rotting mushrooms, in bird nests, tree sap, etc. [Palm, 1970]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

Atheta (Atheta) castanoptera (Mannerheim, 1830)
(Fig. 10B)

Records. Stavropol Region [Pushkin, Maksimova, 2014; Pushkin, Minav, 2015].

Notes. Widespread in the Western Palaearctic; also recorded from the Korean Peninsula [Schülke, Smetana, 2015; Lee, Ahn, 2019]. In Europe in deciduous forests with old rotten trees, also on tree sap [Palm, 1970]. In PSER so far known only from the lowlands and the foothills of the Caucasus in Stavropol Region.

Atheta (Atheta) crassicornis (Fabricius, 1792)
(Fig. 10D)

Records. Samara Region ? [Goreslavets, 2021]; Saratov Region ? [Sazhnev, Mironova, 2019].

Notes. Widespread in the Western Palaearctic [Schülke, Smetana, 2015]. Often found in rotting fungi, old hay, compost, etc. [Palm, 1970]. Next to PSER known from the environs of Saratov, Khvalynsk and Engels towns in Saratov Region. For some records from Samara and Saratov regions we are not certain if they belong to PSER because they lack geographic details within the region level.

Atheta (Philhygra) elongatula (Gravenhorst, 1802)
(Fig. 10I)

Records. Samara Region [Goreslavets, 2004, 2014].

Notes. Very common, widespread in Europe and West Asia, eastwards to East Siberia; also recorded from Korean Peninsula [Schülke, Smetana, 2015]. Eurytopic, prefers moist microhabitats [Palm, 1970]. In PSER so far known only from Krasnosamarskiy forest and other unspecified localities of Samara Region.

Atheta (Atheta) euryptera (Stephens, 1832)

Records. Samara Region ? [Goreslavets, 2021].

Notes. Widespread in the Palaearctic, eastwards to the Russian Far East, Korean Peninsula and Japan; introduced in North America [Schülke, Smetana, 2015]. On tree sap, but also in rotting fungi, compost, excrements, etc. [Palm, 1970]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level. That record comes from samples collected on fungi.

[*Atheta (Oxypodera) fimorum*
(Brisout de Barneville, 1860)]

Records. Samara Region ? [Goreslavets, 2021].

Notes. European species, but also known from North Africa, the Caucasus region and Asia Minor [Schülke, Smetana, 2015]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

[*Atheta (Oreostiba) forticornis* (Hochhuth, 1849)]

Notes. Known only from the original description [Hochhuth, 1849] based on some material from "Caucasus" without further details. No unambiguous records from PSER.

Atheta (Alaobia) gagatina (Baudi di Selve, 1848)
(Fig. 10F)

Records. Samara Region [Goreslavets, 2004, 2021].

Notes. Widespread Palaearctic species, in Russia reaching East Siberia [Schülke, Smetana, 2015]. Found on fungi of various kinds, both tree and soil fungi, also attracted by tree sap [Palm, 1970]. In PSER known only from Krasnosamarskiy forest. About other records from Samara Region we are not certain if they belong to PSER because they lack geographic details within the region level.

[*Atheta (Philhygra) hygrobia* (Thomson, 1856)]
(Fig. 10G)

Records. Samara Region ? [Goreslavets, 2021].

Notes. Common and widespread in Europe, eastwards to East Siberia [Schülke, Smetana, 2015]. Occurs in coniferous forests [Palm, 1970], in leaf litter of beech forests at altitudes up to 1600 m [Brundin, 1942]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

[*Atheta (Dimetrotina) laticollis* (Stephens, 1832)]
(Fig. 10J)

Records. Samara Region ? [Goreslavets, 2021].

Notes. Widespread in Europe, eastwards to Middle Asia and East Siberia [Schülke, Smetana, 2015]. This common, eurytopic species is mostly found in compost and leaf litter [Palm, 1970]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

[*Atheta (Tetropla) liturata* (Stephens, 1832)]

Records. Samara Region ? [Goreslavets, 2021].

Notes. Widespread in Europe, from Britain to European Russia and the Caucasus region [Schülke, Smetana, 2015; Assing, Schülke, 2019]. Occurs in forests and parks, mostly on rotting fungi (*Polyporus sulphureus* etc.) [Palm, 1970]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

[*Atheta (Tetropla) nigrifula* (Gravenhorst, 1802)]
(Fig. 10K)

Records. Samara Region ? [Goreslavets, 2021].

Notes. Widespread in the Palaearctic, from West Europe to East Siberia and China [Schülke, Smetana, 2015]. Not very common in Europe, found on fungi [Palm, 1970]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

[*Atheta (Alaobia) orcina* (Fauvel, 1875)]

Records. Samara Region ? [Goreslavets, 2021].

Notes. Widespread in Western and Southern Europe [Assing, 2010a; Schülke, Smetana, 2015]. Found in mushrooms from unspecified localities in Samara Region. Thus, we are not certain if these records belong to PSER. This is the only record of this species from Russia and Eastern Europe and needs to be verified.

[*Atheta (Alaobia) pallidicornis* (Thomson, 1856)]
(Fig. 10L)

Records. Samara Region ? [Goreslavets, 2021].

Notes. Widespread in Europe, eastwards to West Siberia [Schülke, Smetana, 2015]. Fairly rare, but sometimes found in large numbers in fungi (e.g. *Polyporus*) [Palm, 1970]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

[*Atheta (Atheta) pilicornis* (Thomson, 1852)]
(Fig. 10M)

Records. Samara Region ? [Goreslavets, 2021].

Notes. Widely distributed from West Europe to East Siberia [Schülke, Smetana, 2015]. Fairly common in rotting fungi, both on the ground and on trees and stumps; as well as in tree sap and ashes, in feces and in compost [Palm, 1970]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

[*Atheta (Atheta) ravilla* (Erichson, 1839)]
(Fig. 9H)

Records. Samara Region ? [Goreslavets, 2021].

Notes. Widespread throughout Europe, including European Russia, also in North Africa, the Caucasus and

Asia Minor [Schülke, Smetana, 2015; Assing, Schülke, 2019]. In Europe in various decaying matters, in nests of birds and small mammals, under fungusy tree bark [Koch, 1989]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

[*Atheta (Alaobia) sodalis* (Erichson, 1837)]

Records. Samara Region ? [Goreslavets, 2021]; Saratov Region ? [Sazhnev et al., 2019a].

Notes. Widespread in Europe, eastwards to West Siberia [Schülke, Smetana, 2015; Assing, Schülke 2019]. Eurytopic, mostly found in forests, in nests of various mammals, in compost, on tree sap, in fungi, more rarely in feces [Palm, 1970]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level. Adjacent to PSER record comes from floodplain forests in Saratov Region.

[*Atheta (Atheta) strandiella* Brundin, 1954]

Records. Samara Region ? [Goreslavets, 2021].

Notes. Widespread throughout Europe, eastwards to West Siberia [Schülke, Smetana, 2015]. This rare species is found in Sphagnum in very moist biotopes, on carrion or feces [Palm, 1970]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

[*Autalia rivularis* (Gravenhorst, 1802)]
(Fig. 8C)

Records. Samara Region ? [Goreslavets, 2014].

Notes. Widespread in the Palaearctic, eastwards to the Russian Far East and Japan; introduced in the Nearctic [Schülke, Smetana, 2015]. In Europe inhabits mixed forests and other woodlands, coastal shrubs, pastures; mostly found in various decaying matters [Klimaszewski et al., 2020]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

[*Bolitochara bella* Märkel, 1844]

Records. Samara Region ? [Goreslavets, 2021].

Notes. Widespread from Western Europe to European Russia and Asia Minor [Schülke, Smetana, 2015; Assing, Schülke, 2019]. Inhabitant of forests (especially beech) and parks, in fungi and under bark (beech and oak) [Assing, 2014a]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

[*Bolitochara mulsanti* Sharp, 1875]

Records. Samara Region ? [Goreslavets, 2021].

Notes. Widespread in Europe including European Russia [Schülke, Smetana, 2015]. Of all *Bolitochara* species, *B. mulsanti* is most strongly associated with forests, where it is found in cool and moist places; it is associated with fungi

and is also collected under the bark of dead wood [Wagner, 1995]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

[*Bolitochara obliqua* Erichson, 1837]
(Fig. 8K)

Records. Samara Region ? [Goreslavets, 2021].

Notes. Widespread in Europe, from Great Britain to European Russia except north, in the Caucasus region and Middle Asia where it occurs in mixed deciduous forests at altitudes from 100 to 1600 m [Assing, 2014a; Schülke, Smetana, 2015; Assing, Schülke, 2019]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

[*Bolitochara pulchra* (Gravenhorst, 1806)]

Records. Samara Region [Goreslavets, 2004, 2014, 2021].

Notes. Widespread from West Europe to East Siberia [Schülke, Smetana, 2015]. Associated with fungi, especially under the bark of fungusy stumps and branches [Wagner, 1995]. In PSER so far recorded only from Krasnosamarskiy forest. Regarding other records from Samara Region, we are not certain if they belong to PSER because they lack geographic details within the region level.

[*Brachyusa concolor* (Erichson, 1839)]
(Fig. 8Q)

Records. Samara Region [Goreslavets, 2014]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a].

Notes. Widely distributed in the Palaearctic, eastwards to East Siberia [Schülke, Smetana, 2015; Assing, Schülke, 2019]. Collected on banks of rivers and streams near running water, mostly in leaf litter and on sand and gravel [Horion, 1967]. In PSER so far only recorded from Krasnoslobodsk town in Volgograd Region. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

[*Calodera aethiops* (Gravenhorst, 1802)]

Records. Volgograd Region [Grebennikov, 2002a].

Notes. Widespread in Europe, eastwards to Middle Asia and East Siberia [Schülke, Smetana, 2015]. Hygrophilous species (like almost all *Calodera* species), common on muddy banks of rivers, ponds, in damp, swampy forest areas, etc.; in rotting debris, in damp shady areas, often together with other *Calodera* species [Horion, 1967]. From PSER so far only known from a single specimen collected in Volgograd Region.

[*Calodera nigrita* Mannerheim, 1830]

Records. Astrakhan Region [Grebennikov, 2002a]; Samara Region ? [Goreslavets, 2014]; Volgograd Region [Grebennikov, 2002a].

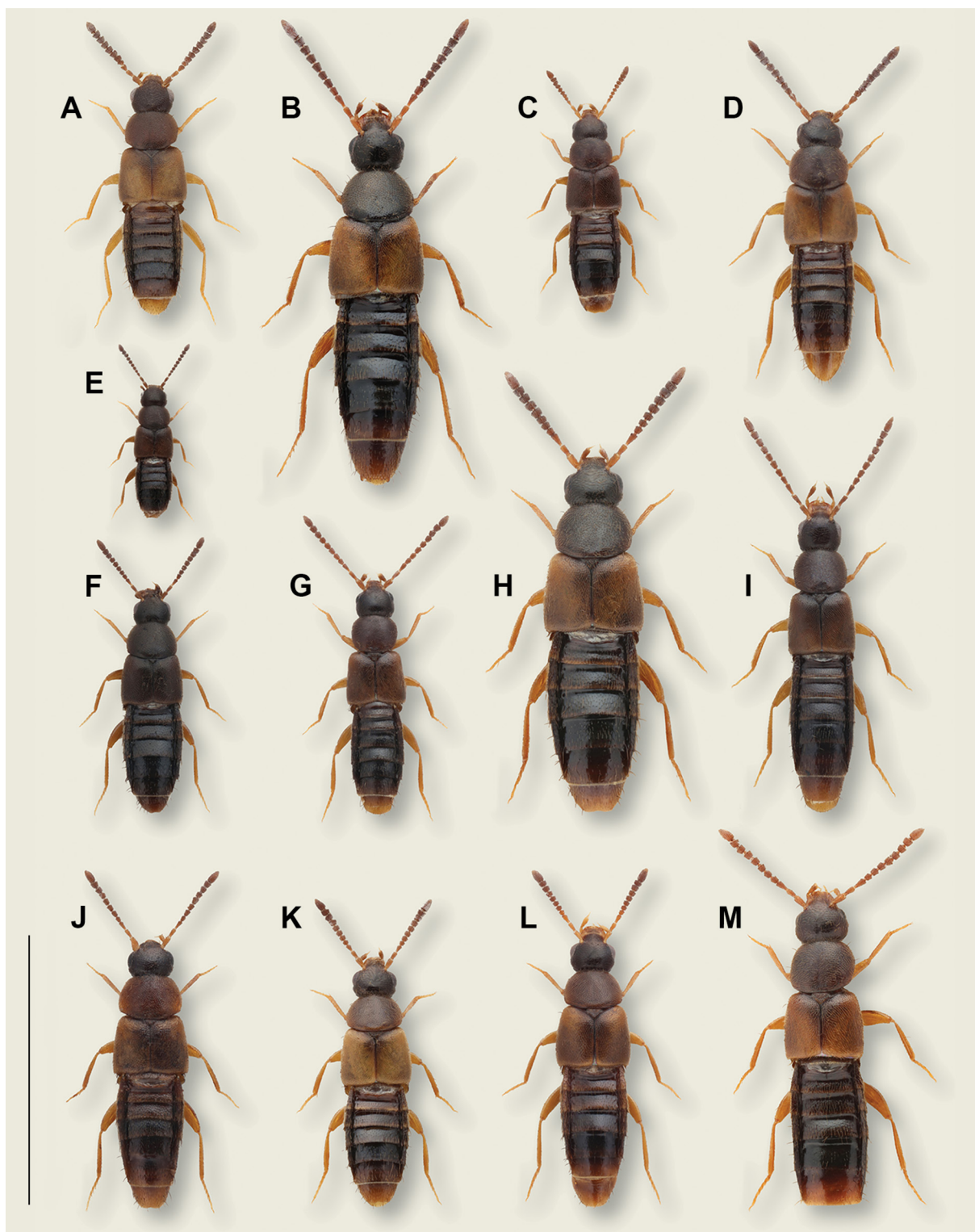


Fig. 10. Diversity of *Atheta* (Aleocharinae) in PSER and adjacent areas.

A – *A. boletophila* (ambiguously recorded in PSER); B – *A. castanoptera*; C – *A. basicornis* (Mulsant et Rey, 1851) (not recorded in PSER); D – *A. crassicornis* (ambiguously recorded in PSER); E – *A. canescens* (ambiguously recorded in PSER); F – *A. gagatina*; G – *A. hygrobia* (ambiguously recorded in PSER); H – *A. britanniae*; I – *A. elongatula*; J – *A. laticollis* (ambiguously recorded in PSER); K – *A. nigritula* (ambiguously recorded in PSER); L – *A. pallidicornis* (ambiguously recorded in PSER); M – *A. pilicornis* (ambiguously recorded in PSER). Scale bar 3 mm.

Рис. 10. Разнообразие видов рода *Atheta* (Aleocharinae) из PSER и сопредельных территорий.

A – *A. boletophila* (указание из PSER сомнительно); B – *A. castanoptera*; C – *A. basicornis* (Mulsant et Rey, 1851) (не указан из PSER); D – *A. crassicornis* (указание из PSER сомнительно); E – *A. canescens* (указание из PSER сомнительно); F – *A. gagatina*; G – *A. hygrobia* (указание из PSER сомнительно); H – *A. britanniae*; I – *A. elongatula*; J – *A. laticollis* (указание из PSER сомнительно); K – *A. nigritula* (указание из PSER сомнительно); L – *A. pallidicornis* (указание из PSER сомнительно); M – *A. pilicornis* (указание из PSER сомнительно). Масштабная линейка 3 мм.

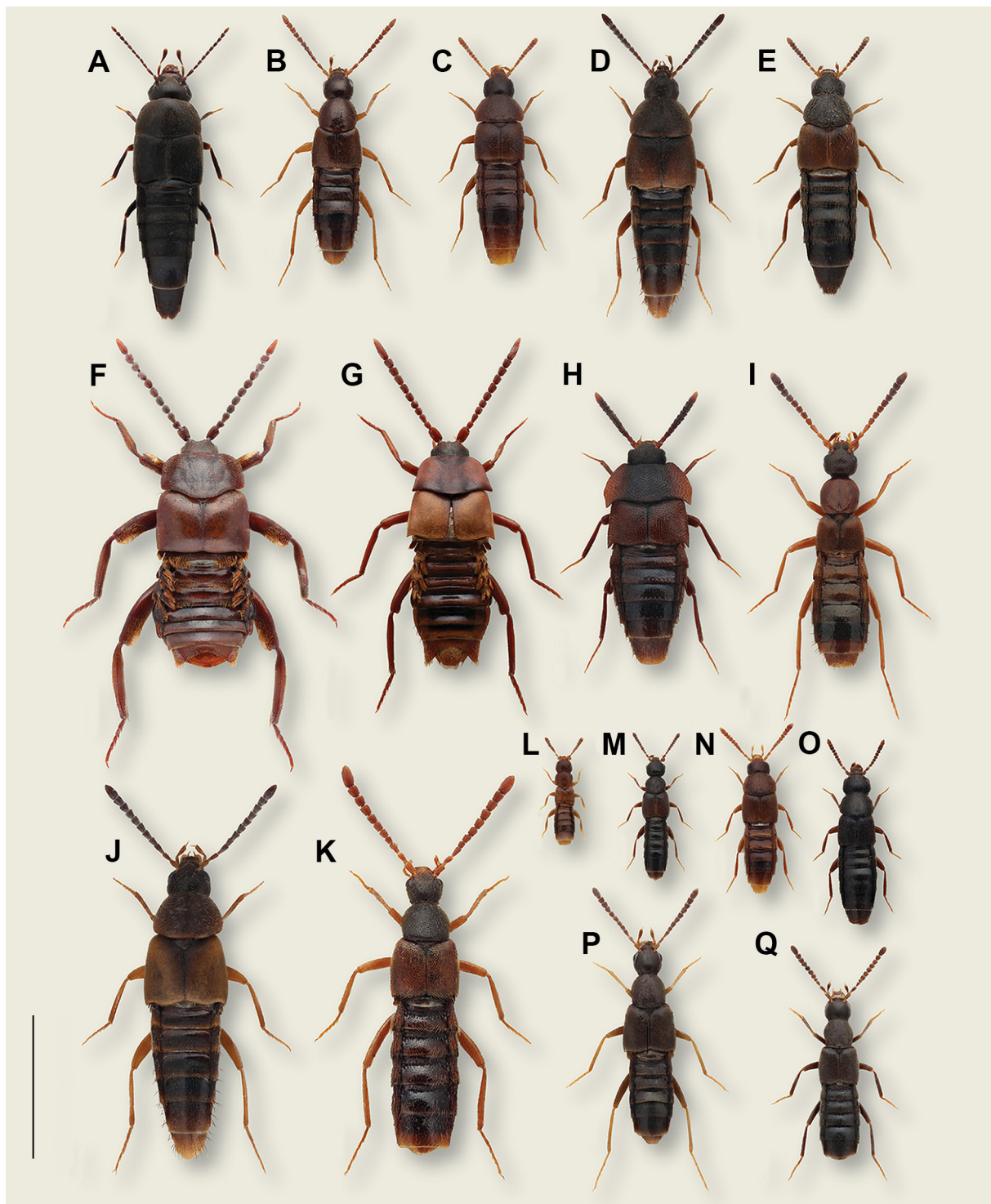


Fig. 11. Diversity of Aleocharinae in PSER and adjacent areas.

A – *Deinopsis erosa*; B – *Ocalea badia*; C – *Thiasophila wockii* (ambiguously recorded in PSER); D – *Oxypoda opaca*; E – *Haploglossa nidicola*; F – *Lomechusoides strumosus*; G – *Lomechusa emarginata*; H – *Dinarda dentata*; I – *Drusilla canaliculata*; J – *Oxypoda acuminata*; K – *Ilyobates nigricollis* (ambiguously recorded in PSER); L – *Meotica exilis* (Gravenhorst, 1806) (not recorded in PSER); M – *Phloeopora corticalis*; N – *Dexiogygia corticina*; O – *Mniusa incrassata* (Mulsant et Rey, 1852) (not recorded in PSER); P – *Parocysa longitarsis* (Erichson, 1839) (not recorded in PSER); Q – *Calodera protensa*. Scale bar 3 mm.

Рис. 11. Разнообразие видов подсемейства Aleocharinae из PSER и сопредельных территорий.

A – *Deinopsis erosa*; B – *Ocalea badia*; C – *Thiasophila wockii* (указание из PSER сомнительно); D – *Oxypoda opaca*; E – *Haploglossa nidicola*; F – *Lomechusoides strumosus*; G – *Lomechusa emarginata*; H – *Dinarda dentata*; I – *Drusilla canaliculata*; J – *Oxypoda acuminata*; K – *Ilyobates nigricollis* (указание из PSER сомнительно); L – *Meotica exilis* (Gravenhorst, 1806) (не указан из PSER); M – *Phloeopora corticalis*; N – *Dexiogygia corticina*; O – *Mniusa incrassata* (Mulsant et Rey, 1852) (не указан из PSER); P – *Parocysa longitarsis* (Erichson, 1839) (не указан из PSER); Q – *Calodera protensa*. Масштабная линейка 3 мм.

Notes. Widespread from Europe to East Siberia [Schülke, Smetana, 2015]. Hygrophilous species, restricted to muddy banks of rivers and ponds, swampy forest areas etc.; in decaying debris in damp shady areas [Horion, 1967]. In PSER so far recorded from the environs of Baskunchak Lake and Kalach-na-Donu town in Volgograd Region. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

Calodera protensa Mannerheim, 1830
(Fig. 11Q)

Records. Samara Region [Goreslavets, 2004].

Notes. Widespread European species, eastwards to European Russia; also found in Japan [Schülke, Smetana, 2015]. Bionomics as in the previous species, with which it frequently co-occurs [Horion, 1967]. In PSER so far only collected from Krasnosamarskiy forest in Samara Region, under pine bark in the tunnels of bark beetles.

Cyphea curtula (Erichson, 1837)

Records. Samara Region [Goreslavets, 2004]; Saratov Region ? [Sazhnev, Volodchenko, 2021].

Notes. Widespread European species, reaching European Russia [Schülke, Smetana, 2015]. Found under rotten tree bark, often in lying trunks, especially on aspen in larval galleries of *Xylotrechus rusticus* Linnaeus, 1758, *Saperda perforata* Pallas, 1773, *Trypophloeus* Fairmaire, 1868 species and *Cossus cossus* (Linnaeus, 1758); in warm and sunny weather beetles appear outside on and near tree trunks [Horion, 1967]. From PSER so far recorded only from Krasnosamarskiy forest in Samara Region and near to PSER from Balashov town in Saratov Region.

Deinopsis erosa (Stephens, 1832)
(Fig. 11A)

Records. Saratov Region ? [Sazhnev et al., 2019a, 2019b]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread Palaearctic species, reaching East Siberia and China in the east [Schülke, Smetana, 2015]. Hygrophilous, lives in the vegetation of swamps, ponds, peat bogs and similar areas [Klimaszewski, 1979]. Known from PSER only from Tryokhostrovskaya village in Volgograd Region. Adjacent to PSER record comes from Balashov District in Saratov Region.

Dexiogyia corticina (Erichson, 1837)
(Fig. 11N)

Records. Volgograd Region [Grebennikov, 2002a].

Notes. Widespread in Europe, eastwards to Asia Minor [Schülke, Smetana, 2015]. Under loose, usually fungus bark of trunks and stumps infested by woodboring insects, also in their tunnels inside the trunk; as well as on tree sap or fungi, often together with other bark staphylinids (*Phloeopora*, *Placusa*, *Cyphaea* etc.) [Horion, 1967]. From PSER hitherto known only from Volgograd Region.

Dinaraea aequata (Erichson, 1837)

Records. Samara Region ? [Goreslavets, 2014, 2021].

Notes. Widespread in Europe, eastwards to the Russian Far East [Schülke, Smetana, 2015; Assing, Schülke, 2019]. In Europe found in forests and parks, mostly in mushrooms (Nikitsky, Schigel, 2004) and under bark of dead deciduous trees, in bracket fungi (*Fomes*, *Polyporus*, *Trametes*, *Ganoderma*, etc.) [Bacal, Derunkov, 2010]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

Dinaraea angustula (Gyllenhal, 1810)

Records. Samara Region [Goreslavets, 2004, 2014, 2016b, 2021].

Notes. Widespread from Great Britain to the Russian Far East; introduced in the Nearctic [Schülke, Smetana, 2015; Klimaszewski et al., 2020]. Found in forests and woodlands in fungi (*Piptoporus*, *Polyporus*) [Nikitsky, Schigel, 2004]; polytopic in North America (Klimaszewski et al., 2013). In PSER so far recorded only from Krasnosamarskiy forest. Regarding other records from Samara Region we are not certain if they belong to PSER because they lack geographic details within the region level.

Dinaraea arcana (Erichson, 1839)

Records. Samara Region [Goreslavets, 2004, 2014].

Notes. Widely distributed from Europe to East Siberia, Mongolia and Korean Peninsula [Schülke, Smetana, 2015]. In Europe inhabits woods; under moist bark [Siitonen, 1994], associated with bark beetles [Tykarski, 2006]. PSER records come from Krasnosamarskiy forest in Samara Region. Other record from Samara Region may as well be outside PSER as it lacks geographic details within the region level.

Dinaraea linearis (Gravenhorst, 1802)

Records. Saratov Region [Sazhnev, Volodchenko, 2021].

Notes. Widespread in Europe, also in East Siberia, the Russian Far East and China [Schülke, Smetana, 2015]. In Europe inhabit forests, associated with polyporous fungi [Nikitsky, Schigel, 2004]. In PSER known only from Dyakovka village in Saratov Region next to border with Volgograd Region; near water and in fungi.

Dinarda dentata (Gravenhorst, 1806)
(Fig. 11H)

Records. Samara Region [Goreslavets, 2004, 2016b]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a; Grebennikov, Riga, 2014].

Notes. Widespread from Europe to East Siberia [Schülke, Smetana, 2015]. The beetles live as tolerated guests in the nests of *Formica* ants (*F. cinerea* Mayr, 1853, *F. fusca* Linnaeus, 1758, *F. sanguinea* Latreille, 1798, etc.) where they feed on dead ants and other dead insects

[Horion, 1967]. In PSER so far recorded from Volgograd and Kotluban town in Volgograd Region and Krasnosamarskiy forest in Samara Region. Some unspecified records from Samara Region lack geographic details within the region level, they may not belong to PSER.

Dinarda hagensii Wasmann, 1889

Records. Samara Region [Goreslavets, 2016a, b].

Notes. Widespread throughout Europe except southern, with the eastern limit of distribution reaching European Russia [Schülke, Smetana, 2015; Assing, Schülke, 2019]. Associated with *Formica exsecta* Nylander, 1846 ants [Parmentier et al., 2014]. In PSER recorded only from Krasnosamarskiy forest. Some other records from Samara Region are unspecified and may be outside PSER.

Dinarda maerkelii Kiesenwetter, 1843

Records. Samara Region [Goreslavets, 2016a, b].

Notes. European species, not recorded from southern Europe, eastwards to European Russia and the North Caucasus [Schülke, Smetana, 2015; Assing, Schülke, 2019]. Myrmecophilous, associated with *Formica rufa* Linnaeus, 1761 and *F. polyctena* Foerster, 1850 ants [Parmentier et al., 2014]. In PSER so far recorded only from Krasnosamarskiy forest. Some other records from Samara Region are unspecified and may be outside PSER.

Dinarda pygmaea Wasmann, 1894

Records. Samara Region [Goreslavets, 2016a, b].

Notes. Distributed in Europe, eastwards to European Russia [Schülke, Smetana, 2015]. Collected in dry forests, forest edges and clearings; in nests of *Formica rufibarbis* Fabricius, 1793 and *F. cunicularia* Latreille, 1798 ants [Koch, 1989]. In PSER so far recorded only from Krasnosamarskiy forest. Some other records from Samara Region are unspecified and may be outside PSER.

Drusilla canaliculata (Fabricius, 1787)
(Fig. 111)

Records. Astrakhan Region [Grebennikov, 2002a]; Dagestan Republic [Assing, 2005a]; Rostov Region [Minoranskiy, Lomakin, 1978]; Samara Region [Goreslavets, 2004, 2014, 2016b]; Volgograd Region [Kirschenblatt, 1936; Grebennikov, 2002a].

Notes. One of the most common Palaearctic Aleocharinae, eastwards to the Russian Far East; introduced in North America [Assing, 2005a; Schülke, Smetana, 2015]. In Europe in various biotopes, mostly near *Formica* ant nests. In PSER in several regions in various habitats, often near ant nests.

Euryusa optabilis Heer, 1839

Records. Samara Region [Goreslavets, 2002, 2004, 2016b].

Notes. European species, but no records from Southern Europe [Schülke, Smetana, 2015]. Collected in

forests, under rotten bark or at the base of old deciduous trees in leaf litter and moss; also in ant nests, especially of *Lasius brunneus* (Latreille, 1798) [Horion, 1967]. In PSER so far recorded from Krasnosamarskiy forest. Some other records from Samara Region are unspecified and may be outside PSER.

[Euryusa pipitzi] (Eppelsheim, 1887)]

Records. Samara Region ? [Goreslavets, 2014].

Notes. Species with disjunct distribution. Known from Central and Southern Europe as well as from the Russian Far East, Korea and Japan [Schülke, Smetana, 2015]. Associated with *Lasius* Fabricius, 1804 ants [Maruyama, Hlaváč, 2002]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

Falagria caesa Erichson, 1837

Records. Astrakhan Region [Pushkin, 2015, 2016]; Samara Region [Goreslavets, 2004, 2014].

Notes. Widespread in Europe, eastwards to the Russian Far East; also known from Oriental and Nearctic (introduced) regions [Schülke, Smetana, 2015]. Found in forested and anthropogenic habitats; in compost and other decaying plant material, in decaying fungi [Klimaszewski et al., 2018]. In PSER so far recorded from Astrakhan Region from carrion, and from forested areas in Samara Region near water bodies.

[? *Falagria collaris* Reitter, 1891]

Notes. Described by Reitter [1891] from "Caucasus" without further details on the locality or bionomics. According to Schülke and Smetana [2015], also distributed in Western and Middle Asia. No unambiguous records in PSER.

Falagria splendens Kraatz, 1858

Records. Volgograd Region [Grebennikov, 2002a].

Notes. Distributed in North Africa, Southern and Central Europe, and the Caucasus [Horion, 1967]. Sifted from mountain pines and grass roots [Horion, 1967]. From PSER so far known from Volgograd Region only, from one specimen collected near water.

Falagria sulcatula (Gravenhorst, 1806)
(Fig. 81)

Records. Astrakhan Region [Grebennikov, Komarov, 1998]; Saratov Region [Sazhnev, 2013a; Sazhnev, Anikin, 2014a]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a].

Notes. Widespread in Europe, eastward to the Russian Far East [Schülke, Smetana, 2015]. According to Horion [1967] found among decaying plant material such as compost, weeds and hay, also from decaying fungi. In PSER recorded along the Volga River basin.

Falagrioma thoracica (Stephens, 1832)
(Fig. 8D)

Records. Samara Region [Goreslavets, 2004, 2014]; Saratov Region [Sazhnev, Kondratiev, 2020]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread in Europe, but relatively rare [Freude et al., 1974], also recorded from northwestern Africa, Western and Middle Asia [Schülke, Smetana, 2015]. Found in grasslands at the edge of oak woodlands [Tóthmérész et al., 2014], may occur in caves [Popa et al., 2019] and in ant nests [Horion, 1967]. In PSER known from near-water habitats in forest areas of Samara Region and under similar conditions in Saratov and Volgograd regions, where it also occurs in *Riparia* T. Forster, 1817 swallow nests.

Geostiba (Geostiba) circellaris (Gravenhorst, 1806)
(Fig. 8S)

Records. Samara Region [Goreslavets, 2004, 2014, 2016b].

Notes. Widespread in Europe, found in Turkey, eastwards to East Siberia and Korean Peninsula; introduced in North America [Schülke, Smetana, 2015]. Found in compost and other decaying plant matter, in decaying fungi, both in forests and in open areas, often in *Formica* ant nests, in winter often in nests of moles and other small mammals [Horion, 1967]. In PSER so far recorded only from Krasnosamarskiy forest in Samara Region. Some other Samara Region records come from unspecified localities and may not belong to PSER.

Gyrophæna (Leptarthrophæna) affinis
Mannerheim, 1830
(Fig. 8L)

Records. Crimea Republic ? [Enushchenko, Semenov, 2016]; Krasnodar Region [Enushchenko, Semenov, 2016]; Rostov Region [Enushchenko, Semenov, 2016; Khachikov, 2017]; Samara Region [Goreslavets, 2004, 2021 (as *G. rosskotheni*)]; Saratov Region [Sazhnev, Mironova, 2019; Sazhnev et al., 2019a]; Volgograd Region [Enushchenko, Semenov, 2016].

Notes. According to Schülke and Smetana [2015], widespread from North Africa and Western Europe to East Siberia and the Russian Far East; also known from North America [Klimaszewski et al., 2020]. In Europe found in forests, on mushrooms (especially *Amanita* and *Polyporus*) [Horion, 1967]. Widespread in PSER, mostly found in fresh mushrooms. In Krasnodar Region in the foothills and plains. In Crimea recorded adjacent to PSER, from foothills and mountains.

Gyrophæna (Gyrophæna) bihamata Thomson, 1867

Records. Krasnodar Region ? [Enushchenko, Semenov, 2016]; Rostov Region [Khachikov, 2017]; Samara Region [Goreslavets, 2004, 2021].

Notes. Widespread in Europe, also known from North Africa, eastwards to the Russian Far East [Schülke, Smetana,

2015]. Polyphagous in most fungal species [Horion, 1967]. In PSER recorded from Rostov and Samara regions. In Krasnodar Region nearby PSER in the mountains and foothills.

Gyrophæna (Agaricophæna) boleti (Linnaeus, 1758)

Records. Krasnodar Region [Enushchenko, Semenov, 2016]; Rostov Region [Enushchenko, Semenov, 2016; Khachikov, 2017]; Samara Region [Goreslavets, 2021]; Stavropol Region [Pushkin, Maksimova, 2014; Pushkin, Minav 2015].

Notes. Widespread in Europe, reaching East Siberia in Russia [Schülke, Smetana, 2015]. Collected in tree fungi of the genera *Polyporus*, *Trametes*, *Fomes*, *Daedalea* [Horion, 1967]. In PSER from several regions west of the Volga River. In Krasnodar Region both in the plains and mountains.

Gyrophæna (Gyrophæna) caucasica Strand, 1939

Records. Crimea Republic [Glotov, 2014; Enushchenko, Semenov, 2016]; Krasnodar Region [Enushchenko, Semenov, 2016]; Rostov Region [Enushchenko, Semenov, 2016; Khachikov, 2017].

Notes. Distributed in the North and West Caucasus and adjacent territories, and in Asia Minor [Schülke, Smetana, 2015; Assing, Schülke, 2019]. In PSER in several regions on agaric fungi; in particular in Krasnodar Region both in the plain forest patches and the westernmost foothills of the Caucasus.

Gyrophæna (Gyrophæna) fasciata (Marsham, 1802)

Records. Crimea Republic ? [Enushchenko, Semenov, 2016]; Rostov Region [Enushchenko, Semenov, 2016; Khachikov, 2017]; Samara Region [Goreslavets, 2004, 2021].

Notes. Widespread in Central and Northern Europe, European Russia, the Caucasus, Asia Minor and Siberia [Enushchenko, Semenov, 2016]. In Europe mostly collected from *Polyporus squamosus* and *Pholiota* fungi [Horion, 1967]. In PSER found in Rostov and Samara regions only. Records from Crimea come from the foothills.

Gyrophæna (Gyrophæna) gentilis Erichson, 1839

Records. Krasnodar Region [Enushchenko, Semenov, 2016]; Rostov Region [Enushchenko, Semenov, 2016; Khachikov, 2017]; Samara Region [Goreslavets, 2004, 2021].

Notes. Distributed in Central and Northern Europe, the Caucasus, Asia Minor, Middle Asia and Siberia [Enushchenko, Semenov, 2016]. Reported from various fungi [Horion, 1967]. In PSER in several regions west of the Volga River. In Krasnodar Region from plains to mountains.

Gyrophæna (Gyrophæna) joyi Wendeler, 1924
(Fig. 8M)

Records. Crimea Republic ? [Enushchenko, Semenov, 2016]; Krasnodar Region [Enushchenko, Semenov, 2016];

Rostov Region [Enushchenko, Semenov, 2016; Khachikov, 2017]; Samara Region [Goreslavets, 2004, 2021]; Saratov Region [Sazhnev, Mironova, 2019; Sazhnev et al., 2019a]; Volgograd Region [Grebennikov, 2002a; Enushchenko, Shavrin, 2011; Enushchenko, Semenov, 2016].

Notes. Distributed from Europe to Western and Central Asia and East Siberia [Schülke, Smetana, 2015; Enushchenko, Semenov, 2016]. On various fungi [Horion, 1967]. In PSER nearly everywhere west of the Volga River; in Krasnodar Region from plains to mountains. Records from Crimea Republic come from the mountains.

Gyrophæna (Gyrophæna) joyioides Wüsthoff, 1937

Records. Crimea Republic ? [Glotov, 2011]; Rostov Region [Enushchenko, Semenov, 2016; Khachikov, 2017]; Samara Region [Goreslavets, 2004, 2021].

Notes. Widespread in Europe, south to Asia Minor and east to West Siberia [Schülke, Smetana, 2015]. On various fungi [Horion, 1967]. In PSER in northern regions west of the Volga River. Records from Crimea Republic come from the mountains.

Gyrophæna (Gyrophæna) lucidula Erichson, 1837

Records. Krasnodar Region [Enushchenko, Semenov, 2016]; Rostov Region [Enushchenko, Semenov, 2016; Khachikov, 2017]; Samara Region [Goreslavets, 2004, 2021]; Saratov Region [Enushchenko, Semenov, 2016; Sazhnev et al., 2017]; Volgograd Region [Grebennikov, 2002a; Enushchenko, Semenov, 2016].

Notes. Widespread throughout Europe including European Russia, also in North Africa, the Caucasus and Asia Minor [Schülke, Smetana, 2015]. On fungi, especially Polyporus squamosus [Horion, 1967]. In PSER found in several regions; in Krasnodar Region reported from plains, from Krymsk.

Gyrophæna (Gyrophæna) manca Erichson, 1839

Records. Krasnodar Region [Enushchenko, Semenov, 2016]; Rostov Region [Enushchenko, Semenov, 2016; Khachikov, 2017]; Samara Region [Goreslavets, 2004, 2021]; Saratov Region [Sazhnev, Mironova, 2019; Sazhnev et al., 2019a]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread in Europe, eastwards to East Siberia and Central Asia [Schülke, Smetana, 2015]. Mostly found on woody fungi (Ganoderma) and under bark of beach stumps [Enushchenko, Semenov, 2016]. In PSER in northern regions and Krasnodar Region. In Krasnodar Region also found at higher elevations next to PSER.

Gyrophæna (Gyrophæna) munsteri Strand, 1935

Records. Krasnodar Region [Enushchenko, Semenov, 2016].

Notes. Widespread in Europe, reaching the Caucasus region and southern Siberia in the east [Enushchenko, Semenov, 2016]. Found on Gomphidius viscidus and Inocybe geophylla fungi [Horion, 1967]. In PSER so far known only from the lowlands of Krasnodar Region.

Gyrophæna (Gyrophæna) nitidula (Gyllenhal, 1810)

Records. Crimea Republic ? [Enushchenko, Semenov, 2016]; Krasnodar Region ? [Enushchenko, Semenov, 2016]; Samara Region [Goreslavets, 2004, 2021].

Notes. Distributed in Central and Northern Europe, eastwards to East Siberia [Schülke, Smetana, 2015]. Found in hilly and mountainous areas in deciduous forests on large agaric fungi [Horion, 1967]. In PSER found only in Krasnosamarskiy forest in Samara Region. Other records from Samara Region come from unspecified localities and maybe outside PSER. In Krasnodar Region and Crimea recorded next to PSER from foothills to the elevations around 1200 m.

[*Gyrophæna (Gyrophæna) obsoleta* Ganglbauer, 1895]

Records. Samara Region ? [Goreslavets, 2021].

Notes. Widespread in Central Europe, recorded in East Siberia [Schülke, Smetana, 2015]. In tree fungi on ash trees and in fungusy leaf litter (together with *G. pulchella*) [Horion, 1967]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

Gyrophæna (Gyrophæna) poweri Crotch, 1867

Records. Samara Region [Goreslavets, 2004, 2021].

Notes. Widely distributed from Western Europe to the Russian Far East [Schülke, Smetana, 2015]. Reported from various fungi, especially species growing on old tree trunks and stumps (*Pholiota mutabilis* etc.) [Horion, 1967]. Among few records from Samara Region only a record from Krasnosamarskiy forest comes from PSER. Other records lack geographic precision and may also be outside PSER.

Gyrophæna (Gyrophæna) pulchella Heer, 1839

Records. Samara Region [Goreslavets, 2016a, 2021].

Notes. Widespread throughout Europe, eastwards to East Siberia [Schülke, Smetana, 2015]. In various fungi [Horion, 1967]. Among few records from Samara Region only a record from Krasnosamarskiy forest comes from PSER. Other records lack geographic precision and may also be outside PSER.

Gyrophæna (Gyrophæna) rousi Dvořák, 1966

Records. Samara Region [Goreslavets, 2004, 2021].

Notes. Distributed in Central and Northern Europe, recorded from Korean Peninsula [Schülke, Smetana, 2015]. Among few records from Samara Region only a record from Krasnosamarskiy forest come from PSER. Other records lack geographic precision and may also be outside PSER.

[*Gyrophæna (Gyrophæna) rugipennis*
Mulsant et Rey, 1861]

Records. Crimea Republic ? [Enushchenko, Semenov, 2016]; Krasnodar Region ? [Enushchenko, Semenov, 2016]; Samara Region ? [Goreslavets, 2021].

Notes. Widely distributed from Central Europe to the Russian Far East [Schülke, Smetana, 2015]. Found on small agaric fungi and on decaying beech stumps, together with other *Gyrophæna* species [Horion, 1967]. Next to PSER found in the foothills of the Caucasus in Krasnodar Region at an altitude of 780 m and in South Crimea. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

Gyrophæna (Phænogyra) strictula Erichson, 1839

Records. Crimea Republic ? [Enushchenko, Semenov, 2016]; Samara Region [Goreslavets, 2016a, 2021].

Notes. Widely distributed from Western Europe to East Siberia [Schülke, Smetana, 2015]. Often found in large numbers on fungi, especially on the tree sponge *Daedalea quercina* [Horion, 1967]. The only PSER records comes from Krasnosamarskiy forest. We are not certain if other records from Samara Region belong to PSER because they lack geographic details within the region level. In Crimea recorded next to PSER in the mountains.

Gyrophæna (Gyrophæna) williamsi Strand, 1935

Records. Samara Region [Goreslavets, 2016a, 2021].

Notes. Widespread in Europe, eastwards to East Siberia [Schülke, Smetana, 2015]. Found in *Tricholoma rutilans* and various other fungi, sometimes in large numbers [Horion, 1967]. The only PSER records comes from Krasnosamarskiy forest. We are not certain if other records from Samara Region belong to PSER because they lack geographic details within the region level.

[?! *Halobrecta algae* (Hardy, 1851)]

Records. Samara Region ? [Goreslavets, 2014].

Notes. Coastal species, widespread in Europe, also in North Africa and Asia Minor [Frank, Ahn, 2011; Schülke, Smetana, 2015]. Mostly found on beaches under seaweed [Haghebaert, 1989; Assing, 2016b]. The only unspecified record from PSER is from the freshwater coast of Samara Region and has yet to be confirmed.

Haploglossa nidicola (Fairmaire, 1853)
(Fig. 11E)

Records. Saratov Region [Sazhnev, Kondratiev, 2020]; Stavropol Region [Pushkin, Maksimova, 2014; Pushkin, Minav, 2015].

Notes. Widespread in Europe [Schülke, Smetana, 2015]. In clay and loess slopes and embankments, steep banks; in nests of sand martins [Horion, 1967]. In PSER found in Khvalynsk District of Saratov Region and next to PSER in the Stavropol Region at altitudes of 2500–2700 m and in nests of sand martins.

[? *Holobus apicatus* (Erichson, 1837)]
(Fig. 8G)

Notes. Widespread in Europe, recorded in Turkey and “Caucasus” [Schülke, Smetana, 2015; Kapp, 2019].

Occurs on tree fungi and in various decaying plant matter, also as synanthropic [Kapp, 2019]. In PSER not recorded; here included because of the old material from “Caucasus” without more precise data listed in Kapp [2019].

Homalota plana (Gyllenhal, 1810)
(Fig. 9L)

Records. Astrakhan Region [Grebennikov, 2002a]; Samara Region [Goreslavets, 2004]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread from North Africa and Europe to the Russian Far East and the Korean Peninsula; introduced in North America [Schülke, Smetana, 2015]. Under rotten bark of deciduous trees, sometimes under bark of conifers and fire damaged trees; often together with *Placusa atrata* [Horion, 1967]. In PSER recorded from the Volga River basin.

Hygronoma dimidiata (Gravenhorst, 1806)
(Fig. 8R)

Records. Samara Region [Goreslavets, 2004, 2014]; Saratov Region [Sazhnev, 2013a]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread in the Palaearctic, eastwards to the Russian Far East [Schülke, Smetana, 2015]. Hygrophilous, inhabits swamps and bogs, often on pond banks, especially under *Carex* reeds [Horion, 1967]. In PSER found so far only in three northern regions in the Volga River basin.

Ilyobates bennetti Donisthorpe, 1914

Records. Krasnodar Region [Assing, 1999a]; Samara Region ? [Goreslavets, 2014].

Notes. Widespread throughout Europe, eastwards to East Siberia; introduced in North America [Schülke, Smetana, 2015]. Politopic, common in agricultural and urban biotopes, from swamps, bogs, floodplains, river banks, to meadows and dry grasslands; occurs in leaf litter, moss, Sphagnum, in compost and other rotting debris [Assing, 1999a]. In PSER so far recorded from the plains of Krasnodar Region. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

[? *Ilyobates mech* (Baudi di Selve, 1848)]

Notes. Confined to Europe except northern; a specimen from “Caucasus” maybe a case of mislabelling [Assing, 1999a]. No records from PSER.

[?! *Ilyobates nigricollis* (Paykull, 1800)]
(Fig. 11K)

Records. Rostov Region [Minoranskiy, Lomakin, 1978].

Notes. Widespread in Europe, also in North America [Schülke, Smetana, 2015]. In Europe found in damp forests and forest edges; in leaves and moss, in the Alps up to 2000 m altitude, sometimes probably accidental findings

with *Lasius* and *Myrmica* Latreille, 1804 ants [Assing, 1999a], in mole nests [Koch, 1989]. In PSER so far only found in Rostov Region, this old record requiring revision.

Ischnopoda leucopus (Marsham, 1802)

Records. Samara Region [Goreslavets, 2004, 2014].

Notes. Widespread from Europe to East Siberia [Schülke, Smetana, 2015]. At river banks, sometimes along streams; both in open terrain and in shady riparian forests, more on sandy than muddy ground [Horion, 1967]. In PSER found in Krasnosamarskiy forest. Other Samara Region records lack geographic precision and may also come outside PSER.

[? *Liogluta funesta* Eppelsheim, 1890]

Notes. Known only from the original description from "Caucasus" [Eppelsheim, 1890] which only potentially maybe from PSER.

[*Liogluta microptera* Thomson, 1867]
(Fig. 9C)

Records. Samara Region ? [Goreslavets, 2021].

Notes. Species with a wide distribution in Europe, eastwards to Asia Minor; also recorded from northeastern China [Schülke, Smetana, 2015]. Can be collected by sifting litter in mixed forests (fir, pine, beech) [Assing, 2010b]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

Lomechusa emarginata (Paykull, 1789)
(Fig. 11G)

Records. Samara Region [Goreslavets, 2004, 2016b]; Volgograd Region [Grebennikov, 2002a; Makarov et al., 2009; Grebennikov, Riga, 2014].

Notes. Confined to Europe including European Russia [Schülke, Smetana, 2015]. Found in forests and forest edges; in spring and summer with *Formica fusca* ants, in autumn and winter in *Myrmica rubra* (Linnaeus, 1758), sometimes also in *Formica sanguinea*, *Polyergus rufescens* (Latreille, 1798) and *Lasius* ant nests [Horion, 1967]. In PSER so far found in two regions of the Volga River basin.

[*Lomechusa pubicollis* Brisout de Barneville, 1860]

Records. Samara Region ? [Goreslavets, 2016b].

Notes. Widespread in Europe including European Russia [Schülke, Smetana, 2015]. In forests and forest edges; in spring and summer under stones near *Formica rufa* ant nests, in autumn and winter near *Myrmica* nests [Horion, 1967]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

Lomechusoides strumosus (Fabricius, 1792)
(Fig. 11F)

Records. Samara Region [Goreslavets, 2016a, b].

Notes. Widely distributed from Western Europe to Central Asia and the Russian Far East [Schülke, Smetana, 2015]. Mostly found with *Formica* and *Myrmica* ants [Hlaváč et al., 2011]. In PSER recorded only from Krasnosamarskiy forest. Other Samara Region records lack geographic precision and may come from outside PSER.

[*Lomechusoides teres* (Eppelsheim, 1884)]

Records. Samara Region ? [Goreslavets, 2016b].

Notes. Occurs in Northern Europe, including northern European Russia; as well as in the Caucasus region [Hlaváč et al., 2011]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

[*Lyprocorrhe anceps* (Erichson, 1837)]
(Fig. 9M)

Records. Samara Region ? [Goreslavets, 2016b].

Notes. Widespread in Europe, eastwards to Central Asia and East Siberia [Schülke, Smetana, 2015]. In Europe found in ant nests, especially those of *Formica* [Horion, 1967]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

[*Megaloscapa punctipennis* (Kraatz, 1856)]

Records. Samara Region ? [Goreslavets, 2014].

Notes. European species, eastwards to Asia Minor [Schülke, Smetana, 2015]. According to Vogel [1982], apparently subterranean with a short swarming period in Europe in March-April, when it is found mainly in the grass of forests. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

[*Mocyta ampicollis* (Mulsant et Rey, 1873)]

Records. Samara Region ? [Goreslavets, 2021].

Notes. Widespread in Europe, eastwards to West Siberia and Mongolia [Schülke, Smetana, 2015]. Found in moist mixed forests and wet meadows, in leaf litter and moss [Josefsen, 2014]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

Mocyta fungi (Gravenhorst, 1806)
(Fig. 9O)

Records. Astrakhan Region [Grebennikov, 2002a]; Rostov Region [Pushkin, 2015]; Samara Region [Goreslavets, 2004, 2014, 2021]; Stavropol Region [Pushkin, Maksimova, 2014; Pushkin, Minav, 2015]; Volgograd Region [Grebennikov, 2002a; Makarov et al., 2009].

Notes. Widespread from Europe to the Russian Far East; introduced in North America [Schülke, Smetana, 2015]. Found in various forest types and wetlands, on river banks, in leaf litter, in soil down to 20 cm deep, in rotting vegetation and in material from rodent burrows; occurs at

altitudes up to 1500 m [Josefsen, 2014]. In PSER found in several regions.

[*Myllaena elongata* (Matthews, 1838)]

Records. Samara Region ? [Goreslavets, 2014].

Notes. European species [Schülke, Smetana, 2015]. Occurs in moist moss and similar debris near water bodies [Horion, 1967]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

Myllaena infuscata Kraatz, 1853

Records. Samara Region [Goreslavets, 2004, 2014].

Notes. Distributed from Western Europe to Western Asia and the Caucasus [Schülke, Smetana, 2015]. In marshy meadows under moss, in swamps in moist Sphagnum, often together with other *Myllaena* species [Horion, 1967]. In PSER so far known only from Krasnosamarskiy forest. Other records from Samara Region are not specified and may also come outside PSER.

Myllaena intermedia Erichson, 1837
(Fig. 9Q)

Records. Astrakhan Region [Grebennikov, 2002a]; Samara Region [Goreslavets, 2004, 2014]; Saratov Region [Sazhnev, 2013a]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread from Western Europe to the Caucasus region and the Russian Far East; introduced in North America [Schülke, Smetana, 2015]. Like all *Myllaena* species, very hygrophilous, found in swamps and bogs on decaying substances (reeds, alder leaves), in moist mosses, especially Sphagnum [Horion, 1967]. In PSER so far recorded from all regions along the Volga River basin.

Myllaena minuta (Gravenhorst, 1806)

Records. Samara Region [Goreslavets, 2004, 2014].

Notes. Widespread in Europe, eastwards to East Siberia [Schülke, Smetana, 2015]. Mostly found in swamp and bog areas, especially on Sphagnum or other detritus [Horion, 1967]. In PSER so far known only from Krasnosamarskiy forest. Other records from Samara Region are not specified and may also come outside PSER.

[?! *Myrmecopora crassiuscula* Aubé, 1850]

Records. Astrakhan Region ? [Grebennikov, 2002a].

Notes. Known only from the type specimen from surroundings of Batumi in Georgia, which has apparently been lost; identity of this species remained unclear [Assing, 1997a]. A few specimens reported as this species were found in the water edge habitat in Volgograd Region, their identity must be confirmed.

Myrmecopora uvida (Erichson, 1840) (*Xenusa*)

Records. Krasnodar Region [Assing, 1997a, 2001a].

Notes. Distributed in Europe except Northern,

recorded in "Caucasus" [Schülke, Smetana, 2015]. In Spain, Assing [2010a] reported this rare species from beech forests at 1200 m altitude. In PSER recorded only from Taman and Krymsk towns in Krasnodar Region.

[? *Myrmoeia confragosa* Hochhuth, 1849]

Notes. Described from "Caucasus" [Hochhuth, 1849] and recorded in Central and Southern Europe. Never recorded in PSER; here included because of uncertain origin in the Caucasus.

Nehemitropia lividipennis (Mannerheim, 1830)
(Fig. 9D)

Records. Astrakhan Region [Pushkin, 2015, 2016]; Saratov Region [Sazhnev, 2013b], Stavropol Region [Pushkin, Maksimova, 2014; Pushkin, Minav, 2015]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a].

Notes. Widespread from Western Europe to Japan [Schülke, Smetana, 2015]. Inhabits various decaying materials such as hay, manure, compost, fungi or carrion, occasionally in animal burrows. In PSER found in several regions; on carrion [Pushkin, 2015, 2016], and on the lake shore [Sazhnev, 2013b].

Notothecta confusa (Märkel, 1844)
(Fig. 9P)

Records. Samara Region [Goreslavets, 2004].

Notes. Widespread in Europe [Schülke, Smetana, 2015]. Myrmecophilous, associated with *Lasius fuliginosus* (Latreille, 1978) ants; but also possible in nests of various *Formica* species [Horion, 1967]. In PSER so far known only from Krasnosamarskiy forest in Samara Region, from *Formica pratensis* Retzius, 1783 nests.

Notothecta flavipes (Gravenhorst, 1806)

Records. Samara Region [Goreslavets, 2004, 2016b]; Volgograd Region [Grebennikov, 2002a; Grebennikov, Riga, 2014].

Notes. Widespread in Europe, eastwards to East Siberia [Schülke, Smetana, 2015]. Myrmecophilous, associated with *Formica* ants [Horion, 1967]. In PSER known from Krasnosamarskiy forest in Samara Region and the environs of Volgograd city in Volgograd Region, collected from *Formica pratensis* nests. Some records from Samara Region are not specified and may also come outside PSER.

Ocalea badia Erichson, 1837
(Fig. 11B)

Records. Astrakhan Region [Grebennikov, 2002a]; Samara Region [Goreslavets, 2004, 2014, 2016b, 2021]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread in Europe, eastwards to East Siberia [Schülke, Smetana, 2015]. Hygrophilous, both near running and stagnant water; often in forest ponds and

swampy places in leaf litter or moss [Knopf, 1961]. In PSER so far known from several regions along the Volga River basin.

Ocalea rivularis Miller, 1852

Records. Volgograd Region [Grebennikov, 2002a].

Notes. Widespread in Europe, reaching the Caucasus [Schülke, Smetana, 2015]. Found on the banks of mountain streams (up to over 1000 m), also on lake and river shores [Horion, 1967]. In PSER known only from Volgograd Region.

[? *Ocalea robusta* Bernhauer, 1902]

Notes. European species confined to Central and Southeastern Europe [Schülke, Smetana, 2015], with old unclear records from "Caucasus". No unambiguous records from PSER.

[*Oligota pumilio* Kiesenwetter, 1858]

Records. Crimea Republic ? [Kapp, 2019].

Notes. Widespread throughout Europe, from France to eastern Turkey, the Caucasus region, and Crimea Peninsula, north to Finland, south to Greece and southern Italy [Kapp, 2019]. According to Schülke and Smetana [2015], the species is also known from North Africa, the Nearctic and the Neotropical regions. Occurs in all habitats from lowlands to subalpine zone; found in hollow trees, in leaf litter and other decaying plant matter, in hay and other mouldy substrates, in agaric fungi and once in a mole nest; also occurs in ant nests of *Formica* and *Lasius* ants [Kapp, 2019]. In PSER so far only known from Evpatoria in Crimea.

[? *Oligota recta* Kapp, 2004]

Notes. This rare species is known from fragmentary material from Austria, Turkey, and the Caucasus; specimens from Anatolia were found in mid-June on a riverbank under bushes of *Tamarix* sp. [Kapp, 2019]. No records from PSER; here included because of general records from "Caucasus".

Oxypoda (Sphenoma) abdominalis (Mannerheim, 1830)

Records. Samara Region [Goreslavets, 2004, 2014, 2016b]; Volgograd Region [Grebennikov, 2002a].

Notes. According to Schülke and Smetana [2015], *O. abdominalis* is distributed from West Europe to the Russian Far East. Found in forests in moist leaf litter and moss, on carrion, fungi etc. [Horion, 1967]. In PSER so far known only from Volgograd Region and from Krasnosamarskiy forest in Samara Region. Other records from Samara Region are not specified and may also come outside PSER.

Oxypoda (Oxypoda) acuminata (Stephens, 1832)
(Fig. 11)

Records. Samara Region [Goreslavets, 2014, 2016b]; Stavropol Region [Pushkin, Maksimova, 2014; Pushkin, Minav, 2015; Pushkin, 2015, 2016].

Notes. Widespread in Europe, eastwards to West Siberia [Schülke, Smetana, 2015]. Occurs in various decaying matters such as manure, compost, carrion, etc., in gopher burrows, leaf litter or on fungi [Mihailov, 2016]. In PSER recorded only from Samara Region and Stavropol Region, in diverse habitats.

Oxypoda (Baeoglana) caucasica Bernhauer, 1902

Records. Rostov Region [Pushkin, 2015, 2016]; Stavropol Region [Pushkin, Maksimova, 2014; Pushkin, 2015; Pushkin, Minav, 2015]; Samara Region [Goreslavets, 2016a, b].

Notes. Widespread from southern Ukraine and northwestern Anatolia through the Caucasus region to northern Iran [Assing, 2019a]. Found in various forest habitats and near streams at altitudes from 140 to 2350 m in leaf litter, roots, moss, and bark [Assing, 2019a]. Known in PSER from several regions; recorded from carrion [Pushkin, 2015] and in *Formica* nests [Goreslavets, 2016a, b]. Record from Stavropol Region comes from environs of Stavropol city.

[*Oxypoda (Bessopora) ferruginea* Erichson, 1839]

Records. Samara Region ? [Goreslavets, 2016b].

Notes. Widespread in North Africa and Europe, eastwards to Asia Minor [Schülke, Smetana, 2015]. In rotting debris near water, in moss, on fields and forest edges under stones, at the base of old trees, in sandy places such as coastal dunes, etc. [Horion, 1967]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

Oxypoda (Bessopora) haemorrhoea (Mannerheim, 1830)

Records. Samara Region [Goreslavets, 2016a, b].

Notes. Widespread in North Africa and Europe, eastwards to East Siberia [Schülke, Smetana, 2015]. More common in hilly and mountainous areas, where it occurs up to the subalpine zone; found in *Formica* ant nests and often without ants, e.g. in compost [Horion, 1967]. In PSER so far known only from Krasnosamarskiy forest. Other records from Samara Region are not specified and may also come from outside PSER.

Oxypoda (Deropoda) mutata Sharp, 1871

Records. Volgograd Region [Grebennikov, 2002a].

Notes. European species, eastwards probably to Asia Minor [Assing, 2012a; Schülke, Smetana, 2015]. From PSER so far only known from Volgograd Region collected at river banks.

[? *Oxypoda (Baeoglana) nova* Bernhauer, 1902]

Records. Samara Region ? [Goreslavets, 2016a, b].

Notes. Distributed in Southern Europe and Asia Minor [Schülke, Smetana, 2015; Assing, 2019a]. Usually collected by sifting leaf litter and roots in various forest and scrub habitats, also found in swamps and on stream banks;

occurs at altitudes from 400 to 2070 m [Assing, 2019a]. In PSER so far known only from Krasnosamarskiy forest. Other records from Samara Region are not specified and may also come outside PSER. Due to some discrepancy of the PSER record with the known distribution, it needs verification.

Oxypoda (Oxypoda) opaca (Gravenhorst, 1802)
(Fig. 11D)

Records. Astrakhan Region [Grebennikov, 2002a]; Stavropol Region [Pushkin, Maksimova, 2014; Pushkin, Minav, 2015].

Notes. Widespread from Western Europe to the Russian Far East, introduced in North America [Schülke, Smetana, 2015]. One of the most common *Oxypoda* species, occurring both in lowlands and in the mountains, in the Alps to the subalpine zone; lives in decaying matter of all kinds [Horion, 1967]. In PSER recorded from Dosang town in Astrakhan Region and from environs of Stavropol in Stavropol Region. Next to PSER known from the Caucasus foothills in Stavropol Region, collected from carrion at an altitude of about 460 m [Pushkin, 2015].

Oxypoda (Baeoglena) praecox Erichson, 1839

Records. Samara Region [Goreslavets, 2016a, b; Assing 2019a].

Notes. Widespread from Central Europe to East Siberia [Assing, 2019a]; collected in a wide range of habitats, from wet debris near standing or flowing water to grasslands or urban habitats; occurs in leaf litter, in mammal and ant nests, in hollow trees and in the straw of field barns [Assing, 2019a]. In PSER so far known only from Krasnosamarskiy forest. Other records from Samara Region are not specified and may also come outside PSER.

[?! *Oxypoda (Podoxya) skalitzkyi* Bernhauer, 1902]

Records. Samara Region ? [Goreslavets, 2004, 2014].

Notes. According to Horion [1967] and Schülke and Smetana [2015], the range extends from Northern and Central Europe to northern Italy, northern Balkans, Alps and Carpathians in Romania, Hungary, Slovakia and Poland; occurs in montane and subalpine forests under coniferous litter, in dead wood, also in compost. In PSER so far known only from Krasnosamarskiy forest. Other records from Samara Region are not specified and may also come outside PSER. Due to significant distance of the PSER records from the known range of the species, this record must be proven.

Oxypoda (Oxypoda) spectabilis Märkel, 1844

Records. Volgograd Region [Grebennikov, 2002a].

Notes. Widespread in Europe including European Russia [Schülke, Smetana, 2015]. Mostly found in forest litter; on fungi, in moss on stumps and trunks, in winter usually caught in subterranean nests of small mammals, in the Alps in marmot burrows [Horion, 1967]. In PSER so far known only from a specimen from Volgograd Region.

Parocysa rubicunda (Erichson, 1837)

Records. Volgograd Region [Grebennikov, 2002a].

Notes. Widespread in Europe, eastwards to Middle Asia [Schülke, Smetana, 2015]. Hygrophilous species, occurring near flowing waters, but also at muddy banks of ponds, in damp places in sand and clay pits, in swamps on rotting matter, tufts of grass and other vegetation; common on seashores [Horion, 1967]. From PSER so far only known from Volgograd Region, collected on river banks.

Pella cognata (Märkel, 1842)

Records. Samara Region [Goreslavets, 2004, 2014, 2016b].

Notes. Widespread in Europe, eastwards to West Siberia [Schülke, Smetana, 2015]; collected from nests of *Lasius fuliginosus* ants, relatively rare and local in Europe [Franc, 1992]. In PSER so far known only from Krasnosamarskiy forest. Other records from Samara Region are not specified and may also come outside PSER.

Pella funesta (Stephens, 1832)

Records. Samara Region [Goreslavets, 2004, 2016b]; Volgograd Region [Grebennikov, Riga, 2014].

Notes. Widely distributed in Europe, also in North Africa and Asia Minor [Schülke, Smetana, 2015]. Common species collected around *Lasius fuliginosus* ant nests [Franc, 1992]. In PSER so far known only from two regions in the Volga River basin, collected on the forest floor, sometimes in river floodplains [Goreslavets, 2004], in ant nests [Goreslavets, 2016b], and specifically in the nest of *Lasius fuliginosus* [Grebennikov, Riga, 2014].

Pella humeralis (Gravenhorst, 1802)

Records. Samara Region [Goreslavets, 2004, 2016b]; Volgograd Region [Grebennikov, 2002a; Grebennikov, Riga, 2014].

Notes. Widespread from Europe to East Siberia [Schülke, Smetana, 2015]. Common, associated with ants of the *Formica rufa* group and with *Lasius fuliginosus*, collected near their nests [Maruyama, 2006]. In PSER so far known only from Samara and Volgograd regions, where it has been reported from the forest floor and sometimes from compost or abandoned anthills in the upper floodplain [Goreslavets, 2004], and in *Formica* nests [Grebennikov, 2002a; Goreslavets, 2016b].

Pella limbata (Paykull, 1789)

Records. Samara Region [Goreslavets, 2016a, b]; Saratov Region [Kovalev et al., 2011]; Volgograd Region [Grebennikov, Riga, 2014].

Notes. Broadly distributed in Europe, eastwards to East Siberia [Schülke, Smetana, 2015]. Commonly collected from leaf litter around *Lasius fuliginosus* ant the nests, but detailed information on the association of this species with ants has not yet been reported [Maruyama, 2006]. Found in PSER in several regions of the Volga River basin, in *Lasius*

nests [Grebennikov, Riga, 2014; Goreslavets, 2016b], and in the burrow of *Marmota bobak* (Müller, 1776) [Kovalev et al., 2011].

Pella lugens (Gravenhorst, 1802)
(Fig. 9E)

Records. Volgograd Region [Grebennikov, 2002a; Grebennikov, Riga, 2014].

Notes. Widespread in Europe and Middle Asia [Schülke, Smetana, 2015]. Mostly found in nests of *Lasius fuliginosus* ants, as well as in *L. brunneus* and rarely in *Liometopum microcephalum* (Panzer, 1978); often in old trees occupied by *Lasius* and in litter or moss at the base of such trunks [Horion, 1967]. In PSER so far found only in Volgograd Region, with *Lasius fuliginosus*.

Pella similis (Märkel, 1844)

Records. Volgograd Region [Grebennikov, 2002a; Grebennikov, Riga, 2014].

Notes. Distributed in Central and Southern Europe, also in Asia Minor [Maruyama, 2006]. This rare species, associated with *Lasius fuliginosus* and *Liometopum microcephalum* ants, is collected around their nests [Maruyama, 2006]. From PSER only one specimen is known from Volgograd Region, collected in a nest of *Lasius* ants.

[?! *Phanerota fasciata* Say, 1832]

Records. Samara Region ? [Goreslavets, 2021].

Notes. Native to the Nearctic [Brunke et al., 2021], where it is most abundant on fruiting bodies of mushrooms of the genera *Russula* and *Lactarius* [Ashe, 1981]. Included here because of a single geographically unspecified record from fungi in Samara Region; it is the only record of this species from the Palaearctic region that must be verified.

Phloeopora corticalis (Gravenhorst, 1802)
(Fig. 11M)

Records. Samara Region [Goreslavets, 2004, 2014, 2016a].

Notes. Widespread in Europe, recorded in North Africa, eastwards to Asia Minor [Schülke, Smetana, 2015]. Found under tree bark in various forest types, woodlands or single trees [Horion, 1967]. In PSER known only from Krasnosamarskiy forest. Other records from Samara Region are not specified and may also come outside PSER.

Phloeopora scribae Eppelsheim, 1884

Records. Samara Region [Goreslavets, 2016a].

Notes. Widespread in Europe including European Russia [Schülke, Smetana, 2015; Egorov et al., 2020]. Records from Russia need to be verified since the species is often confused with *Phloeopora terres* (Oleg Semionov, personal communication). In PSER so far recorded from Samara Region, from Krasnosamarskiy forest, from under bark of fallen pines.

Phloeopora teres (Gravenhorst, 1802)

Records. Volgograd Region [Grebennikov, 2002a].

Notes. Common in Europe and Asia Minor [Schülke, Smetana, 2015]. Found under bark of various tree types, also in the tunnels of bark beetle *Scolytus intricatus* Wood et Bright, 1992 [Horion, 1967]. In PSER so far known only from one specimen from Volgograd Region collected under the bark.

Placusa atrata (Mannerheim, 1830)

Records. Samara Region [Goreslavets, 2004].

Notes. Widespread from Western Europe to the Russian Far East [Schülke, Smetana, 2015]. Found under rotten conifer bark on dying trunks and stumps; in Northern Europe particularly common under bark of burnt birch and grey alder on the *Trichoderma lignorum* mould [Horion, 1967]. From PSER so far only known from Krasnosamarskiy forest in Samara Region.

Placusa complanata Erichson, 1839

Records. Samara Region [Goreslavets, 2004].

Notes. Widespread in Europe, eastwards to East Siberia and Mongolia [Schülke, Smetana, 2015]. Under rotten bark, especially of pines and spruces; often together with other *Placusa* species [Horion, 1967]. In PSER so far known only from Krasnosamarskiy forest in Samara Region.

Placusa incompleta Sjöberg, 1934

Records. Samara Region [Goreslavets, 2004].

Notes. European species, introduced in North America [Schülke, Smetana, 2015]. Occurs mostly under coniferous bark, rarely under hardwood bark (aspen, birch), occasionally also on tree sap and in fungi [Horion, 1967]. In PSER so far known only from Krasnosamarskiy forest in Samara Region, collected under pine bark.

Placusa pumilio (Gravenhorst, 1802)

Records. Samara Region [Goreslavets, 2016a].

Notes. Widespread in Europe, eastwards to East Siberia [Schülke, Smetana, 2015]. Mostly under rotten tree bark, infected by Scolytidae [Horion, 1967]. In PSER so far known only from Krasnosamarskiy forest in Samara Region, on mouldy cuts of a pine trunk.

Placusa tachyporoides (Waltl, 1838)
(Fig. 9F)

Records. Samara Region [Goreslavets, 2004].

Notes. Widespread from Western Europe to Japan, introduced in North America [Schülke, Smetana, 2015]. Occurs under bark of recently fallen trees; sometimes in fungi such as *Fomes fomentarius* [Horion, 1967]. From PSER so far known only from Krasnosamarskiy forest in Samara Region.

Pronomaea rostrata Erichson, 1837

Records. Volgograd Region [Grebennikov, 2002a].

Notes. Species with Atlanto-Mediterranean distribution, ranging from North Africa and the Iberian Peninsula to Poland and Ukraine [Assing, 2007b]. It is bound to damp habitats and is found in damp moss at the altitudes up to 1900 m [Assing, 2007b]. From PSER the only specimen is currently known from Volgograd Region, collected near water.

Pycnota paradoxa (Mulsant et Rey, 1861)
(Fig. 9G)

Records. Astrakhan Region [Kirschenblatt, 1938]; Kalmykia Republic [Kirschenblatt, 1938]; Rostov Region [Kirschenblatt, 1938]; Samara Region [Kirschenblatt, 1938]; Saratov Region [Kirschenblatt, 1938]; Stavropol Region [Kirschenblatt, 1938; Pushkin, Maksimova, 2014; Pushkin, Minav, 2015; Pushkin, 2015, 2016]; Volgograd Region [Kirschenblatt, 1938].

Notes. Common in Europe, eastwards to Asia Minor [Schülke, Smetana, 2015]. In PSER known from all regions along the Volga River basin.

[? *Silusa areolata* Reitter, 1888]

Notes. This species was described from “Caucasus” without further details on the locality or bionomics; it is also known from lowlands and higher altitudes of Asia Minor [Assing, 2002a; Schülke, Smetana, 2015]. No unambiguous records from PSER.

[? *Silusa uniplicata* Reitter, 1888]

Notes. This species was described from “Caucasus” without further details on the locality or bionomics. No unambiguous records from PSER.

Tachyusa coarctata Erichson, 1837
(Fig. 8P)

Records. Samara Region [Goreslavets, 2014]; Volgograd Region [Grebennikov, 2002a].

Notes. Based on Pašnik [2006], widespread in the Palaearctic, from France and Italy in the west to the Caucasus in the east; however according to Schülke and Smetana [2015] the distribution is much wider, eastwards to Japan. Occurs on the banks of slow-flowing and stagnant waters, especially on muddy bottoms, in gravel; in swamps, both in open areas and in forests, even in raised bogs [Horion, 1967]. In PSER known from Mikhaylovka village in Volgograd Region. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

Tachyusa constricta Erichson, 1837
(Fig. 8N)

Records. Crimea Republic ? [Pašnik, 2006]; Samara Region [Goreslavets, 2004, 2014]; Volgograd Region [Grebennikov, 2002a; Pašnik, 2006].

Notes. Common in the West Palaearctic, from Europe to West Siberia and Altai [Pašnik, 2006; Schülke, Smetana, 2015]. Bionomics as in the above-mentioned *Tachyusa* species. From PSER so far only known from Samara and Volgograd regions. Adjacent to PSER record comes from the Crimean mountains.

Tachyusa nitella Fauvel, 1895

Records. Krasnodar Region ? [Pašnik, 2006]; Samara Region [Goreslavets, 2004, 2014]; Volgograd Region [Grebennikov, 2002a; Pašnik, 2006].

Notes. Widespread from Spain to Asia Minor and the Caucasus [Pašnik, 2006; Schülke, Smetana, 2015]. Bionomics as in *T. coarctata*. In PSER known from Samara and Volgograd regions in the Volga River basin. Adjacent to PSER found in the Caucasus foothills in Krasnodar Region.

Tachyusa objecta Mulsant et Rey, 1870

Records. Volgograd Region [Pašnik, 2006].

Notes. Widespread from North Africa and Spain in the west to the Ob River in Siberia in the east [Pašnik, 2006; Schülke, Smetana, 2015]. Bionomics as in *T. coarctata*. In PSER known only from the old material from “Sarepta” in the Lower Volga region.

Thiasophila angulata (Erichson, 1837)

Records. Samara Region [Goreslavets, 2004, 2016a, b].

Notes. Widespread from Europe to East Siberia [Schülke, Smetana, 2015]. In nests of the *Formica exsecta* ants [Horion, 1967]. In PSER so far known only from Krasnosamarskiy forest. Other records from Samara Region are not specified and may also come outside PSER.

[*Thiasophila wockii* (G. Schneider, 1862)]
(Fig. 11C)

Records. Samara Region [Goreslavets, 2016b].

Notes. European species including Northern Europe and European Russia [Schülke, Smetana, 2015]. Associated with *Camponotus* Mayr, 1861 ants [Horion, 1967]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

[? *Zoosetha inconspicua* Erichson, 1839]

Notes. Widespread in the south of the West Palaearctic, but apparently very rare [Assing, 1998]; found in the Caucasus region without a specified locality [Assing, 2003]. No unambiguous records from PSER.

Zyras collaris (Paykull, 1789)
(Fig. 9A)

Records. Samara Region [Goreslavets, 2014, 2016a, b].

Notes. Widespread in North Africa, Europe, the Caucasus, recorded in Iran; more common in the east than in the west [Horion, 1967; Schülke, Smetana, 2015].

Occurs in moist, marshy soils, near water under moss and plant debris, in tufts of grass and *Carex*; not strictly myrmecophilous although occasionally found in nest of *Lasius fuliginosus* or *Myrmica* ants [Horion, 1967]. In PSER so far known only from Krasnosamarskiy forest. Other records from Samara Region are not specified and may also come outside PSER.

[*Zyras fulgidus* (Gravenhorst, 1806)]

Records. Samara Region ? [Goreslavets, 2016b].

Notes. From southern Europe and southern Central Europe to the Caucasus and Iran; rare species everywhere [Horion, 1967; Schülke, Smetana, 2015]. Occurs in *Lasius brunneus* and in *Camponotus* ant nests but in general little is known about the myrmecophilic behaviour of this species [Horion, 1967]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

[*Zyras haworthi* (Stephens, 1832)]

Records. Samara Region ? [Goreslavets, 2004, 2016b].

Notes. Widespread in Europe, known in the Caucasus, Turkey and Iran [Horion, 1967; Schülke, Smetana, 2015]. Myrmecophilous, usually found near nests of *Lasius fuliginosus* ants [Horion, 1967]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

[? *Zyras maculipennis* Gridelli, 1921]

Notes. Distributed in the Caucasus region and Middle Asia [Schülke, Smetana, 2015; Assing, 2017a]. No records from PSER but included here because of the old "Caucasus" records and because potentially it can be expected here.

Subfamily Euaesthetinae

Euaesthetus bipunctatus (Ljungh, 1804)
(Fig. 19E)

Records. Samara Region [Goreslavets, 2004, 2014]; Volgograd Region [Grebennikov, 2002a].

Notes. Distributed from Europe to East Siberia and Middle Asia [Schülke, Smetana, 2015]. Prefers humid microhabitats, also recorded from cultivated lands and mole nests [Nowosad, 1990; Puthz, 2012]. In PSER known only from Samara and Volgograd regions.

[? *Euaesthetus fulvus* Motschulsky, 1860]

Notes. Hitherto known from the original description based on the material from Kyrgyzstan [Motschulsky, 1860] and unspecified records from "Caucasus" and "sud de la Russia" [Coiffait, 1984]. Never unambiguously recorded from PSER.

Euaesthetus laeviusculus Mannerheim, 1844

Records. Rostov Region [Khachikov, 2003, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2014].

Notes. Transpalearctic, distributed from Europe to the Russian Far East [Schülke, Smetana, 2015], introduced to Nearctic [Campbell, Davies, 1991]. Can be found in humid and swampy microhabitats [Puthz, 2012]. In PSER recorded only from Rostov and Samara regions.

[*Euaesthetus ruficapillus* (Lacordaire, 1835)]

Records. Samara Region ? [Goreslavets, 2014].

Notes. Distributed from Europe to East Siberia [Schülke, Smetana, 2015]. Prefers swampy habitats and often can be found in reed roots, leaf litter and decaying wood [Bordoni, 1995; Puthz, 2012]. Known only from the geographically unspecified localities in Samara Region, which maybe within or outside PSER limits. Old records of this species from "Caucasus" [Hochhuth, 1862; Ganglbauer, 1895; Coiffait, 1984] require revision.

Euaesthetus superlatus Peyerimhoff, 1937

Records. Rostov Region [Khachikov, 2003, 2017].

Notes. The West Palearctic, from Central and Southern Europe reaching East Siberia [Schülke, Smetana, 2015]. Usually found in warm and dry microhabitats in grass and decaying debris [Puthz, 2012], recorded from xerothermous sites [Assing, 2001b]. In PSER recorded only from Rostov Region.

Subfamily Habrocerinae

Habrocerus capillaricornis (Gravenhorst, 1806)
(Fig. 19D)

Records. Crimea Republic ? [Gusarov, 1989]; Dagestan Republic [Khachikov, 1998a]; Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets, 2002, 2016b; Goreslavets et al., 2002].

Notes. Cosmopolitan, introduced from the West Palearctic to almost all continents [Schülke, Smetana, 2015]. Usually occurs in humid microhabitats, recorded from deep layers of leaf litter, decaying organics, mushrooms and under stones; from lowlands to mountains [Gusarov, 1989; Assing, 2013a]. In PSER recorded from several southern regions east to the Volga River basin; adjacent to PSER records from Crimea come from the mountains.

Subfamily Mycetoporinae

Bolitobius castaneus (Stephens, 1832)
(Fig. 12D)

Records. Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets, 2004, 2014; Goreslavets et al., 2002]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a].

Notes. Widespread from Europe to Middle East [Schülke, Smetana, 2015]. In Northern and Eastern Europe, Siberia and Middle Asia, the nominotypical subspecies is replaced by the subspecies *B. c. boreomontanicus* Schülke, 2010 [Schülke, 2012a; Schülke, Smetana, 2015]. Forest species, prefers leaf litter [Schülke, 2012a]. In PSER recorded from Rostov, Volgograd and Samara regions, without identity of the subspecies; presumably these records belong to *B. c. boreomontanicus*.

Bolitobius cingulatus Mannerheim, 1830
(Fig. 12A)

Records. Crimea Republic ? [Gusarov, 1989]; Rostov Region [Khachikov, 1998a, 2017]; Stavropol Region ? [Khachikov, 1998a].

Notes. Widely distributed Holarctic species [Herman, 2001]; common in Oriental region too [Schülke, Smetana, 2015]. Found in forest litter and in rotten logs, prefers wet habitats (Outerelo, Gamarra, 2010; Schülke, 2012a). In PSER found in Rostov Region. Records from Crimea Republic and Stavropol Region come from foothills and mountains.

[?! *Bryoporus multipunctus* Hampe, 1867]

Records. Samara Region ? [Goreslavets, 2004, 2021].

Notes. Distributed from southern part of Central Europe, through Turkey to Middle East [Schülke, Smetana, 2015]. Biology is poorly known, but recorded from dung and carrion [Smetana, 1966], known from high elevations up to 1870 m [Assing, 2013a]. Never recorded from Russia. In PSER so far known only from Krasnosamarskiy forest. Other records from Samara Region are not specified and may also come outside PSER. Findings of this species in Samara Region seem unexpected and need verification.

Carphacis striatus Olivier, 1795
(Fig. 12I)

Records. Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2021]; Volgograd Region [Grebennikov, 2015].

Notes. Distributed in Europe and known from Japan, but not recorded from East Siberia and the Russian Far East [Schülke, 2012a]. Confined to fungi [Schülke, 2012a]. In PSER recorded from a few regions within the Volga River basin.

[? *Ischnosoma myops* (Eppelsheim, 1880)]

Notes. Confined to Caucasus region, also recorded from Turkey [Schülke, Smetana, 2015]. Biology is unknown. Never recorded from PSER, geographic origin of an unspecified record from "Caucasus" [Kocian, 1997] needs verification.

Ischnosoma splendidum (Gravenhorst, 1806)

Records. Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2016b]; unspecified locality: Samara or Saratov Region [Kocian, 1997].

Notes. Widespread in Holarctic and Oriental regions [Herman, 2001; Schülke, Smetana, 2015]; inhabit open and forested territories, can be found in litter or moss [Schülke, 2012a]; prefers wet habitats, rotten plants, once found even under rotten fish [Ryabukhin, 1999]. In PSER unambiguously recorded only in Rostov and Samara regions.

[*Lordithon exoletus* (Erichson, 1839)]

Records. Saratov Region [Sazhnev, Mironova, 2019; Sazhnev et al., 2019a].

Notes. Widespread through Europe including European part of Russia, and North Africa [Schülke, Smetana, 2015]. Adjacent to PSER record comes from the environs of Saratov city in Saratov Region; an old unclear record from "Caucasus" [Fauvel, 1875a] is probably a misidentification.

Lordithon lunulatus (Linnaeus, 1760)
(Fig. 12B)

Records. Orenburg Region [Nagumanova, 2005a]; Rostov Region [Khachikov, 2003, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2021]; Saratov Region [Sazhnev et al., 2019a].

Notes. Widespread from Europe to East Siberia; also found in the USA [Schülke, Smetana, 2015]. Can be found in mushrooms, common in Central Europe [Schülke, 2012a]. In PSER recorded from Rostov to Orenburg Region with some gaps.

Lordithon pulchellus (Mannerheim, 1830)

Records. Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2021]; Volgograd Region [Khachikov, 1998a].

Notes. Widespread from Europe to the Russian Far East [Schülke, 2012a; Schülke, Smetana, 2015]. Recorded mostly on various tree fungi [Schülke, 2012a]. In PSER recorded from Rostov Region and from the Volga River basin.

Lordithon rostratus (Motschulsky, 1860)

Records. Rostov Region [Khachikov, 2017].

Notes. Known from Turkey, Georgia, Azerbaijan and unclear records from "Caucasus" [Schülke, Smetana, 2015]. Can be found in riverine and floodplain forests; mycobiont [Khachikov, 2017]. In PSER registered only in Rostov Region.

Lordithon thoracicus (Fabricius, 1777)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Pushkin, 2015, 2016]; Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2021]; Saratov Region [Sazhnev, Mironova, 2019]; Stavropol Region [Khachikov, 1998a; Pushkin, Maksimova, 2014; Pushkin, Minav, 2015].

Notes. Holarctic, from Europe to the Russian Far East and in North America [Schülke 2012a; Schülke, Smetana, 2015]. In Central Europe usually found in mushrooms [Schülke, 2012a]. Recorded in most regions of PSER.

[? *Lordithon transversulus* (Reitter, 1909)]

Notes. Distributed in the Caucasus region and India [Schülke, Smetana, 2015]. Biology is unknown. Never

unambiguously recorded from PSER, unspecified record from “Caucasus” [Reitter, 1909] needs verification.

Lordithon trimaculatus (Fabricius, 1793)

Records. Crimea Republic ? [Gusarov, 1989]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2021].

Notes. Transpalaeartic, known from Europe to the Russian Far East; not common [Schülke, 2012a; Schülke, Smetana, 2015]. In Central Europe only in montane forests; in mushrooms [Schülke, 2012a]. In PSER so far known only from Krasnosamarskiy forest. Other records from Samara Region are not specified and may also come outside PSER. Adjacent to PSER records from Crimea come from mountains and foothills.

[? *Lordithon trinotatus* (Erichson, 1839)]
(Fig. 12C)

Notes. Widespread across the Palaearctic region, eastwards in Russia reaching East Siberia and the Far East [Schülke, Smetana, 2015], although eastern Palaearctic records need verification [Schülke, 2012a]. Biology is poorly known, but the species can be found in mushrooms from foothills to elevations around 1680 m [Assing, 2013a]. In Russia from the European part to the Far East [Schülke, Smetana, 2015]. In PSER not recorded; old records from “Caucasus” [Hochhuth, 1849; Horion, 1967] need revision.

[*Mycetoporus baudueri* Mulsant et Rey, 1875]
(Fig. 12F)

Records. Volgograd Region [Grebennikov, 2002a].

Notes. Widespread in Europe, known from North Africa and Middle East, but due to confusion with similar species distribution needs clarification [Schülke, 2012a; Schülke, Smetana, 2015]. Biology is poorly known. In PSER recorded only from Volgograd Region. Records from unspecified localities in the Caucasus apparently belong to another species from *M. baudueri* group [Schülke, 2019a].

Mycetoporus bimaculatus Lacordaire, 1835
(Fig. 12E)

Records. Samara Region [Goreslavets, 2004, 2021]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread from Europe to West Siberia, more common in central and southern regions; due to confusion with similar species distribution needs clarification [Schülke, 2012a; Schülke, Smetana, 2015]. Biology is poorly known, but apparently forest species [Ermakov et al., 2017]. In PSER recorded only from Samara and Volgograd regions.

[? *Mycetoporus brucki* (Pandellé, 1869)]

Notes. Confined to Southern Europe, Turkey and Iran [Schülke, Smetana, 2015]. Occurs mostly in leaf litter of mountainous forests [Schülke, 2012a]. Never recorded from PSER, old records from “Caucasus” [Hellén, 1925] need verification.

Mycetoporus clavicornis (Stephens, 1832)

Records. Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2016a].

Notes. Widespread in Europe including European Russia, recorded in North Africa [Schülke, Smetana, 2015], but distribution needs clarification due to confusion with similar species [Schülke, 2012a]. Prefers humid and swampy microhabitats in open landscapes and forests [Khachikov, 1998a; Schülke, 2012a]. In PSER recorded only from Rostov and Samara regions.

[*Mycetoporus corpulentus* Luze, 1901]

Records. Samara Region ? [Goreslavets, 2014].

Notes. Widespread in Europe except Iberian Peninsula and Northern Europe [Schülke, Smetana, 2015]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

Mycetoporus forticornis Fauvel, 1875

Records. Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002]; Stavropol Region ? [Khachikov, 1998a].

Notes. Known from Central and Southern Europe; easternmost records come from Turkey and European part of Russia [Semenov, 2012; Schülke, Smetana, 2015]. Found mostly in leaf litter, but also occurs in other ground-based debris of dry microhabitats [Goreslavets et al., 2002; Schülke, 2012a]. In PSER recorded from Rostov and Samara regions, record from Stavropol Region comes from the foothills of the North Caucasus.

Mycetoporus glaber (Sperk, 1835)

Records. Krasnodar Region [Khachikov, 1998a]; Rostov Region [Khachikov, 1998a, 2017]; Stavropol Region ? [Khachikov, 1998a].

Notes. Distributed from Europe to West Siberia, more common in Central Europe [Schülke, Smetana, 2015]. In Canary Islands represented by the subspecies *M. g. rufus* Wollaston, 1864. Found in leaf litter, occurs mostly in lowlands, but also recorded from higher elevations [Schülke, Kocian, 2000]. In PSER recorded from Taman Peninsula and westernmost foothills in Krasnodar Region and Rostov Region; records from Stavropol Region come from low foothills.

Mycetoporus lepidus (Gravenhorst, 1806)

Records. Samara Region [Goreslavets et al., 2002; Goreslavets, 2004].

Notes. Transpalaeartic, distributed from Europe to the Russian Far East and Japan, introduced to Nearctic [Schülke, Smetana, 2015]. Forest dweller, usually associated with decaying wood, but also recorded from leaf litter [Gontarenko, 2006; Boháč, Matějka, 2016], known as predator of mycetophilous dipterans [Majzlan, Fedor, 2009]. In PSER known only from Samara Region.

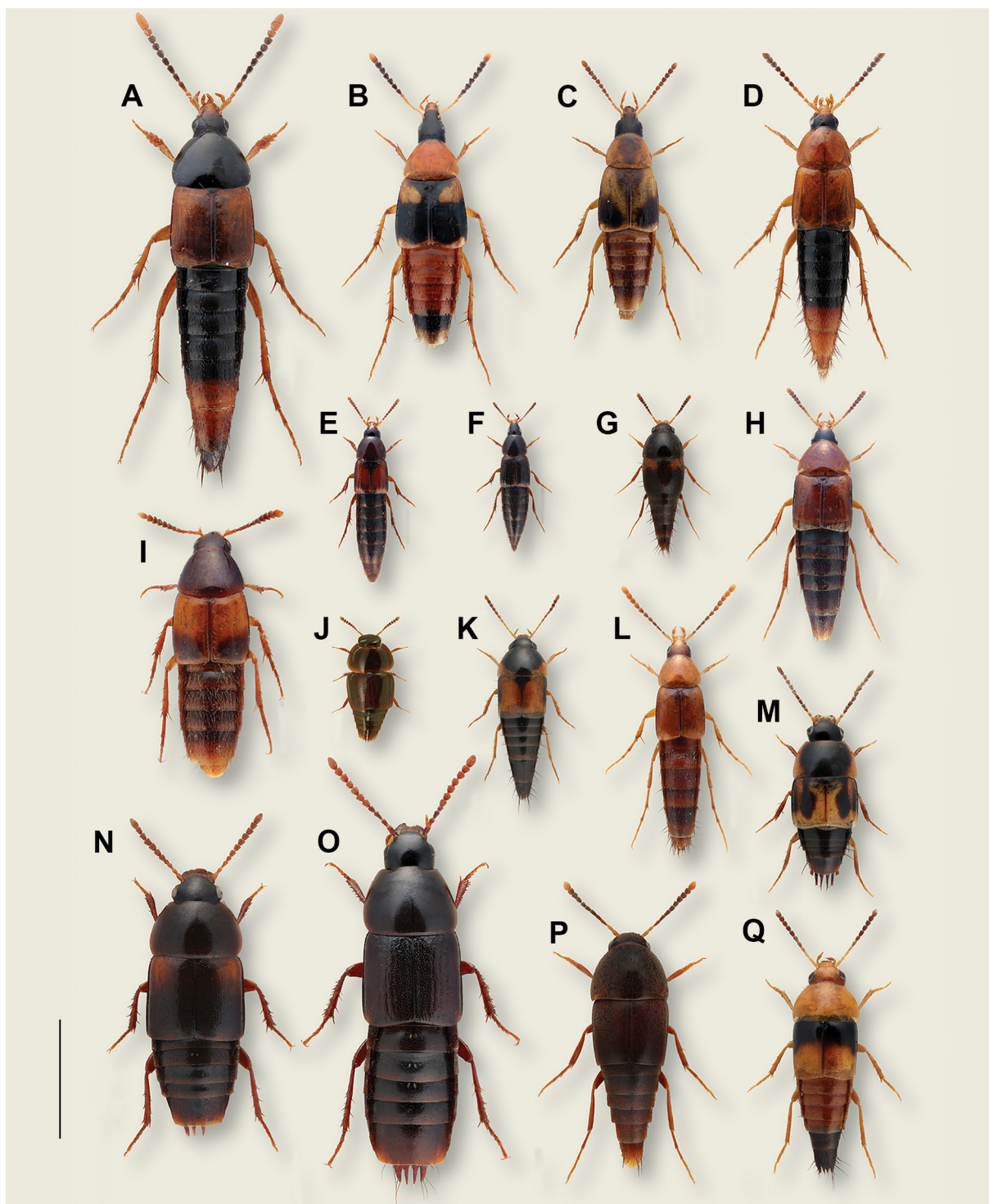


Fig. 12. Diversity of Mycetoporinae and Tachyporinae in PSER and adjacent areas.

A–F, H–I, L – Mycetoporinae; G, J–K, M–Q – Tachyporinae. A – *Bolitobius cingulatus*; B – *Lordithon lunulatus*; C – *Lordithon trinotatus* (ambiguously recorded in PSER); D – *Bolitobius castaneus*; E – *Mycetoporus bimaculatus*; F – *Mycetoporus baudueri*; G – *Sepedophilus bipunctatus*; H – *Mycetoporus punctus*; I – *Carphacis striatus*; J – *Coproporus colchicus* (image credit Lech Borowiec); K – *Tachyporus hypnorum*; L – *Ischnosoma longicorne* (Mäklin, 1847) (Mycetoporinae) (not recorded in PSER); M – *Cilea silphoides*; N – *Tachinus bipustulatus*; O – *Tachinus elongatus* (ambiguously recorded in PSER); P – *Sepedophilus testaceus*; Q – *Tachyporus obtusus*. Scale bar 3 mm.

Рис. 12. Разнообразие видов подсемейств Mycetoporinae и Tachyporinae из PSER и сопредельных территорий.

A–F, H–I, L – Mycetoporinae; G, J–K, M–Q – Tachyporinae. A – *Bolitobius cingulatus*; B – *Lordithon lunulatus*; C – *Lordithon trinotatus* (указание из PSER сомнительно); D – *Bolitobius castaneus*; E – *Mycetoporus bimaculatus*; F – *Mycetoporus baudueri*; G – *Sepedophilus bipunctatus*; H – *Mycetoporus punctus*; I – *Carphacis striatus*; J – *Coproporus colchicus* (автор фото Lech Borowiec); K – *Tachyporus hypnorum*; L – *Ischnosoma longicorne* (Mäklin, 1847) (не указан из PSER); M – *Cilea silphoides*; N – *Tachinus bipustulatus*; O – *Tachinus elongatus* (указание из PSER сомнительно); P – *Sepedophilus testaceus*; Q – *Tachyporus obtusus*. Масштабная линейка 3 мм.

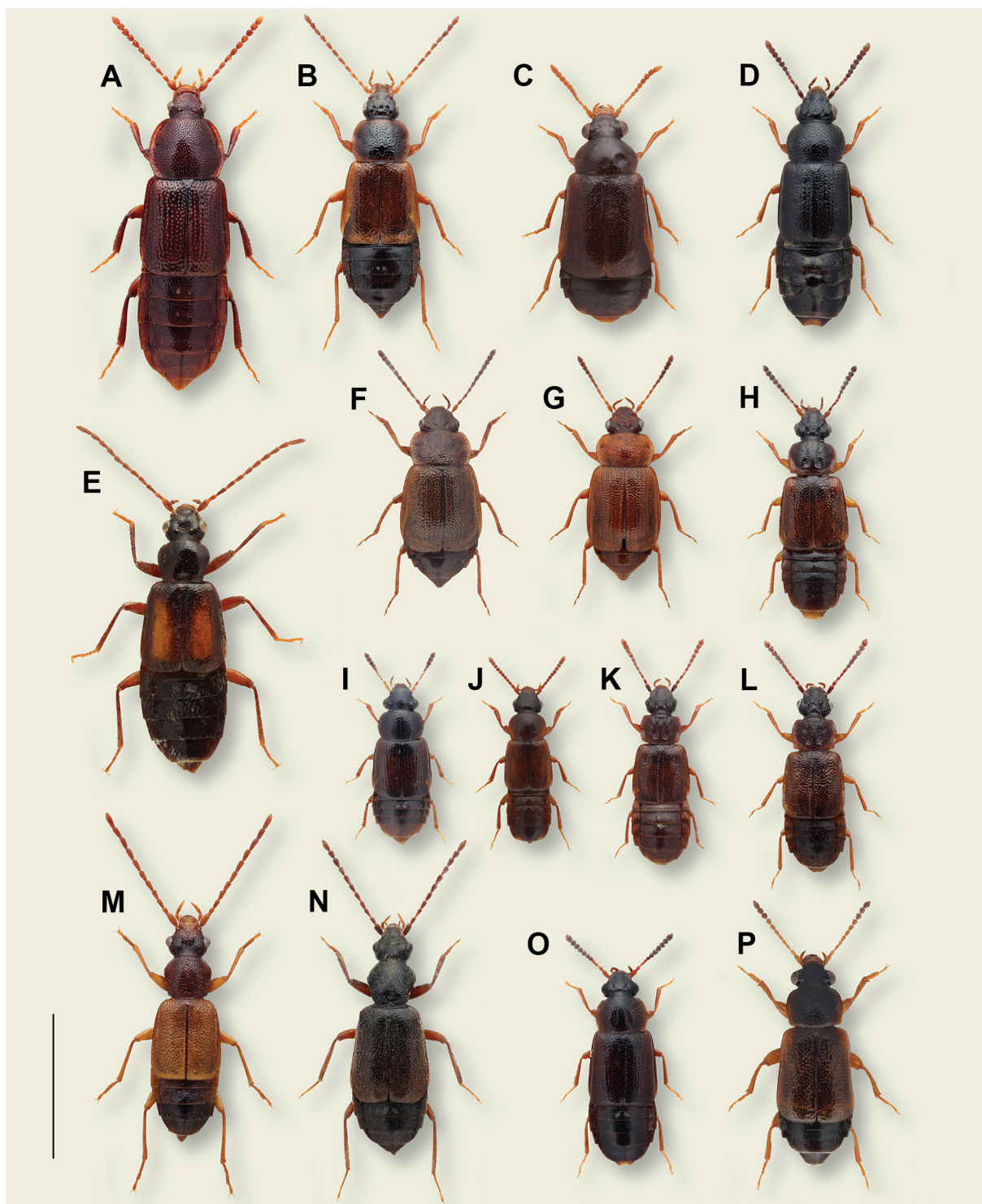


Fig. 13. Diversity of Omaliinae in PSER and adjacent areas.

A – *Acidota crenata*; B – *Arpedium quadrum*; C – *Eusphalerum tenenbaumi* (Bernhauer, 1932) (not recorded in PSER); D – *Phyllodrepa floralis*; E – *Geodromicus plagiatus* (Fabricius, 1798) (not recorded in PSER); F – *Anthobium unicolor*; G – *Anthobium atrocephalum*; H – *Omalius rivulare*; I – *Acrolocha sulcula* (Stephens, 1834) (not recorded in PSER); J – *Xylodromus depressus* (Gravenhorst, 1802) (not recorded in PSER); K – *Omalius littorale*; L – *Omalius caesum*; M – *Anthophagus caraboides*; N – *Lesteva longoelytrata*; O – *Phyllodrepa nigra* (not recorded in PSER); P – *Eusphalerum primulae* (Stephens, 1834) (not recorded in PSER). Scale bar 3 mm.

Рис. 13. Разнообразие видов подсемейства Омалииные из PSER и сопредельных территорий.

A – *Acidota crenata*; B – *Arpedium quadrum*; C – *Eusphalerum tenenbaumi* (Bernhauer, 1932) (не указан из PSER); D – *Phyllodrepa floralis*; E – *Geodromicus plagiatus* (Fabricius, 1798) (не указан из PSER); F – *Anthobium unicolor*; G – *Anthobium atrocephalum*; H – *Omalius rivulare*; I – *Acrolocha sulcula* (Stephens, 1834) (не указан из PSER); J – *Xylodromus depressus* (Gravenhorst, 1802) (не указан из PSER); K – *Omalius littorale*; L – *Omalius caesum*; M – *Anthophagus caraboides*; N – *Lesteva longoelytrata*; O – *Phyllodrepa nigra* (не указан из PSER); P – *Eusphalerum primulae* (Stephens, 1834) (не указан из PSER). Масштабная линейка 3 мм.

Mycetoporus nigricollis Stephens, 1835

Records. Crimea Republic ? [Gusarov, 1989]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014].

Notes. Known mostly from Central and Southern Europe with the northernmost records from Great Britain and southeasternmost from North Africa [Schülke, 2012a]. Biology is poorly known, but recorded in forests and meadows from leaf litter [Schülke, Kocian, 2000]. In PSER unambiguously recorded only from Krasnosamarskiy forest in Samara Region. The species maybe confused with other species from *M. nigricollis* group [Schülke, Kocian, 2000]. Next to PSER recorded from Samarskaya Luka in Samara Region and from the mountains in Crimea.

[?! *Mycetoporus piceolus* Rey, 1883]

Records. Rostov Region ? [Khachikov, 1998a, 2017].

Notes. Widespread in Europe, in Central Europe more common, easternmost records come from European part of Russia. Overall distribution needs clarification due to confusion with other *Mycetoporus* species [Schülke, 2012a; Schülke, Smetana, 2015]. Therefore, the only record from PSER, from Rostov Region, needs verification.

[? *Mycetoporus punctipennis* Scriba, 1868]

Notes. Distributed in Central and Southern Europe from France to the Caucasus region [Schülke, Smetana, 2015]. Biology is poorly known, but recorded from forest leaf litter and at snowfield edges, in lowlands and mountains [Assing, 2006]. Never unambiguously recorded from PSER, except old unspecified record from "Caucasus" [Ganglbauer, 1895] that needs verification.

Mycetoporus punctus (Gravenhorst, 1806)
(Fig. 12H)

Records. Crimea Republic ? [Gusarov, 1989]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004].

Notes. Transpalearctic, from Europe to the Russian Far East [Schülke, Smetana, 2015]. Prefers humid forest leaf litter from lowlands to mountains [Gontarenko, 2006; Assing, 2013a]. In PSER recorded from various localities in Samara Region. Adjacent to PSER record from Crimea Republic comes from the mountain foothills.

[? *Mycetoporus rufescens* (Stephens, 1832)]

Notes. Widespread in Europe, known from North Africa, Cyprus and Turkey [Schülke, Smetana, 2015]. Prefers forest leaf litter and decaying wood with fungi [Schülke, 2012a]. Never recorded from PSER, except old unspecified records from "Caucasus" [Ganglbauer, 1895; Hellén, 1925; Luze, 1901a] which need revision.

Subfamily Omaliinae

Acidota crenata (Fabricius, 1793)
(Fig. 13A)

Records. Samara Region [Goreslavets, 2002, 2016a; Goreslavets et al., 2002]; Volgograd Region [Grebennikov, 2002a; Makarov et al., 2009].

Notes. Holarctic species widely distributed across northern Eurasia and North America [Schülke, Smetana, 2015; Shavrin, 2021]. The subspecies *A. c. japonica* Watanabe, 1990 confined to Japan [Schülke, Smetana, 2015]. Predominantly forest leaf litter inhabitant, but may occur in unforested landscapes in wet, swampy and mossy microhabitats; absent in southern Europe [Zanetti, 2012; Shavrin, 2021]. In PSER registered in Samara and Volgograd regions. Noteworthy is that in the revision of *Acidota* of Russia, Shavrin [2021] did not find any new material from our study region.

Acrolocha pliginskii (Bernhauer, 1912)

Records. Crimea Republic [Bernhauer, 1912; Gusarov, 1989; Shavrin, Khachikov, 2019]; Krasnodar Region ? [Shavrin, Khachikov, 2019]; Rostov Region [Khachikov, 2017; Shavrin, Khachikov, 2019].

Notes. Described from Crimea [Bernhauer, 1912]; widely but sporadically distributed in Europe from British Isles to Urals [Shavrin, Khachikov, 2019] or even West Siberia [Zanetti, 2012]. Adults active in autumn [Zanetti, 2012]. In PSER known only from Rostov Region. Some records from Crimea and Krasnodar Region [Shavrin, Khachikov, 2019] come from the mountain foothills.

Anthobium atrocephalum (Gyllenhal, 1827)
(Fig. 13G)

Records. Crimea Republic ? [Gusarov, 1989]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2014, 2021].

Notes. Holarctic species, in Eurasia found from Europe to the Russian Far East [Schülke, Smetana, 2015]; in Central Europe occurs in leaf litter of forests and shrubs [Zanetti, 2012]. In PSER recorded only in several regions. Adjacent to PSER records from Crimea come from mountains.

[*Anthobium melanocephalum* (Illiger, 1794)]

Records. Samara Region ? [Goreslavets et al., 2002].

Notes. Widespread in Europe and Turkey [Schülke, Smetana, 2015], also recorded from European Russia [Semionenkov et al., 2015]; in Central Europe found in montane forests, in leaf litter, often in autumn on fungi [Zanetti, 2012]. Next to PSER recorded only from Samarskaya Luka in Samara Region.

Anthophagus angusticollis (Mannerheim, 1830)

Records. Samara Region [Goreslavets et al., 2002; Goreslavets, 2004].

Notes. Widespread in Northern and Central Europe and in Russia from the European regions to East Siberia [Schülke, Smetana, 2015]. Frequently found in montane habitats and lower altitudes, in moist biotopes [Zanetti, 2012]. In PSER recorded in Krasnosamarskiy forest in Samara Region. Old unspecified records from "Caucasus" [Ganglbauer, 1895; Luze, 1902a; Horion, 1963] need revision.

Anthophagus caraboides (Linné, 1758)
(Fig. 13M)

Records. Samara Region [Goreslavets et al., 2002]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread from Europe to East Siberia [Schülke, Smetana, 2015]. Found in riverine forests on flowering trees and bushes [Zanetti, 2012]. In PSER recorded in Samara and Volgograd regions.

[*Arpedium brachypterum* (Gravenhorst, 1802)]

Notes. Holarctic, widespread in North America and Eurasia from British Isles to the Russian Far East; in Central Europe almost everywhere; more often at high altitudes [Ryabukhin, 1999; Zanetti, 2012; Schülke, Smetana, 2015]. Occurs in swamps, in mountainous areas in damp litter and along snow fields [Zanetti, 2012], also found under bark of fallen deciduous trees [Ryabukhin, 1999]. Next to PSER recorded from Stavropol Region [Arzanov et al., 2019], also known from an old unspecified record from “Caucasus” [Ganglbauer, 1895].

Arpedium quadrum (Gravenhorst, 1806)
(Fig. 13B)

Records. Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2021]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a; Makarov et al., 2009].

Notes. Widespread from Europe to the Russian Far East [Schülke, Smetana, 2015]. In Europe found in ground-based debris near water, from low to higher altitudes [Zanetti, 2012]. In PSER recorded in Rostov, Samara and Volgograd regions.

[? *Eusphalerum densicolle* (Bernhauer, 1915)]

Notes. Distributed in the Caucasus region and Turkey [Schülke, Smetana, 2015]; bionomics is unknown. In PSER not recorded; unspecified records from “Caucasus” [Schülke, Smetana, 2015] need clarification.

[?! *Eusphalerum limbatum* (Erichson, 1840)]

Records. Samara Region ? [Goreslavets, 2014].

Notes. Known from the Alps where it comprises three subspecies [Schülke, Smetana, 2015], up to the subalpine zone [Zanetti, 1982]. The PSER record from Samara Region does not seem biogeographically plausible and probably is based on misidentification.

Eusphalerum minutum (Fabricius, 1792)

Records. Crimea Republic [Gusarov, 1989]; Rostov Region [Khachikov, 2017]; Samara Region [Goreslavets, 2016a].

Notes. Widespread from Europe to East Siberia in Russia [Schülke, Smetana, 2015]. In Europe found in wetlands (wet meadows, swamps, moors), mostly on plants

with yellow flowers [Zanetti, 2012]. In PSER recorded in Rostov and Samara regions, and from Crimea Republic without details.

Eusphalerum rufoscutellatum (Eppelsheim, 1881)

Records. Rostov Region [Khachikov, 2017]; Stavropol Region [Zanetti, 1993].

Notes. Known from Georgia, Turkey and the southern European part of Russia [Schülke, Smetana, 2015]. Frequently found at flowers [Khachikov, 2017]. In PSER recorded in Rostov and Stavropol (Pyatigorsk, Zheleznovodsk) regions.

Eusphalerum sareptanum (Eppelsheim, 1878)

Records. Dagestan Republic [Zanetti, 1993]; Krasnodar Region [Zanetti, 1993]; Volgograd Region [Eppelsheim, 1878].

Notes. Distributed in the South European Russia, the Caucasus and Turkey [Zanetti, 1993; Schülke, Smetana, 2015]. In PSER known from the lectotype (designated by Zanetti [1993] from “Sarepta”) in Volgograd Region, from Smolenskaya village in Krasnodar Region and from near the Caspian Sea in northern Dagestan.

[? *Geodromicus klimai* Bordoni, 1984]

Notes. Known from the original description based on three females and one male from “Caucasus”, without any more details about type locality [Bordoni, 1984] and from an additional record from Karachay-Cherkessia Republic [Khachikov, 1998a]. Presumably a montane species which does not occur in PSER.

Hapalaraea pygmaea (Paykull, 1800)
(Fig. 14A)

Records. Crimea Republic ? [Gusarov, 1989]; Rostov Region [Khachikov, 2017].

Notes. Distributed from British Isles across almost all of Europe including European Russia [Schülke, Smetana, 2015; Semionenkov et al., 2015]. Occurs under tree bark, in tree hollows and in bird nests [Zanetti, 2012]. In PSER in Rostov Region. Next to PSER known from the mountains in Crimea.

Lesteva longoelytrata (Goeze, 1777)
(Fig. 13N)

Records. Samara Region [Goreslavets, 2014]; Volgograd Region [Grebennikov, 2002a].

Notes. Distributed from British Isles across Central Europe eastward to Western Asia [Schülke, Smetana, 2015]. Eurytopic, dwells in humid places, especially on the banks of water bodies, often in agricultural lands [Zanetti, 2012]. In PSER known only from Samara and Volgograd regions; all records from the Caucasus [e.g., Fauvel, 1871; Luze, 1903] are old, unspecific and based on misidentifications.

Lesteva punctata Erichson, 1839

Records. Crimea Republic ? [Gusarov, 1989; Shavrin, 2014]; Rostov Region [Shavrin, 2014; Khachikov, 2017 after Shavrin, 2014].

Notes. Widely distributed in Europe except Iberian Peninsula [Zanetti, 2012], also known from Turkey, the Caucasus and Iran [Zanetti, 2012; Shavrin, 2014; Schülke, Smetana, 2015]. Prefers humid habitats such as banks of water areas, mossy areas, wooded valleys [Koch, 1989; Zanetti, 2012]. In PSER found in Rostov Region. In Crimea in the mountain foothills.

Olophrum assimile (Paykull, 1800)

Records. Crimea Republic [Scheerpeltz, 1929]; Kalmykia Republic [Khachikov, 1998a]; Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Scheerpeltz, 1929; Goreslavets et al., 2002]; Saratov Region [Sazhnev, 2013a]; Volgograd Region [Grebennikov, 2002a].

Notes. Distributed from Northwest Europe to Syria across the Ponto-Mediterranean region [Herman, 2001; Schülke, Smetana, 2015]. Inhabits both humid and dry biotopes [Zanetti, 2012], found on banks of water reservoirs and in forest litter [Goreslavets et al., 2002]. In PSER reported from Crimea and Rostov Region in the west and from the Volga River basin in the east.

Olophrum piceum (Gyllenhal, 1810)

Records. Stavropol Region [Khachikov, 1998a]; Volgograd Region [Grebennikov, 2002a].

Notes. Distributed from Spain to south of Northern and Eastern Europe [Schülke, Smetana, 2015]. Eurytopic, found in damp and dry biotopes, especially in forest litter [Zanetti, 2012]. In PSER reported from Stavropol and Volgograd regions.

Omalium caesum Gravenhorst, 1806
(Fig. 13L)

Records. Astrakhan Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a]; Crimea Republic [Gusarov, 1989]; Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Stavropol Region [Gorkavaya, 2017a]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a; Makarov et al., 2009].

Notes. Distributed from Faroe Islands across almost entire Europe to North Africa in the south and eastward to Kazakhstan [Schülke, Smetana, 2015]. Dwells in leaf litter, found both in woods and anthropogenic habitats, in Italy recorded from the plains to very high altitude [Lupi et al., 2006]. In PSER widespread from Crimea to the Volga River basin; one old record from "Caucasus" [Kolenati, 1846] comes from unspecified locality.

Omalium littorale Kraatz, 1857
(Fig. 13K)

Records. Crimea Republic [Gusarov, 1989]; Rostov Region [Khachikov, 2017]; Stavropol Region ? [Khachikov, 1998a].

Notes. Distributed in Central and Northern Europe eastward to Central Asia across Turkey and the Caucasus [Schülke, Smetana, 2015]. Occurs on sea coasts and in litter [Zanetti, 2012]. In PSER known only from Rostov Region. In Crimea Republic both in plains and foothills; in Stavropol Region known from foothills.

Omalium riparium Thomson, 1857

Records. Crimea Republic [Gusarov, 1989]; Saratov Region [Sazhnev et al., 2017].

Notes. Widespread European species, with the nominotypical subspecies confined to the northern part of the distribution and *O. r. impar* Mulsant et Rey, 1861 distributed along the Mediterranean coast, from France eastward to Ukraine and southern Russia, and from Morocco to Cyprus [Schülke, Smetana, 2015]. Occurs in sediments of the sea coasts and shores of various water bodies [Sazhnev et al., 2017]. In PSER known only from Crimea and Saratov Region, as the subspecies *O. r. impar*.

Omalium rivulare (Paykull, 1789)
(Fig. 13H)

Records. Crimea Republic [Gusarov, 1989]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Saratov Region [Sazhnev et al., 2019a; Sazhnev, Mironova, 2019]; Stavropol Region [Khachikov, 1998a]; Volgograd Region [Grebennikov, 2002a].

Notes. Distributed in the West Palaearctic, from North Africa and British Isles to Turkey and the Caucasus, introduced in the Nearctic Region [Schülke, Smetana, 2015]. Eurytopic, often found on decaying substrates [Zanetti, 2012]. In PSER rather widespread with some gaps from Crimea to the Volga River basin.

Omalium rugatum Mulsant et Rey, 1880

Records. Saratov Region ? [Sazhnev, Mironova, 2019; Sazhnev et al., 2019a].

Notes. Distributed in the West Palaearctic, from British Isles and south of Northern Europe across Central Europe eastward to Ukraine and Turkey [Schülke, Smetana, 2015]. Inhabits mainly forests, in litter [Zanetti, 2012]. Next to PSER known only from Saratov Region, from Chardym village [Sazhnev et al., 2019a] and from an unspecified locality [Sazhnev, Mironova, 2019].

Phloeonomus minimus (Erichson, 1839)

Records. Krasnodar Region [Khachikov, 2003].

Notes. Distributed in Central and Southern Europe, also recorded from the Russian Far East [Filatova, 1981; Schülke, Smetana, 2015]. Found under bark near base of deciduous trees [Zanetti, 2012]. Next to PSER known only from nearby Black Sea coast in western Krasnodar Region [Khachikov, 2003] and Teberda National Biosphere Reserve in Karachay-Cherkessia Republic [Arzanov et al., 2019].

Phloeonomus punctipennis Thomson, 1867
(Fig. 14F)

Records. Crimea Republic ? [Gusarov, 1989]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2016a].

Notes. Distributed from Europe to East Siberia [Schülke, Smetana, 2015]. Found under bark of deciduous trees, especially in lowlands [Zanetti, 2012]. In PSER recorded from Krasnosamarskiy forest and unspecified localities at the left bank of the Volga River in Samara Region. Adjacent to PSER records from Crimea come from mountains.

Phloeonomus pusillus (Gravenhorst, 1806)
(Fig. 14D)

Records. Crimea Republic ? [Gusarov, 1989]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004]; Saratov Region [Sazhnev et al., 2019a].

Notes. Holarctic, known from Europe to the Russian Far East and North America [Schülke, Smetana, 2015]. Found under mostly coniferous trees bark, in lower and higher elevations [Zanetti, 2012]. In PSER recorded from Krasnosamarskiy forest in Samara Region and Chardym village in Saratov Region. Adjacent to PSER records from Crimea Republic come from the mountains.

Phloeostiba lapponica (Zetterstedt, 1838)
(Fig. 14B)

Records. Rostov Region [Khachikov, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004]; Saratov Region [Sazhnev et al., 2019a].

Notes. Holarctic, distributed from Europe to the Russian Far East and North America [Schülke, Smetana, 2015]. Can be found in Central Europe everywhere, but rare, under bark mostly from conifers, up to higher altitudes [Zanetti, 2012]. In PSER recorded in Rostov, Samara and Saratov regions.

Phloeostiba plana Paykull, 1792
(Fig. 14E)

Records. Crimea Republic ? [Gusarov, 1989]; Krasnodar Region ? [Khachikov, 2003]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2016a].

Notes. Widespread in the Palaearctic, from British Isles to Japan [Schülke, Smetana, 2015]. Found under bark near base of deciduous trees [Zanetti, 2012]. In PSER reported only from Krasnosamarskiy forest. Other records from Samara Region are not specified and may also come outside PSER. Adjacent to PSER records from Crimea Republic and Krasnodar Region come from foothills and mountains.

Phyllocladus floralis (Paykull, 1789)
(Fig. 13D)

Records. Crimea Republic [Gusarov, 1989]; Rostov Region [Khachikov, 1998a, 2017].

Notes. Known from Europe including European part of Russia, Algeria and North America [Schülke, Smetana,

2015]. Can be found in plant material, nests and on flowers [Zanetti, 2012]. In PSER recorded in Crimea Republic, Rostov Region; old records from unclear localities in the Caucasus [Ganglbauer, 1895; Horion, 1963] need revision.

Xylodromus affinis (Gerhardt, 1877)

Records. Astrakhan Region [Kirschenblatt, 1938; Grebennikov, 2002a]; Stavropol Region [Kirschenblatt, 1938].

Notes. Widespread in Europe including European Russia, also in Tunisia and the Caucasus [Schülke, Smetana, 2015; Semionenko et al., 2015]. Nidicolous, can be found in mole and other small mammal nests, from the plains to subalpine zone [Zanetti, 2012]. In PSER recorded from Astrakhan and Stavropol regions.

Xylodromus concinnus (Marsham, 1802)

Records. Astrakhan Region [Kirschenblatt, 1938; Grebennikov, 2002a]; Kalmykia Republic [Kirschenblatt, 1938; Khachikov, 1998a]; Rostov Region [Khachikov, 1998a, 2017]; Stavropol Region [Kirschenblatt, 1938]; Volgograd Region [Kirschenblatt, 1938; Grebennikov, 2015].

Notes. Distributed in Europe including European part of Russia; introduced to North America and Australian region [Schülke, Smetana, 2015]. Synanthropic, recorded from coops and barns; from the plain to high elevations [Zanetti, 2012]. In PSER recorded in several southern regions.

Subfamily Oxyporinae

Oxyporus rufus (Linnaeus, 1758)
(Fig. 19A)

Records. Crimea Republic [Gusarov, 1989; Tokareva et al., 2021]; Krasnodar Region [Solodovnikov, 1998; Tokareva et al., 2021]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2021; Tokareva et al., 2021]; Saratov Region [Sazhnev, Mironova, 2019]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread from Europe to the Russian Far East and China [Tokareva et al., 2021]. Inhabits fungi, detailed biology can be found in Tokareva et al. [2020]. In PSER repeatedly recorded in the west: Crimea Republic, Krasnodar and Rostov regions and from the Volga River basin in the east.

Subfamily Oxytelinae

Anotylus bernhaueri Ganglbauer, 1898

Records. Astrakhan Region [Kirschenblatt, 1938]; Kalmykia Republic [Kirschenblatt, 1938]; Rostov Region [Khachikov, 2012, 2017]; Saratov Region [Kovalev et al., 2011]; Volgograd Region [Grebennikov, 2002a].

Notes. According to Schülke [2012a], thermophilic species distributed from Southeastern Europe to Middle Asia; in Central Europe rare because it lives in underground burrows of small mammals, especially ground squirrels. In PSER known from Rostov Region to the Volga River basin.

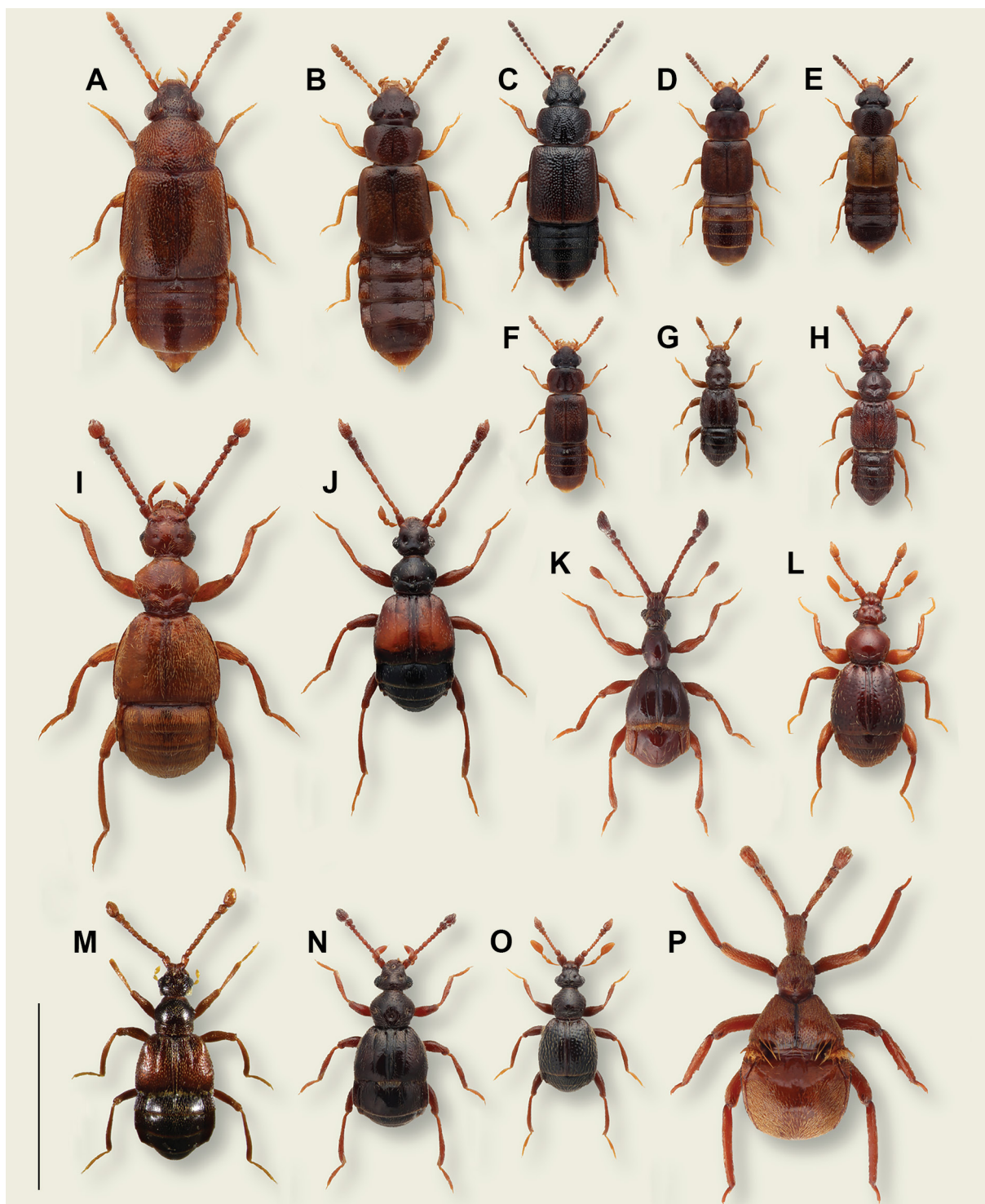


Fig. 14. Diversity of Omalinae and Pselaphinae in PSER and adjacent areas.

A–F – Omalinae; G–P – Pselaphinae. A – *Hapalaraea pygmaea*; B – *Phloeostiba lapponica* (Zetterstedt, 1838) (not recorded in PSER); C – *Omalium oxyacanthae* Gravenhorst, 1806 (not recorded in PSER); D – *Phloeonomus pusillus*; E – *Phloeostiba plana*; F – *Phloeonomus punctipennis*; G – *Biblioplectus ambiguus* (Reichenbach, 1816) (Pselaphinae) (not recorded in PSER); H – *Euplectus nanus*; I – *Trichonyx sulcicollis*; J – *Rybaxis longicornis*; K – *Pselaphus heisei*; L – *Bryaxis clavicornis* (ambiguously recorded in PSER); M – *Tyrus mucronatus*; N – *Brachygluta fossulata*; O – *Bryaxis bulbifer*; P – *Claviger longicornis*. Scale bar 3 mm.

Рис. 14. Разнообразие видов подсемейств Омалинае и Пселафинае из PSER и сопредельных территорий.

A–F – Омалинае; G–P – Пселафинае. A – *Hapalaraea pygmaea*; B – *Phloeostiba lapponica* (Zetterstedt, 1838) (не указан из PSER); C – *Omalium oxyacanthae* Gravenhorst, 1806 (не указан из PSER); D – *Phloeonomus pusillus*; E – *Phloeostiba plana*; F – *Phloeonomus punctipennis*; G – *Biblioplectus ambiguus* (Reichenbach, 1816) (не указан из PSER); H – *Euplectus nanus*; I – *Trichonyx sulcicollis*; J – *Rybaxis longicornis*; K – *Pselaphus heisei*; L – *Bryaxis clavicornis* (указание из PSER сомнительно); M – *Tyrus mucronatus*; N – *Brachygluta fossulata*; O – *Bryaxis bulbifer*; P – *Claviger longicornis*. Масштабная линейка 3 мм.

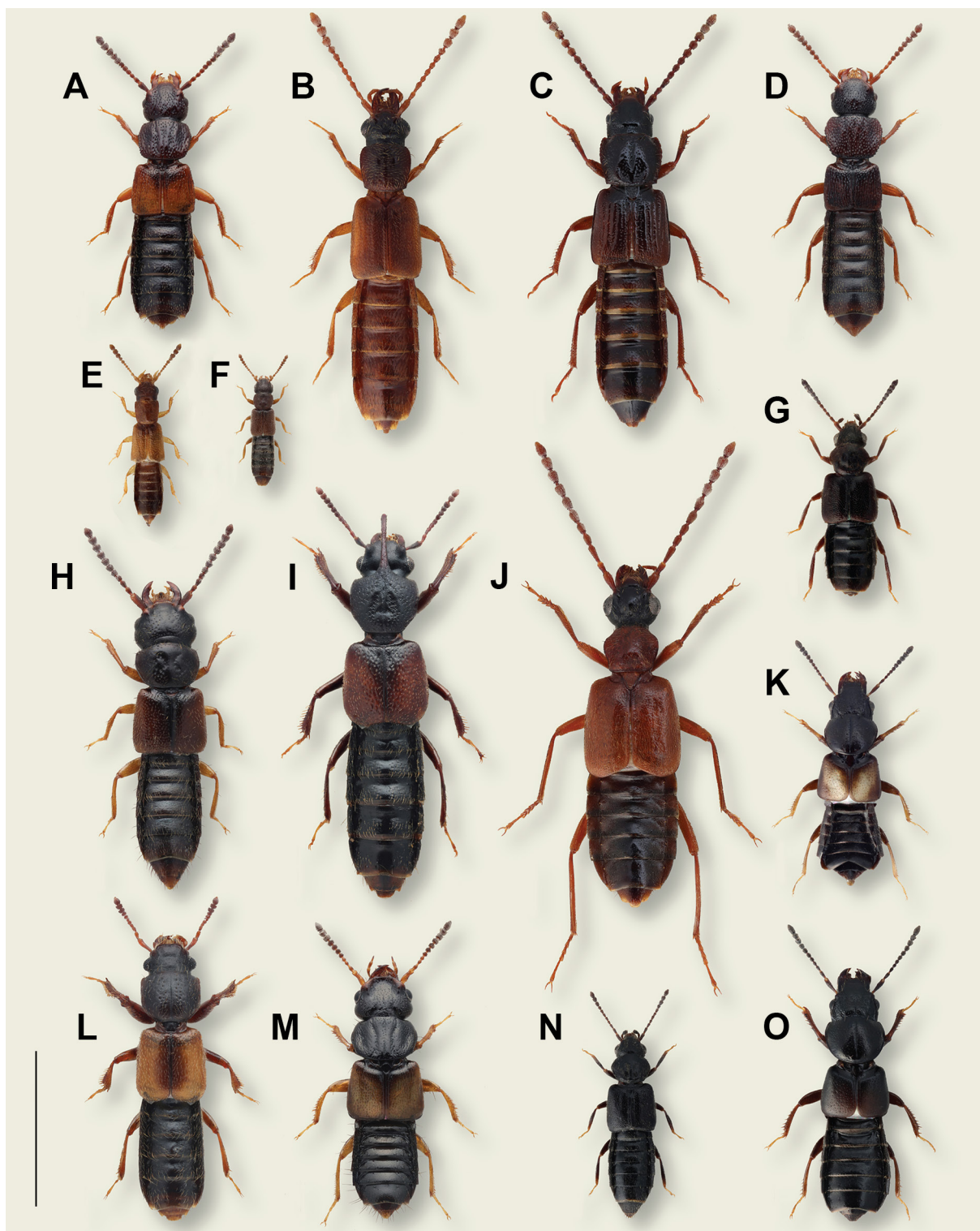


Fig. 15. Diversity of Oxytelinae in PSER and adjacent areas.

A – *Anotylus insectatus*; B – *Manda mandibularis*; C – *Coprophilus striatulus* (Fabricius, 1793) (not recorded in PSER); D – *Anotylus rugifrons*; E – *Planeustomus palpalis*; F – *Carpelimus gracilis*; G – *Thinodromus arcuatus* (ambiguously recorded in PSER); H – *Aploderus caelatus* (Gravenhorst, 1802) (not recorded in PSER); I – *Bledius spectabilis*; J – *Deleaster dichrous*; K – *Platystethus cornutus*; L – *Bledius diota* (ambiguously recorded in PSER); M – *Oxytelus laqueatus*; N – *Carpelimus obesus*; O – *Platystethus alutaceus*. Scale bar 3 mm.

Рис. 15. Разнообразие видов подсемейства Охителлины из PSER и сопредельных территорий.

A – *Anotylus insectatus*; B – *Manda mandibularis*; C – *Coprophilus striatulus* (Fabricius, 1793) (не указан из PSER); D – *Anotylus rugifrons*; E – *Planeustomus palpalis*; F – *Carpelimus gracilis*; G – *Thinodromus arcuatus* (указание из PSER сомнительно); H – *Aploderus caelatus* (Gravenhorst, 1802) (не указан из PSER); I – *Bledius spectabilis*; J – *Deleaster dichrous*; K – *Platystethus cornutus*; L – *Bledius diota* (указание из PSER сомнительно); M – *Oxytelus laqueatus*; N – *Carpelimus obesus*; O – *Platystethus alutaceus*. Масштабная линейка 3 мм.

[? *Anotylus clypeonitens* (Pandellé, 1867)]

Notes. Widespread in the East Mediterranean region [Schülke, 2012a; Schülke, Smetana, 2015], also in Central Europe where it reaches Great Britain, northern France and northern Italy; in Central Europe occurs in rotten plant debris or in excrements [Schülke, 2012a]. According to Schülke and Smetana [2015] found in South European Territory (ST) of Russia. However, we are unaware of any published record from PSER or nearby except an old ambiguous indication from “Caucasus” by Scheerpeltz [1962].

Anotylus complanatus (Erichson, 1839)

Records. Samara Region [Goreslavets, 2004]; Stavropol Region [Khachikov, 1998a].

Notes. Widespread in Europe (except north), North Africa and Turkey, common in Southern Europe, records in Middle and Central Asia requires confirmation; in various decaying substrates [Schülke, 2012a]. Introduced to other parts of the globe [Schülke, Smetana, 2015]. In PSER known from Stavropol and Samara regions only.

Anotylus hamatus (Fairmaire et Laboulbène, 1856)

Records. Volgograd Region [Grebennikov, 2002a].

Notes. Widespread from Europe including European Russia to Middle Asia and Mongolia [Schülke, Smetana, 2015]. In Central Europe in dung and in nests of small mammals [Schülke, 2012a]. In PSER known from a single record from the Lower Volga region.

Anotylus insecatus (Gravenhorst, 1806)
(Fig. 15A)

Records. Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004]; Volgograd Region [Kirschenblatt, 1936, 1938; Grebennikov, 2002a].

Notes. Widespread from Middle and Eastern Europe to the Caucasus and Middle Asia, adventive in North America; more common in the plains than in montane areas and occurs in various decaying substrates [Schülke, 2012a]. In PSER known from Rostov Region and the Volga River basin.

Anotylus intricatus (Erichson, 1840)

Records. Astrakhan Region [Pushkin, 2015, 2016]; Samara Region [Goreslavets et al., 2002]; Stavropol Region [Pushkin, Maksimova, 2014; Pushkin, Minav, 2015].

Notes. According to Schülke [2012a], widespread from West Mediterranean to China and the Russian Far East; in Central Europe only in the south and rare; also recorded from Central European part of Russia [Semionenko et al., 2015]; in various decaying matters. In PSER recorded broadly but sporadically.

[? *Anotylus inustus* (Gravenhorst, 1806)]

Notes. According to Schülke [2012a] known from North Africa, Europe except Northern, Middle East and

Middle Asia; East Palaearctic records need verification. We are unaware of any unambiguous records from PSER except general record from “Caucasus” in Horion [1963].

Anotylus mendus Herman, 1970

Records. Astrakhan Region [Grebennikov, 2002a]; Rostov Region [Khachikov, 1998a, 2012, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Saratov Region [Sazhnev et al., 2017, 2019a]; Volgograd Region [Grebennikov, 2002a; Makarov et al., 2009].

Notes. According to Schülke [2012a] confined to southeastern Central Europe and Southeastern Europe; in Central Europe very rare. In PSER commonly recorded from Rostov Region and the Volga River basin.

Anotylus nitidulus (Gravenhorst, 1802)

Records. Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1998a, 2017]; Saratov Region [Sazhnev, Mironova, 2019].

Notes. Common and very widespread Transpalearctic species introduced to other continents; confined to decaying debris and high humidity microhabitats [Schülke, 2012a; Schülke, Smetana, 2015]. In PSER known only from Rostov and Saratov regions.

[?! *Anotylus plagiatus* (Rosenhauer, 1856)]

Records. Rostov Region ? [Khachikov, 2017].

Notes. West Mediterranean species known from Iberian Peninsula and North Africa, divided into three subspecies (*A. p. aegyptiacus* Koch, 1934 and *A. p. nevesi* Scheerpeltz, 1951 in addition to the nominotypical) of debatable taxonomic status [Schülke, 2012a; Schülke, Smetana, 2015]. In view of the known distribution of this species, a geographically remote record of the nominotypical subspecies from Rostov Region, which is the only record in PSER and Russia overall, here considered doubtful.

Anotylus pumilus (Erichson, 1839)

Records. Astrakhan Region [Grebennikov, 2002a]; Rostov Region [Khachikov, 1998a, 2012, 2017]; Samara Region [Goreslavets et al., 2002]; Volgograd Region [Grebennikov, 2002a; Makarov et al., 2009].

Notes. Widespread from Western Europe to Middle Asia; in Central Europe wide distributed but rare, absent in the north; in dry excrements [Schülke, 2012a; Schülke, Smetana, 2015; Semionenko et al., 2015]. In PSER found in Rostov Region and the Volga River basin.

Anotylus rugifrons (Hochhuth, 1849)
(Fig. 15D)

Records. Astrakhan Region [Grebennikov, 2002a]; Rostov Region [Khachikov, 1998a, 2012, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004]; Volgograd Region [Grebennikov, 2002a; Makarov et al., 2009].

Notes. Confined to Central, Eastern and Southeastern Europe and the Caucasus; in Central Europe widespread

but rare; in wet habitats in ground-based decaying debris [Schülke, 2012a; Schülke, Smetana, 2015]. In PSER found in Rostov Region and the Volga River basin.

Anotylus rugosoides Schülke, 2012

Records. Astrakhan Region [Schülke, 2012b]; Crimea Republic [Schülke, 2012b]; Dagestan Republic [Schülke, 2012b]; Krasnodar Region [Schülke, 2012b]; Orenburg Region [Schülke, 2012b]; Rostov Region [Schülke, 2012b]; Volgograd Region [Schülke, 2012b].

Notes. According to Schülke [2012b], the distribution type of this species is still unclear but, as far as known, it is widespread and occurs in Southern Europe, European Russia and south of West Siberia, the Caucasus and Turkey. Bionomics is unknown but caught by flight in twilight and attached to light. In PSER nearly everywhere.

Anotylus rugosus (Fabricius, 1775)

Records. Astrakhan Region [Grebennikov, 2002a]; Krasnodar Region [Khachikov, 1998a]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 2012, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Saratov Region [Sazhnev et al., 2018]; Stavropol Region [Gorkavaya, 2017a]; Volgograd Region [Grebennikov, 2002a; Makarov et al., 2009].

Notes. Widespread in the Palaearctic, adventive in North America and New Zealand; one of the most common rove beetles in Central Europe that occurs in decaying substrates and wet habitats [Schülke, 2012a; Schülke, Smetana, 2015]. Everywhere in PSER, but with some gaps.

Anotylus sculpturatus (Gravenhorst, 1806)

Records. Astrakhan Region [Pushkin, 2015, 2016]; Krasnodar Region [Khachikov, 2012]; Saratov Region [Sazhnev, 2013b]; Stavropol Region [Pushkin, Maksimova, 2014; Pushkin, Minav, 2015]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread from Southwestern Europe to Central Asia, known from Algeria in North Africa; in Central Europe everywhere and common, in decaying substrates [Schülke, 2012a; Schülke, Smetana, 2015]. In PSER widespread with gaps, eastwards to the Volga River basin.

Anotylus tetracarínatus (Block, 1799)

Records. Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1998a, 2017]; Samara Region [Goreslavets, 2014].

Notes. Cosmopolitan species, however exact distribution is not well known due to confusion with other species; in Central Europe widespread and very common, in decaying substrates [Schülke, 2012a; Schülke, Smetana, 2015]. In PSER recorded only in Rostov and Samara regions.

Anotylus tetrátoma (Czwalina, 1871)

Records. Samara Region [Goreslavets et al., 2002; Goreslavets, 2004].

Notes. Widespread in Europe, known from Western Asia, introduced to North America, however exact distribution is not well known due to confusion with other species; in Central Europe patchy and rare; on dry excrements [Schülke, 2012a; Schülke, Smetana, 2015]. In PSER so far known only from Krasnosamarskiy forest, which is an interesting record. Other records from Samara Region are not specified and may also come outside PSER. Always recorded as a coprophilous species.

Aploderus caesus (Erichson, 1839)

Records. Krasnodar Region [Khachikov, 2012]; Rostov Region [Khachikov, 1998a, 2012, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004]; Volgograd Region [Grebennikov, 2002a].

Notes. Confined to Eastern, Central and south of Northern Europe, in Central Europe more common in northeast; confined to near water, wet habitats, sometimes halophilic [Schülke, 2012a; Schülke, Smetana, 2015]. In PSER rather widespread with gaps, east to the Volga River basin.

[?!] *Bledius atricapillus* (Germar, 1825)

Records. Rostov Region ? [Minoranskiy, Lomakin, 1978; Khachikov, 2017].

Notes. According to Schülke [2012a], common in Europe along the North Sea coast and in the pioneering biotopes in inland habitats; recorded from Central European part of Russia [Semenov, 2011]; identity and distribution remains unclear. In view of these circumstances, record from PSER from Rostov Region requires revision.

Bledius bicornis (Germar, 1823)

Records. Astrakhan Region [Grebennikov, 2002a]; Orenburg Region [Nagumanova, 2005b, 2006]; Volgograd Region [Makarov et al., 2009].

Notes. According to Schülke [2012a] and Schülke and Smetana [2015], distributed from Europe and North Africa to Central Asia. In North Africa represented by subspecies *B. b. ajjer* Jarrige, 1960. In PSER found in the Volga River basin and eastwards.

Bledius crassicolis Lacordaire, 1835

Records. Samara Region [Goreslavets, 2004, 2014, 2016a].

Notes. According to Schülke [2012a], widespread, from Great Britain to the Caucasus; unknown from Mediterranean region; confined to clay soils. In PSER so far known only from Krasnosamarskiy forest. Other records from Samara Region are not specified and may also come outside PSER. These are the only records of this species from the Russian Federation.

Bledius cribricollis Heer, 1839

Records. Samara Region [Goreslavets, 2014, 2016a].

Notes. According to Schülke and Smetana [2015], widespread West Palaearctic species. Schülke [2012a]

stresses that real distribution of this species is unclear due to confusion with similar species; in Central Europe common and widespread in its southern part; confined to clays. In PSER so far known only from Krasnosamarskiy forest. Other records from Samara Region are not specified and may also come outside PSER.

Bledius debilis Erichson, 1840

Records. Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 2017]; Volgograd Region [Grebennikov, 2002a].

Notes. Described from “Southern Russia”; distribution unclear, in the latest catalogue [Schülke, Smetana, 2015] given as Southern Russia and Turkmenistan. In PSER recorded only in Rostov and Volgograd regions.

[?! *Bledius defensus* Fauvel, 1872]

Records. Samara Region ? [Goreslavets, 2014].

Notes. Widespread in Europe, except Southern; eastern distribution border unclear; on sandy banks, also sea coasts [Schülke, 2012a]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level. This record is rather remote from the known range of the species, thus considered questionable.

[?! *Bledius denticollis* Fauvel, 1872]

Records. Rostov Region ? [Minoranskiy, Lomakin, 1978].

Notes. Wide distribution of this species, from Western Europe to the Far East of Russia, is considered doubtful, possibly based on misidentifications; based on the revised material, in Central Europe it occurs in the mountain areas [Schülke, 2012a]. In view of that information, an old record from Rostov Region, which is the only record of this species in PSER, is considered doubtful.

Bledius dinoceros Znojko, 1929

Records. Kalmykia Republic [Khachikov, 2003]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a; Makarov et al., 2009].

Notes. The species was described based on a single specimen from “Odessa” in southeastern Ukraine [Znojko, 1929]. Blinsein [1976] added genitalia illustrations and other details that facilitated identification. Known distribution area is limited by the holotype and additional material from southeastern Ukraine reported in Blinsein [1976], as well as records from Kalmykia Republic and Volgograd Region in PSER. Found at banks of salt marshes or similar inland saline water bodies.

[?! *Bledius diota* Schiødte, 1866]
(Fig. 15L)

Records. Samara Region ? [Goreslavets, 2014].

Notes. According to Schülke [2012a], rare species confined to the sea shores of Western, Southern and

Northern Europe. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level. This is the only record from the Russian Federation; due to its remote position from the known range of the species it is considered doubtful.

Bledius dissimilis Erichson, 1840

Records. Astrakhan Region [Grebennikov, 2002a]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2014, 2016a]; Volgograd Region [Grebennikov, 2002a].

Notes. Transpalaeartic, confined to clay banks of water reservoirs [Schülke, 2012a]. In PSER known from the Volga River basin.

[?! *Bledius erraticus* Erichson, 1839]

Records. Rostov Region ? [Minoranskiy, Lomakin, 1978; Khachikov, 2017].

Notes. Widespread in Europe, except its southern part; eastern distributional border unclear; in Central Europe more common in the north than in the south; on sandy and limestone banks [Schülke, 2012a]. Records in PSER from Rostov Region are the only records of this species from the Russian Federation, in view of the above mentioned they need confirmation.

[?! *Bledius femoralis* (Gyllenhal, 1827)]

Records. Samara Region [Goreslavets, 2002, 2004, 2014].

Notes. Widespread European species, in Central Europe more common in the northern parts than in the south; confined to sandy banks [Schülke, 2012a]. In Russia recorded only from Smolensk Region by Oleg Semionenkov (personal communication), identification confirmed by Michael Schülke. In PSER so far known only from Krasnosamarskiy forest. Other records from Samara Region are not specified and may also come outside PSER.

Bledius fergussoni Joy, 1912

Records. Samara Region [Goreslavets, 2002, 2004, 2014; Goreslavets et al., 2002]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread West Palaearctic species reaching East Siberia in the east; on sandy banks of North and Baltic seas, and of inland water bodies [Schülke, 2012a]. In North Africa the subspecies *B. f. fuscipennis* Koch, 1934. Apart from general “ST” record in Schülke and Smetana [2015], records from Samara and Volgograd regions are the only records of this species from PSER.

[?! *Bledius filipes* Sharp, 1911]

Records. Samara Region ? [Goreslavets, 2004, 2014].

Notes. Widespread European species, absent in Iberian Peninsula and Southern Europe, with easternmost record coming from Central European part of Russia ([Semenov, 2011]; Oleg Semionenkov, personal communication); on

sandy banks of seas and inland water bodies [Schülke, 2012a]. In PSER so far known only from Krasnosamarskiy forest. Other records from Samara Region are not specified and may also come outside PSER.

Bledius fossor Heer, 1839

Records. Astrakhan Region [Grebennikov, 2002a]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Volgograd Region [Grebennikov, 2002a].

Notes. According to Schülke [2012a], widespread from Southwestern Europe and North Africa to Central Asia; in Central Europe very rare. In PSER recorded from the Volga River basin.

Bledius frisius Lohse, 1978

Records. Rostov Region [Khachikov, 2017].

Notes. According to Schülke [2012a], sea coastal species widespread in Europe, North Africa and Near East. In PSER recorded only from Rostov Region, from Tsimlyansk sand dunes.

Bledius furcatus (Olivier, 1811)

Records. Astrakhan Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a]; Rostov Region [Khachikov, 2012, 2017]; Volgograd Region [Makarov et al., 2009].

Notes. Widespread West Palaearctic species [Schülke, 2012a; Schülke, Smetana, 2015]; in Central Europe mainly confined to sea coasts, rarely in some inland locations [Schülke, 2012a]. In PSER recorded from Rostov Region and from the Volga River basin.

Bledius gallicus (Gravenhorst, 1806)

Records. Astrakhan Region [Grebennikov, 2002a]; Rostov Region [Khachikov, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2014]; Saratov Region [Sazhnev, Anikin, 2014a]; Volgograd Region [Kirschenblatt, 1936, 1938; Grebennikov, 2002a; Makarov et al., 2009].

Notes. Transpalaearctic; in wet water edge habitats [Schülke, 2012a]. In PSER recorded from the Volga River basin.

Bledius hinnulus Erichson, 1840

Records. Astrakhan Region [Grebennikov, 2002a].

Notes. Based on Schülke and Smetana [2015], thermophilic species known from Southern Europe, Near East and Middle Asia. In PSER known only from Astrakhan Region and unclear "Caucasus" record [Scheerpeltz, 1960].

[?! *Bledius longulus* Erichson, 1839]

Records. Samara Region ? [Goreslavets, 2014].

Notes. Widespread in Europe with unclear eastern border of distribution; in Central Europe occurs more in the plains than in the mountains; on sandy banks [Schülke, 2012a]. In PSER known from unspecified localities in Samara Region only, these records need confirmation.

Bledius nanus Erichson, 1840

Records. Samara Region [Goreslavets, 2014, 2016a].

Notes. The West Palaearctic, widespread from Western Europe to Near East and Middle Asia; in Central Europe on clay and sandy areas, often in big quantities at steep slopes [Schülke, 2012a]. In PSER so far known only from Krasnosamarskiy forest. Other records from Samara Region are not specified and may also come outside PSER.

Bledius opacus (Block, 1799)

Records. Rostov Region [Khachikov, 2017]; Samara Region [Goreslavets, 2004, 2014].

Notes. Widespread in the Palaearctic, from Western Europe to East Siberia, Mongolia and China; in Central Europe common in plains, more rare in the south, on clay, sandy and gravel banks [Schülke, 2012a]. In PSER so far known only from Krasnosamarskiy forest. Other records from Samara Region are not specified and may also come outside PSER.

Bledius pallipes (Gravenhorst, 1806)

Records. Rostov Region [Minoranskiy, Lomakin, 1978]; Samara Region [Goreslavets, 2002, 2004, 2014].

Notes. Widespread from Western Europe to East Siberia and China; East Palaearctic records unreliable; in Central Europe more common in the plains than in the mountains; on sandy river banks and similar habitats [Schülke, 2012a]. In PSER recorded only in two regions, but probably is more widespread.

[? *Bledius picipennis* Hochhuth, 1849]

Notes. Poorly known species of unclear identity and distribution from "Caucasus" [Hochhuth, 1849]. No clear records from PSER.

Bledius procerulus Erichson, 1840

Records. Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 2017].

Notes. Widespread in Europe, except Iberian Peninsula and most of Southern and Northern Europe, to West Siberia; in Central Europe more common in the south and east; prefers warm places [Schülke, 2012a]. In PSER recorded only in Rostov Region.

Bledius pygmaeus Erichson, 1839

Records. Rostov Region [Khachikov, 2017].

Notes. Known only from Central and Eastern Europe [Schülke, 2012a; Schülke, Smetana, 2015]. In PSER recorded only from Rostov Region, which seems the only record of this species from the Russian Federation.

Bledius sareptanus Fagel, 1970

Records. Volgograd Region [Fagel, 1970].

Notes. Known from the original description based on several specimens from "Sarepta" an area in PSER;

additional information on external characters provided in the identification key to species of the subgenus *Elbidus* in Kascheev [1991]. Following Kascheev [1991], this species is also recorded in Kazakhstan [Schülke, Smetana, 2015] without listing any material such records are based on. Noteworthy is that male genitalia has never been illustrated for this species and that it was not recorded in any of the subsequent faunistic papers, pending for a taxonomic revision.

Bledius sarmaticus Znojko, 1929

Records. Astrakhan Region [Grebennikov, 2002a]; Crimea Republic [Znojko, 1929]; Kalmykia Republic [Grebennikov, 2002a]; Krasnodar Region [Znojko, 1929]; Saratov Region [Sazhnev et al., 2019a]; Volgograd Region [Grebennikov, 2002a].

Notes. Described based on a series of specimens collected in Eastern Ukraine, in Crimea (Evpatoria) and westernmost area of Black Sea coast in Krasnodar Region (Anapa) [Znojko, 1929]. According to Znojko [1929], confined to wet banks of saline water reservoirs. In PSER widespread, recorded from Crimea Republic to Saratov Region.

Bledius spectabilis Kraatz, 1857
(Fig.151)

Records. Astrakhan Region [Grebennikov, 2002a; Khachikov, 2012]; Kalmykia Republic [Grebennikov, 2002a]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 2017]; Volgograd Region [Makarov et al., 2009].

Notes. Widespread from Western Europe to West Siberia and Mongolia; distinctly halophilous and occurs both on sea shores and inland saline habitats, in Central Europe rare but may occur in large numbers [Schülke, 2012a; Schülke, Smetana, 2015]. In PSER in the Volga River basin and Kalmykia, but presumably more widespread than currently known.

[?! *Bledius subterraneus* Erichson, 1839]

Records. Samara Region ? [Goreslavets, 2002, 2004, 2014].

Notes. Transpalearctic, from Western Europe to the Russian Far East; in Central Europe on sandy banks [Schülke, 2012a]. In PSER so far known only from Krasnosamarskiy forest. Other records from Samara Region are not specified and may also come outside PSER. Presumably avoids thermophilic conditions of the PSER, as it is found only in Samara Region where it was considered rare [Goreslavets, 2002]. These records from Samara Region may need a revision.

[*Bledius tibialis* Heer, 1839]

Records. Saratov Region ? [Sazhnev, 2013b].

Notes. Widespread from Western Europe to Central Asia; in Central Europe predominantly in the south and east, not common [Schülke, 2012a]. Recently reported only from Lysye Gory District in Saratov Region at the PSER

border; additional relevant records are imprecise and old like "Caucasus" in Fauvel [1872], or like a general catalogue record from ST in Schülke and Smetana [2015].

Bledius tricornis Herbst, 1784

Records. Astrakhan Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a]; Kalmykia Republic [Khachikov, 2012]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2002, 2014, 2016a]; Saratov Region [Sazhnev, Anikin, 2014a]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a; Makarov et al., 2009].

Notes. Transpalearctic; halophilous, in Middle Europe occurs on the coastal and inland saline habitats [Schülke, 2012a], similar bionomics holds outside Middle Europe where such data available. Widespread in PSER.

Bledius unicornis (Germar, 1825)

Records. Astrakhan Region [Grebennikov, 2002a]; Dagestan Republic [Khachikov, 2012]; Kalmykia Republic [Grebennikov, 2002a; Khachikov, 2012]; Rostov Region [Khachikov, 2012, 2017]; Volgograd Region [Stierlin, 1867].

Notes. Widespread in the West Palearctic, occurs in coastal and inland habitats, halophilic [Schülke, 2012a]. In PSER recorded from the Volga River basin.

Bledius verres Erichson, 1840

Records. Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 2017]; Samara Region [Goreslavets, 2004, 2014]; Saratov Region [Sazhnev, 2013b]; Stavropol Region [Motschulsky, 1860]; Volgograd Region [Motschulsky, 1860; Hochhuth, 1862; Solsky, 1867; Grebennikov, 2002a].

Notes. Widespread in the Palearctic from Mediterranean to Middle Asia; also known from many tropical areas globally; in Central Europe only at saline shores of lake Neusiedler See [Schülke, 2012a]. Presumably widespread in PSER, but many records are old, from the 19th century.

[?! *Bledius vilis* Mäklin, 1878]

Records. Samara Region ? [Goreslavets, 2014].

Notes. So far known only from Scandinavia, Baltic region, Russia and northwestern Central Europe; rare species that occurs on sandy shores [Schülke, 2012a; Schülke, Smetana, 2015; Semionenkov et al., 2015]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level. In view of the known distribution of this species, a record from Samara Region seems doubtful.

Carpelimus aceus Gildenkov, 1997

Records. Astrakhan Region [Gildenkov, 2001; Grebennikov, 2002a]; Crimea Republic [Gildenkov, 2015]; Rostov Region [Gildenkov, 1997a, 2001; Khachikov, 2012, 2017]; Volgograd Region [Gildenkov, 2001].

Notes. Known from Hungary (György Makranczy, personal communication) and several regions in PSER, as well as in Azerbaijan and Uzbekistan [Gildenkova, 2001].

Carpelimus alutaceus (Fauvel, 1898)

Records. Crimea Republic [Gildenkova, 1998a, 2015].

Notes. Gildenkova [2001] outlines this species distribution range by Southern Europe and North Africa, but states that it requires clarification due to difficult discrimination of this species from its congeners, for example, *C. halophilus*. In PSER known only from Crimea Republic where it was mainly found at banks of saline lakes or estuaries.

Carpelimus bilineatus Stephens, 1832

Records. Astrakhan Region [Gildenkova, 2001; Grebennikov, 2002a]; Crimea Republic [Gildenkova, 1998a, 2001]; Dagestan Republic [Gildenkova, 2001]; Kalmykia Republic [Gildenkova, 2001]; Krasnodar Region [Gildenkova, 2001, 2015]; Rostov Region [Minoranskiy, Lomakin, 1978; Gildenkova, 2001; Khachikov, 2012, 2017]; Samara Region [Gildenkova, 2001]; Saratov Region [Sazhnev, 2013a; Sazhnev, Akinin, 2014a]; Volgograd Region [Gildenkova, 2001, 2015; Grebennikov, 2002a].

Notes. Widespread across the Palaearctic including the Russian Far East but missing in Siberia [Gildenkova, 2001], apparently introduced to all other continents [Gildenkova, 2015]. Widespread in all regions of PSER, but not recorded from plains of Stavropol Region and northern Dagestan.

[*Carpelimus blinsteini* Gildenkova, 1997]

Records. Crimea Republic [Gildenkova, 1997b, 1998a].

Notes. Known from the type series collected at the saline sands on the bank of Sivash Lake in Schastlivtsevo at Arbatskaya Strelka, which is in Kherson Region close to the northern border of Crimea Republic of Russia [Gildenkova, 1997b], and from additional material from Ukraine including Transcarpathian Region [Gildenkova, 2015]. Wider occurrence of this species at least in the Russian part of Crimea is likely.

Carpelimus corticinus (Gravenhorst, 1806)

Records. Astrakhan Region [Gildenkova, 2001]; Crimea Republic [Gildenkova, 1998a, 2015]; Krasnodar Region [Gildenkova, 2001, 2015]; Rostov Region [Minoranskiy, Lomakin, 1978; Gildenkova, 2001; Khachikov, 2017]; Samara Region [Gildenkova, 2001; Goreslavets et al., 2002; Goreslavets, 2014]; Saratov Region [Sazhnev, 2013a]; Stavropol Region [Gildenkova, 2001]; Volgograd Region [Gildenkova, 2001, 2015; Grebennikov, 2002a].

Notes. Very widespread in the entire Palaearctic region except far northern areas and deserts of North Africa [Gildenkova, 2001], recorded in the Oriental region [Gildenkova, 2015]. In PSER absent only in Kalmykia Republic and Orenburg Region, probably due to low sampling effort there.

Carpelimus elongatulus Erichson, 1837

Records. Rostov Region [Minoranskiy, Lomakin, 1978].

Notes. Widespread in Europe except Southern, occurs in Ciscaucasia, Fore Baikal area and the Russian Far East [Gildenkova, 2001], recorded from North America (György Makranczy, personal communication). In the Far East the nominotypical subspecies is replaced by the subspecies *C. e. ussuriensis* Gildenkova, 2004. Apparently, a temperate species avoiding thermophilic areas; noteworthy is the only record from Rostov Region in PSER.

Carpelimus ensius Gildenkova, 1997

Records. Crimea Republic [Gildenkova, 1997b, 1998a].

Notes. Known from the type series only, which includes the holotype collected in PSER at the saline shore of Karkinitzkiy Gulf at Portovaya in Crimea Republic, and paratypes from Kherson Region [Gildenkova, 2015]. According to G. Makranczy (personal communication), a record of this species from Hungary which was based on a single male [Gildenkova, 2015], is likely a case of mislabeling.

Carpelimus erichsoni (Sharp, 1871)

Records. Crimea Republic [Gildenkova, 1998a]; Krasnodar Region [Gildenkova, 2001]; Rostov Region [Gildenkova, 2001; Khachikov, 2017]; Samara Region [Gildenkova, 2001; Goreslavets et al., 2002; Goreslavets, 2014]; Stavropol Region [Gildenkova, 2001].

Notes. Gildenkova [2001] stated very poor knowledge about true distribution of this difficult-to-identify species and confidently reported its occurrence in Central, Southern and Eastern Europe, and in Middle Asia. Widespread in PSER.

Carpelimus exiguus (Erichson, 1837)

Records. Krasnodar Region [Gildenkova, 2001, 2015]; Rostov Region [Minoranskiy, Lomakin, 1978; Gildenkova, 2001, 2016; Khachikov, 2017]; Samara Region [Gildenkova, 2001, 2016; Goreslavets et al., 2002; Goreslavets, 2014]; Saratov Region [Gildenkova, 2001, 2016]; Volgograd Region [Gildenkova, 2001, 2012, 2016].

Notes. Transpalaearctic, widespread from Europe (except Northern), through Asia Minor and the Caucasus, to Siberia, Mongolia and the Russian Far East; a number of the extra-Palaearctic records in earlier literature which need revision [Gildenkova, 2001]. Widespread in PSER too.

[*Carpelimus fiorii* Gildenkova, 2001]

Records. Samara Region ? [Goreslavets et al., 2002; Goreslavets, 2014; Gildenkova, 2015].

Notes. Poorly known and presumably widely distributed species known only from Italy, Samara Region (Samarskaya Luka and unspecified records) and from Georgia [Gildenkova, 2015]. No clear records from PSER.

Carpelimus foveolatus (C. Sahlberg, 1834)

Records. Crimea Republic [Gildenkov, 2001]; Krasnodar Region [Gildenkov, 2001]; Rostov Region [Minoranskiy, Lomakin, 1978; Gildenkov, 2001; Khachikov, 2017].

Notes. Widespread in Europe and occurs in the Caucasus; distinct subspecies *C. f. turanus* Gildenkov, 2001 in Middle Asia; seemingly thermophilic and confined to banks of saline water bodies [Gildenkov, 2001]. In PSER known from Crimea Republic to the Volga River basin with gaps.

Carpelimus fuliginosus (Gravenhorst, 1802)

Records. Krasnodar Region [Gildenkov, 2001]; Rostov Region [Gildenkov, 2001; Khachikov, 2017]; Samara Region [Gildenkov, 2001; Goreslavets, 2014].

Notes. Widespread in Europe, the Caucasus and reaches Middle Asia; confined to warm and humid habitats; absent in many areas of Central European Russia [Gildenkov, 2001, 2015]. In view of the somewhat disjunct distribution range outlined in Gildenkov [2001], patchy distribution of this species in PSER, where it is presumably absent in large areas is noteworthy.

Carpelimus gracilis (Mannerheim, 1830)
(Fig. 15F)

Records. Astrakhan Region [Gildenkov, 2001]; Krasnodar Region [Gildenkov, 2001]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 2017]; Samara Region [Gildenkov, 2001; Goreslavets et al., 2002; Goreslavets, 2014]; Volgograd Region [Gildenkov, 2001].

Notes. Widespread in the West Palaearctic, however in Russia absent to the east from central Siberia [Gildenkov, 2001, 2015]; also recorded from North America, apparently introduced [Gildenkov, 2001]. Patchy records from various areas in PSER.

Carpelimus gusarovi Gildenkov, 1997

Records. Astrakhan Region [Gildenkov, 1997a, 2001; Grebennikov, 2002a]; Crimea Republic [Gildenkov, 1997a, 2015]; Dagestan Republic [Gildenkov, 1997a, 2001]; Kalmykia Republic [Gildenkov, 2001; Khachikov, 2012]; Krasnodar Region [Gildenkov, 2001]; Rostov Region [Gildenkov, 1997a, 2001; Khachikov, 2012, 2017]; Volgograd Region [Gildenkov, 2015].

Notes. Thermophilic species widespread in Southeastern Europe, Asia Minor and the Caucasus (lowlands), Middle Asia (Kazakhstan) and Near East [Gildenkov, 2001, 2015]. In PSER widespread but not recorded from Samara, Saratov and Orenburg regions.

Carpelimus halophilus (Kiesenwetter, 1844)

Records. Crimea Republic [Gildenkov, 2001]; Rostov Region [Minoranskiy, Lomakin, 1978; Gildenkov, 2001; Khachikov, 2017]; Samara Region [Gildenkov, 2001; Goreslavets et al., 2002; Goreslavets, 2014].

Notes. Gildenkov [2001] states uncertain distribution range for this species because of its difficult discrimination from similar species and resulting many misidentifications. He assumed this species range to cover Europe except Northern, the Lower Volga region, Kazakhstan and Baikal area. According to Gildenkov [2001], distinctly halophilous species. Records from PSER are sparse and confined to Crimea Republic, Rostov and Samara regions.

Carpelimus lgockii (Bernhauer, 1914)

Notes. Known from the holotype from "Odessa, Khadzhibeyskiy estuary" and additional material from Chongar Peninsula of Crimea and from Kherson Region [Gildenkov, 1998b, 2001]. Gildenkov and Gontarenko [2010] list additional material from Odessa Region, Gildenkov [2015] lists a neotype from "Odessa lower reaches of Kuyanik liman". It is likely that the species occurs wider, at least in Crimea.

Carpelimus lindrothi (Palm, 1942)

Records. Astrakhan Region [Gildenkov, 2001]; Krasnodar Region ? [Gildenkov, 2015]; Rostov Region [Gildenkov, 2001]; Samara Region [Gildenkov, 2001]; Volgograd Region [Gildenkov, 2001; Grebennikov, 2002a].

Notes. Widespread in Central and Northern Europe, reaching European Russia; recorded from the East Caucasus, southern Siberia and the Russian Far East (separate subspecies *C. l. camtchaticus* Gildenkov, 2004 confined to Kamchatka Peninsula); considered a more cold-loving, more northern vicariant of *C. nitidus* (see below) [Gildenkov, 2001, 2015]. Widespread in PSER with gaps, eastwards to the Volga River basin. Record from Krasnodar Region comes from foothills around Tuapse.

Carpelimus manchuricus (Bernhauer, 1938)

Records. Krasnodar Region [Gildenkov, 2001]; Rostov Region [Gildenkov, 2001; Khachikov, 2017]; Samara Region [Gildenkov, 2001; Goreslavets et al., 2002; Goreslavets, 2014]; Volgograd Region [Gildenkov, 2001].

Notes. Transpalaearctic species with the nominotypical subspecies restricted to the Russian Far East and adjacent regions of China, and *C. m. subtilicornis* Roubal, 1946 in the rest of the distribution area including three regions of PSER.

Carpelimus modestus (Casey, 1889)

Records. Astrakhan Region [Gildenkov, 2001 (as *C. heidenreichi*); Grebennikov, 2002a]; Samara Region [Gildenkov, 2001 (as *C. heidenreichi*); Goreslavets et al., 2002; Goreslavets, 2014]; Volgograd Region [Gildenkov, 2001 (as *C. heidenreichi*); Grebennikov, 2002a].

Notes. Central and Southern Europe, Siberia, Mongolia and the Russian Far East [Gildenkov, 2001, 2015 for *C. heidenreichi*]; recorded from Burundi in tropical Africa which could be a case of mislabeling or new invasion [Gildenkov, 2015]. In PSER along the Volga River.

Carpelimus nigrita (Wollaston, 1857)

Records. Astrakhan Region [Gildenkova, 2001]; Crimea Republic [Gildenkova, 1998a]; Kalmykia Republic [Gildenkova, 2001]; Krasnodar Region [Gildenkova, 2001, 2015]; Rostov Region [Gildenkova, 2001; Khachikov, 2017]; Samara Region [Gildenkova, 2001; Goreslavets, 2014]; Volgograd Region [Gildenkova, 2001, 2015].

Notes. Thermophilic species widespread in Southern Europe, Asia Minor, the Caucasus, Middle Asia (lowlands), southern Siberia and Mongolia; in North Africa known from Egypt [Gildenkova, 2001, 2015]. Divided into two subspecies, the nominotypical restricted to Madeira, the subspecies *C. n. anthracinus* (Mulsant et Rey, 1861) distributed everywhere else. *Carpelimus n. anthracinus* is widespread in PSER too, where it reaches south-east of Samara Region, but not recorded in Orenburg Region, probably due to poor sampling there.

Carpelimus nitidus (Baudi di Selve, 1848)

Records. Astrakhan Region [Gildenkova, 2001; Grebennikov, 2002a]; Crimea Republic [Gildenkova, 2001, 2015]; Dagestan Republic [Gildenkova, 2001]; Krasnodar Region [Gildenkova, 2001]; Rostov Region [Minoranskiy, Lomakin, 1978; Gildenkova, 2001; Khachikov, 2017]; Volgograd Region [Gildenkova, 2001].

Notes. Widespread in Southern Europe, Asia Minor, the Caucasus and Middle Asia [Gildenkova, 2001, 2015], where it is found from lowlands to medium elevations of the mountains. In PSER widespread but so far notably absent from Samara, Saratov and Orenburg regions. Considered a more thermophilic vicariant of its sister more northern species, *C. lindrothi* (see above).

Carpelimus obesus (Kiesenwetter, 1844)
(Fig. 15N)

Records. Astrakhan Region [Grebennikov, Komarov, 1998; Gildenkova, 2001; Grebennikov, 2002a]; Crimea Republic [Gildenkova, 1998b, 2015]; Kalmykia Republic [Grebennikov, 2002a]; Krasnodar Region [Gildenkova, 2001, 2015]; Rostov Region [Minoranskiy, Lomakin, 1978; Gildenkova, 2001, 2009; Khachikov, 2017]; Samara Region [Gildenkova, 2001; Goreslavets et al., 2002]; Saratov Region [Sazhnev, Anikin, 2014a]; Stavropol Region [Gildenkova, 2001]; Volgograd Region [Grebennikov, Komarov, 1998; Gildenkova, 2001; Grebennikov, 2002a].

Notes. Widespread across the Palaearctic region, except its southeast and North Africa [Gildenkova, 2001]. Good sampling in the Russian Federation including PSER, although not found in Orenburg Region and northern Dagestan.

Carpelimus politus (Kiesenwetter, 1850)

Records. Kalmykia Republic [Gildenkova, 2001]; Krasnodar Region [Gildenkova, 2001]; Rostov Region [Gildenkova, 2001]; Samara Region [Gildenkova, 1994, 2001; Goreslavets et al., 2002; Goreslavets, 2014 (in some references as a species *C. tenerepunctus*)]; Volgograd Region [Gildenkova, 2001, 2015].

Notes. Widespread from Central and Southern Europe (nominotypical subspecies), through the South European Russia to the Caucasus and Middle Asia (subspecies *C. p. tenerepunctus* Gildenkova, 1994). In PSER rather widespread west from the Volga River.

Carpelimus pusillus (Gravenhorst, 1802)

Records. Astrakhan Region [Gildenkova, 2001; Grebennikov, 2002a]; Krasnodar Region [Gildenkova, 2001]; Rostov Region [Gildenkova, 2001]; Samara Region [Gildenkova, 2001; Goreslavets et al., 2002; Goreslavets, 2014].

Notes. Widespread Palaearctic species not found in the far north of Europe or in Siberia, but found in the Russian Far East [Gildenkova, 2015]; invasive in North America; reliably reported from Oriental and Afrotropical regions [Gildenkova, 2015]; notably polytopic and polizonal, occurs at shores of various water bodies including saline; noted as pest on watermelon plantations in the south [Gildenkova, 2001]. In spite of wide distribution range, also in PSER not found in some areas there.

Carpelimus rivularis (Motschulsky, 1860)

Records. Astrakhan Region [Gildenkova, 2001]; Krasnodar Region [Gildenkova, 2001, 2015]; Crimea Republic [Gildenkova, 1998b]; Rostov Region [Minoranskiy, Lomakin, 1978; Gildenkova, 2001; Khachikov, 2017]; Samara Region [Gildenkova, 2001; Goreslavets et al., 2002; Goreslavets, 2014]; Stavropol Region [Gildenkova, 2001]; Volgograd Region [Gildenkova, 2001; Grebennikov, 2002a].

Notes. Holarctic species, which in the Palaearctic broadly occurs everywhere except far north and deserts in the south; in Europe reaches polar circle [Gildenkova, 2001, 2015]. Widespread in PSER but not found in Crimea, Kalmykia and northern Dagestan.

Carpelimus schneideri (Ganglbauer, 1895)

Records. Crimea Republic [Gildenkova, 1998b, 2001]; Dagestan Republic [Gildenkova, 2015]; Kalmykia Republic [Gildenkova, 2015]; Samara Region [Goreslavets et al., 2002; Gildenkova, 2004, 2015; Goreslavets, 2014].

Notes. Widespread polytypic West Palaearctic species. The nominotypical subspecies is restricted to Central Europe; *C. s. freyi* (Koch, 1936) is known from Near East; *C. s. macropterus* (Fauvel, 1902) is confined to North Africa. The rest of the range belongs to *C. s. zerchei* Gildenkova, 2001, a subspecies which is known mainly from the type series which includes the holotype from Samara Region and paratypes from Crimea and northern Dagestan, Kherson Region, and Uzbekistan [Gildenkova, 2001] and from additional material reported in Gildenkova [2015]. Some 'paratypes' from Crimea were reported by Gildenkova [1998a] as "*Carpelimus zerchei* in litt." prior to formal species description.

Carpelimus similis (Smetana, 1967)

Records. Crimea Republic [Gildenkova, 1998b, 2001]; Krasnodar Region [Gildenkova, 2001, 2015]; Samara Region [Goreslavets, 2004]; Stavropol Region [Gildenkova, 2001].

Notes. Widespread in Europe except Northern, in Asia Minor, the Caucasus and Middle Asia [Gildenkov, 2001]. Widespread in PSER too, but markedly absent in some regions there.

Carpelimus suavis Gildenkov, 2002

Records. Samara Region [Gildenkov, 2002; Goreslavets et al., 2002; Goreslavets, 2014].

Notes. Known from the type series with the holotype and some paratypes from the PSER area of Samara Region, and more paratypes from Uzbekistan and Turkmenistan [Gildenkov, 2002].

Carpelimus troglodytes (Erichson, 1939)

Records. Crimea Republic [Gildenkov, 1998a, b, 2001, 2015].

Notes. Thermophilic species confined to Mediterranean (Southern Europe and North Africa, nominotypical subspecies) [Gildenkov, 2001]. In Crimea represented by a separate subspecies *C. t. tauricus* Gildenkov, 1998 from localities both in Ukraine and Russia.

Coprophilus pennifer (Motschulsky, 1845)

Records. Astrakhan Region [Kirschenblatt, 1938; Grebennikov, 2002a; Gildenkov, 2020a]; Crimea Republic [Solsky, 1867; Fauvel, 1875a]; Kalmykia Republic [Grebennikov, 2002a; Khachikov, 2012; Gildenkov, 2019a, 2020a]; Rostov Region [Khachikov, 2017; Gildenkov, 2019a]; Samara Region [Goreslavets et al., 2002; Gildenkov, 2019a]; Saratov Region [Kovalev et al., 2011; Sazhnev, Anikin, 2014a; Gildenkov, 2019a]; Stavropol Region [Gildenkov, 2019a]; Volgograd Region [Kirschenblatt, 1936, 1938; Grebennikov, 2002a; Makarov et al., 2009; Gildenkov, 2019a].

Notes. According to the revision of Gildenkov [2019a], this is a thermophilic species widespread in southern West Palaearctic from Crimea, Turkey and Iraq in the west to eastern Kazakhstan and southeastern Afghanistan in the east. In PSER everywhere except Kuban plain in Krasnodar Region, Republic of Adygea and Dagestan; only old records from Crimea.

Coprophilus pseudopiceus Gildenkov, 2015

Records. Rostov Region [Gildenkov, Khachikov, 2017; Khachikov, 2017].

Notes. According to Gildenkov [2015], the known distribution of this species earlier confused with *C. piceus* must be widespread in Europe. Khachikov [2017] is the only record of this species in PSER. Based on the material listed in Gildenkov [2015] and a summary in Schülke [2012a, also for *piceus*], *C. pseudopiceus* is a nidicolous species confined to nests of small mammals. In case *C. pseudopiceus* and *C. schubertii* are vicariant species, their co-occurrence in Rostov Region is noteworthy [Gildenkov, Khachikov, 2012]. See also notes for *C. schubertii* below.

Coprophilus rufipennis (Reitter, 1894)

Records. Astrakhan Region [Kirschenblatt, 1938]; Kalmykia Republic [Kirschenblatt, 1938].

Notes. Poorly known Middle Asian species [Gildenkov, Khachikov, 2012], also recorded from Iran [Schülke, Smetana, 2015] as well as from Astrakhan Region and Kalmykia Republic in PSER [Kirschenblatt, 1938].

Coprophilus schubertii (Mostchulsky, 1860)

Records. Astrakhan Region [Kirschenblatt, 1938]; Rostov Region [Khachikov, 2012, 2017; Gildenkov, 2015]; Saratov Region [Solsky, 1867; Kovalev et al., 2011; Sazhnev et al., 2017]; Stavropol Region [Gildenkov, 2015]; Volgograd Region [Solsky, 1867; Kirschenblatt, 1936, 1938; Grebennikov, 2002a; Gildenkov, 2015].

Notes. According to Gildenkov [2015] who confirmed a synonymy of *C. schubertii* and *C. piceus* earlier noted by Kirschenblatt [1938] but overlooked in later literature, *C. schubertii* is wide-spread in eastern Ukraine, PSER, eastern Transcaucasia and southern Siberia east to Irkutsk Region. Also, Gildenkov [2015] established that earlier records of *C. schubertii* from Europe west from Ukraine belongs to a different species which he described as *C. pseudopiceus* Gildenkov, 2015. *Coprophilus schubertii* is often found in the gopher burrows.

Coprophilus solskyi Bernhauer, 1908

Records. Rostov Region [Gildenkov, Khachikov, 2017; Khachikov, 2017; Gildenkov, 2019b, 2020b].

Notes. The latest revision and a lectotype designation of this species is provided in Gildenkov [2019b]. Gildenkov and Khachikov [2017] and Gildenkov [2019b] who studied the type material of *C. solskyi* from Romania, also recorded this species for Rostov Region in PSER. Gildenkov and Khachikov [2017] stated that their earlier incorrect record of *C. rufipennis* (Reitter, 1894) for Rostov Region was based on misidentification of *C. solskyi*. Considering the recently established synonymy of *C. solskyi* and *C. fauveli* [Gildenkov, 2019b], *C. solskyi* must be a widespread species patchily known from Romania, Rostov Region of PSER and from Azerbaijan.

Deleaster dichrous (Gravenhorst, 1802)
(Fig. 15G)

Records. Krasnodar Region [Grebennikov, 2002b]; Samara Region [Goreslavets, 2002, 2014]; Saratov Region [Grebennikov, 2002b]; Stavropol Region [Khachikov, 1998a]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a, b].

Notes. Common in the West Palaearctic, where it reaches Asia Minor and Transcaucasia in the south and West Siberia in the east [Jenkins Shaw, 2018]; introduced to the Nearctic region [Smetana, 2019]. Inhabits wet leaf litter and other plant remains, sandy shores [Goreslavets et al., 2002; Schülke, 2012a]; flies in the twilight [Schülke, 2012a]. In PSER recorded from Krasnodar Region to the Volga River basin.

Eppelsheimius pirazzolii Eppelsheim, 1885

Records. Dagestan Republic [Khachikov, 2003]; Kalmykia Republic [Khachikov, 2003].

Notes. Thermophilic species widespread in North Africa and Near East [Schülke, Smetana, 2015]. In PSER known from single specimens from northern Dagestan and Kalmykia without bionomic data [Khachikov, 2003].

Euphantias pliginskii Bernhauer, 1912

Records. Crimea Republic [Bernhauer, 1912; Blinsein, 1976; Gusarov, 1989; Khachikov, 2012]; Dagestan Republic [Khachikov, 2003 (as *E. insignis*), 2012].

Notes. Described [Bernhauer, 1912] and repeatedly recorded from Crimea, this species was also recorded for northern Dagestan, the latest record based on a single female found near Sulak village [Khachikov, 2012]. Known only from PSER; presumably halophilous as other species of this genus.

Euphantias pusanovi Blinsein, 1976

Records. Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 2003, 2012, 2017]; Volgograd Region [Khachikov, 2012].

Notes. Described from a series of specimens from several localities in eastern Ukraine [Blinsein, 1976]. Halophilous, confined to wet banks of saline water reservoirs [Khachikov, 2012]. Later discovered in Rostov and Volgograd regions in PSER.

Manda mandibularis Gyllenhal, 1827
(Fig. 15B)

Records. Rostov Region [Khachikov, 1998a, 2012, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2014]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread in Europe including European Russia, reaching West Siberia in the east [Schülke, Smetana, 2015]. In central Europe on banks, often swarming on meadows or coming to light [Schülke, 2012a]. In view of the recently found similar species *M. tanaitica* (see below), distribution of *M. mandibularis* needs to be checked. In PSER known only from Rostov, Samara and Volgograd regions.

Manda tanaitica Gildenkov et Khachikov, 2007

Records. Rostov Region [Gildenkov, Khachikov, 2007; Khachikov, 2012, 2017].

Notes. Described from PSER, from several specimens collected in various localities of Rostov Region only [Gildenkov, Khachikov, 2007]. Presumably a more widespread species earlier confused with *M. mandibularis* (see above). Bionomics is unknown.

[*Ochtheophilus omalinus* (Erichson, 1840)]

Notes. Distributed from North Africa through almost the whole of Europe to Turkey and the Caucasus; mostly

found at lower elevations at banks of larger and slower rivers, at muddy spots, often in vegetable debris embedded in finer wet sand on bank, or in flood debris [Makranczy, 2014]. Never recorded in PSER, but, based on the overall distribution and bionomics, can be expected here; the nearest finding is from southern Urals in Bashkortostan [Makranczy, 2014].

Oxytelus fulvipes Erichson, 1839

Records. Rostov Region [Khachikov, 2017].

Notes. Known only from south of Northern, from Central and Eastern Europe; usually found in spring in humid habitats [Schülke, 2012a]. Khachikov [2017] is the only record of this species in PSER and Russia in general.

Oxytelus laqueatus (Marsham, 1802)
(Fig. 15M)

Records. Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2016]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread in the Palaearctic, adventive to North and South America; in Central Europe common in the north, more rare and montane in the south, rare in the west; in rotten substrates [Schülke, 2012a; Schülke, Smetana, 2015]. In PSER only in the Volga River basin.

Oxytelus migrator Fauvel, 1904

Records. Rostov Region [Khachikov, 2017]; Volgograd Region [Grebennikov, 2002a].

Notes. East Palaearctic and Oriental species adventive and widespread in Europe; in Central Europe everywhere and common; occurs in compost, often flying [Schülke, 2012a; Schülke, Smetana, 2015]. In PSER only in Rostov and Volgograd regions.

Oxytelus piceus (Linnaeus, 1767)

Records. Astrakhan Region [Pushkin, 2015, 2016]; Dagestan Republic [Khachikov, 1998a]; Kalmykia Republic [Khachikov, 1998a]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1998a, 2012, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2014]; Saratov Region [Sazhnev, Anikin, 2014a, 2020]; Stavropol Region [Pushkin, Maksimova, 2014; Pushkin, Minav, 2015]; Volgograd Region [Makarov et al., 2009].

Notes. Widespread in the entire Palaearctic, introduced to Afrotropical region; very common in Central Europe, in rotten substrates of all kinds, often flying [Schülke, 2012a; Schülke, Smetana, 2015]. Widespread in PSER, with some gaps.

Oxytelus sculptus Gravenhorst, 1806

Records. Astrakhan Region [Grebennikov, 2002a]; Rostov Region [Khachikov, 1998a, 2012, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004]; Volgograd Region [Grebennikov, 2002a; Makarov et al., 2009].

Notes. Cosmopolitan [Schülke, 2012a]; occurs in compost and manure of cattle, horses, and poultry [Webster et al., 2012]. In Russia distributed from the European part to East Siberia [Schülke, Smetana, 2015]. In PSER recorded from Rostov Region and from the Volga River basin.

Planeustomus heydeni (Eppelsheim, 1884)

Records. Astrakhan Region [Eppelsheim, 1884; Grebennikov, 2002a; Khachikov, 2012]; Kalmykia Republic [Khachikov, 2012]; Rostov Region [Khachikov, 1998a, 2012, 2017].

Notes. Thermophilic species described on the mix of specimens which included material from Astrakhan in PSER [Eppelsheim, 1884]; the nominotypical subspecies confined to Southeastern Europe which in Central Europe is known only from Slovakia, considered very rare; in Turkey represented by the subspecies *P. h. seriatipennis* Koch, 1937 [Schülke, 2012a; Schülke, Smetana, 2015]. In PSER recorded from Rostov Region through Kalmykia to Astrakhan Region.

Planeustomus kahrii (Kraatz, 1857)

Records. Rostov Region [Khachikov, 2003, 2012, 2017]; Volgograd Region [Grebennikov, 2002a].

Notes. From Southwestern to Southeastern Europe, in North Africa and the Caucasus [Schülke, Smetana, 2015]. In PSER recorded in Rostov and Volgograd regions only.

Planeustomus palpalis (Erichson, 1839)
(Fig. 15E)

Records. Rostov Region [Khachikov, 2003, 2012, 2017].

Notes. Widespread in Europe, from Great Britain and southern Northern Europe to Southeastern Europe [Schülke, 2012a; Schülke, Smetana, 2015]. In PSER recorded only in Rostov Region, which is the easternmost known record for the species.

[*Platystethus akkumus* Kastcheev, 1999]

Records. Samara Region ? [Goreslavets, 2014].

Notes. Described from Kazakhstan [Kastcheev, 1999], this poorly known species is recorded in Samara Region without geographic details within the region level. Therefore, we do not know if it occurs in PSER or only nearby.

[? *Platystethus alutaceus* Thomson, 1861]
(Fig. 15O)

Records. Rostov Region [Khachikov, 2003].

Notes. Widespread Transpalearctic species; in Central Europe confined to plains where it occurs in decaying debris of all sorts [Schülke, 2012a; Schülke, Smetana, 2015]. The only PSER record from Rostov Region needs to be verified (Eduard Khachikov, personal communication).

Platystethus arenarius (Geoffroy, 1785)

Records. Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Stavropol Region [Khachikov, 1998a, 2012].

Notes. Widespread Transpalearctic species; in Central Europe confined everywhere in decaying debris of all sorts [Schülke, 2012a; Schülke, Smetana, 2015]. In PSER in some areas, probably more widespread than currently known.

Platystethus capito Heer, 1839

Records. Samara Region [Goreslavets, 2014, 2016a], Saratov Region ? [Sazhnev, 2012].

Notes. Widespread from Western Europe and North Africa to West Siberia and Middle Asia, the subspecies *P. c. submontanus* Kascheev, 2002 known from Kazakhstan; in Central Europe mainly in lowlands, at sandy banks of water reservoirs, in decaying substrates [Schülke, 2012a; Schülke, Smetana, 2015]. In PSER known from Krasnosamarskiy forest in Samara region. Other records from Samara Region are not specified and may also come outside PSER. Adjacent to PSER records come from Khvalynskiy National Reserve in Saratov Region and foothills of the North-Western Caucasus (Eduard Khachikov, personal communication, identification verified by Michael Schülke).

Platystethus degener Mulsant et Rey, 1878

Records. Dagestan Republic [Khachikov, Iljina, 2011; Khachikov et al., 2021].

Notes. Distributed from Europe to Middle Asia and India, also recorded from North America; prefers various humid decaying debris [Schülke, 2012a]. In PSER so far recorded only from northern Dagestan.

Platystethus cornutus Gravenhorst, 1802
(Fig. 15K)

Records. Astrakhan Region [Grebennikov, 2002a]; Kalmykia Republic [Khachikov, 1998a; Grebennikov, 2002a]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1998a, 2012, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Saratov Region [Sazhnev, Anikin, 2014a]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a].

Notes. Widespread across the entire Palearctic and occurs in the Oriental Afrotropical and Neotropical biogeographic regions; status of the subspecies described from China require revision; everywhere in Central Europe, common in humid decaying debris [Schülke, Smetana, 2015]. In PSER widespread except Crimea and Ciscaucasia.

[? *Platystethus ebneri* Scheerpeltz, 1929]

Records. Samara Region ? [Goreslavets, 2004].

Notes. Poorly known species described from Lebanon [Scheerpeltz, 1929]. In PSER recorded only from Krasnosamarskiy forest in Samara Region, an interesting outlying record that requires verification.

[? *Platystethus laevis* Märkel et Kiesenwetter, 1848]

Notes. Species confined to the Alps, Appenines and the Caucasus, in Europe where it occurs in the decaying substrates of alpine and subalpine habitats not common [Schülke, 2012a; Schülke, Smetana, 2015]. From the Caucasus area known from old records [e.g., Horion, 1963; Scheerpeltz, 1955] that need revision and from unpublished records (Eduard Khachikov, personal communication about specimens in his collection, identifications verified by Michael Schülke). Never recorded and highly unlikely in PSER.

Platystethus nitens (C.R. Sahlberg, 1832)

Records. Dagestan Republic [Khachikov, 1998a]; Kalmykia Republic [Khachikov, 1998a, 2012]; Krasnodar Region [Khachikov, 1998a]; Rostov Region [Khachikov, 1998a]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Saratov Region [Sazhnev, 2012; Sazhnev, Anikin, 2014a]; Stavropol Region [Khachikov, 1998a]; Volgograd Region [Kirschenblatt, 1936; Makarov et al., 2009].

Notes. Widespread across the entire Palaearctic; in Central Europe everywhere, but rare in the north and in the mountains; confined to wet banks of water reservoirs, in decaying substrates [Schülke, 2012a; Schülke, Smetana, 2015]. In PSER nearly everywhere except Crimea.

Platystethus nodifrons Mannerheim, 1830

Records. Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2016a]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread across the entire Palaearctic; in Central Europe more in the north and east, in the south and west rare or absent; confined to wet banks of water reservoirs, in decaying substrates [Schülke 2012a; Schülke, Smetana, 2015]. In PSER recorded from Krasnosamarskiy forest in Samara Region and Kotluban village in Volgograd Region. Next to PSER from Samarskaya Luka. We are not certain if some other records from Samara Region belong to PSER because they lack geographic details within the region level.

Platystethus rufospinus Hochhuth, 1851

Records. Krasnodar Region [Khachikov, 2012]; Rostov Region [Khachikov, 1998a, 2012, 2017]; Volgograd Region [Makarov et al., 2009].

Notes. Distributed from Southern and Southeastern Europe, through Turkey and Transcaucasia to Central Asia [Schülke, Smetana, 2015], poorly known species. In PSER patchily recorded from Krasnodar Region, as well as Rostov and Volgograd regions only.

Platystethus spinosus Erichson, 1840

Records. Astrakhan Region [Grebennikov, 2002a; Khachikov, 2012]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1998a, 2017]; Samara Region [Goreslavets,

2014]; Saratov Region [Kovalev et al., 2011]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a; Makarov et al., 2009].

Notes. Widespread from Southern Europe and Mediterranean, through Turkey and Transcaucasia to Middle Asia; in Central Europe only in southern parts, rare, occurs in wet habitats, on banks of water reservoirs in decaying debris [Schülke, 2012a; Schülke, Smetana, 2015]. In PSER only in the Volga River basin and in Rostov Region.

Thinobius brevipennis Kiesenwetter, 1850

Records. Volgograd Region [Grebennikov, 2002a].

Notes. Widespread from Great Britain to China, albeit with gaps in Russia; in Central Europe from lowlands to higher elevations in the Alps, but rare, contrary to other congeners also occurs near stagnant waters and near snowfields in the mountains [Schülke, Makranczy, 2012; Schülke, Smetana, 2015]. In PSER recorded only from Volgograd Region.

[? *Thinobius comes* Smetana, 1959]

Records. Samara Region ? [Goreslavets, 2004, 2014].

Notes. Rare species known from some areas in Central Europe, Romania and Ukraine [Schülke, Makranczy, 2012; Schülke, Smetana, 2015]. In PSER so far known only from Krasnosamarskiy forest. Other records from Samara Region are not specified and may also come outside PSER. These are the easternmost records of this species which need verification.

Thinobius flagellatus Lohse, 1984

Records. Volgograd Region [Grebennikov, 2002a].

Notes. From Northern and Central Europe to East Siberia and the Far East of Russia; in Central Europe not rare, in gravel and sand banks of bigger rivers, also on muddy spots of banks [Schülke, Makranczy, 2012; Schülke, Smetana, 2015]. In PSER recorded only in Volgograd Region.

[? *Thinobius longipennis* (Heer, 1841)]

Notes. Widespread in Europe, from France and Great Britain to Southeastern Europe, known from North China and Mongolia; in Central Europe rare, but sometimes may appear in large quantities, on sandy banks of flowing waters [Schülke, Makranczy, 2012; Schülke, Smetana, 2015]. In PSER not recorded; here included because of the old records from "Caucasus" [Fauvel, 1889] which need revision.

[? *Thinodromus arcuatus* Stephens, 1834]
(Fig. 15G)

Notes. Widespread in the West Palaearctic [Schülke, Smetana, 2015], occurs near water [Schülke, 2012a]. No unambiguous records from PSER; here included because of old general imprecise records from "Caucasus" [Klima, 1904; Ganglbauer, 1895; Horion, 1963].

[? *Thinodromus dilatatus* Erichson, 1839]

Notes. Widespread in western and southern West Palaearctic; in Central Europe on sandy shores of flowing rivers [Schülke, 2012a; Schülke, Smetana, 2015]. No unambiguous records from PSER; here included because of old general imprecise records from “Caucasus” [Fauvel, 1873a].

Thinodromus motschulskyi Hochhuth, 1860

Records. Crimea Republic [Gildenkov, 2000]; Krasnodar Region [Gildenkov, 2000].

Notes. Reported from Georgia, ST and Ukraine in Schülke and Smetana [2015]. Gildenkov [2000] reports this species from Sevastopol in Crimea and Ubinskaya in Krasnodar Region of PSER.

Subfamily Paederinae

Achenium depressum (Gravenhorst, 1802)

Records. Astrakhan Region [Grebennikov, 2002a]; Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Orenburg Region [Assing, 2010c]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1998a; Assing, 2010c; Anlaş et al., 2011a]; Samara Region [Goreslavets et al., 2002]; Saratov Region [Kovalev et al., 2011; Sazhnev, Anikin, 2014a]; Volgograd Region [Khachikov, 1998a; Grebennikov, 2002a; Makarov et al., 2009; Assing, 2010a].

Notes. Widespread and common south European species confined to unforested habitats; recorded from southern Italy in the west to Orenburg Region of Russia in the east; non-Russian records are based on rich material with available bionomic data [Assing, 2010c]. In PSER recorded from almost all regions; older records prior the revision of this genus by V. Assing need verification.

Achenium caucasicum Laporte, 1835

Records. Dagestan Republic [Khachikov et al., 2021].

Notes. Widespread in the Caucasus region and Middle Asia; biology is unknown [Assing, 2010c]. In PSER so far recorded from Tagirkent-Kazmalyar village near to the Caspian Sea shore in Dagestan Republic [Khachikov et al., 2021]. Next to PSER known from the foothills of the North-Western Caucasus [Assing, 2010c].

Achenium humile (Nicolai, 1822)
(Fig. 16A)

Records. Astrakhan Region [Kirschenblatt, 1938; Horion, 1965; Grebennikov, 2002a]; Crimea Republic [Gusarov, 1989; Assing, 2010c]; Orenburg Region [Assing, 2010c]; Rostov Region [Khachikov, 1998a, 2017; Assing, 2010c]; Samara Region [Horion, 1965; Goreslavets et al., 2002; Goreslavets, 2014]; Saratov Region [Horion, 1965]; Volgograd Region [Grebennikov, 2002a; Makarov et al., 2009; Assing, 2010c].

Notes. Widespread thermophilic West Palaearctic species with Ponto-Mediterranean type of distribution

[Assing, 2010c]. Prefers unforested habitats, usually occurs on the meadows and shores of water bodies [Assing, 2010c]. In PSER recorded from almost all regions from Crimea to Orenburg Region.

Achenium planum Erichson, 1840

Records. Crimea Republic [Gusarov, 1989; Assing, 2010c]; Dagestan Republic [Assing, 2010c; Khachikov et al., 2021]; Krasnodar Region [Assing, 2010c].

Notes. Widespread in Middle Asia and the Caucasus; reaches Crimea in the west; found both in the plains and higher elevations up to 2250 m [Assing, 2010c]. In PSER recorded only from Crimea and from Derbent (Caspian Sea shore) in Dagestan. Records by Assing [2010c] from Krasnodar Region come from the foothills of the North-Western Caucasus.

Achenium propontiacum Bordoni, 2009

Records. Crimea Republic [Assing, 2010c]; Rostov Region ? [Khachikov, 2017].

Notes. Similar in bionomics with *A. depressum*, but distributed only around the Black Sea region [Assing, 2010c]. In this respect records of *A. propontiacum* in Khachikov [2017] from Rostov Region in PSER, which is further north from Black Sea, require revision.

Achenium quadriceps Eppelsheim, 1889

Records. Astrakhan Region [Grebennikov, 2002a; Assing, 2010c]; Dagestan Republic [Assing, 2010c; Anlaş et al., 2011a]; Rostov Region [Khachikov, 2003, 2017; Anlaş et al., 2011a]; Volgograd Region [Grebennikov, 2002a; Makarov et al., 2009; Assing, 2010c].

Notes. Ecologically flexible and widespread in southern West Palaearctic; reliably recorded in southern Russia, the Caucasus region, Middle Asia and north-western China [Assing, 2010c]. Available records from PSER fit this distribution pattern.

Achenium volcanus Solodovnikov et Li, 2013

Records. Krasnodar Region [Koch, 1937; Khachikov, 1998a; Solodovnikov, Li, 2013].

Notes. Known from the type [Solodovnikov, Li, 2013] and additional [Khachikov, 1998a] material collected in wet soil at Karabetova hill chain of Taman Peninsula in PSER. Khachikov's [1998a] record undoubtedly belongs to *A. volcanus* and not to *A. sanctum* because the latter species is similar to the former and is restricted to Middle East in distribution according to the revision of Assing [2010c].

Astenus bimaculatus Erichson, 1840

Records. Astrakhan Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a]; Crimea Republic [Gusarov, 1989]; Kalmykia Republic [Khachikov, 1998a]; Samara Region [Goreslavets et al., 2002].

Notes. Thermophilic species distributed from Southern Europe to Middle Asia, also recorded from

Taiwan [Assing, 2012b; Schülke, Smetana, 2015]. Biology is poorly known, but recorded from the plains [Gusarov, 1989; Grebennikov, 2002a]. In PSER recorded from several western regions. Divided into three subspecies: *A. b. auliensis* Coiffait, 1984 is confined to Kazakhstan and apparently replaces nominotypical subspecies in Middle Asia, *A. b. cinguliventris* Koch, 1936 is confined to Near East.

Astenus bulgaricus Coiffait, 1971

Records. Astrakhan Region [Grebennikov, 2002a]; Rostov Region [Khachikov, 1998a, 2017; Anlaş et al., 2011a]; Volgograd Region [Grebennikov, Komarov, 1998; Khachikov, 1998a; Grebennikov, 2002a; Makarov et al., 2009].

Notes. South European species known only from Bulgaria, Turkey, Ukraine and South European part of Russia [Schülke, Smetana, 2015]. Usually occurs in debris around water bodies [Grebennikov, 2002a]. PSER records fit the distribution pattern.

[?! *Astenus cribrellus* (Baudi di Selve, 1870)]

Records. Crimea Republic ? [Gusarov, 1989].

Notes. Distribution pattern unclear, biology is unknown. Since the verified records come from Italy, France and Turkey and the species is often confused with similar species [Assing, 2012b], the only PSER record from the plains of Crimea Republic needs verification.

Astenus gracilis (Paykull, 1789)
(Fig. 16B)

Records. Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2016b].

Notes. Distributed from Europe including European Russia to East Siberia and Middle Asia, apparently Transpalearctic [Schülke, Smetana, 2015]. Prefers dry microhabitats of open landscapes, recorded from high elevations [Assing, 2012b; Altın, Yağmur, 2018]. In PSER so far known only from Krasnosamarskiy forest. Next to PSER recorded from Samarskaya Luka. Other records from Samara Region are not specified and may also come outside PSER.

Astenus immaculatus Stephens, 1833

Records. Crimea Republic ? [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets, 2002, 2004, 2014, 2016b; Goreslavets et al., 2002]; Saratov Region [Sazhnev et al., 2017]; Volgograd Region [Horion, 1965; Grebennikov, Komarov, 1998; Grebennikov, 2002a].

Notes. Known from North Africa, Europe including European Russia and from Near East [Schülke, Smetana, 2015]. In Central Europe and Crimea prefers moist plant debris at plains and higher elevations [Gusarov, 1989; Assing, 2012b]. In PSER repeatedly recorded from Krasnodar Region to the Volga River basin. In Crimea in the mountains.

Astenus lyonessius (Joy, 1908)

Records. Astrakhan Region [Grebennikov, 2002a]; Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 2017]; Samara Region [Goreslavets et al., 2002].

Notes. Known from North Africa, widespread in Europe where it is more common in the south with easternmost records coming from European part of Russia, recorded in Near East [Schülke, Smetana, 2015]. Often confused with *A. gracilis* and *A. pulchellus* [Assing, 2012b]. Occurs usually in leaf litter and under rocks in open landscapes, recorded from lowlands to high elevations [Gusarov, 1989; Assing, 2012b]. In PSER recorded from Crimea Republic to Samara Region.

[?! *Astenus nigromaculatus* (Motschulsky, 1858)]

Records. Rostov Region ? [Minoranskiy, Lomakin, 1978].

Notes. Known from Spain and Canary Islands to Afrotropical region and Near East [Schülke, Smetana, 2015]. Biology is poorly known, but recorded in moist ground-based debris from lowlands up to 2000 m [Assing, Feldmann, 2012; Assing et al., 2013]. Never recorded from Russia, an old record from Rostov Region in PSER needs verification.

Astenus paradoxus (Eppelsheim, 1878)

Records. Crimea Republic [Gusarov, 1989; Assing, 2002b].

Notes. Distributed from Crimea Republic to Azerbaijan, apparently confined to the Caucasus region [Assing, 2002b]. Biology is unknown. In PSER recorded only from Crimea, from Feodosia and central part of the peninsula.

Astenus procerus (Gravenhorst, 1806)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998; Anlaş, 2020]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1998a, 2017]; Saratov Region [Sazhnev et al., 2017]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread from Europe and North Africa to West Siberia and Middle Asia [Schülke, Smetana, 2015; Anlaş, 2020]. Prefers warm and dry microhabitats, usually can be found in various ground-based debris, known from lowlands up to high elevations around 2000 m [Assing, 2012b; Anlaş, 2020]. In PSER known from Crimea Republic to the Volga River basin.

Astenus pulchellus (Heer, 1839)
(Fig. 16C)

Records. Astrakhan Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a]; Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998; Knysh, Solodovnikov, 2002]; Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002]; Stavropol

Region [Hochhuth, 1860]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a; Makarov et al., 2009].

Notes. Distributed from Europe to Middle Asia. In Europe probably introduced [Assing, 2012b; Schülke, Smetana, 2015]. Usually can be found in leaf litter and under rocks, but also occurs in dung and compost [Assing, 2012b]. In PSER recorded from almost all regions with gaps.

Astenus thoracicus (Baudi di Selve, 1857)

Records. Crimea Republic ? [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998; Anlaş, 2020].

Notes. Widespread in southern West Palaearctic, distributed from the Canary Islands, south Italy and Greece to Middle Asia [Anlaş, 2020]. Subspecies *A. t. villiersi* Koch, 1941 confined to Morocco. Biology is poorly known, but recorded in various ground-based debris from lowlands to high elevations around 2000 m [Gusarov, 1989; Anlaş, 2020]. In PSER reliably recorded from Krasnodar Region. Records from Crimea Republic come from the mountain foothills.

[?! *Astenus uniformis* (Jacquelin du Val, 1853)]

Records. Samara Region ? [Goreslavets, 2016b].

Notes. West Mediterranean, records from Central Europe and East Mediterranean apparently based on misidentifications [Assing, 2008a; Schülke, Smetana, 2015]; for information about current taxonomy status see Assing [2008a]. Biology is unknown. Never recorded from Russia, a single biogeographically implausible record from PSER, from Samara Region, apparently is a misidentification.

[?! *Domene stilicina* (Erichson, 1840)]

Records. Rostov Region ? [Minoranskiy, Lomakin, 1978].

Notes. Widespread in East Mediterranean, easternmost records reach Near East [Assing, 2018c; Anlaş, 2019a]. Biology is poorly known, but often collected under stones from lowlands up to around 1000 m [Assing, 2019b; Örgel, Tezcan, 2020]. Never recorded from Russia, a single old PSER record from Rostov Region is questionable and needs verification.

Homaeotarsus iranoturcestanicus (Scheerpeltz, 1956)

Records. Dagestan Republic [Anlaş et al., 2011b].

Notes. Distributed in Middle Asia [Schülke, Smetana, 2015]; hitherto known records from Russia belongs to PSER and come from the shores of the Caspian Sea in Dagestan Republic [Anlaş et al., 2011b]. Biology is poorly known, but recorded from nearby rivers [Assing, 2011b; Anlaş et al., 2011b; Khachikov et al., 2021].

Lathrobium bernhaueri Koch, 1937

Records. Rostov Region [Khachikov, 2003].

Notes. Confined to the Caucasus region, also recorded from Turkey [Schülke, Smetana, 2015]. Occurs in

leaf litter of various forests and near water [Tikhomirova, 1968; Khachikov, 2003]. In PSER known only from Rostov Region [Khachikov, 2003] and an unspecified locality in the Caucasus [Koch, 1937].

Lathrobium brunnipes (Fabricius, 1792)
(Fig. 16M)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014; Ryvkin, 2011]; Saratov Region [Sazhnev et al., 2018]; Stavropol Region [Khachikov, 1998a].

Notes. Widely distributed across the Palaearctic, known from Europe to the Russian Far East [Schülke, Smetana, 2015]. Eurytopic, but prefers moist microhabitats and decaying organics [Gusarov, 1989; Assing, 2012b]. In PSER repeatedly recorded from Crimea Republic to the Volga River basin.

[?! *Lathrobium crassipes* Mulsant et Rey, 1878]

Records. Samara Region ? [Goreslavets, 2014].

Notes. Distributed from southern Central Europe to Italy and Balkan Peninsula, not common [Schülke, Smetana, 2015]. Occurs in humid biotopes [Assing, 2012b]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level. Based on the known distribution range of the species, its occurrence in Samara Region is biogeographically implausible and apparently is a misidentification.

Lathrobium elongatum (Linnaeus, 1767)
(Fig. 16N)

Records. Astrakhan Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a]; Rostov Region [Khachikov, 1998b, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2016b; Ryvkin, 2011]; Saratov Region [Horion, 1965]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a].

Notes. Widespread from Europe to Middle Asia and East Siberia [Schülke, Smetana, 2015]. Eurytopic, but prefers leaf litter in moist microhabitats [Grebennikov, 2002a; Assing, 2012b]. In PSER repeatedly recorded from Rostov Region and the Volga River basin.

Lathrobium flavipes Hochhuth, 1851

Records. Astrakhan Region [Coiffait, 1982]; Kalmykia Republic [Grebennikov, 2002a]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1998b, 2017]; Samara Region [Czwalina, 1888; Goreslavets et al., 2002; Ryvkin, 2011; Goreslavets, 2014, 2016a]; Saratov Region [Sazhnev, Anikin, 2014a; Sazhnev et al., 2017]; Volgograd Region [Khachikov, 1998a, b; Grebennikov, 2002a; Makarov et al., 2009; Ryvkin, 2011].

Notes. Described and repeatedly recorded from East Siberia [Hochhuth, 1851; Coiffait, 1982; Shavrin, 2006; Ryvkin, 2011], later widely recorded from European part of Russia [Coiffait, 1982; Grebennikov, 2002a; Ryvkin, 2011;

Khachikov, 2017]. Prefers various ground-based debris near water [Grebennikov, 2002a; Ryvkin, 2011]. In PSER recorded from Rostov Region to the Volga River basin.

Lathrobium fovulum Stephens, 1833

Records. Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 1998b, 2017; Ryvkin, 2011]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2014, 2016a]; Saratov Region [Horion, 1965]; Stavropol Region [Khachikov, 1998b]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread from France in Europe to the Lena River in Siberia [Ryvkin, 2011; Assing, 2012b]. Found in various ground-based debris from leaf litter to tree logs bark on swampy habitats or near water [Grebennikov, 2002a; Ryvkin, 2011; Assing, 2012b]. In PSER recorded from Krasnodar to Samara Region with gaps.

Lathrobium fulvipenne (Gravenhorst, 1806)

Records. Crimea Republic ? [Gusarov, 1989]; Rostov Region [Khachikov, 1998b, 2017]; Saratov Region [Sazhnev et al., 2018, 2019b].

Notes. Widespread from Europe to China [Assing, 2012b; Schülke, Smetana, 2015], introduced to North America [Majka, Klimaszewski, 2008]. Eurytopic, usually occurs in open landscapes, recorded as synantropic [Majka, Klimaszewski, 2008; Assing, 2012b]. In PSER known from Rostov and Samara regions, records from Crimea Republic come from foothills.

Lathrobium furcatum Czwalina, 1888

Records. Rostov Region [Khachikov, 1998b, 2017; Anlaş et al., 2011b].

Notes. Ponto-Mediterranean ripicolous, confined to the Caucasus region and Near East, distribution reaches southeast of Central Europe, not common [Assing, 2012b; Schülke, Smetana, 2015]. In PSER recorded only from Rostov Region.

Lathrobium geminum Kraatz, 1857

Records. Rostov Region [Khachikov, 1998b, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Volgograd Region [Kirschenblatt, 1936, 1938; Grebennikov, Komarov, 1998; Grebennikov, 2002a].

Notes. Widespread from Europe to East Siberia and Middle Asia [Schülke, Smetana, 2015], records from the Far East need verification [Ryvkin, 2011]. Eurytopic, but prefers various ground debris in unforested and humid landscapes [Ryvkin, 2011; Assing, 2012b], also mentioned as nidicolous [Kirschenblatt, 1936, 1938]. In PSER recorded only from Rostov Region and the Volga River basin.

Lathrobium impressum Heer, 1841

Records. Rostov Region [Khachikov, 1998b, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Saratov Region [Sazhnev et al., 2019a].

Notes. Distributed from Europe to East Siberia, not common [Schülke, Smetana, 2015]. Occurs mostly in leaf litter and moss of swampy microhabitats [Ryvkin, 2011; Assing, 2012b]. In PSER known only from Rostov, Samara and Saratov regions.

Lathrobium laevipenne Heer, 1839

Records. Krasnodar Region ? [Khachikov, 1998a; Solodovnikov, 1998]; Stavropol Region ? [Khachikov, 1998a].

Notes. Ponto-Mediterranean, distributed from Central Europe to Turkey [Assing, 2012b; Schülke, Smetana, 2015]. Prefers humid habitats around water bodies [Solodovnikov, 1998; Assing, 2012b]. Records from Krasnodar and Stavropol regions come from the very foothills of the Caucasus. Expected in humid habitats of PSER.

Lathrobium latum Tikhomirova, 1968

Records. Rostov Region [Khachikov, 2017]; Samara Region [Goreslavets, 2014, 2016a].

Notes. Original description based on ten specimens of both sexes from Voronezh Region (European part of Russia), Altai Mountains (West Siberia) and Primorskiy Region (Far East) without details on biology [Tikhomirova, 1968]. In PSER recorded from Rostov and Samara regions.

Lathrobium longulum Gravenhorst, 1802

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 1998b, 2017; Ryvkin, 2011]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2016b; Ryvkin, 2011]; Saratov Region [Sazhnev, 2013a]; Stavropol Region [Khachikov, 1998b]; Volgograd Region [Grebennikov, 2002a].

Notes. Transpalearctic, distributed from Europe to Middle Asia and the Russian Far East [Schülke, Smetana, 2015]. Eurytopic, prefers decaying plant organics in humid microhabitats [Ryvkin, 2011; Assing, 2012b]. In PSER widely recorded from Crimea Republic to the Volga River basin.

Lathrobium pallidipenne Hochhuth, 1851

Records. Crimea Republic [Gusarov, 1989]; Dagestan Region [Khachikov, 1998b]; Rostov Region [Khachikov, 1998b, 2017].

Notes. Distributed from Europe to East Siberia [Schülke, Smetana, 2015]. Prefers humid microhabitats in open landscapes [Assing, 2012b]. In PSER recorded from several western regions.

Lathrobium pallidum Nordmann, 1837

Records. Krasnodar Region [Solodovnikov, 1998]; Saratov Region [Sazhnev, Anikin, 2014a]; Stavropol Region [Khachikov, 1998b].

Notes. The West Palearctic, distributed from Europe to European part of Russia, not common [Schülke,

Smetana, 2015]. Occurs mainly in open landscapes in various ground-based debris, recorded from mammal nests [Assing, 2012b]. PSER records come from Krasnodar and Stavropol regions and from Rovnoe District in Saratov Region.

[?! *Lathrobium roubali* Koch, 1944]

Records. Rostov Region ? [Khachikov, 2017].

Notes. Described from a single male specimen from an unspecified locality in the Caucasus [Koch, 1944]. Coiffait [1972] described *L. szekessyi* (now a junior synonym of *L. roubali*) apparently based on the same specimen [Assing, 2007c]. Biology is unknown. In PSER recorded only from Orlovskiy District in Rostov Region, a record needs verification. Next to PSER recorded from the foothills of the North-Western Caucasus (Eduard Khachikov, personal communication).

Lathrobium sareptae Grebennikov, 2001

Records. Volgograd Region [Grebennikov, 2001a].

Notes. Hitherto known only from the original description based on two male specimens from Volgograd in PSER, biology is unknown [Grebennikov, 2001a].

Lathrobium taxi Bernhauer, 1902

Records. Astrakhan Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a]; Dagestan Republic [Khachikov et al., 2021]; Krasnodar Region [Solodovnikov, 1998]; Samara Region [Goreslavets, 2014]; Volgograd Region [Grebennikov, 2002a].

Notes. Distributed from eastern and southeastern Central Europe to Asia Minor [Assing, 2012b; Schülke, Smetana, 2015]. Prefers leaf litter and plant debris near water in open landscapes [Grebennikov, 2002a; Assing, 2012b]. In PSER known from Krasnodar Region to the Volga River basin.

Lathrobium tichomirovae Coiffait, 1981

Records. Krasnodar Region [Solodovnikov, 1998; Knysh, Solodovnikov, 2004].

Notes. Described from the foothills of the West Caucasus, confined to the Caucasus region of Russia, recorded in Azerbaijan [Coiffait, 1981; Solodovnikov, 1998; Assing, 2013b]. Recorded in various ground-based debris from leaf litter to dung and carrion, can be found from lowlands up to 1850 m [Solodovnikov, 1998; Assing, 2014c]. Based on the structure of aedeagus closely related to *L. bernhaueri* and maybe a synonym of the latter [Assing, 2014c], this pending more detailed investigation. In PSER known only from Krasnodar Region, from plains and, next to PSER, up to medium elevations in the mountains.

Leptobium gracile (Gravenhorst, 1802)

Records. Astrakhan Region [Khachikov, 1998a; Grebennikov, 2002a; Assing, 2005b]; Crimea Republic [Gusarov, 1989; Assing, 2005b]; Dagestan Republic

[Khachikov, 1998a]; Kalmykia Republic [Grebennikov, 2002a]; Krasnodar Region [Solodovnikov, 1998; Assing, 2005b]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1998a, 2017]; Samara Region [Goreslavets, 2014]; Saratov Region [Sazhnev, Anikin, 2014a, 2020]; Volgograd Region [Kirschenblatt, 1936; Horion, 1965; Grebennikov, 2002a; Assing, 2005b; Makarov et al., 2009].

Notes. Distributed from Canary Islands through south of the West Palaearctic to Middle Asia and West Siberia [Assing, 2005b; Schülke, Smetana, 2015]. Prefers unforested and coastal biotopes, humid meadows, agricultural lands [Assing, 2012b]. In PSER recorded from most regions.

Leptobium sparsum (Reitter, 1887)

Records. Krasnodar Region [Khachikov, 1998a; Solodovnikov, 1998; Knysh, Solodovnikov, 2004; Assing, 2005b].

Notes. Known from the West Caucasus [Schülke, Smetana, 2015; Assing, 2017b]. Inhabits forest litter; found under stones and in plant debris [Solodovnikov, 1998; Assing, 2005b]. In PSER recorded only from Krasnodar Region from Black Sea coast and low elevations of the foothill forests.

Lithocharis nigriceps Kraatz, 1859

Records. Crimea Republic [Gusarov, 1989]; Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets, 2004, 2014]; Saratov Region [Sazhnev, 2019]; Volgograd Region [Grebennikov, 2002a; Makarov et al., 2009].

Notes. Cosmopolitan, originally from South Asia, widespread in the Palaearctic and Oriental regions [Assing, 2012b, 2015; Schülke, Smetana, 2015]. Inhabit rotting organics, leaf litter, shores of water bodies [Assing, 2012b]. In PSER recorded from Crimea, Rostov Region and the Volga River basin.

Lithocharis ochracea (Gravenhorst, 1802)
(Fig. 16J)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 2017]; Samara Region [Goreslavets et al., 2002].

Notes. Cosmopolitan, common in Central Europe [Assing, 2012b; Schülke, Smetana, 2015]. Inhabit decaying organics (compost, dung, plant debris) [Assing, 2012b]. Recorded from several areas in PSER west to the Volga River basin.

Lobrathium multipunctum (Gravenhorst, 1802)
(Fig. 16K)

Records. Crimea Republic [Gusarov, 1989]; Rostov Region [Khachikov, 1998a, b, 2017]; Saratov Region [Sazhnev et al., 2017].

Notes. Widespread in Europe and North Africa, introduced to Nearctic [Assing, 2007d; Schülke, Smetana, 2015]. Prefers open landscapes (meadows, swamps, salt-marsh, agricultural lands) [Assing, 2012b]. In PSER recorded from several regions.

Lobrathium reitteri (Czwalina, 1889)

Records. Krasnodar Region [Solodovnikov, 1998; Knysh, Solodovnikov, 2004].

Notes. Described based on material from forest zone of Fisht-Oshten mountain range in the North-Western Caucasus [Czwalina, 1889]; common and widespread in the montane forests of the North-Western Caucasus [Solodovnikov, 1998, 2001]. In PSER recorded from the lowland forest patches of Azov-Kuban plain in Krasnodar Region.

Luzea cephalica (Eppelsheim, 1889)

Records. Crimea Republic [Assing, 2010d]; Rostov Region [Khachikov, 2003; Khachikov, 2017]; Volgograd Region [Grebennikov, 2002a; Makarov et al., 2009].

Notes. Described based on single male specimen from Feodosia in Crimea, record from Greece considered as doubtful [Assing, 2010d; Schülke, Smetana, 2015]. Can be found under stones and sifted from detritus [Gontarenko, 2003; Assing, 2010d]. In PSER recorded in Crimea Republic, Rostov and Volgograd regions.

Luzea infirma (Erichson, 1840)

Records. Astrakhan Region [Grebennikov, 2002a]; Dagestan Republic [Khachikov et al., 2021].

Notes. Widespread across semiarid regions from North Africa eastwards to Middle Asia and Afghanistan [Assing, 2010d; Schülke, Smetana, 2015]. In PSER recorded in Astrakhan Region and Dagestan Republic.

Luzea rossica (Bernhauer, 1908)

Records. Crimea Republic [Assing, 2010d]; Dagestan Republic [Khachikov et al., 2021]; Rostov Region [Khachikov, 2017]; Volgograd Region [Bernhauer, 1908].

Notes. Described based on two specimens, one from Aresch (Agdash) in Azerbaijan and second from Sarepta (Volgograd) in Russia [Bernhauer, 1908]; also recorded from Ukraine and Armenia [Assing, 2010d; Schülke, Smetana, 2015]. Found under stones and sifted from detritus [Gontarenko, 2003; Assing, 2010d]. In PSER known from Crimea to the Volga River basin and northern Dagestan.

Medon castaneus (Gravenhorst, 1802)
(Fig. 16E)

Records. Samara Region [Horion, 1965; Goreslavets, 2004].

Notes. Distributed from Iberian Peninsula, Great Britain and Scandinavia to the South European Russia; rare [Assing, 2005c, 2012b; Schülke, Smetana, 2015]. Nidicolous species, inhabits nests and burrows of European mole and other mammals [Assing, 2005c]. In PSER recorded from Krasnosamarskiy forest in Samara Region. Horion's [1965] record is nearby, from environs of Samara city.

Medon dilutus (Erichson, 1839)
Medon dilutus ssp. *pythonissa* (Saulcy, 1865)

Records. Crimea Republic [Gusarov, 1989; Assing, 2004]; Dagestan Republic [Khachikov, 1998a]; Krasnodar Region [Khachikov, 1998a; Solodovnikov, 1998; Assing, 2004]; Rostov Region [Khachikov, 2003, 2017]; Stavropol Region [Khachikov, 1998a]; Volgograd Region [Grebennikov, 2002a].

Notes. Comprises five subspecies replacing each other throughout Europe and Near East [Assing, 2012b]: *M. d. cephalus* Koch, 1938 confined to Western Europe, *M. d. dilutus* Erichson, 1938 to Central Europe, *M. d. pythonissa* Saulcy, 1865 to Southern Europe and Near East, *M. d. quadriceps* Wollaston, 1864 to Azores, Sicily and North Africa, *M. d. spelaeus* Wollaston, 1864 to Spain and North Africa. Occurs in various ground-based debris from leaf litter to rotten wood and seashore debris, also recorded from mammal and ant nests [Solodovnikov, 1998; Assing, 2012b]. These subspecies are often confused with each other. In PSER nearly everywhere, as *M. d. pythonissa*.

Medon fuscus (Mannerheim, 1830)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998; Assing, 2004]; Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002]; Volgograd Region [Grebennikov, 2002a].

Notes. Distributed from Central Europe (France and south Britain) through Balkans, the Black Sea region, the Caucasus, Asia Minor to Middle Asia [Assing, 2012b, 2018b]. Often inhabits leaf litter, also in mammal nests, river banks, gardens [Assing, 2012b]. In PSER recorded from almost all regions from Crimea to the Volga River basin.

Medon rufiventris (Nordmann, 1837)

Records. Krasnodar Region [Assing, 2004].

Notes. Widespread in Europe except Northern, present in North Africa, recorded in Turkey [Schülke, Smetana, 2015]; in Central Europe widespread but rare [Assing, 2005c, 2012b]. Inhabits dead wood (under bark, in stumps) [Assing, 2012b]. In PSER recorded only from the environs of Krasnodar city.

Micrillus pallidus (Reitter, 1887)

Records. Dagestan Republic [Khachikov, Iljina, 2011; Khachikov et al., 2021].

Notes. Distributed from the Caucasus region to Middle Asia [Assing, 2008b; Schülke, Smetana, 2015]. Biology is poorly known. In PSER so far recorded from the several plain localities in Dagestan Republic.

Micrillus testaceus (Erichson, 1840)

Records. Dagestan Republic [Khachikov et al., 2021]; Rostov Region [Khachikov, 2017]; Volgograd Region [Grebennikov, 2002a].

Notes. Widely distributed all over the Mediterranean region with the easternmost records from Ukraine and South European part of Russia [Assing, 2008b, 2012b]. Prefers various unforested landscapes, mostly under stones or in subterranean crevices, can be found from lowlands up to 1800 m [Assing, 2008b]. In PSER known from Dagestan Republic, Rostov and Volgograd regions.

Nazeris pallidipes Reitter, 1888

Records. Krasnodar Region [Solodovnikov, 1998].

Notes. Confined to the West Caucasus region [Solodovnikov, 2001; Assing, 2009c]. Can be found in leaf litter, under stones and rotten wood mostly at foothills and elevations up to 1600 m [Solodovnikov, 2001; Assing, 2019b]. Some records from Krasnodar Region comes from the isolated forest patches of Azov-Kuban plain [Solodovnikov, 1998].

[?! *Ochtheophilum brevipenne* (Mulsant et Rey, 1861)]

Records. Rostov Region ? [Khachikov, 2017].

Notes. Holomediterranean, distributed from southwestern France to Ukraine [Assing, 2012b]. Eurytopic, but prefers plant debris in swampy microhabitats around seashores, wetlands and salt lakes [Assing, 2009d, 2012b]. In Russia known only by ST record from the Palaearctic catalogue [Schülke, Smetana, 2015]. In PSER known from the only record from Rostov Region that needs confirmation.

[?! *Ochtheophilum collare* (Reitter, 1884)]

Records. Rostov Region ? [(Khachikov, 2017); Saratov Region [Sazhnev, 2013a].

Notes. Distributed from southern Scandinavia to the West Caucasus region [Assing, 2009d]. Needs revision due to the significant intraspecific variability of both external morphology and the structure of aedeagus which overlap with closely related *O. fracticorne* [Assing, 2009d]. Eurytopic in the south of its distribution, prefers various ground-based debris in humid habitats; in the northern areas confined to coastal, saline and anthropogenetic habitats [Assing, 2009d]. Due to the abovementioned variability, records from PSER, which are the only records for this species from Russia overall, need verification.

[?! *Ochtheophilum egregium* (Reitter, 1884)]

Records. Volgograd Region ? [Grebennikov, 2002a].

Notes. Described and hitherto recorded only from Azerbaijan [Assing, 2009d]. Biology is unknown. The only record from PSER needs confirmation.

[?! *Ochtheophilum fracticorne* (Paykull, 1800)]
(Fig. 16I)

Records. Rostov Region ? [Minoranskiy, Lomakin, 1978]; Samara Region ? [Goreslavets et al., 2002; Goreslavets, 2014, 2016a, b]; Stavropol Region ? [Khachikov, 1998a; Gorkavaya, 2017a].

Notes. Holarctic, distributed from northern Spain throughout Central Europe and Russia to the Far East, introduced to Canada; for details see Assing [2009d]. Eurytopic, prefers mostly cold humid habitats at forested and open landscapes such as: bogs, swamps, grasslands etc. [Assing, 2009d]. Despite the indication about preference of the cold habitats in Assing [2009d], recorded in PSER from two regions. Records from Stavropol Region comes from the Caucasus foothills. Due to the abovementioned taxonomic difficulties with similar species, these records need verification.

Ochtheophilum turkestanicum (Korge, 1968)

Records. Astrakhan Region [Khachikov, 1998a; Grebennikov, 2002a]; Dagestan Republic [Khachikov, 1998a]; Krasnodar Region [Solodovnikov, 1998a].

Notes. Thermophilic species, distributed from south Italy to the Caucasus region and Middle Asia [Assing, 2009d]. Biology is poorly known, but recorded around water bodies from lowlands up to 1500 m [Grebennikov, 2002a; Assing, 2009d]. In PSER recorded from Krasnodar Region, Dagestan Republic and Astrakhan Region.

[*Paederidus caucasicus* Scheerpeltz, 1957]

Notes. According to Khachikov [2018a], earlier records of *Paederidus rubrothoracius* (Goeze, 1777) from Krasnodar Region and Adygea Republic [Solodovnikov, 1998] in fact belong to *P. caucasicus* described from Transcaucasia. According to Khachikov [2018a, b], *P. caucasicus* occurs in the foothills of the North Caucasus in Republic of Adygea and Stavropol Region and in other regions of the Caucasus eastwards to Armenia, while *P. rubrothoracius* does not reach the Caucasian region at all. As a riparian species it may come to lowlands of PSER along river valleys.

[*Paederidus punctiventris* Scheerpeltz, 1957]

Notes. According to Khachikov [2018a], earlier records of *Paederidus ruficollis* (Fabricius, 1777) from Krasnodar Region and Adygea Republic [Solodovnikov, 1998] or for Stavropol Region [Khachikov, 1998a] in fact belong to *P. punctiventris* described from Dagestan. According to Khachikov [2018a], *P. punctiventris* occurs in the foothills of the North Caucasus in Republic of Adygea and Stavropol Region and in other regions of the Caucasus eastwards to Dagestan, while *P. ruficollis* does not reach the Caucasian region at all. As a riparian species it may come to lowlands of PSER along river valleys.

[*Paederus balcanicus* C. Koch, 1938]

Records. Crimea Republic ? [Gusarov, 1989].

Notes. Distributed from France across Central and Southern Europe eastward to Ukraine and Iran [Schülke, Smetana, 2015]. Inhabits wetlands [Gusarov, 1989; Assing, 2012b]. Records from Crimea come from foothills and mountains, but given this species biology and distribution, it can be expected to be found on plains in PSER too.

Paederus fuscipes Curtis, 1826

Records. Astrakhan Region [Grebennikov, 2002a; Pushkin, 2016]; Crimea Republic [Gusarov, 1989]; Dagestan Republic [Khachikov, 1998a]; Kalmykia Republic [Khachikov, 1998a; Grebennikov, 2002a]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2016b]; Saratov Region [Sazhnev et al., 2018]; Stavropol Region [Pushkin, Maksimova, 2014; Pushkin, Minav, 2015]; Volgograd Region [Grebennikov, 2002a; Makarov et al., 2009].

Notes. Cosmopolitan, originally the West Palaearctic, introduced in other regions of the globe [Assing, 2012b; Schülke, Smetana, 2015]. Inhabits wetlands, wet meadows, swamps and shores of water bodies [Assing, 2012b; Sazhnev et al., 2018]. In PSER repeatedly recorded from almost all regions.

Paederus limnophilus Erichson, 1840

Records. Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014].

Notes. Distributed from France and Italy across Central and Southeastern Europe eastward to the Southern Territory of Russia [Schülke, Smetana, 2015]. Occurs near water, especially on the banks of streams and rivers and on coastal vegetation [Goreslavets, 2004; Assing, 2012b]. In PSER recorded from Rostov and Samara regions.

Paederus littoralis Gravenhorst, 1802
(Fig. 16P)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998; Knysh, Solodovnikov, 2004]; Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Saratov Region [Sazhnev, 2013a; Sazhnev et al., 2018]; Stavropol Region [Khachikov, 1998a]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a].

Notes. Widespread in the West Palaearctic region; eastward reaches Iran and West Siberia [Assing, 2012b; Schülke, Smetana, 2015]. Occurs mainly on the shores of water bodies, also inhabits plant residues and dung [Solodovnikov, 1998; Grebennikov, 2002a]. In PSER repeatedly recorded from Crimea to the Volga River basin.

Paederus riparius (Linnaeus, 1758)
(Fig. 16O)

Records. Astrakhan Region [Khachikov, 1998a; Grebennikov, 2002a]; Crimea Republic [Gusarov, 1989]; Dagestan Republic [Khachikov, 1998a]; Kalmykia Republic [Khachikov, 1998a; Grebennikov, 2002a]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2016b]; Saratov Region [Sazhnev, Rodnev, 2005; Sazhnev et al., 2018, 2019b]; Volgograd Region [Grebennikov, 2002a; Brekhova, Brekhov, 2013].

Notes. Widespread from North Africa and Great Britain to the Russian Far East, introduced into the Nearctic region [Schülke, Smetana, 2015]. Inhabits wetlands and shores of water bodies [Assing, 2012b]. In PSER repeatedly recorded from Crimea to the Volga River basin.

[?! *Platydromene picipes* (Erichson, 1840)]

Records. Orenburg Region [Nagumanova, 2005a, b; 2006].

Notes. Distributed from Southern Europe to the Caucasus region and Near East, recorded from Canary Islands and North Africa, not common [Schülke, Smetana, 2015]. Occurs predominantly around banks of mountain rivers [Anlaş et al., 2011b; Assing, 2012b]. The only records from PSER, remote eastern records from Buzulukskiy Bor in Orenburg Region are questionable and likely is based on misidentification.

Pseudomedon obscurellus (Erichson, 1840)
(Fig. 16L)

Records. Crimea Republic [Assing, 2008a]; Rostov Region [Khachikov, 2017]; Samara Region [Goreslavets et al., 2002]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread in the West Palaearctic region, from Portugal eastward to Turkey and Transcaucasia, introduced into the Neotropical region [Assing, 2009e; Schülke, Smetana, 2015]. Inhabits humid biotopes, banks of water reservoirs and decaying matter [Grebennikov, 2002a; Assing, 2012b]. In PSER widespread from Crimea to the Volga River basin, with some gaps.

Pseudomedon obsoletus (Nordmann, 1837)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Saratov Region [Sazhnev, 2013a]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread in the West Palaearctic region, from Portugal eastwards to Kazakhstan [Assing, 2008a; Schülke, Smetana, 2015]; reports from North America, Australia and Ethiopia are questionable and need verification [Assing, 2009e]. Inhabits damp places and decaying substances [Assing, 2012b]. In PSER reported from Crimea to the Volga River basin.

Rugilus angustatus (Geoffroy, 1785)

Records. Astrakhan Region [Khachikov, 1998a]; Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2002, 2004].

Notes. Distributed in the West Palaearctic, from Britain eastward to West Siberia, introduced to North America [Assing, 2012c; Schülke, Smetana, 2015]. Occurs mainly in wet habitats and on decaying substances [Assing, 2012b], also found on mushrooms [Gusarov, 1989]. In PSER spread from Crimea to Samara Region with some gaps.

Rugilus erichsonii (Fauvel, 1867)

Records. Samara Region [Goreslavets, 2002; Goreslavets et al., 2002]; Volgograd Region [Kirschenblatt, 1936].

Notes. Distributed in the West Palaearctic, from Ireland eastward to north European territory of Russia [Assing, 2012c; Schülke, Smetana, 2015]. Inhabits humid places, especially compost and other decaying substances, also found in the nest of *Citellus pygmaeus* Pallas, 1778 [Kirschenblatt, 1936; Assing, 2012b]. In PSER recorded from Kotelnikovo town in Volgograd Region. Also reported from Samara Region, from environs of Samara city and other localities without geographic details within the region level.

Rugilus orbiculatus (Paykull, 1789)
(Fig. 16H)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1989; Knysh, Solodovnikov, 2004]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Stavropol Region [Khachikov, 1998a]; Volgograd Region [Kirschenblatt, 1936, 1938; Grebennikov, 2002a].

Notes. Widespread in the Holarctic region, including North Africa, Central Asia and China in the Palaearctic, introduced to Australian and Nearctic regions [Assing, 2012c; Schülke, Smetana, 2015]. Inhabits mainly decaying plant material and dung [Solodovnikov, 1998; Assing, 2012b], also found in burrows of *Citellus pygmaeus* [Kirschenblatt, 1936, 1938]. In PSER widespread from Crimea to the Volga River basin.

Rugilus rufipes Germar, 1836

Records. Krasnodar Region [Knysh, Solodovnikov, 2004]; Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a].

Notes. Distribution stretches from Spain eastward to West Siberia, across Central Europe, northward to the Scandinavian Peninsula and southward to Iran [Schülke, Smetana, 2015]. Occurs in forest and open biotopes, often in compost [Assing, 2012b]. In PSER recorded from Krasnodar Region to the Volga River with some gaps.

Rugilus similis (Erichson, 1839)

Records. Crimea Republic [Gusarov, 1989]; Dagestan Republic [Anlaş et al., 2011b]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2016b]; Saratov Region [Kovalev et al., 2011]; Stavropol Region [Khachikov, 1998a]; Volgograd Region [Grebennikov, 2002a].

Notes. Distributed from Ireland eastward to West Siberia, across Central Europe, Turkey and Kazakhstan [Schülke, Smetana, 2015]. Lives mainly in forests and

wetlands; often found on decaying plant debris [Assing, 2012b]. In PSER repeatedly and widely recorded from Crimea to the Volga River basin.

Scopaeus bicolor Baudi di Selve, 1848

Records. Crimea Republic [Gusarov, 1989]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a].

Notes. Distribution stretches from Italy to Ukraine and from Transcaucasia to Anatolia [Frisch, 2012a; Schülke, Smetana, 2015]. Biology is poorly known, but recorded near banks of water bodies [Gusarov, 1989; Grebennikov, 2002a]. In PSER known only from Crimea Republic and Volgograd Region.

Scopaeus chalcodactylus (Kolenati, 1846)

Records. Crimea Republic [Frisch, 1997].

Notes. Distributed from Turkey to Iran and to Crimea across Transcaucasia region [Schülke, Smetana, 2015]. Inhabits wet, sandy or gravel open spaces, insolated land exposed to sun, usually on the banks of flowing waters [Aiydov, Frisch, 2014]. In PSER known only from an ambiguously indicated locality presumably in the foothills of Crimean mountains; probably more widespread, at least in Crimea.

Scopaeus debilis Hochhuth, 1851

Records. Rostov Region [Khachikov, 2003, 2017]; Volgograd Region [Grebennikov, 2002a].

Notes. West Palaearctic species, widely distributed in the Mediterranean region and Middle East with the easternmost point of distribution in East Siberia [Frisch, 2010; Schülke, Smetana, 2015]. Thermo-hydrophilous, inhabits damp, sunny margins and banks of flowing water bodies [Frisch, 1999]. In PSER recorded only from Rostov and Volgograd regions.

Scopaeus gladiifer Binaghi, 1935

Records. Crimea Republic [Gusarov, 1989]; Kalmykia Republic [Anlaş et al., 2011b]; Krasnodar Region [Anlaş et al., 2011b]; Rostov Region [Anlaş et al., 2011b; Khachikov, 2017]; Samara Region [Goreslavets, 2014, 2016a, b]; Saratov Region [Kovalev et al., 2011]; Volgograd Region [Grebennikov, 2002a].

Notes. Distributed from Greece to Ukraine across Black Sea regions of Bulgaria and Romania, including Turkey and South Territory of Russia [Frisch, 2010; Schülke, Smetana, 2015]. Inhabits banks of water bodies and wet shelters, in heaps of hay and under stones [Gusarov, 1989; Goreslavets, 2016a], also found in the burrow of *Marmota bobak* and in ant-hills [Kovalev et al., 2011; Goreslavets, 2016b]. In PSER widespread from Crimea to the Volga River basin.

Scopaeus gracilis (Sperk, 1835)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Khachikov, 1998a; Solodovnikov, 1998];

Rostov Region [Khachikov, 1998a, 2017]; Stavropol Region [Khachikov, 1998a].

Notes. Distributed from Western Europe, including Great Britain, Canary Islands and Northwest Africa, through the mountainous regions of Europe and the Middle East to Iran [Frisch, 2012a; Schülke, Smetana, 2015]. Ripicolous, occurs on sandy and gravel pits [Frisch, 2012a], also found on carrion [Gusarov, 1989]. In PSER recorded from Crimea to Stavropol Region.

Scopaeus laevigatus (Gyllenhal, 1827)
(Fig. 16G)

Records. Astrakhan Region [Grebennikov, 2002a]; Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Mynoranskiy, Lomakin, 1978; Khachikov, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2014, 2016a]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread throughout temperate and southern Palaearctic, from Western Europe eastward to the Russian Ussuri region, widely distributed in Central Europe [Frisch, 2003; Schülke, Smetana, 2015]. Inhabits banks and shores of various water reservoirs, also found in swamps and wet meadows [Frisch, 2003, 2012a]. In PSER widespread from Crimea to the Volga River basin, with some gaps.

Scopaeus minimus (Erichson, 1839)

Records. Krasnodar Region [Solodovnikov, 1998].

Notes. Distributed from Central Europe across Southeastern Europe eastward to Turkey and Iran [Frisch, 2010; Schülke, Smetana, 2015]. Occurs in wet meadows and marshes, as well as on saline soils [Frisch, 2012a]. In PSER a single known record comes from Krasnodar Region, from salt marshes.

Scopaeus minutus Erichson, 1840

Records. Volgograd Region [Kirschenblatt, 1936, 1938].

Notes. Widespread from British Isles to Southern Fennoscandia and western Russia, common in most of Western, Central, and Southern Europe [Frisch, 2010; Schülke, Smetana, 2015]. Riparian, but also occurs in meadows and wastelands [Frisch, 2012a]; also found in burrows of small rodents, e.g. *Citellus pygmaeus* [Kirschenblatt, 1936, 1938]. In PSER known only from Volgograd Region.

Scopaeus pusillus Kiesenwetter, 1843

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 2017].

Notes. Distributed from Western Europe eastward across Central Europe and Southern Fennoscandia to the Altai and Baikal regions in West Siberia [Frisch, 1997; Anlaş, Frisch, 2014]. Thermo-hydrophilous, inhabits shores of water bodies, but also occurs on dry areas, on sand and

gravel pits [Frisch, 1997, 2012a]. In PSER known only in the western part, from Crimea to Rostov Region.

Scopaeus sareptanus Gusarov, 1992

Records. Astrakhan Region [Gusarov, 1992; Frisch, 2012b]; Volgograd Region [Gusarov, 1992; Frisch, 2012b].

Notes. Described from "Sarepta" (currently mainly Volgograd) [Gusarov, 1992] and distributed in the steppe zone of southern Russia and Central Asia and recorded from the Volga River throughout Kazakhstan and northern Uzbekistan eastward to the western border of China [Frisch, 2012b; Schülke, Smetana, 2015]. Inhabits river banks [Frisch, 2012b]. In PSER found only in Astrakhan and Volgograd regions.

Scymbalium anale (Nordmann, 1837)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Khachikov, 1998a; Solodovnikov, 1998]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1998a, 2017; Özgen, Khachikov, 2018]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a].

Notes. Distributed from Middle Asia through Southern Europe to Italy and South France; rare in Central Europe [Assing, 2012b]. Found in humid meadows, water shores, under stones [Assing, 2012b; Yaman et al., 2020]. In northern PSER recorded from Crimea Republic to Volgograd Region, with some gaps.

Scymbalium persimile Cameron, 1940

Records. Dagestan Republic [Anlaş et al., 2011b; Özgen, Khachikov, 2018].

Notes. Known from Iraq and South European part of Russia [Schülke, Smetana, 2015]. Bionomic information unknown. In PSER recorded only from Dagestan Republic near Makhachkala city.

[?! *Sunius bicolor* (Olivier, 1795)]

Records. Rostov Region ? [Minoranskiy, Lomakin, 1978].

Notes. Widespread in Central Europe, especially in western, central and northern parts [Assing, 2012b; Schülke, Smetana, 2015]. Prefers unforested humid landscapes, also inhabits mammal burrows [Assing, 2012b]. A single old and geographically outlying record from PSER, from Rostov Region, which is the only record from Russia overall, is likely a misidentification.

Sunius claviceps (Reitter, 1908)

Records. Astrakhan Region [Grebennikov, 2001a, 2002a]; Samara Region [Horion, 1965].

Notes. Widespread in Middle Asia, known from South European Russia [Assing, 2008c, 2011c; Schülke, Smetana, 2015]. Biology is unknown. *Sunius bogdoensis* described from Baskunchak Lake near Bolshoe Bogdo mountain in Astrakhan Region [Grebennikov, 2001a] later was synonymized with *S. claviceps* by Assing [2008c]. In PSER recorded from Astrakhan and Samara regions.

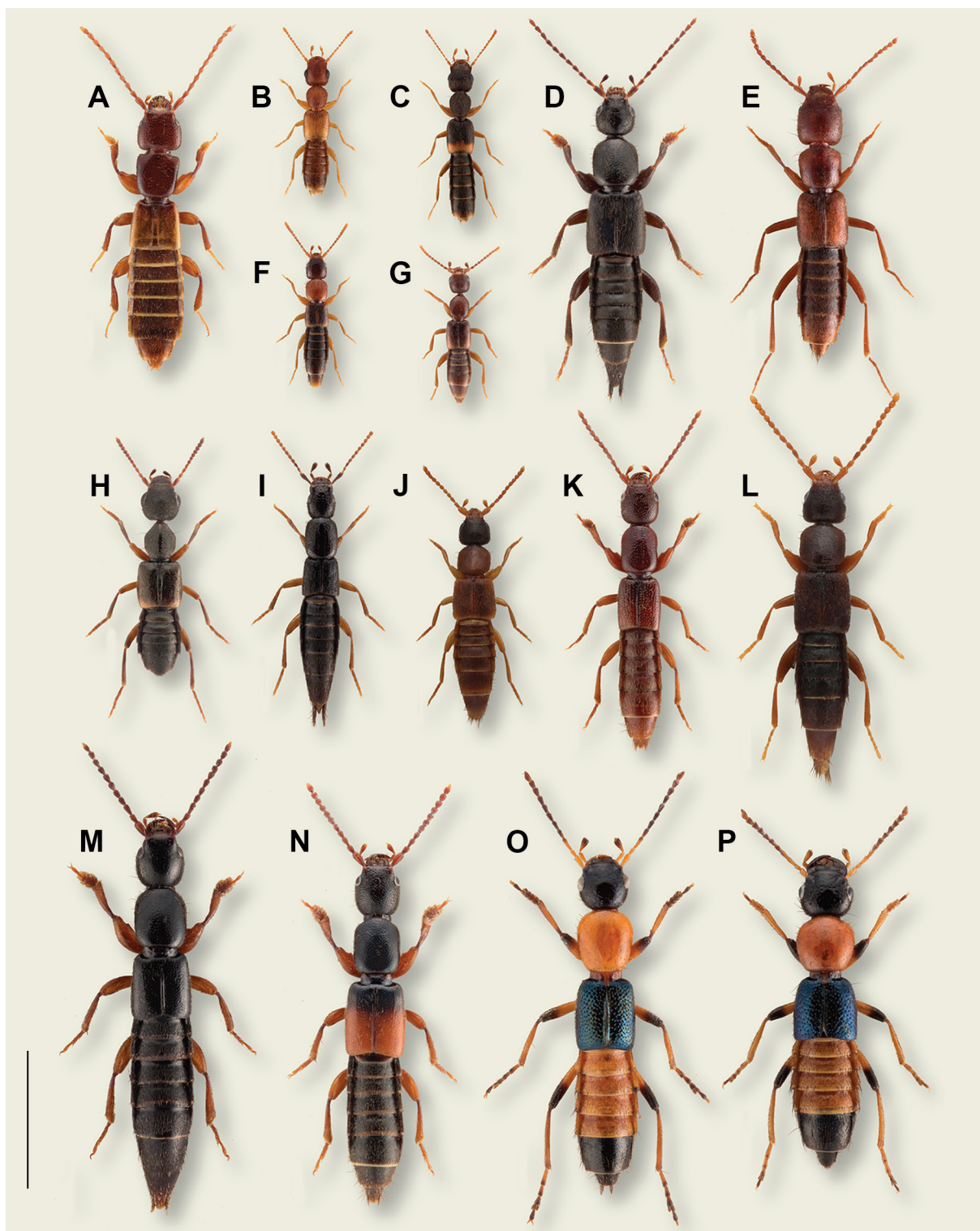


Fig. 16. Diversity of Paederinae in PSER and adjacent areas.

A – *Achenium humile*; B – *Astenus gracilis*; C – *Astenus pulchellus*; D – *Tetartopeus quadratus*; E – *Medon castaneus*; F – *Sunius melanocephalus*; G – *Scopaeus laevigatus*; H – *Rugilus orbiculatus*; I – *Ochtheophilum fracticorne* (ambiguously recorded in PSER); J – *Lithocharis ochracea*; K – *Lobrathium multipunctum*; L – *Pseudomedon obscurellus*; M – *Lathrobium brunnipes*; N – *Lathrobium elongatum*; O – *Paederus riparius*; P – *Paederus littoralis*. Scale bar 3 mm.

Рис. 16. Разнообразие видов подсемейства Paederinae из PSER и сопредельных территорий.

A – *Achenium humile*; B – *Astenus gracilis*; C – *Astenus pulchellus*; D – *Tetartopeus quadratus*; E – *Medon castaneus*; F – *Sunius melanocephalus*; G – *Scopaeus laevigatus*; H – *Rugilus orbiculatus*; I – *Ochtheophilum fracticorne* (указание из PSER сомнительно); J – *Lithocharis ochracea*; K – *Lobrathium multipunctum*; L – *Pseudomedon obscurellus*; M – *Lathrobium brunnipes*; N – *Lathrobium elongatum*; O – *Paederus riparius*; P – *Paederus littoralis*. Масштабная линейка 3 мм.



Fig. 17. Diversity of Staphylininae in PSER and adjacent areas.

A – *Ocypus ophthalmicus*; B – *Emus hirtus* (image credit Kirill Makarov); C – *Creophilus maxillosus*; D – *Physetops tataricus* (image by Kirill Makarov); E – *Staphylinus erythropterus*; F – *Ocypus picipennis*; G – *Dinothenarus pubescens* (ambiguously recorded in PSER); H – *Ontholestes murinus*; I – *Tasgius melanarius*; J – *Platydracus latebricola*; K – *Quedius levicollis* (Brüllé, 1832) (not recorded in PSER); L – *Quedius fuliginosus*. Scale bar 7 mm.

Рис. 17. Разнообразие видов подсемейства Staphylininae из PSER и сопредельных территорий.

A – *Ocypus ophthalmicus*; B – *Emus hirtus* (автор фото Кирилл Макаров); C – *Creophilus maxillosus*; D – *Physetops tataricus* (автор фото Кирилл Макаров); E – *Staphylinus erythropterus*; F – *Ocypus picipennis*; G – *Dinothenarus pubescens* (указание из PSER сомнительно); H – *Ontholestes murinus*; I – *Tasgius melanarius*; J – *Platydracus latebricola*; K – *Quedius levicollis* (Brüllé, 1832) (не указан из PSER); L – *Quedius fuliginosus*. Масштабная линейка 7 мм.

Sunius fallax (Lokay, 1919)

Records. Crimea Republic [Gusarov, 1989; Assing 2008d]; Krasnodar Region [Solodovnikov, 1998; Assing, 2008d]; Rostov Region [Khachikov, 1998a, 2017]; Stavropol Region [Khachikov, 1998a; Assing, 2008d]; Volgograd Region [Grebennikov, 2002a; Makarov et al., 2009].

Notes. Distributed from Asia Minor and the West Caucasus to Central Europe [Assing, 2011c; Schülke, Smetana, 2015]. Found in forested and open landscapes, humid and dry habitats [Assing, 2012b]. Recorded from several regions of western PSER.

[? *Sunius fulgocephalus* (Coiffait, 1970)]

Notes. Known from Azerbaijan, Armenia, Georgia and Iran [Schülke, Smetana, 2015]. Found near river shores at altitudes from 300 to 2220 m [Assing, 2008d]. Never unambiguously recorded in PSER; here included because of general records from "Caucasus" [Assing, 2008c] that need clarification.

Sunius melanocephalus (Fabricius, 1792)
(Fig. 16F)

Records. Crimea Republic [Gusarov, 1989]; Dagestan Republic [Khachikov, 1998a]; Krasnodar Region [Solodovnikov, 1998; Knysh, Solodovnikov, 2004]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1998a, 2017; Assing, 2008d]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2016b]; Saratov Region [Sazhnev et al., 2017]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a].

Notes. Transpalearctic species with easternmost records from China, widespread in Central Europe, introduced to the Nearctic region [Assing, 2008c, d, 2011c; Schülke, Smetana, 2015]. Prefers unforested and humid biotopes, occasionally found in decaying organics [Assing, 2012b]. In PSER recorded in most regions.

Sunius nigrinus (Eppelsheim, 1892)

Records. Volgograd Region [Assing, 2008d].

Notes. Distributed in Middle Asia, Central European part of Russia and China; records from Afghanistan are based on misidentification and belong to *S. afghanicus* [Assing, 2008d; Schülke, Smetana, 2015]. Found mostly near rivers at altitudes around 2000 m [Assing, 2008d]. In PSER recorded only from Volgograd Region.

Tetartopeus quadratus (Paykull, 1789)
(Fig. 16D)

Records. Rostov Region [Khachikov, 2003, 2017]; Samara Region [Goreslavets, 2014]; Saratov Region [Sazhnev, 2013a].

Notes. Widespread from Europe to East Siberia [Schülke, Smetana, 2015]; recently was found in Kazakhstan [Assing, 2009f]. Occurs near water bodies and swamps [Assing, 2012b]. In PSER recorded in the north, from Rostov Region and from the Volga River basin.

Tetartopeus rufonitidus (Reitter, 1909)

Records. Astrakhan Region [Grebennikov, 2002a; Anlaş, 2015]; Dagestan Republic [Anlaş, 2015]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2014]; Volgograd Region [Grebennikov, 2002a; Makarov et al., 2009].

Notes. Distributed from Western Europe to Middle Asia [Assing, 2014b], records from the East Palearctic presumably are based on misidentification [Assing, 2011d]. Found near water bodies and swamps, in humid meadows and decaying organics [Assing, 2012b]. In PSER widely recorded west of the Volga River.

Tetartopeus scutellaris (Nordmann, 1837)

Records. Crimea Republic [Gusarov, 1989]; Rostov Region [Khachikov, 1998a, 2017; Anlaş, 2015]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2014]; Saratov Region [Horion, 1965]; Volgograd Region [Grebennikov, 2002a].

Notes. Distributed in the Caucasus, European part of Russia, Balkans and west of Central Europe; known from Turkey [Assing, 2012b; Anlaş, 2015; Schülke, Smetana, 2015]. Rare; found near water bodies [Assing, 2012b]. In PSER recorded from Crimea Republic to the Volga River basin.

Tetartopeus terminatus (Gravenhorst, 1802)

Records. Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 2003, 2017; Anlaş, 2015]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2002, 2014]; Saratov Region [Sazhnev, 2012, 2013a; Sazhnev et al., 2018, 2019b].

Notes. Widespread in the Palearctic, common in Central Europe [Assing, 2012b; Schülke, Smetana, 2015], records from the East Palearctic presumably are based on misidentification [Assing, 2011d]. Found near swamps [Assing, 2012b]. In PSER recorded from Rostov Region and the Volga River basin.

Tetartopeus zetterstedti (Rye, 1872)

Records. Astrakhan Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a; Makarov et al., 2009].

Notes. Transpalearctic species, distributed from Northern Europe to the Russian Far East [Assing, 2011d; Schülke, Smetana, 2015]. Found near shores of water bodies [Grebennikov, 2002a]. In PSER recorded from Astrakhan and Volgograd regions.

Throbalium horni Koch, 1939

Records. Crimea Republic [Gusarov, 1989]; Volgograd Region [Koch, 1939].

Notes. Known from Turkmenistan and South European Region of Russia [Schülke, Smetana, 2015]. Bionomic information is unknown. The original description

is based on material from “Sarepta” (mainly Volgograd) in Volgograd Region in PSER [Koch, 1939]; another PSER record is from Crimea.

Throbalium kochi Peyerimhoff, 1938

Records. Crimea Republic [Gusarov, 1989]; Dagestan Republic [Khachikov, 1998a, b]; Kalmykia Republic [Khachikov, 1998a, b]; Rostov Region [Khachikov, 2003, 2017]; Volgograd Region [Grebennikov, 2002a; Makarov et al., 2009].

Notes. Described from Georgia, also known from Azerbaijan and South European Russia [Schülke, Smetana, 2015]. Flies to light [Khachikov, 2003]. Recorded from several regions of PSER.

Throbalium komarovi Grebennikov, 2001

Records. Astrakhan Region [Grebennikov, 2001a].

Notes. Described from Dosang village in Astrakhan Region in PSER based on single male specimen [Grebennikov, 2001a]. Later also recorded from Chilmamedkum sands in Turkmenistan [Anlaş et al., 2011b].

Subfamily Piestinae

Siagonium quadricorne Kirby et Spence, 1815
(Fig. 19J)

Records. Rostov Region [Khachikov, 2003, 2017].

Notes. Widely distributed in Central Europe, also occurs in Southern Europe, but not often [Schülke, Smetana, 2015]. Found under bark of deciduous trees at an early stage of decay [Assing, 2012b], recorded from bird [Williams, 1979] and mole [Osella, Zanetti, 1975] nests. In PSER known only from three specimens of both sexes collected in Rostov Region [Khachikov, 2003].

Subfamily Platyprosopinae

Platyprosopus elongatus Mannerheim, 1830
(Fig. 19I)

Records. Astrakhan Region [Solsky, 1870; Kirschenblatt, 1938; Grebennikov, 2002a]; Crimea Republic [Erichson, 1839; Gusarov, 1989]; Dagestan Republic [Khachikov, 1998a]; Kalmykia Republic [Khachikov, 1998a]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 2017]; Volgograd Region [Grebennikov, 2002a; Makarov et al., 2009].

Notes. Distributed in the Caucasus including Transcaucasia, and in Middle Asia [Schülke, Smetana, 2015]. Biology is poorly known, but Gusarov [1989] recorded it in dung. In PSER recorded from Crimea Republic to the Volga River basin; some records from Crimea Republic and Krasnodar Region come from the foothills.

Subfamily Proteininae

[? *Megarthrur belleveyei* Saulcy, 1862]

Notes. Distributed in Southern Europe, North Africa, Middle East and disjunctly in East Siberia and the Russian Far East [Schülke, Smetana, 2015]. Eurytopic,

but prefers various decaying plant debris in warm microhabitats [Cuccodoro, Löbl, 1997; Zanetti, 2012]. Never unambiguously recorded from PSER; unspecified records [Cuccodoro, Löbl, 1997] from “Caucasus” need more detailed investigation.

[? *Megarthrur denticollis* (Beck, 1817)]
(Fig. 19K)

Notes. Transpalaeartic, from Europe to Japan [Schülke, Smetana, 2015]. Eurytopic, but prefers various decaying organics [Cuccodoro, Löbl, 1997; Zanetti, 2012]. Never unambiguously recorded from PSER; unspecified records from “Caucasus” [Horion, 1963] need verification.

[*Megarthrur depressus* (Paykull, 1789)]

Records. Crimea Republic ? [Gusarov, 1989]; Samara Region ? [Goreslavets, 2021]; Stavropol Region ? [Khachikov, 1998a].

Notes. Transpalaeartic, distributed from Europe to the Russian Far East [Schülke, Smetana, 2015], records from south Mediterranean region and Japan are misidentifications [Cuccodoro, Löbl, 1997]. Eurytopic, but more often in various decaying debris and mushrooms [Cuccodoro, Löbl, 1997; Zanetti, 2012]. No clear records from PSER, but potentially may occur here because it is recorded in Samara Region without geographic details within the region level. Also, it is found in adjacent mountain foothills in Crimea and Stavropol Region.

[*Megarthrur hemipterus* (Illiger, 1794)]

Records. Samara Region ? [Goreslavets et al., 2002; Goreslavets, 2021].

Notes. Transpalaeartic, from Europe to the Russian Far East and Japan [Schülke, Smetana, 2015], apparently absent in Mediterranean region [Cuccodoro, Löbl, 1997]. Prefers various decaying debris, often in mushrooms [Cuccodoro, Löbl, 1997; Zanetti, 2012]. No clear records from PSER, but potentially may occur here because it is recorded in Samara Region without geographic details within the region level. One clear adjacent to PSER record in Samara Region comes from Samarskaya Luka. Exact geographic origin of a general wider ST record in the Palaeartic catalogue [Schülke, Smetana, 2015] is unknown.

[*Megarthrur nitidulus* Kraatz, 1857]

Records. Samara Region ? [Goreslavets et al., 2002; Goreslavets, 2021].

Notes. Transpalaeartic, from Europe to the Russian Far East [Schülke, Smetana, 2015], apparently absent in Mediterranean region, the Caucasus and Japan [Muona, Viramo, 1995]. Can be found mostly in various plant debris but also recorded from dung and carrion [Cuccodoro, Löbl, 1997; Zanetti, 2012]. No clear records from PSER, but potentially may occur here because it is recorded in Samara Region without geographic details within the region level. One clear adjacent to PSER record in Samara Region comes from Samarskaya Luka. Exact geographic origin

of a general wider ST record in the Palaearctic catalogue [Schülke, Smetana, 2015] is unknown.

[*Megarthus prosseni* Schatzmayr, 1904]

Records. Samara Region ? [Goreslavets, 2021].

Notes. Widely distributed in the West Palaearctic [Schülke, Smetana, 2015], records from Siberia and the Russian Far East needs verification [Cuccodoro, Löbl, 1997]. Eurytopic, but prefers decaying plant debris, also recorded from dung and mushrooms [Cuccodoro, Löbl, 1997; Zanetti, 2012]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level. Exact geographic origin of a general wider ST record in the Palaearctic catalogue [Schülke, Smetana, 2015] is unknown.

[*Metopsia similis* Zerche, 1998]
(Fig. 19L)

Notes. Known from Scandinavia, Central and Southern Europe, Middle East [Schülke, Smetana, 2015] and Central European part of Russia (Oleg Semionenkov, personal communication). Prefers leaf litter and moss in warm and dry microhabitats [Zanetti, 2012]. Never unambiguously recorded from PSER. Exact geographic origin of a general wider ST record in the Palaearctic catalogue [Schülke, Smetana, 2015] is unknown.

[?! *Proteinus altaicus* Reitter, 1905]

Records. Samara Region ? [Goreslavets, 2021].

Notes. Known from Scandinavia and Siberia [Schülke, Smetana, 2015]. Biology is unknown. Based on the known distribution of this species, a single unspecified record from Samara Region, which may or may not be from PSER, does not seem plausible and probably is a misidentification.

[*Proteinus atomarius* Erichson, 1840]
(Fig. 19G)

Records. Samara Region ? [Goreslavets, 2021].

Notes. The West Palaearctic, distributed from Europe to Mongolia, introduced to the Nearctic region [Schülke, Smetana, 2015]. Eurytopic, usually found in various decaying debris and mushrooms [Zanetti, 2012], from lowlands up to 2010 m [Assing, 2019c]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

[? *Proteinus crenulatus* Pandellé, 1867]

Records. Crimea Republic ? [Gusarov, 1989].

Notes. Recorded from Europe to Middle Asia but due to the confusion with other species its distribution needs revision [Zanetti, 2012]. Usually occurs in various decaying debris [Zanetti, 2012], recorded from marmot nests [Tronquet, 1998]. The only reliable record from near PSER comes from Crimea Republic, from mountain foothills; old unspecified records from "Caucasus" [Ganglbauer, 1895; Horion, 1963] need verification.

Proteinus laevigatus Hochhuth, 1872

Records. Samara Region [Goreslavets et al., 2002; Goreslavets, 2004].

Notes. Distributed from Europe to Siberia, not common [Zanetti, 2012]. Eurytopic in various decaying substrates, known from mushrooms [Zanetti, 2012]. In PSER clearly recorded only from Krasnosamarskiy forest in Samara Region. Other Samara Region record adjacent to PSER comes from Samarskaya Luka. Unspecified records from "Caucasus" [Hochhuth, 1849; Reitter, 1905] need verification.

Subfamily Pselaphinae

[? *Batriscus tauricus* Motschulsky, 1851] (incertae sedis)

Records. Crimea Republic ? [Motschulsky, 1851].

Notes. Known only from the original description based on the unspecified number of specimens from unclear locality in Crimea [Motschulsky, 1851]. Type material missing [Krivosheyev, 2015] and original description [Motschulsky, 1851] is very short and uninformative.

Brachygluta fossulata (Reichenbach, 1816)
(Fig. 14N)

Records. Samara Region [Goreslavets, 2014]; Saratov Region [Kurbatov, Egorov, 2012]; Volgograd Region [Grebennikov, 2002a; Makarov et al., 2009].

Notes. Widespread from Europe to East Siberia; subspecies *B. f. symmetrica* Bückle et Brachat, 2008 confined to Turkey and Lebanon [Schülke, Smetana, 2015]. Usually found in humid plant debris around water bodies, but also occurs in forest leaf litter and decaying wood [Kurbatov, Egorov, 2012; Krivosheyev, 2015]. In PSER recorded in the Volga River basin.

[*Brachygluta foveola* (Motschulsky, 1840)]

Notes. Distributed from Southern Europe to Middle East [Schülke, Smetana, 2015]. Subspecies *B. f. symmetrica* Bückle et Brachat, 2008 is known from Lebanon and Turkey. Halophilous, prefers bank of salty continental water bodies [Krivosheyev, 2015]. Maybe expected in PSER because *B. f. foveola* is widespread in south Ukraine including banks of Sivash Lake close to Crimean plains [Krivosheyev, 2015].

Brachygluta furcata (Motschulsky, 1835)

Records. Crimea Republic [Blinstein, 1989]; Volgograd Region [Makarov et al., 2009].

Notes. Known from Southern and Eastern Europe, also from Middle East [Schülke, Smetana, 2015]. Halophilous, prefers salt marshes and shores preferably of inland waters [Blinstein, 1989]. In PSER recorded from Crimea Republic and Volgograd Region.

Brachygluta haematica (Reichenbach, 1816)

Records. Crimea Republic [Krivosheyev, 2013].

Notes. Widespread nemoral Palaearctic species [Schülke, Smetana, 2015]. In PSER known from Simferopol in Crimea.

Brachygluta iranica (Saulcy, 1876)

Records. Volgograd Region [Makarov et al., 2009].

Notes. Described from Iran and currently known from the Caucasus region, Middle Asia and West Siberia [Schülke, Smetana, 2015]. Biology is unknown. In PSER known only from Volgograd Region; old unspecified records from the Caucasus [Karaman, 1961] need verification.

[Brachygluta nodosa Motschulsky, 1835]

Records. Crimea Republic ? [Krivosheyev, 2013].

Notes. Confined to the Caucasus region and Crimea [Schülke, Smetana, 2015]. Biology is poorly known, apparently littoral [Krivosheyev, 2013]. Nearby to PSER record from Crimea comes from foothills; old unspecified record from the Caucasus [Heyden et al., 1883] needs verification.

Brachygluta retowskii Simon, 1883

Records. Crimea Republic [Jacobson, 1910; Krivosheyev, 2013]; Saratov Region [Sazhnev et al., 2017].

Notes. Described from Feodosia city in Crimea based on five specimens [Simon, 1883]. Distributed is Southern and Eastern Europe; the easternmost records come from Georgia [Schülke, Smetana, 2015]. Prefers humid ground-based debris around water bodies, occasionally occurs in shores of salty lakes [Krivosheyev, 2013]. In PSER recorded only from Crimea Republic and Saratov Region.

[? Brachygluta xanthoptera (Reichenbach, 1816)]

Notes. Widespread from Europe, except Northern, to Middle East [Schülke, Smetana, 2015]. Hydrophilous, usually found in various ground-based debris (in leaf litter, decaying wood, moss, under stones etc.) around water bodies [Krivosheyev, 2015]. Included here as potentially possible in PSER because of the ambiguous record from unspecified locality "Taur", presumably in Crimea Republic which according to Krivosheyev [2013] needs verification.

Bryaxis bulbifer Reichenbach, 1816
(Fig. 14O)

Records. Crimea Republic [Krivosheyev, 2013]; Samara Region [Kurbatov, Egorov, 2012]; Saratov Region [Goreslavets, 2014]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread from Europe to Middle East and East Siberia [Schülke, Smetana, 2015]. Forest dweller, usually found in leaf litter, moss, decaying wood and roots, also recorded in swampy habitats [Krivosheyev, 2015]. In PSER recorded from Crimea Republic and from the Volga River basin.

[Bryaxis clavicornis (Panzer, 1805)]
(Fig. 14L)

Records. Samara Region ? [Goreslavets, 2014].

Notes. Widespread in Europe except south, easternmost records from Central European Russia [Schülke,

Smetana, 2015]. Prefers humid forest microhabitats, usually can be found in leaf litter, moss, decaying wood and other ground-based debris; occurs from lowlands to mountains [Krivosheyev, 2015]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

[? Bryaxis clavipes (Motschulsky, 1851)]

Records. Dagestan Republic ? [Reitter, 1888].

Notes. Described from Georgia [Motschulsky, 1851] and confined to the Caucasus region [Schülke, Smetana, 2015]. Biology is unknown. Old unspecified records from Dagestan come from the original description of *Bythinus dimorphus* [Reitter, 1888] based on unspecified number of specimens and needs verification. No unambiguous records from PSER.

Claviger longicornis Müller, 1818
(Fig. 14P)

Records. Samara Region ? [Goreslavets, 2016b]; Volgograd Region [Grebennikov, Riga, 2014].

Notes. Widespread in Europe, including European Russia [Schülke, Smetana, 2015]. Myrmecophilus, usually occurs in dry and warm microhabitats in association with *Lasius* ants [Krivosheyev, 2015]. In PSER recorded from environs of Svetly Yar village in Volgograd Region. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

[Claviger testaceus Preyßler, 1790]

Records. Samara Region ? [Goreslavets, 2016b].

Notes. Widespread in Europe including European Russia, recorded in Turkey [Schülke, Smetana, 2015]. Myrmecophilus, prefers humid microhabitats in association with *Lasius* or more seldom *Myrmica* ants [Krivosheyev, 2015]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

Ctenistes palpalis Reichenbach, 1816

Records. Astrakhan Region [Grebennikov, 2002a]; Crimea Republic [Krivosheyev, 2013]; Volgograd Region [Grebennikov, 2002a; Makarov et al., 2009].

Notes. Widespread from Central and Southern Europe, known from Middle East and the Oriental region [Schülke, Smetana, 2015]. Usually found in dry and warm forest habitats, often in association with *Tetramorium caespitum* (Linnaeus, 1758) ants; rarely in humid plant debris [Krivosheyev, 2013]. In PSER recorded from Astrakhan and Volgograd regions, record from Crimea Republic comes from Simferopol.

Euplectus nanus (Reichenbach, 1816)
(Fig. 14H)

Records. Samara Region [Goreslavets, 2016a].

Notes. Widespread in Europe, including European Russia, recorded from the Caucasus [Schülke, Smetana,

2015]. Prefers decaying wood and other plant debris, rarely occurs with *Lasius* and *Formica* ants [Krivosheyev, 2015]. In PSER so far known only from Krasnosamarskiy forest in Samara Region.

Pselaphus heisei Herbst, 1791
(Fig. 14K)

Records. Crimea Republic ? [Krivosheyev, 2013]; Samara Region [Kurbatov, Egorov, 2012; Goreslavets, 2014]; Saratov Region [Kurbatov, Egorov, 2012]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread from Europe to the Russian Far East [Schülke, Smetana, 2015]. Prefers flood and swampy microhabitats, usually found in various decaying plant debris [Krivosheyev, 2015]. In PSER recorded from Samara and Volgograd regions, record from Crimea Republic comes from foothills.

[? *Reichenbachia chevrieri* (Aubé, 1844)]

Records. Crimea Republic ? [Krivosheyev, 2013].

Notes. Southern and Central Europe, "Caucasus" and Middle East [Schülke, Smetana, 2015]. Biology is unknown. Here included because of the old record from "Krym" and "Caucasus" [Schülke, Smetana, 2015] which need verification.

[? *Reichenbachia juncorum* (Leach, 1817)]

Records. Crimea Republic ? [Krivosheyev, 2013].

Notes. Widespread in Europe, easternmost records coming from Ukraine, also recorded from North Africa [Schülke, Smetana, 2015; Krivosheyev, 2015]. Prefers humid microhabitats around water bodies at forest and open landscapes, usually found in various ground-based plant debris [Krivosheyev, 2015]. Listed here because of an ambiguous unspecified record from "Taur" in Crimea which according to Krivosheyev [2015] needs verification.

Rybaxis longicornis Leach, 1817
(Fig. 14J)

Records. Crimea Republic [Krivosheyev, 2013]; Samara Region [Kurbatov, Egorov, 2012]; Saratov Region [Kovalev et al., 2011; Kurbatov, Egorov, 2012]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread from Europe and North Africa to East Siberia and Middle Asia [Schülke, Smetana, 2015]. Can be found in humid leaf litter and various ground-based debris around stagnant water bodies in forests and open landscapes [Krivosheyev, 2015]. In PSER recorded from Crimea Republic and from the Volga River basin.

Trichonyx sulcicollis (Reichenbach, 1816)
(Fig. 14I)

Records. Samara Region ? [Kurbatov, Egorov, 2012]; Saratov Region [Sazhnev et al., 2017].

Notes. Widespread in Europe, easternmost records coming from Ukraine; introduced to the Nearctic region

[Schülke, Smetana, 2015]. Usually occurs in swampy microhabitats, mostly in forest biotopes; found in decaying wood, under bark and in moss, sometimes with *Lasius* or *Myrmica* ants [Krivosheyev, 2015]. In PSER recorded from Lesnoy village close to border with Kazakhstan in Saratov Region. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

Trissemus melinus (Solsky, 1870)

Records. Astrakhan Region [Solsky, 1869]; Volgograd Region [Grebennikov, 2002a; Makarov et al., 2009].

Notes. Described based on the material with unspecified number and sex of specimens from an area vaguely identified as Transcaucasia region and Astrakhan [Solsky, 1870]; later recorded from more countries around the Caucasus and Middle Asia [Schülke, Smetana, 2015]. Biology is poorly known, but recorded from forest leaf litter [Reitter, 1877] and bottom sediments of dry saline ponds [Grebennikov, 2002a]. In PSER known from Astrakhan and Volgograd regions.

[*Tychus anatolicus* Besuchet, 1964]

Records. Crimea Republic ? [Krivosheyev, 2015].

Notes. Hitherto reported from Southeastern Europe, Turkey, the Caucasus and Middle East [Samin et al., 2011; Schülke, Smetana, 2015]. Biology is poorly known; recorded from various plant debris around water bodies in open landscapes [Bekchiev, 2013; Sabella, Šíma, 2016]. Record nearby PSER from Crimea Republic comes from foothills, unspecified record from the Caucasus [Schülke, Smetana, 2015] needs verification.

[? *Tychus armeniacus* Saulcy, 1878]

Notes. Described from Georgia, confined to the Caucasus region species [Saulcy, 1878; Schülke, Smetana, 2015]. Biology is unknown. An old unspecified record from "Caucasus" [Heyden et al., 1883] needs verification. Not in PSER, but maybe expected.

[? *Tychus lederi* Saulcy, 1878]

Notes. Described from Transcaucasia region [Saulcy, 1878], currently known from the Caucasus region and Middle East [Schülke, Smetana, 2015]. Biology is unknown. We were unable to find the origin of the records from "Krym" and South European part of Russia mentioned in the Palaearctic catalogue [Schülke, Smetana, 2015]. Never unambiguously recorded from PSER, but maybe expected.

[? *Tychus tauricus* Motschulsky, 1851]

Notes. Known only from the short and uninformative original description which is based on unspecified number of specimens from unclear locality which, judging from the species name, apparently comes from Crimea [Motschulsky, 1851]. Type material missing [Krivosheyev, 2015].

Tyrus mucronatus Panzer, 1803
(Fig. 14M)

Records. Saratov Region [Kovalev et al., 2011; Kurbatov, Egorov, 2012].

Notes. Widespread from Europe to the Russian Far East [Schülke, Smetana, 2015]. Humid forest species, usually occurs around water bodies in various plant debris, rarely in nests of *Lasius* and *Formica*, also recorded at alpine zone [Krivosheyev, 2015]. In PSER recorded only from Melovoe village in southern part of Saratov Region.

Subfamily Scaphidiinae

Scaphidium quadrimaculatum Olivier, 1790
(Fig. 19B)

Records. Samara Region [Goreslavets, 2004, 2016a]; Saratov Region [Sazhnev, Mironova, 2019]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread from Western Europe to West Siberia [Schülke, Smetana, 2015]. Associated with decaying wood and tree fungi, often in polypores [Grebennikov, 2002a; Sazhnev, Mironova, 2019]. In PSER recorded from the Volga River basin.

Scaphisoma agaricinum (Linnaeus, 1758)
(Fig. 19F)

Records. Samara Region [Goreslavets, 2016a, 2021]; Saratov Region [Sazhnev, Mironova, 2019]; Volgograd Region [Grebennikov, 2002a].

Notes. Transpalearctic, from Europe to the Russian Far East [Schülke, Smetana, 2015]. Usually found in decaying wood and other plant debris, often occurring in tree fungi, mostly polypores [Grebennikov, 2002a; Sazhnev, Mironova, 2019]. In PSER recorded from the Volga River basin.

Scaphisoma boleti (Panzer, 1793)

Records. Volgograd Region [Grebennikov, 2002a].

Notes. Widespread from Western Europe to East Siberia [Schülke, Smetana, 2015]. In Iran and Azerbaijan represented by the subspecies *S. b. dilutum* Reitter, 1885. Associated with tree fungi [Majzlan, 2016]. In PSER recorded only from Krasnoslobodsk in Volgograd Region.

[*Scaphisoma boreale* Lundblad, 1952]

Records. Saratov Region ? [Saznev, Mironova, 2019; Sazhnev et al., 2019a].

Notes. The northern West Palearctic, from Scandinavia and Central Europe to Siberia [Schülke, Smetana, 2015]. Associated with tree fungi, mainly polypores [Merkel, 1996; Nikitsky, Schigel, 2004]. Forest zone element, next to PSER recorded only from Saratov city and unspecified localities in Saratov Region.

Scaphisoma inopinatum Löbl, 1967

Records. Samara Region [Goreslavets, 2016a, 2021].

Notes. Widespread from Northern and Middle Europe to the Russian Far East and China [Schülke, Smetana, 2015].

Usually associated with fungi in forest habitats [Wojas, 2016]. In PSER recorded only from Krasnosamarskiy forest in Samara Region. We are not certain if another record from Samara Region belongs to PSER because it lacks geographic details within the region level.

[?! *Scaphisoma simillimum* Löbl, 1970]

Records. Samara Region ? [Goreslavets, 2016a, 2021].

Notes. Described and hitherto known from eight type specimens of both sexes from Turkey and the Caucasus mountains in Georgia and Russia [Löbl, 1970]. Biology is unknown. In PSER so far known only from Krasnosamarskiy forest. Other records from Samara Region are not specified and may also come outside PSER. Based on the known distribution, records from Samara Region need verification.

[*Scaphisoma subalpinum* Reitter, 1880]

Records. Saratov Region ? [Sazhnev, Mironova, 2019].

Notes. Widespread from Europe to Middle East [Schülke, Smetana, 2015]. In the Russian Far East represented by the subspecies *S. s. ussuricum* Pic, 1921. Associated with decaying wood and fungi in forest habitats. Potentially relevant for PSER record comes from an unspecified locality around Saratov city in Saratov Region.

Subfamily Scydmaeninae

[*Euconnus hirticollis* Illiger, 1798]

Records. Saratov Region ? [Kurbatov, Egorov, 2012].

Notes. Widespread in Europe including European Russia [Schülke, Smetana, 2015]. Prefers humid microhabitats often around water bodies and can be found in various ground-based debris [Kurbatov, Egorov, 2012]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

[*Neuraphes angulatus* (Müller et Kunze, 1822)]
(Fig. 19M)

Records. Saratov Region ? [Kurbatov, Egorov, 2012].

Notes. Widespread in Europe including European Russia [Schülke, Smetana, 2015]. Occurs mostly in humid forest leaf litter [Kurbatov, Egorov, 2012]. We are not certain if the record from Saratov Region belongs to PSER because it lacks geographic details within the region level.

Scydmaenus rufus Müller et Kunze, 1822
(Fig. 19H)

Records. Saratov Region [Kurbatov, Egorov, 2012]; Volgograd Region [Kurbatov, Egorov, 2012].

Notes. Widespread from Western Europe to Middle East, also in North Africa [Schülke, Smetana, 2015]. Prefers wood of different decomposition stages, also recorded under bark [Kurbatov, Egorov, 2012]. In PSER recorded only from Saratov and Volgograd regions.

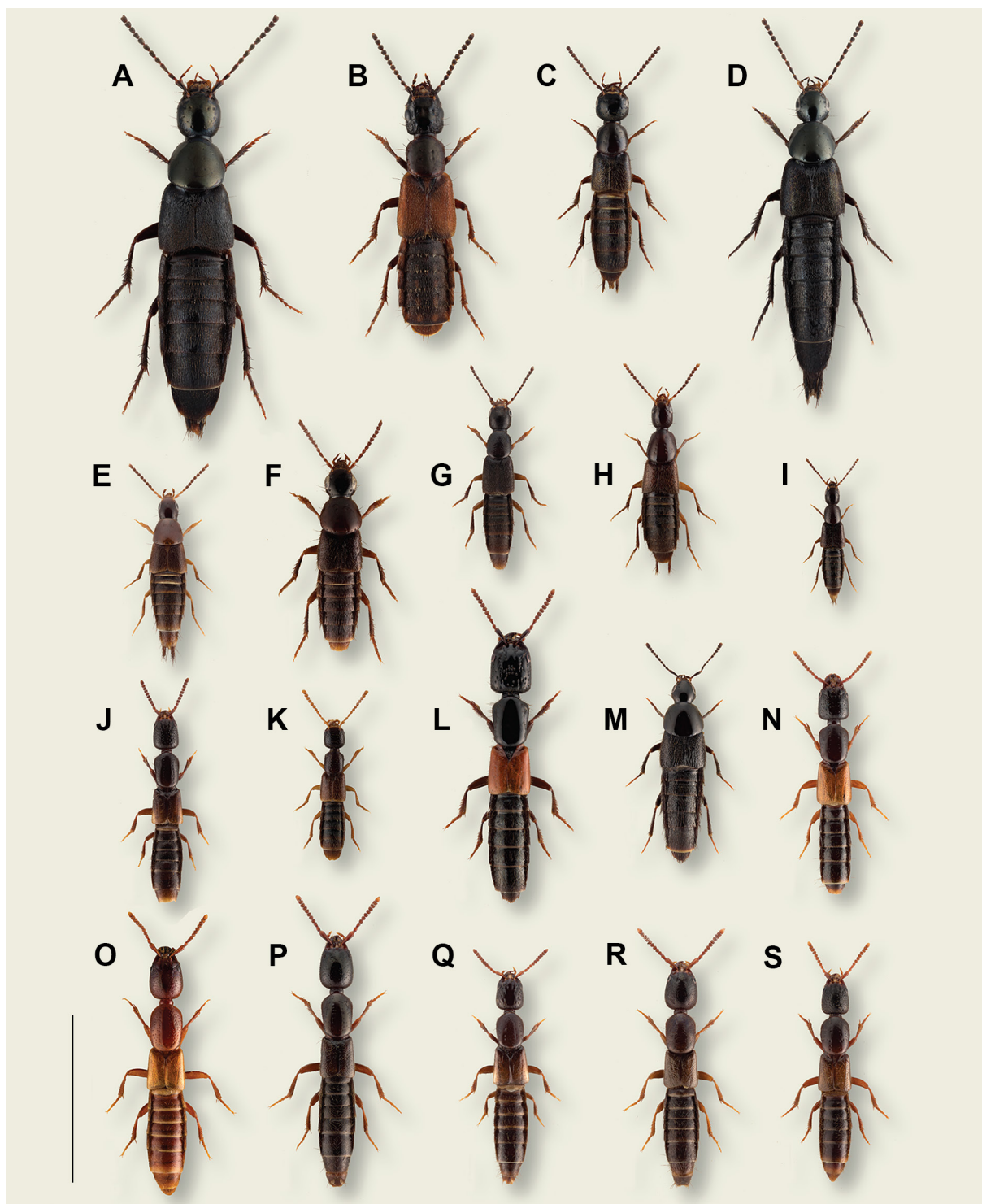


Fig. 18. Diversity of Staphylininae and Xantholininae in PSER and adjacent areas.

A–I, K, M – Staphylininae; J, L, N–S – Xantholininae. A – *Philonthus decorus*; B – *Cafius xantholoma*; C – *Bisnius cephalotes*; D – *Philonthus cognatus*; E – *Heterothops dissimilis*; F – *Quedius umbrinus*; G – *Erichsonius cinerascens*; H – *Gabrius osseticus*; I – *Gabrius breviventer*; J – *Leptacinus batychrus*; K – *Neobisnius villosulus*; L – *Gauropterus fulgidus*; M – *Acylophorus glaberrimus*; N – *Nudobius lentus* (ambiguously recorded in PSER); O – *Xantholinus laevigatus* (ambiguously recorded in PSER); P – *Xantholinus dvoraki*; Q – *Phacophallus parumpunctatus*; R – *Xantholinus linearis* (ambiguously recorded in PSER); S – *Gyrohypnus angustatus*. Scale bar 3 mm.

Рис. 18. Разнообразие видов подсемейств Staphylininae и Xantholininae из PSER и сопредельных территорий.

A–I, K, M – Staphylininae; J, L, N–S – Xantholininae. A – *Philonthus decorus*; B – *Cafius xantholoma*; C – *Bisnius cephalotes*; D – *Philonthus cognatus*; E – *Heterothops dissimilis*; F – *Quedius umbrinus*; G – *Erichsonius cinerascens*; H – *Gabrius osseticus*; I – *Gabrius breviventer*; J – *Leptacinus batychrus*; K – *Neobisnius villosulus*; L – *Gauropterus fulgidus*; M – *Acylophorus glaberrimus*; N – *Nudobius lentus* (указание из PSER сомнительно); O – *Xantholinus laevigatus* (указание из PSER сомнительно); P – *Xantholinus dvoraki*; Q – *Phacophallus parumpunctatus*; R – *Xantholinus linearis* (указание из PSER сомнительно); S – *Gyrohypnus angustatus*. Масштабная линейка 3 мм.

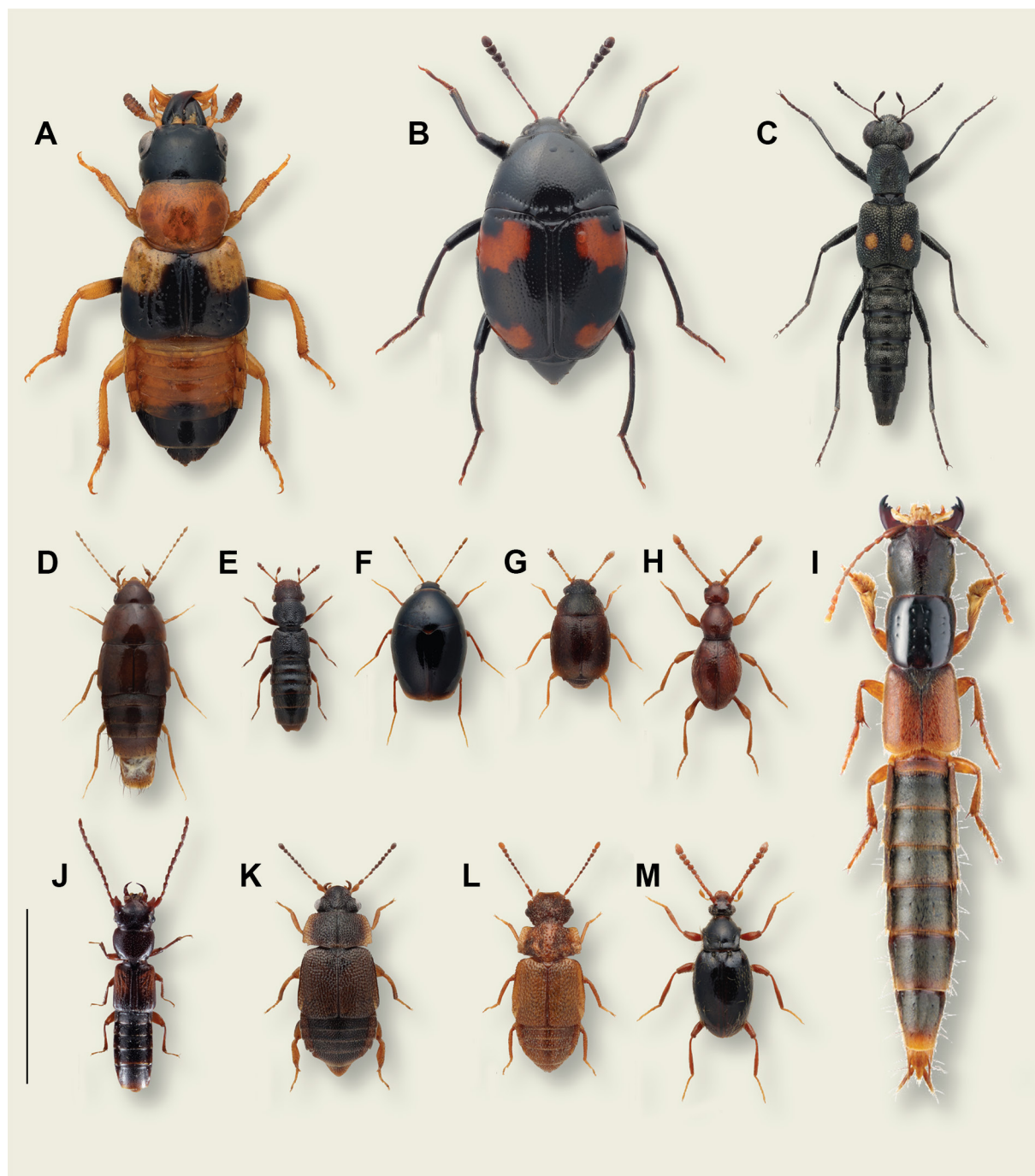


Fig. 19. Diversity of Staphylinidae from various subfamilies in PSER and adjacent areas:

A – *Oxyporus rufus* (Oxyporinae); B – *Scaphidium quadrimaculatum* (Scaphidiinae) (image credit Anders Illum); C – *Stenus comma* (Steninae); D – *Habrocerus capillaricornis* (Habrocerinae); E – *Euaesthetus bipunctatus* (Euaesthetinae); F – *Scaphisoma agaricinum* (Scaphidiinae); G – *Proteinus atomarius* (Proteininae) (ambiguously recorded in PSER); H – *Scydmaenus rufus* (Scydmaeninae); I – *Platyprosopus elongatus* (Platyprosopinae), length of body 16 mm (image credit Kirill Makarov); J – *Siagonium quadricorne* (Piestinae); K – *Megarthus denticollis* (Proteininae) (ambiguously recorded in PSER); L – *Metopsia similis* Zerche, 1998 (Proteininae) (ambiguously recorded in PSER); M – *Nevrapthes angulatus* (Müller et Kunze, 1822) (Scydmaeninae) (not recorded in PSER). Scale bar 3 mm.

Рис. 19. Разнообразие видов семейства Staphylinidae разных подсемейств из PSER и сопредельных территорий.

A – *Oxyporus rufus* (Охупоринае); B – *Scaphidium quadrimaculatum* (Скафидиинae) (автор фото Anders Illum); C – *Stenus comma* (Стенинае); D – *Habrocerus capillaricornis* (Хаброцеринае); E – *Euaesthetus bipunctatus* (Еуаэстетинае); F – *Scaphisoma agaricinum* (Скафидиинae); G – *Proteinus atomarius* (Протеининае) (указание из PSER сомнительно); H – *Scydmaenus rufus* (Скыдмаенинае); I – *Platyprosopus elongatus* (Платипросопинае), length of body 16 mm (фото Кирилла Макарова); J – *Siagonium quadricorne* (Пиестинае); K – *Megarthus denticollis* (Протеининае) (указание из PSER сомнительно); L – *Metopsia similis* Zerche, 1998 (Протеининае) (указание из PSER сомнительно); M – *Nevrapthes angulatus* (Müller et Kunze, 1822) (Скыдмаенинае) (не указан из PSER). Масштабная линейка 3 мм.

Scydmaenus tarsatus Müller et Kunze, 1822

Records. Saratov Region [Kurbatov, Egorov, 2012].

Notes. Widespread from Western Europe to Turkey and European part of Russia, also known from North Africa [Schülke, Smetana, 2015]. Prefers various ground-based decaying debris [Kurbatov, Egorov, 2012]. We are not certain if the record from Saratov Region belongs to PSER because it lacks geographic details within the region level.

Subfamily Staphylininae

Acylophorus glaberrimus (Herbst, 1784)
(Fig. 18M)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1998a, 2017]; Saratov Region [Sazhnev, 2013a]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2001b].

Notes. West Palaearctic species distributed from Europe to Middle Asia, not common; prefers wet leaf litter and other plants organic debris, also can be found in swamp moss [Solodovnikov, 2012]. In Russia known only from PSER, from Crimea to the Volga River basin.

Astrapaesus ulmi Rossi, 1790

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998; Knysh, Solodovnikov, 2004]; Rostov Region [Khachikov, 1998a, 2017].

Notes. Broadly distributed in Europe except its northern part, reaches western Turkey, and western Russia [Herman, 2001; Pietrykowska-Tudruj et al., 2014]. Due to patchy occurrence in Europe, generally considered a rare species [Assing, Schülke, 2012; Pietrykowska-Tudruj et al., 2014]. Inhabits xerothermic habitats with moderately moist soil [Della Rocca et al., 2021]. In Russia found only in PSER, in its western part only.

Bisnius cephalotes Gravenhorst, 1802
(Fig. 18C)

Records. Crimea Republic ? [Gusarov, 1989]; Rostov Region [Khachikov, 2017].

Notes. Transpalaearctic, introduced to the Nearctic [Schillhammer, 2012; Klimaszewski, Brunke, 2018]. Usually occurs in dung and compost [Gusarov, 1989; Forbes et al., 2016], also recorded from bird nests [Smetana, 1995]. In Russia distributed from the European part throughout Siberia to the Far East [Poppius, 1909; Shilov, 1975]. In PSER known only from Rostov Region, and from a foothill record in the mountains of Crimea.

Bisnius fimetarius Gravenhorst, 1802

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Khachikov, 1997; Solodovnikov, 1998]; Rostov Region [Minoranskiy, Lomakin, 1978]; Stavropol Region [Khachikov, 1997].

Notes. Transpalaearctic species reaching India and Taiwan; introduced to North America [Cameron, 1932;

Schillhammer, 2012; Hayashi, 2015]. Inhabits decaying plant and animal organic remains, also recorded from marmot nests [Schillhammer, 2012; Smetana, 1958]. Broadly distributed in Russia [Shilov, 1975; Pavlov, 2005]. In PSER in several western regions.

[?! *Bisnius longicollis* Bernhauer, 1908]

Records. Rostov Region ? [Minoranskiy, Lomakin, 1978].

Notes. Described from an unspecified locality in Siberia [Bernhauer, 1908] and lately recorded only from Siberia and the Far East [Lobkova, Semenov, 2015]. The type locality of the current junior synonym *B. intrudens* described from the Beskid Mountains is considered a mislabeling [Schillhammer, 1999a]. Apparently, the only and rather old record from Rostov Region in PSER is based on misidentification.

Bisnius manytchensis Khachikov, 2003

Records. Rostov Region [Khachikov, 2003, 2012, 2017].

Notes. The species was described based on a single male collected in Rostov Steppe Reserve, which had slight external and aedeagal (presence of Y-shaped sclerite in the endophallus) difference from *B. spermophili*. The species is hitherto known only from the original description, its identity needs clarification.

Bisnius nitidulus (Gravenhorst, 1802)

Records. Crimea Republic [Gusarov, 1989]; Kalmykia Republic [Khachikov, 1997]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2014]; Saratov Region [Sazhnev et al., 2017]; Volgograd Region [Grebennikov, 2001b].

Notes. Widespread in temperate zone from Eastern France to the Russian Far East; in Central Europe occurs in open landscapes with sandy soils [Schillhammer, 2012; Schülke, Smetana, 2015]. Prefers open biotopes and slopes exposed to sunlight, especially on sandy and limestone soils, in rotten plant remains, excrements and under stones [Staniec, Pietrykowska-Tudruj, 2007]; found in spring season on pig's carcasses [Mądra et al., 2014]. In PSER broadly distributed.

[?! *Bisnius noualhieri* (Fauvel, 1898)]

Records. Samara Region ? [Goreslavets, 2016].

Notes. Currently known from Algeria and Morocco only [Schülke, Smetana, 2015]. Biology is unknown. The record in PSER from Krasnosamarskiy forest in Samara Region is surprising and needs revision.

Bisnius parvus (Sharp, 1874)

Records. Crimea Republic [Gusarov, 1989]; Rostov Region [Khachikov, 1997, 2017].

Notes. Originally West Palaearctic species; introduced all over the world [Schillhammer, 2012]. Inhabits bird or

bat feces [Khachikov, Gontarenko, 2020]. Apparently, it was introduced to Russia by poultry transportation [Orlova-Bienkowskaja, 2017]. If so, probably it was brought from Europe, because there are no records from Siberia and the Far East. In PSER known only from Crimea Republic and Rostov Region.

Bisnius pentheri Ganglbauer, 1905

Records. Rostov Region [Khachikov, 2017 (misidentified as *B. scribeae*); Khachikov, Gontarenko, 2020]; Saratov Region [Khachikov, Gontarenko, 2020].

Notes. Nidicolous, confined to marmot burrows; until recently was known only from Turkey and Armenia [Ganglbauer, 1905; Coiffait, 1967a]. Recently reliably identified and recorded from two areas in PSER and from eastern Ukraine [Khachikov, Gontarenko, 2020: figs 1-10, illustrations of habitus and aedeagus]. Apparently, more widespread in PSER than currently known due to nidicolous biology.

Bisnius scribeae (Fauvel, 1867)

Records. Astrakhan Region [Kirschenblatt, 1938]; Kalmykia Republic [Kirschenblatt, 1938]; Rostov Region [Kirschenblatt, 1938; Minoranskiy, Lomakin, 1978; Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002]; Stavropol Region [Kirschenblatt, 1938]; Volgograd Region [Kirschenblatt, 1936, 1938; Grebennikov, 2001b].

Notes. West Palaearctic nidicolous species distributed from Central Europe to East Siberia [Kirschenblatt, 1938; Horion, 1965; Schülke, Smetana, 2015]. Usually occurs in nests of various small mammals, known as predator of fleas [Kirschenblatt, 1938; Schillhammer, 2012]. In PSER recorded from Rostov Region and from the Volga River basin.

Bisnius sordidus Gravenhorst, 1802

Records. Crimea Republic [Erichson, 1840; Gusarov, 1989]; Kalmykia Republic [Khachikov, 1997]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004]; Saratov Region [Sazhnev, Mironova, 2019; Sazhnev et al., 2019a]; Stavropol Region [Pushkin, Maksimova, 2014; Pushkin, Minav, 2015]; Volgograd Region [Kirschenblatt, 1936; Grebennikov, 2001b].

Notes. Worldwide distribution; recorded from almost all continents [Schillhammer, 2012]. Ecology flexible, mostly found in various organic debris [Khachikov, 2017], or even in mole nests [Nowosad, 1990]. Common in Russia including several records in PSER.

Bisnius spermophili (Ganglbauer, 1897)

Records. Crimea Republic [Gusarov, 1989]; Rostov Region [Khachikov, 1998a, 2017]; Saratov Region [Kirschenblatt, 1938]; Volgograd Region [Kirschenblatt, 1936; Grebennikov, 2001b].

Notes. West Palaearctic nidicolous species, usually occurs in mole nests, distributed from Europe to Middle Asia, not common [Schillhammer, 2012]. In PSER known from several western regions.

Bisnius subuliformis (Gravenhorst, 1802)

Records. Crimea Republic [Gusarov, 1989]; Samara Region [Goreslavets, 2014]; Saratov Region ? [Sazhnev, Volodchenko, 2021].

Notes. West Palaearctic species known from Europe to Middle Asia; usually occurs in decaying wood in hollows and nests [Kirschenblatt, 1950; Schillhammer, 2012; Sazhnev, Volodchenko, 2021]. In Russia known only from PSER where it is recorded in several areas. Adjacent to PSER record comes from Balashov District in Saratov Region [Sazhnev, Volodchenko, 2021] and Karachay-Cherkessia Republic [Khachikov, Gontarenko, 2020]. There is also an old record from northern European Russia in Karelia [Horion, 1965].

Bisnius zhuk (Gusarov, 1995)

Records. Crimea Republic [Gusarov, 1995]; Krasnodar Region [Gusarov, 1995; Solodovnikov, 1998]; Stavropol Region [Khachikov, 1997].

Notes. Distributed in South European Russia, Azerbaijan and Turkmenistan [Gusarov, 1995; Solodovnikov, 1998; Schillhammer, 2019]. Prefers dung of different mammals, but also mentioned from carrion and decaying mushrooms, occurs from plains to mountains [Gusarov, 1995]. All lowland records from Russia belongs to PSER, some records from Stavropol and Krasnodar regions come from foothills. Can be confused with the similar and more common *B. fimetarius*, for differences see Schillhammer [2019].

Cafius cicatricosus (Erichson, 1840)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998].

Notes. European sea shore inhabitant confined to North Atlantic Ocean and Mediterranean Sea coasts; not common [Frank, Ahn, 2011]. Recorded from the coasts of the Black Sea in south Crimea and the North-Western Caucasus; potentially maybe found at Black Sea shores and estuaries of PSER.

Cafius xantholoma (Gravenhorst, 1806)
(Fig. 18B)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Khachikov, 1997; Solodovnikov, 1998].

Notes. Widely distributed West Palaearctic sea shore inhabitant confined to North Atlantic and Mediterranean Sea coasts [Frank, Ahn, 2011]; occurs in sea debris, but prefers deep layers of seaweed beds [Gusarov, 1989]. Recorded from the coasts of the Black Sea in south Crimea and the North-Western Caucasus including area of PSER.

Creophilus maxillosus Linnaeus, 1758
(Fig. 17C)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Pushkin, 2016]; Orenburg Region [Nagumanova, 2005a, b, 2006]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 2017]; Samara Region [Goreslavets et

al., 2002; Goreslavets, 2004]; Stavropol Region [Pushkin, Maksimova, 2014; Pushkin, Minav, 2015; Pushkin, 2015, 2016]; Volgograd Region [Grebennikov, 2001b; Makarov et al., 2009; Pushkin, 2015, 2016].

Notes. Widespread in the Holarctic and Neotropics, in the Palaearctic including Atlantic islands represented by the nominotypical subspecies [Clarke, 2015]. Feeds on carcasses, as well as on maggots that tend to be on dead animals [Augul et al., 2015]. Widespread in Russia from the European part to the Far East [Schülke, Smetana, 2015]. In PSER recorded in most regions.

Dinothenarus pubescens (De Geer, 1774)
(Fig. 17G)

Records. Crimea Republic ? [Gusarov, 1989]; Samara Region ? [Goreslavets, 2002; Goreslavets et al., 2002]; Stavropol Region ? [Zerche, 1991; Khachikov, 1997, 2011; Pushkin, Maksimova, 2014].

Notes. Widely distributed in Europe, reaches Turkey; mostly found in forest habitats; prefers fresh dung [Iljina, Khachikov, 2011; Schillhammer, 2012]; also known from Lebanon as a separate subspecies *D. p. meridiorientalis* Bordoni, 1984. In Russia distributed throughout its European part [Schülke, Smetana, 2015]. Found only in adjacent regions to PSER, in the foothills of Crimean mountains, in the foothills of the Caucasus in Stavropol Region. Records from Samara Region come from Samarskaya Luka.

Emus hirtus (Linnaeus, 1758)
(Fig. 17B)

Records. Crimea Republic [Gusarov, 1989]; Rostov Region [Khachikov, 1997, 2017; Pushkin, 2015, 2016]; Samara Region [Goreslavets, 2002, 2016a; Goreslavets et al., 2002]; Saratov Region [Sazhnev, Rodnev, 2005]; Stavropol Region [Pushkin, Maksimova, 2014; Pushkin, Minav, 2015; Pushkin, 2015, 2016]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2001b; Makarov et al., 2009].

Notes. West Palaearctic coprophilous species distributed from Europe to Middle Asia [Schillhammer, 2012]; in Russia occurs from European part [Egorov et al., 2020] to the Altai mountains [Psarev, 2014]. Usually can be found in open landscapes in the dung of cattle; predator of *Aphodius* Hellwig, 1798 beetles and their larvae, maggots and *Sphaeridium* Fabricius, 1775 beetles [Krawczynski et al., 2011; Biel et al., 2014]. Lately suggested for protection in Europe as endangered species [Goreslavets, 2002; Biel et al., 2014]. In PSER repeatedly recorded from almost all regions.

Erichsonius cinerascens (Gravenhorst, 1802)
(Fig. 18G)

Records. Rostov Region [Khachikov, 2003, 2017]; Saratov Region [Sazhnev, 2013a; Sazhnev et al., 2018]; Volgograd Region [Grebennikov, 2001b].

Notes. Distributed everywhere in Europe except its southern part [Schillhammer, 2012]; in Russia occurs

in its European part [Shulaev, 2008] and in West Siberia [Bukhkalov et al., 2012]. Prefers humid ground-based debris usually near the water bodies [Schillhammer, 2012; Sazhnev et al., 2018]. In PSER recorded from Rostov Region and the Volga River basin.

Erichsonius subopacus (Hochhuth, 1851)

Records. Crimea Republic ? [Gusarov, 1989]; Krasnodar Region ? [Solodovnikov, 1998]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Stavropol Region [Khachikov, 1997].

Notes. Distributed from Southern Europe to Western Asia, in Central Europe rare [Schillhammer, 2012; Özgen, 2017]; bionomics as in *E. cinerascens* [Schillhammer, 2012]; in the plains and also recorded from the foothills in Crimea and the West Caucasus [Gusarov, 1989; Solodovnikov, 1998]. Widespread in PSER.

Gabrius astutus (Erichson, 1840)

Records. Krasnodar Region [Khachikov, 1997; Solodovnikov, 1998]; Stavropol Region [Khachikov, 1997].

Notes. Transpalaearctic species, in Russia reaching the Far East [Ryabukhin, 2008; Schillhammer, 2012; Schülke, Smetana, 2015]. Inhabits leaf litter, moss, other plant debris, water shores [Fauvel, 1865; Solodovnikov, 1998]. In PSER recorded only from Krasnodar and Stavropol regions.

Gabrius austriacus Scheerpeltz, 1947

Records. Krasnodar Region [Solodovnikov, 1998].

Notes. Occurs over the whole Europe except for southern and extreme northern parts; introduced into the Nearctic region [Schillhammer, Lott, 2001]. Schülke and Smetana [2015] also report it from West Siberia. Inhabits shores of stagnant or slow-flow water bodies, under plant debris [Schillhammer, 2012]. In PSER recorded only from Krasnodar Region.

Gabrius breviventer (Sperk, 1835)
(Fig. 18I)

Records. Rostov Region [Khachikov, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014].

Notes. Known from the Holarctic and Oriental regions; common in Europe [Schillhammer, 2012; Schülke, Smetana, 2015]. Inhabits banks of water areas, forest litter, plant debris [Schillhammer, 2012]. In PSER recorded from Rostov and Samara regions.

[*Gabrius cyphonotus* Joy, 1913]

Notes. Described from uncertain locality in "Caucasus" [Joy, 1913]; later mentioned from the southern regions of European Russia, Azerbaijan and Georgia [Herman, 2001; Schülke, Smetana, 2015]. Ecology and biology are unknown [Smetana, 1960]. We are unaware of any records from PSER or any material underlying Schülke and Smetana's [2015] general record from ST in Russia.

Gabrius dieckmanni Smetana, 1957

Records. Samara Region [Goreslavets et al., 2002; Schillhammer, 2004; Goreslavets, 2016a].

Notes. Fragmentary distribution; known from Germany [Schülke, Smetana, 2015], but also found in Samara Region and East Siberia (Buryatia Republic) in Russia [Voinkov, 2020]. Not common, halophilic, inhabits plant debris on water areas' shores [Willers, 2001; Voinkov, 2020]. In PSER only in Samara Region, where in addition to Schillhammer's [2004] record of specimens near Polyakovo village it was recorded from Krasnosamarskiy forest near the shores of water bodies [Goreslavets et al., 2002; Goreslavets, 2016a]. Adjacent to PSER record comes from Samarskaya Luka.

Gabrius exspectatus Smetana, 1952

Records. Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 2003, 2017]; Samara Region [Goreslavets, 2004, 2014, 2021].

Notes. Presumably West Palaearctic species with the easternmost records from Altai mountains [Schülke, Smetana, 2015]; Schillhammer [2012] mentioned that this species could be confused with *G. splendidulus* and thus real distribution needs clarification. Prefers habitats under the bark of rotten trees [Schillhammer, 2012; Semenov, 2014]. In PSER recorded from Rostov and Samara regions, and in Krasnodar Region from sea coast debris.

Gabrius femoralis (Hochhuth, 1851)

Records. Krasnodar Region [Petrenko, 1980; Khachikov, 1997; Solodovnikov, 1998; Knysh, Solodovnikov, 2004].

Notes. Widely distributed in Southern and Central Europe, reaching Asia Minor [Schillhammer, 2012; Schülke, Smetana, 2015]. Occurs in forest litter, humid places near water bodies [Tóth, 1984; Schillhammer, 2012]. In PSER only in Krasnodar Region, where Solodovnikov [1998] mentioned it from forests from plains to mountains.

[? *Gabrius insignis* (Luze, 1904)]

Notes. Described from Middle Asia and later recorded in that area and in Afghanistan [Luze, 1904; Coiffait, 1974; Schülke, Smetana, 2015]. Smetana [1953] introduced an unclear record for this species from "Caucasus" which potentially may include an areas covered by PSER. Biology is unknown. Never unambiguously recorded in PSER.

[? *Gabrius lividipes* (Baudi di Selve, 1848)]

Records. "Caucasus" [Ganglbauer, 1895; Smetana, 1957; Coiffait, 1974].

Notes. Described from Sardinia, known from Europe including European part of Russia, Asia Minor and "Caucasus" ([Palmén, 1946 (record from Leningrad Region); Herman, 2001; Schillhammer, 2012; Schülke, Smetana, 2015]; Oleg Semionenkov, personal communication). Inhabits plains, valleys, foothills, can be found on river

shores, under stones, in moss [Smetana, 1958; Horion, 1965]. Never unambiguously recorded in PSER.

Gabrius nigrutilus (Gravenhorst, 1802)

Records. Crimea Republic [Gusarov, 1989; Khachikov, 2017]; Krasnodar Region [Solodovnikov, 1998; Knysh, Solodovnikov, 2004]; Rostov Region [Khachikov, 2017]; Samara Region [Goreslavets et al., 2002].

Notes. Cosmopolitan species; apparently introduced from the West Palaearctic to other regions; eurytopic [Smetana, 1995; Chani-Posse, 2011; Schillhammer, 2012]. In PSER recorded from Crimea to the Volga River basin with some gaps.

Gabrius osseticus (Kolenati, 1846)
(Fig. 18H)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2016b]; Volgograd Region [Grebennikov, 2001b].

Notes. Widespread in the Palaearctic; distributed from Western Europe to the Russian Far East [Ryabukhin, 1999; Schillhammer, 2012; Schülke, Smetana, 2015]. Eurytopic; inhabits leaf litter, humid moss, plant debris, shores of water bodies [Pietrykowska-Tudruj, Staniec, 2011; Schillhammer, 2012]. In PSER recorded from Crimea and Krasnodar Region, and from the the Volga River basin.

Gabrius piliger Mulsant et Rey, 1876

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Petrenko, 1980; Solodovnikov, 1998] Rostov Region [Khachikov, 2017].

Notes. West Palaearctic species; known from Europe and Asia Minor [Schillhammer, 2012; Schülke, Smetana, 2015]. Rare; inhabits dung, humid places in forests, leaf-litter [Petrenko, 1980; Gusarov, 1989; Solodovnikov, 1998]. In PSER recorded from Crimea Republic and Rostov Region.

Gabrius ravasinii Gridelli, 1920

Records. Volgograd Region [Grebennikov, 2001b].

Notes. Distributed in Southern and Eastern Europe, also Turkey and Cyprus; prefers near water habitats [Schillhammer, 2012; Özgen, Khachikov, 2013; Schülke, Smetana, 2015]. In PSER was recorded only once from Volgograd Region. The "Caucasus" records that come from old publications [Smetana, 1956; Coiffait, 1974] need clarification.

Gabrius sacerdotalis Joy, 1913

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998; Knysh, Solodovnikov, 2004]; Rostov Region [Khachikov, 2017].

Notes. Known from Georgia, Turkey and the southern territories in European Russia [Schülke, Smetana, 2015].

Occurs in forest litter, near water, under stones [Gusarov, 1989; Solodovnikov, 1998; Khachikov, 2017]. In PSER recorded from Crimea to the Don River basin. In Krasnodar Region Solodovnikov [1998] mentioned this species from forests in the plain and higher altitudes.

[? *Gabrius splendidulus* (Gravenhorst, 1802)]

Notes. Holarctic species; widespread in Europe and Siberia; found under tree bark in rotten wood [Schillhammer, 2012; Pietrykowska-Tudruj et al., 2019]. Never mentioned from PSER, ambiguous records from “Caucasus” [Fauvel, 1874; Smetana, 1957] need clarification.

Gabrius subnigritulus Joy, 1913

Records. Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 1998a, 2003, 2017]; Volgograd Region [Grebennikov, 2001b].

Notes. Distributed in Central Europe, in the Caucasus, Middle East and Middle Asia [Schillhammer, 2012; Schülke, Smetana, 2015]. Usually found in forest leaf litter and under stones near water [Solodovnikov, 1998; Schillhammer, 2012]. In PSER recorded from Krasnodar, Rostov and Volgograd regions.

Gabrius suffragani Joy, 1913

Records. Astrakhan Region [Khachikov, 1997; Grebennikov, Komarov, 1998; Grebennikov, 2001b]; Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2014]; Saratov Region [Sazhnev et al., 2017]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2001b].

Notes. Distributed from Central Europe to the Caucasus and Turkey [Schillhammer, 2012; Schülke, Smetana, 2015]. Inhabit shores of stagnant or slow-flow water bodies and leaf litter [Solodovnikov, 1998; Schillhammer, 2012]. Recorded from all regions of PSER except Stavropol Region, Dagestan and Kalmykia republics.

Gabrius trossulus (Nordmann, 1837)

Records. Rostov Region [Khachikov, 2017]; Samara Region [Goreslavets, 2014].

Notes. European species [Schillhammer, 2012]. In Central Europe found near swamps, in humid forests among moss, leaf litter, plant debris [Staniec, Pietrykowska-Tudruj, 2007; Schillhammer, 2012]. In PSER recorded from Rostov Region. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

[?! *Gabrius velox* Sharp, 1910]

Records. Samara Region ? [Goreslavets et al., 2002; Goreslavets, 2014].

Notes. Confined to Western Europe and recorded from Algeria [Schillhammer, Lott, 2001; Schülke, Smetana,

2015], where it is found in coastal areas near water; rare [Schillhammer, 2012]. Schillhammer and Lott [2001] rejected Smetana's [1960] interpretation and synonymy [Smetana, 1995] of *G. velox* and *G. austriacus* and pointed out that since 1960 records of *G. velox* in fact belong to *G. austriacus*. We are not certain if the records from Samara Region belong to PSER because they lack geographic details within the region level. Due to the outlined taxonomic confusion, these records of *G. velox* anyways need clarification.

Gabronthus limbatus (Fauvel, 1900)

Records. Dagestan Republic [Khachikov, 1998a; Khachikov et al., 2021]; Rostov Region [Khachikov, 2003, 2017].

Notes. Distributed from Central and Western Europe to East Siberia [Schülke, Smetana, 2015]. In steppe landscapes inhabit dung, in forest-steppe zones – plant debris [Khachikov, 2003]; can be found in mountains [Tóth, 1984]. In PSER recorded from Rostov Region and northern Dagestan.

Gabronthus maritimus (Motschulsky, 1858)

Records. Samara Region [Goreslavets et al., 2002; Goreslavets, 2014].

Notes. Distributed from the South Palaearctic [Portevin, 1929; Hromádka, 2010] to the Afrotropical and Oriental regions [Cameron, 1921; Shibata, 1993]. Biology is poorly known, but recorded from plant debris and mushrooms [Özgen, 2017]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level. The identification for this record was verified by Aleš Smetana [Goreslavets et al., 2002].

Heterothops balthasari Smetana, 1967

Records. Astrakhan Region [Khachikov, 1998a]; Rostov Region [Khachikov, 1997, 2017]; Volgograd Region [Khachikov, 1998a; Grebennikov, 2001b; Makarov et al., 2009].

Notes. Nidicolous species known from Central and Southeastern Europe [Smetana, 1967; Grebennikov, 2001b]; due to its cryptic habitats the distribution needs clarification. In PSER repeatedly recorded from several regions in the north.

Heterothops dissimilis (Gravenhorst, 1802)
(Fig. 18E)

Records. Astrakhan Region [Khachikov, 1998a; Grebennikov, 2001b]; Crimea Republic [Gusarov, 1989]; Dagestan Republic [Khachikov, 1998a]; Kalmylia Republic [Khachikov, 1998a]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2021]; Volgograd Region [Kirschenblatt, 1936, 1938; Khachikov, 1998a; Grebennikov, Komarov, 1998; Grebennikov, 2001b; Makarov et al., 2009].

Notes. Widespread from Europe to the Russian Far East; prefers various humid microhabitats (from leaf litter to mole nests) in open landscapes, often in anthropogenic biotopes [Ryabukhin, 1999; Solodovnikov, 2012]. In PSER nearly everywhere eastwards to the Volga River basin.

Heterothops jureceki Štourač, 2000

Records. Orenburg Region [Štourač, 2000]; Saratov Region [Sazhnev et al., 2017].

Notes. Described based on four specimens collected in Orenburg Region, without bionomic data [Štourač, 2000]. The first record after the original description comes from Saratov Region, specimens were collected using the pitfall trap set up near the *Marmota bobac* burrow and identified by Alexey Kovalev [Sazhnev et al., 2017]; presumably nidicolous species.

[?! *Heterothops minutus* Wollaston, 1860]

Records. Samara Region ? [Goreslavets, 2014].

Notes. Distributed in Central and Southern Europe, also in Central European part of Russia [Semionov et al., 2015]; recorded in Canary Islands and Madeira [Schülke, Smetana, 2015]. Biology is poorly known, occurs in hay [Solodovnikov, 2012]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

[?! *Heterothops nigerrimus* Bernhauer, 1914]

Notes. Described from Gissar Range in Tajikistan [Bernhauer, 1914], this species is currently known from Middle Asia, Afghanistan and Southern Territory of Russia [Schülke, Smetana, 2015], the latter record is apparently based on the unspecified indication from "Lower Volga" in Tikhomorova [1973] which needs confirmation.

Heterothops praeivius Erichson, 1839

Records. Crimea Republic [Gusarov, 1989]; Kalmykia Republic [Kirschenblatt, 1936, 1938]; Rostov Region [Kirschenblatt, 1938]; Saratov Region [Kirschenblatt, 1936, 1938; Horion, 1965]; Stavropol Region [Kirschenblatt, 1938]; Volgograd Region [Kirschenblatt, 1938].

Notes. Widespread from Europe and North Africa to the Russian Far East [Schülke, Smetana, 2015]; old records based on the identifications from external characters need verification [Ryabukhin, 1999; Solodovnikov, 2012]. Predominantly occurs in nests of various mammals [Nowosad, 1990], but also can be found in hay and leaf litter [Solodovnikov, 2012]. In PSER repeatedly recorded from several regions.

Heterothops quadripunctulus (Gravenhorst, 1806)

Records. Astrakhan Region [Grebennikov, Komarov, 1998; Grebennikov, 2001b]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2001b].

Notes. Widespread from Europe to the Russian Far East; usually can be found at open landscapes,

hydrophilous, prefers banks of various water bodies, often in backwaters [Horion, 1965; Solodovnikov, 2012]. In PSER recorded from Astrakhan and Volgograd regions.

Heterothops tenuiventris Kirschenblatt, 1938

Records. Volgograd Region [Grebennikov, 2001b].

Notes. Nidicolous species, described from western Kazakhstan, found in the nests of *Citellus pygmaeus* and *Spermophilus fulvus* (Lichtenstein, 1823) [Kirschenblatt, 1938]; poorly known, overlooked in Herman [2001]. Lately, Grebennikov [2001b] examined the type material and recorded the species from Volgograd Region.

Jurececia asphaltina Erichson, 1840

Records. Astrakhan Region [Kirschenblatt, 1938]; Dagestan Republic [Kirschenblatt, 1938]; Kalmykia Republic [Kirschenblatt, 1938; Grebennikov, 2001b]; Rostov Region [Kirschenblatt, 1938]; Samara Region [Rambousek, 1920; Kirschenblatt, 1938]; Volgograd Region [Kirschenblatt, 1938; Grebennikov, 2001b].

Notes. Southeastern European nidicolous species [Kirschenblatt, 1938]; the original description of a synonym, *J. paradoxa* Rambousek, 1920, is based on the material from Samara Region; associated with the nests of small mammals (*Citellus pygmaeus*, *Spermophilus fulvus*, *Mus musculus* Linnaeus, 1758) [Kirschenblatt, 1938; Grebennikov, 2001b]. In PSER repeatedly recorded from several regions from Rostov Region in the west and from Dagestan and the Lower Volga region in the east.

[? *Neobisnius lathrobioides* Baudi, 1848]

Notes. Distributed in Europe, Canary Islands, North Africa, Turkey, introduced to North America [Herman, 2001; Schülke, Smetana, 2015]. Distribution needs clarification due to confusion with *N. procerulus*; in Central Europe confined to warmer locations [Schillhammer, 2012]. No clear records from PSER where it potentially could be expected, only ambiguous record from "Caucasus" [Fagel, 1954].

[?! *Neobisnius orbus* (Kiesenwetter, 1850)]

Records. Samara Region ? [Goreslavets, 2016a].

Notes. Distributed in Southern Europe, North Africa and Middle East; in Afghanistan represented by a separate subspecies *N. o. nouristanicus* Coiffait, 1979 [Schülke, Smetana, 2015]. In PSER recorded only from Krasnosamarskiy forest in Samara Region from the floodplain of a river; the record is not unlikely from the biogeographic standpoint but needs confirmation.

Neobisnius procerulus Gravenhorst, 1806

Records. Astrakhan Region [Grebennikov, 2001b]; Crimea Republic [Gusarov, 1989]; Kalmykia Republic [Khachikov, 1997; Grebennikov, 2001b]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets,

2004, 2014, 2016a]; Saratov Region [Sazhnev et al., 2017]; Volgograd Region [Grebennikov, 2001b].

Notes. The West Palaearctic, introduced to other continents [Schillhammer, 2012]; recorded in European Russia and West Siberia; in Afghanistan represented by separate subspecies *N. p. decolor* Coiffait, 1974 [Schülke, Smetana, 2015]. Found in forests and near water bodies [Khachikov, 1997, 2017]. In PSER very widespread.

Neobisnius prolixus Erichson, 1840

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2014, 2016a]; Stavropol Region [Khachikov, 1997].

Notes. Widespread in Europe, Middle East and Middle Asia [Schülke, Smetana, 2015]. Found in forests and near water bodies [Khachikov, 1997, 2017]. In PSER rather widespread west to the Volga River basin.

Neobisnius villosulus Stephens, 1833
(Fig. 18K)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2014, 2016a].

Notes. Widely distributed in Europe; introduced to North America [Herman, 2001; Smetana, 2004; Majka, Klimaszewski, 2008]. Found mainly in humid habitats around rivers, marshes and lakes [Newton et al., 2001; Majka, Klimaszewski, 2008]. In Russia found in European part only [Schülke, Smetana, 2015]. In PSER recorded in few regions from Crimea Republic, Rostov and Samara regions.

[? *Ocypus aeneocephalus* (De Geer, 1774)]

Notes. West Palaearctic species distributed from Western Europe throughout European Russia to Transbaikalia [Horion, 1965; Schillhammer, 2012]. Prefers ground-based plant debris in open and forested landscapes, both in the plains and mountainous biotopes [Kleeberg, Uhlig, 2011]. Except ambiguous old record from "Caucasus" [Ménétriés, 1832] and general ST record [Schülke, Smetana, 2015], never unambiguously recorded from PSER.

[?! *Ocypus alpestris* Erichson, 1840]

Records. Samara Region ? [Goreslavets, 2004].

Notes. Alpine species confined to Eastern Alps [Schillhammer, 2012]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level. Given the distribution of this species this record seems an obvious misidentification.

Ocypus brunnipes (Fabricius, 1781)

Records. Krasnodar Region [Knysh, Solodovnikov, 2004]; Rostov Region [Khachikov, 1997, 2017]; Samara

Region [Goreslavets, 2014, 2016a]; Stavropol Region [Khachikov, 1997].

Notes. Widespread West Palaearctic species with the easternmost records from East Siberia, introduced to the Nearctic region [Schillhammer, 2012; Schülke, Smetana, 2015]. Confined to various decaying ground-based debris, also in moss; can be found both in the lowland and mountain biotopes, also known as synantropic [Khachikov, 1997; Deichsel, 2006]. In PSER not common, but recorded from several regions.

Ocypus curtipennis Motschulsky, 1849

Records. Crimea Republic [Motschulsky, 1849; Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Dagestan Republic [Khachikov, 1997; Khachikov et al., 2021].

Notes. Distributed in Southeastern Europe and Middle East [Schülke, Smetana, 2015], described from Crimea [Motschulsky, 1849]. Usually can be found in leaf litter, upper layers of soil and under rocks, occurs in the nests and burrows of mammals and birds; predator of other insects and snails [Mihailov, 2018]. Records from PSER are highly disjunct between the Black Sea area from the one hand and the Caspian Sea area in northern Dagestan, on the other hand.

Ocypus fulvipennis Erichson, 1840

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998; Knysh, Solodovnikov, 2004]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004]; Stavropol Region [Khachikov, 1997].

Notes. Widespread from Western Europe to East Siberia and Middle Asia, not common [Schillhammer, 2012]; usually occurs in leaf litter and under stones in dry and warm habitats [Assing, 2001b; Schatz, 2012]; recorded from lowlands to subalpine zone in the mountains [Smetana, 1958; Solodovnikov, 1998]. Widespread in European part of Russia; reported from East Siberia [Horion, 1965; Pavlov, 2005; Schülke, Smetana 2015]. In PSER recorded in several regions from Crimea Republic to the Volga River basin.

Ocypus fuscatus (Gravenhorst, 1802)

Records. Krasnodar Region ? [Solodovnikov, 1998]; Samara Region ? [Goreslavets et al., 2002; Goreslavets, 2016a]; Stavropol Region ? [Khachikov, 1997].

Notes. Widespread from Western Europe throughout European Russia to East Siberia and Middle Asia [Horion, 1965; Coiffait, 1974; Schillhammer, 2012]; old record from Amur Province [Fauvel, 1874] is probably a misidentification. Prefers open landscapes with dry microhabitats, sometimes found in the forests; recorded from lowlands to subalpine zone in the mountains [Smetana, 1958; Schillhammer, 2012]. In PSER known only from Krasnosamarskiy forest in Samara Region. Adjacent to PSER records come from Samarskaya Luka in Samara Region and the Caucasus foothills in Krasnodar and Stavropol regions.

Ocypus mus (Brullé, 1832)

Records. Dagestan Republic [Khachikov, 1998a].

Notes. Thermophilic species, confined to Southern and Southeastern Europe and Middle East [Schülke, Smetana, 2015]; occurs mainly in open landscapes with warm microhabitats [Schillhammer, 2012]. In PSER recorded only from the environs of Mahachkala city near to Caspian shore in Dagestan Republic.

Ocypus nitens (Schränk, 1781)

Records. Astrakhan Region [Nordmann, 1837]; Krasnodar Region [Solodovnikov, 1998; Solodovnikov, Knysh, 2004; Khachikov, 1997, 2020]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004]; Stavropol Region [Khachikov, 1997; Pushkin, Maksimova, 2014; Pushkin, Minav, 2015]; Volgograd Region [Grebennikov, 2001b, 2002a].

Notes. Common West Palaearctic species; widespread from Europe including European Russia, to Iran [Samin et al., 2011; Schillhammer, 2012; Schülke, Smetana, 2015; Egorov et al., 2020], introduced to the Nearctic [Newton, 1987; Brunke, 2016]. *Staphylinus lugens* [Nordmann, 1837], now a junior synonym of *O. nitens*, was described from Astrakhan Region. Usually found in leaf litter and other plant debris at open and forested landscapes [Grebennikov, 2001a]. In PSER repeatedly recorded from Krasnodar Region to the Volga River basin.

[?] *Ocypus olens* (Müller, 1764)

Records. Saratov Region ? [Sazhnev, Rodnev, 2005]; Samara Region ? [Goreslavets, 2002]; Stavropol Region ? [Pushkin, Maksimova, 2014].

Notes. Widespread in Europe species, occurs in North Africa, introduced to the Nearctic [Schillhammer, 2012; Schülke, Smetana, 2015]. Prefers dry open landscapes or sparse forests from lowlands to foothills [Pilon, 1991; Schillhammer, 2012], known as predator of snails [Orth et al., 1976]. Old records from Siberia [Erichson, 1840] and the Caucasus [Fauvel, 1874] apparently are based on misidentifications. We are not certain if the records from Samara and Saratov regions belong to PSER because they lack geographic details within the region level. We consider these records questionable, they need taxonomic confirmation.

Ocypus ophthalmicus (Scopoli, 1763)
(Fig. 17A)

Records. Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004]; Stavropol Region [Khachikov, 1997]; Volgograd Region [Grebennikov, 2001b].

Notes. Widespread from Western Europe to East Siberia and Middle Asia [Eppelsheim, 1887a; Schülke, Smetana, 2015]; usually found in ground-based debris at open landscapes from lowlands to mountains [Schillhammer, 2012]. In PSER known from Krasnodar and Rostov regions and from the Volga River basin.

Ocypus picipennis (Fabricius, 1792)
(Fig. 17F)

Records. Astrakhan Region [Grebennikov, 2001b, 2002a]; Crimea Republic [Gusarov, 1989]; Kalmykia Republic [Khachikov, 1997]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002]; Saratov Region [Kovalev et al., 2011]; Volgograd Region [Grebennikov, 2001b, 2002a; Makarov et al., 2009].

Notes. Widespread from Western Europe to East Siberia and China [Schülke, Smetana, 2015]. Consisted of five subspecies: *O. p. barbarus* Müller, 1926 confined to North Africa, *O. p. fallaciosus* Müller, 1926 to Southern Europe, *O. p. nevadensis* Müller, 1926 to Southwestern Europe, *O. p. caucasicus* Müller, 1926 to Transcaucasia and *O. p. picipennis* is widely distributed throughout the Palaearctic from Europe to the Russian Far East and China [Schülke, Smetana, 2015]. Found from plains to higher elevations in the mountains, in leaf litter and other ground-based plant debris [Gusarov, 1989; Grebennikov, 2001b]; recorded from xerothermous sides [Assing, 1994]. In PSER as *O. p. picipennis* repeatedly recorded nearly everywhere; a single record of *O. p. fallaciosus* from Volgograd Region [Grebennikov, 2002a] needs verification along with the taxonomic assessment of all intraspecific forms.

Ocypus ponomarevorum Khachikov, 2013

Records. Rostov Region [Khachikov, 2013a, 2017].

Notes. Described based on three specimens of both sexes from Razdorskaya village in Rostov Region [Khachikov, 2013a]. Later the same author [Khachikov, 2017] provided additional records from Rostov Region based on two female specimens.

[?] *Ocypus pullus* Hochhuth, 1849

Notes. Described from several unspecified localities in the Caucasus ("Aus verschiedenen Gegenden Kaukasiens" [Hochhuth, 1849: 122]). Eppelsheim [1887b] synonymized *O. pullus* to *O. simulator* Eppelsheim, 1878 without any explanations. Müller [1926] also cited it as a synonym, but provided some weak differences between *O. pullus* and *O. simulator*. Smetana and Davies [2000] reinstated *O. pullus* from synonymy only with a suspicion that both species are not identical pending examination of type material. Later *O. pullus* was recorded from Turkey [Samin et al., 2011]. The status of species and its possible occurrence in PSER remains unknown.

Ocypus sericeicollis (Ménétriés, 1832)

Records. Crimea Republic ? [Gusarov, 1989]; Dagestan Republic [Khachikov et al., 2021]; Krasnodar Region ? [Solodovnikov, 1998]; Rostov Region ? [Minoranskiy, Lomakin, 1978].

Notes. Common in Southern and Southeastern Europe, rarer to the east and west [Schillhammer, 2012]; recorded in Turkey and Middle East [Schülke, Smetana, 2015]. Found under rocks [Gusarov, 1989]. In Russia

known from the mountain foothills in Crimea Republic and Krasnodar Region. In PSER known only from Kumtorkala District near the Caspian Sea shore in Dagestan Republic. An old record from Rostov Region needs verification.

Ontholestes murinus (Linnaeus, 1758)
(Fig. 17H)

Records. Astrakhan Region [Grebennikov, 2001b; Pushkin, 2015, 2016]; Crimea Republic [Gusarov, 1989]; Dagestan Republic [Khachikov, 1998a]; Krasnodar Region [Solodovnikov, 1998; Knysh, Solodovnikov, 2004]; Orenburg Region [Nagumanova, 2005b, 2006]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2002, 2004]; Stavropol Region [Khachikov, 1997; Pushkin, Maksimova, 2014; Pushkin, Minav, 2015; Pushkin, 2015, 2016]; Volgograd Region [Grebennikov, 2001b].

Notes. Widespread from Europe to the Russian Far East, introduced to North America [Schülke, Smetana, 2015]; usually can be found in dung and carrion [Smetana, 1981]. In PSER recorded nearly everywhere.

Ontholestes tessellatus (Geoffroy, 1785)

Records. Samara Region [Goreslavets et al., 2002; Goreslavets, 2004].

Notes. Transpalearctic, from Europe to the Russian Far East and China [Schülke, Smetana, 2015]. Can be found in various types of ground-based debris such as decaying plants and dung, also recorded as necrophilous [Pilon, 1998; Goreslavets et al., 2002]. Widely recorded throughout the territory of Samara Region including areas within PSER.

Philonthus addendus Sharp, 1867

Records. Samara Region ? [Goreslavets et al., 2002; Goreslavets, 2004, 2014].

Notes. Transpalearctic temperate eurytopic species [Schillhammer, 2012]. In PSER known from Krasnosamarskiy forest. Other Samara Region records come from unspecified localities. Next to PSER in Samara Region found in Samarskaya Luka.

Philonthus alberti Schillhammer, 2000

Records. Krasnodar Region ? [Khachikov, 1997; Knysh, Solodovnikov, 2004]; Rostov Region [Khachikov, 1997, 2017 (as *Ph. picipes*)]; Stavropol Region ? [Khachikov, 1997].

Notes. Distributed from the Caucasus region in the east to Austria in the west, confined to humid forests [Schillhammer, 2012]. In PSER recorded from environs of Goryachiy Klyuch in Krasnodar Region and from Rostov Region (erroneously as *Ph. picipes* Fauvel). Khachikov [1997] reported it from the mountains, from Stavropol and Krasnodar regions.

Philonthus albipes (Gravenhorst, 1802)

Records. Crimea Republic ? [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region

[Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2014, 2016a]; Volgograd Region [Grebennikov, 2001b].

Notes. This is a dung inhabiting species with unclear, presumably wide, distribution in the Palaearctic region [Schillhammer, 2012]. In PSER repeatedly recorded from Crimea in the west to the Volga River in the east.

Philonthus alpinus (Eppelsheim, 1875)]

Records. Stavropol Region ? [Khachikov, 1997].

Notes. West Palaearctic species with bionomics as in *Ph. albipes* [Schillhammer, 2012]. Lack of records of *Ph. alpinus* from plains of southern Russia is noteworthy; the only record from PSER by Khachikov [1997] comes from Kislovodsk in Stavropol Region, next to the foothills of the North Caucasus.

Philonthus atratus (Gravenhorst, 1802)

Records. Crimea Republic [Gusarov, 1989]; Dagestan Republic [Khachikov, 1998a]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Saratov Region [Sazhnev, 2013a].

Notes. Palaearctic species; inhabits shores of water bodies, mainly; in detritus, cracks in wet soil or under rocks or logs [Solodovnikov, 1998; Pietrykowska-Tudruj, Staniec, 2011], also found in shelters under logs and rocks. In PSER records come from Crimea to the Volga River basin and northern Dagestan, but with large gaps.

Philonthus binotatus (Gravenhorst, 1806)

Records. Samara Region [Horion, 1965; Goreslavets, 2014]; Saratov Region [Sazhnev et al., 2019a, b, c]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread in the Palaearctic, reaching the Russian Far East; presumably halophilic species, that inhabits shores of water bodies [Schillhammer, 2012], but may occur in dung [Psarev, 2019]. In PSER recorded in regions around the Volga River basin.

Philonthus biskrensis Fagel, 1957

Records. Astrakhan Region [Khachikov, 1997; Grebennikov, Komarov, 1998; Grebennikov, 2002a]; Kalmykia Republic [Khachikov, 1997; Grebennikov, 2002a]; Rostov Region [Khachikov, 1997, 2017]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread in the Southwest Palaearctic [Schülke, Smetana, 2015]. Occurs on the banks of water bodies [Gusarov, 1995], but biology needs clarification. Rather widespread in PSER, these records are the only findings from the Russian Federation.

[? *Philonthus caerulescens* (Lacordaire, 1835)]

Notes. According to Schillhammer [2012] widespread in Europe, and can be very common in some parts of southern Central Europe; confined to sandy and gravelly

river banks. Other than the ST record [Schülke, Smetana, 2015] and single old records from “Caucasus” [Ganglbauer, 1895; Horion, 1965], no unambiguous records from PSER.

Philonthus carbonarius (Gravenhorst, 1802)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Khachikov, 1997; Solodovnikov, 1998]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2016a]; Stavropol Region [Khachikov, 1997]; Volgograd Region [Kirschenblatt, 1938; Khachikov, 1997; Grebennikov, 2001a].

Notes. Distributed throughout the Palaearctic, but data from the East Palaearctic require verification; one of the most common species in Central Europe [Schillhammer, 2012]. Usually inhabits humid places in lowlands, especially in meadows and fields, often occurs in forest litter, decaying plants and dung [Solodovnikov, 1998; Schillhammer, 2012; Goreslavets, 2016a]. Widely recorded throughout PSER from Crimea Republic to Samara Region, with some gaps.

Philonthus caucasicus Nordmann, 1837

Records. Astrakhan Region [Grebennikov, 2001b; Pushkin, 2015, 2016]; Crimea Republic [Nordmann, 1837; Gusarov, 1989]; Kalmykia Republic [Khachikov, 1997]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1997, 2017]; Samara Region [Goreslavets, 2002, 2014]; Stavropol Region [Pushkin, Maksimova, 2014; Pushkin, Minav, 2015; Pushkin, 2015, 2016]; Volgograd Region [Kirschenblatt, 1936; Khachikov, 1997; Grebennikov, 2001b; Makarov et al., 2009].

Notes. Widespread Palaearctic species whose distribution stretches eastwards to East Siberia and Mongolia; introduced into the Nearctic region [Herman, 2001; Schülke, Smetana 2015]. Lives on all kinds of decaying substances [Schillhammer, 2012], like rotting weeds, hay, compost, corpses, horse and cow dung [Pushkin, 2016; Psarev, 2019]. In PSER widespread and common.

[?! *Philonthus chaldeus* Stephens, 1832]

Records. Crimea Republic ? [Gusarov, 1989]; Rostov Region ? [Khachikov, 1997, 2017]; Samara Region ? [Goreslavets et al., 2002; Goreslavets, 2004]; Stavropol Region ? [Khachikov, 1997].

Notes. This species has been listed as a synonym of *Philonthus succicola* Thomson, 1860 by several authors [e.g., Coiffat, 1974; Grebennikov, 2001b]. In Schülke and Smetana [2015] listed as *nomen dubium* because the type series consists of four different species and thus the identity of the species requires clarification [Tottenham, 1937; Schillhammer, 2000]. Under such circumstances, records from PSER may in fact belong to *P. succicola*.

[?! *Philonthus chopardi* Cameron, 1950]

Records. Samara Region ? [Goreslavets, 2014].

Notes. Distributed in North Africa and Yemen [Schülke, Smetana, 2015]. We are not certain if the record

from Samara Region belongs to PSER because it lacks geographic details within the region level. Given the known distribution of this species, it is a supprising record which, apparently, is based on misidentification.

Philonthus cochleatus Scheerpeltz, 1937

Records. Crimea Republic [Gusarov, 1989]; Dagestan Republic [Khachikov, 1998a]; Kalmykia Republic [Khachikov, 1997; Grebennikov, 2001b]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 2017]; Samara Region [Goreslavets et al., 2002]; Volgograd Region [Grebennikov, 2001b].

Notes. West Palaearctic species [Schülke, Smetana, 2015]; in Central Europe confined to the south and south-east only, its distribution requires clarification, bionomics is unclear [Schillhammer, 2012]; reported from dung [Gusarov, 1989] and forest litter [Goreslavets et al., 2002]. In PSER repeatedly recorded in various regions from Crimea to the Volga River basin.

Philonthus cognatus Sharp, 1876
(Fig. 18D)

Records. Crimea Republic [Gusarov, 1989]; Dagestan Republic [Khachikov, 1998a]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2021]; Saratov Region [Sazhnev et al., 2017]; Stavropol Region [Khachikov, 1997]; Volgograd Region [Khachikov, 1997; Grebennikov, 2001b].

Notes. Widespread in the Palaearctic including European Russia and Siberia [Schülke, Smetana, 2015]; introduced into the Nearctic region [Smetana, 1995]; one of the most common species in Central Europe where it occurs at low altitudes, in treeless biotopes, particularly on arable lands [Schillhammer, 2012]; in North America occurs in coniferous and deciduous forests, prefers humid places [Smetana, 1995]. Common and widespread in PSER too.

Philonthus concinnus (Gravenhorst, 1802)

Records. Astrakhan Region [Grebennikov, 2001b]; Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Orenburg Region [Nagumanova, 2005a, 2006]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2021]; Saratov Region [Sazhnev, Anikin, 2018]; Stavropol Region [Khachikov, 1997]; Volgograd Region [Grebennikov, 2001b; Makarov et al., 2009].

Notes. Widespread in the Palaearctic including European Russia, Siberia and the Far East [Schülke, Smetana, 2015], introduced into the Nearctic [Smetana, 1995]. Eurytopic, inhabits all types of saprogenic substances [Schillhammer, 2012]; often found in habitats disturbed by humans [Smetana, 1995]. Common and widespread in PSER too.

Philonthus confinis Strand, 1941

Records. Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 2017].

Notes. Distributed from Great Britain to Mongolia; exact distribution still unclear, especially Western European records require verification [Schillhammer, 2012]. Reported from decaying plant debris [Solodovnikov 1998], horse and cow dung [Aiydov, 2014, 2017; Semenov, 2015]. In PSER recorded only in Krasnodar and Rostov regions.

Philonthus coprophilus Jarrige, 1949

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2021]; Stavropol Region [Gorkavaya, 2017a, b]; Volgograd Region [Grebennikov, 2001b].

Notes. Distributed from Great Britain and North Africa to West Siberia, noted in most European countries [Schillhammer, 2012]. Often occurs in carrion, cow and horse dung [Gusarov, 1989; Aiydov, 2014; Mazurov, 2017]. In PSER repeatedly recorded in various regions from Crimea to the Volga River basin.

Philonthus corruscus (Gravenhorst, 1802)

Records. Crimea Republic [Gusarov, 1989]; Kalmykia Republic [Khachikov, 1997; Grebennikov, 2001b]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002]; Stavropol Region [Pushkin, Maksimova, 2014; Pushkin, Minav, 2015; Pushkin, 2015, 2016]; Volgograd Region [Grebennikov, 2001b].

Notes. Widespread from Mediterranean region eastward to Central Asia [Schillhammer, 2012]. Prefers forest biotopes, reported from plant residues, corpses and dung [Solodovnikov, 1998; Goreslavets et al., 2002; Schillhammer, 2012]. In PSER repeatedly recorded in various regions from Crimea to the Volga River basin.

[*Philonthus corvinus* Erichson, 1839]

Records. Saratov Region ? [Sazhnev et al., 2019a, b].

Notes. Distributed almost throughout the entire Europe, reaching West Siberia in Russia [Schillhammer, 2012]. Hydrophilic, prefers shores of water bodies and swamps [Dorofeev, 2013; Sazhnev et al., 2019b], also occurs in forest and meadow biotopes; reported from dung [Pavlov, 2005]. Next to PSER recorded only from Saratov city, and from unspecified localities in Saratov Region which potentially may be within PSER area.

Philonthus cruentatus (Gmelin, 1790)

Records. Astrakhan Region [Grebennikov, Komarov, 1998; Grebennikov, 2001b]; Crimea Republic [Gusarov, 1989]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002]; Stavropol Region [Gorkavaya, 2017a]; Volgograd Region [Khachikov, 1997; Grebennikov, Komarov, 1998; Grebennikov, 2001b].

Notes. Widespread in the Palaearctic, introduced into the Nearctic [Smetana, 1995; Schülke, Smetana, 2015].

Prefers open landscapes [Schillhammer, 2012]; occurs on all kinds of decaying organic matter, particularly on dung and carrion [Smetana, 1995; Semenov, 2015, 2016]. In PSER recorded in various regions from Crimea to the Volga River basin.

Philonthus cyanipennis (Fabricius, 1792)

Records. Samara Region [Goreslavets et al., 2002; Goreslavets, 2002, 2021].

Notes. Widespread in the Palaearctic from Europe to China and the Russian Far East [Smetana, 1995; Schülke, Smetana, 2015]. Occurs in forest habitats in various kinds of rotting mushrooms [Schillhammer, 2012], rarely reported from other decaying substances, like corpses, dung and litter [Smetana, 1995; Zenkova, Kolesnikova, 2016]. In PSER reported from Krasnosamarskiy forest in Samara Region, presumably not going further south. Next to PSER recorded from Samarskaya Luka in Samara Region.

Philonthus debilis (Gravenhorst, 1802)

Records. Astrakhan Region [Grebennikov, 2001b]; Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Volgograd Region [Kirschenblatt, 1936; Grebennikov, 2001b].

Notes. Widespread Palaearctic species, introduced into the Nearctic [Schülke, Smetana, 2015]. Common in various habitats, especially in decaying organic debris; reported from disturbed habitats near and in human settlements [Smetana, 1995; Schillhammer, 2012]. In PSER repeatedly recorded in various regions from Crimea to the Volga River basin.

Philonthus decorus (Gravenhorst, 1802)
(Fig. 18A)

Records. Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2014]; Saratov Region [Sazhnev, Mironova, 2019]; Stavropol Region [Pushkin, Maksimova, 2014; Pushkin, Minav, 2015].

Notes. Transpalaearctic, in Russia from European part to the Far East, in Central Europe quite common [Schillhammer, 2012]. Occurs in coniferous and deciduous forests, mainly in leaf litter [Goreslavets et al., 2002; Schillhammer, 2012]. In PSER recorded in its northern regions and in Stavropol Region, for the latter without locality data.

Philonthus dimidiatipennis Erichson, 1840

Records. Astrakhan Region [Khachikov, 1997; Grebennikov, 2001b]; Crimea Republic [Gusarov, 1989]; Kalmykia Republic [Khachikov, 1997; Grebennikov, 2001b]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2014]; Volgograd Region [Grebennikov, 2001b; Makarov et al., 2009].

Notes. Widespread in the Southwestern Palaearctic, except North Africa; in the east to Mongolia [Schillhammer, 2012]; introduced into the Oriental region [Schülke, Smetana, 2015]. Inhabits shores of water bodies [Pavlov, 2005]; possibly halophilic, reported from salt marshes [Grebennikov, 2001b]. In PSER repeatedly recorded in various regions from Crimea to the Volga River basin.

Philonthus discoideus (Gravenhorst, 1802)

Records. Crimea Republic [Gusarov, 1989]; Rostov Region [Khachikov, 1997, 2017]; Volgograd Region [Grebennikov, 2001b].

Notes. Palaearctic species introduced in various regions of the globe, nowadays mentioned as cosmopolitan [Smetana, 1995; Schillhammer, 2012]. Usually in habitats associated with human settlements, mainly in diverse decaying organic matter [Smetana, 1995]; also reported from shores of water bodies [Shulaev, Bogdanov, 2008]. In PSER reported only from Crimea Republic, Rostov and Volgograd regions.

Philonthus ebeninus (Gravenhorst, 1802)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004]; Stavropol Region [Khachikov, 1997]; Volgograd Region [Grebennikov, 2001b].

Notes. Widely distributed in the Palaearctic, except Japan [Schillhammer, 2012]. Little known biology, but in several publications reported from dung [Gusarov, 1989; Goreslavets et al., 2002]. In PSER recorded in various regions from Crimea Republic to the Volga River basin.

Philonthus ephippium Nordmann, 1837

Records. Kalmykia Republic [Khachikov, 1997]; Rostov Region [Khachikov, 2003, 2017]; Saratov Region [Sazhnev, Anikin, 2014a]; Volgograd Region [Grebennikov, 2001b].

Notes. Widespread from South European Russia across Kazakhstan and West Siberia to Mongolia [Schülke, Smetana, 2015]. Little known biology, reported only from meadows and near-water biotopes [Pavlov, 2005]. In PSER recorded only from a few regions in the north-west.

[? *Philonthus fenestratus* Fauvel, 1872]

Notes. West Palaearctic species [Schülke, Smetana, 2015]; single ambiguous record from "Caucasus" [Gridelli, 1920]. So far, no any records from PSER.

[*Philonthus frigidus* Märkel et Kiesenwetter, 1848]

Notes. Distributed in Central and Southern Europe, in Balkan Peninsula represented by the subspecies *P. f. balkanicus* R. Dvořák et Havelka, 1952 [Schülke, Smetana, 2015]. Possibly prefers mountainous terrain, occurs from subalpine to alpine belts, under stones

[Schillhammer, 2012]. In Russia reported only from the mountains in the Karachay-Cherkessia Republic [Aiydov, 2014], but record needs to be verified (Eduard Khachikov, personal communication). Never reported in PSER. A single imprecise record from "Caucasus" [Fauvel, 1874] needs revision.

[? *Philonthus fugax* Faldermann, 1835]

Notes. Very poorly known species with unclear location of the type material to check; presumably closely related to *P. politus* [Schillhammer, 2000]. Vaguely recorded from "Caucasus" and "Transcaucasia" [Schülke, Smetana, 2015]. Never recorded in PSER.

Philonthus fumarius (Gravenhorst, 1806)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004; Goreslavets, 2014]; Saratov Region [Kovalev et al., 2011; Sazhnev et al., 2018, 2019b]; Stavropol Region [Khachikov, 1997]; Volgograd Region [Khachikov, 1997; Grebennikov, 2001b].

Notes. Distributed throughout entire Europe, including European Russia [Schülke, Smetana, 2015]. Prefers silted zone of stagnant water reservoirs, especially in lowlands [Schillhammer, 2012]; also reported in forest litter, plant residues, excrements and carrion [Solodovnikov, 1998]. In PSER recorded in various regions from Crimea Republic to the Volga River basin.

[? *Philonthus fuscatus* Kraatz, 1859]

Records. Samara Region ? [Goreslavets, 2016a, 2021].

Notes. Described from Ceylon, reported from India, Sri Lanka, China and Iraq, introduced to the Oriental region [Herman, 2001; Schülke, Smetana, 2015]. In PSER so far known only from Krasnosamarskiy forest. Other records from Samara Region are not specified and may also come outside PSER. These are the only reports for this species from Russia; presumably they are based on the misidentification.

Philonthus intermedius (Lacordaire, 1835)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002].

Notes. Distributed from Great Britain through Europe southeastwards to Turkmenistan [Schülke, Smetana, 2015]; single records from "Caucasus" [Fauvel, 1874] need revision. Occurs mainly in forests [Schillhammer, 2012]; reported from dung [Solodovnikov, 1998]. In PSER recorded from Crimea to the Volga River basin.

[? *Philonthus juvenilis* Peyron, 1858]

Notes. Distributed in southeast of Europe and in Turkey [Schülke, Smetana, 2015]. Never recorded from PSER; single record from "Caucasus" [Tronquet, Zanetti, 2002] may have some relation to PSER but needs revision.

[? *Philonthus laminatus* (Creutzer, 1799)]

Notes. Widespread in Europe, recorded in Turkey and the Caucasus region [Schülke, Smetana, 2015]. Eurytop obviously prefers open landscapes [Schillhammer, 2012]. Ambiguousuly recorded from “Caucasus” [Fauvel, 1874; Coiffait, 1967a, 1974], or ST [Schülke, Smetana, 2015], no exact records from PSER.

Philonthus lepidus (Gravenhorst, 1802)

Records. Crimea Republic [Gusarov, 1989]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2016b]; Stavropol Region [Kirschenblatt, 1938]; Volgograd Region [Grebennikov, 2001b].

Notes. Widespread from Western Europe eastward to Central Asia and to the Far East in Russia [Schülke, Smetana, 2015]. Prefers open areas [Schillhammer, 2012]. Inhabits shores of water bodies, also occurs in forest litter, plant residues, under stones and dung [Gusarov, 1989; Goreslavets et al., 2002]. In PSER recorded from Crimea Republic to the Volga River basin, with some gaps.

Philonthus linki Solsky, 1866

Records. Astrakhan Region [Grebennikov, 2001b]; Rostov Region [Khachikov, 2003, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2002, 2014].

Notes. Described from Samara area, reported from Central and Southern European Territory of Russia and in Northeast China [Schülke, Smetana, 2015]. Biology is poorly known, reported only from decaying plant residues [Goreslavets et al., 2002]. In PSER recorded from few regions west of the the Volga River basin; as a rare species suggested to be included in the Red Book of Samara Region [Goreslavets, 2002a].

Philonthus longicornis Stephens, 1832

Records. Astrakhan Region [Grebennikov, 2001b]; Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets, 2004, 2014]; Volgograd Region [Grebennikov, 2001b].

Notes. Widespread Palaearctic species, introduced in various regions of the world, cosmopolitan [Schülke, Smetana, 2015]. Inhabits various decaying organic matter [Smetana, 1995], especially dung [Solodovnikov, 1998]. In PSER repeatedly recorded in various regions from Crimea to the Volga River basin.

[*Philonthus marginatus* (O. Müller, 1764)]

Records. Samara Region ? [Goreslavets et al., 2002; Goreslavets, 2014]; Saratov Region ? [Horion, 1965].

Notes. Widespread in the West Palaearctic, except for North Africa, eastward to Altai; mainly on dung [Schillhammer, 2012]; also reported from forest litter, birch's sap and animal's carcasses [Semenov, 2014; Semenov et al., 2015]. The only clear records adjacent to PSER come

from Samarskaya Luka in Samara Region and environs of Saratov city in Saratov Region. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

Philonthus micans (Gravenhorst, 1802)

Records. Astrakhan Region [Grebennikov, 2001b]; Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Saratov Region [Sazhnev et al., 2019c]; Stavropol Region [Gorkavaya, 2017a]; Volgograd Region [Grebennikov, 2001b; Makarov et al., 2009].

Notes. Distributed across entire Europe eastward to the Far East of Russia [Schülke, Smetana, 2015]. Probably hygrophilous, lives in a silted zone of stagnant and slowly flowing waters, especially in lowlands [Schillhammer, 2012]; also reported from forest litter [Goreslavets et al., 2002]. In PSER repeatedly recorded in various regions from Crimea to the Volga River basin.

Philonthus micantoides Benick et Lohse, 1956

Records. Rostov Region [Khachikov, 2003]; Samara Region [Goreslavets, 2004, 2014]; Saratov Region [Sazhnev, 2013a; Sazhnev et al., 2018].

Notes. Distributed in Northern and Central Europe, eastward to Central and Southern European parts of Russia [Schülke, Smetana, 2015]. Rare, probably hygrophilic [Schillhammer, 2012], reported from shores of various water bodies [Semenov, 2014]. In PSER recorded only from the northern regions.

[*Philonthus nigrita* (Gravenhorst, 1806)]

Records. Samara Region ? [Goreslavets, 2014].

Notes. Distributed almost in entire Europe, eastward to East Siberia in Russia [Schülke, Smetana, 2015]. Inhabits swamps [Schillhammer, 2012]; also found near water reservoirs [Semenov, 2014] and in compost [Pavlov, 2005]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level. Record from “Caucasus” [Coiffait, 1967a] that potentially may have a relation to PSER, is imprecise and needs verification. According to Eduard Khachikov (personal communication), the species is found in the North-Western Caucasus.

[? *Philonthus nitidicollis* (Lacordaire, 1835)]

Notes. Distributed from Northern Europe eastward to Central Asia [Schülke, Smetana, 2015]; mainly in decaying substances, especially dung and compost [Schillhammer, 2012]. In PSER not recorded but potentially expected because of unclear records from “Caucasus” [Horion, 1965; Coiffait, 1974].

Philonthus nitidus (Fabricius, 1787)

Records. Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2001b].

Notes. Distributed in the Central and North Palaearctic, from Great Britain to the Baikal region and Mongolia [Schillhammer, 2012]; rare, perhaps because superseded by *P. spinipes* [Schillhammer, 2012]. In dung and other decaying debris [Schillhammer, 2012], also recorded from animal carcasses [Semenov et al., 2015]. In PSER recorded only from Volgograd Region.

[?! *Philonthus oberti* Eppelsheim, 1889]

Records. Samara Region ? [Goreslavets, 2014].

Notes. Exclusively East Palaearctic species, distributed from East Siberia southward to China and eastward to the Far East of Russia [Schillhammer, 2000; Schülke, Smetana, 2015]. Biology is unknown. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level. Given the known distribution of this species, this record is probably a misidentification.

[?! *Philonthus oblitus* Jarrige, 1951]

Records. Samara Region ? [Goreslavets, 2014].

Notes. Southern species from southern Europe, North Africa, Israel and Turkey [Schülke, Smetana, 2015]. Never recorded from Russia. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level. Given the known distribution of this species, this record is probably a misidentification.

Philonthus parvicornis (Gravenhorst, 1802)

Records. Astrakhan Region [Khachikov, 1997; Grebennikov, Komarov, 1998; Grebennikov, 2001b]; Crimea Republic [Gusarov, 1989]; Dagestan Republic [Khachikov, 1997]; Kalmykia Republic [Khachikov, 1997]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1997, 2017]; Samara Region [Goreslavets, 2004, 2014]; Stavropol Region [Khachikov, 1998a]; Volgograd Region [Khachikov, 1997; Grebennikov, 2001b; Makarov et al., 2009].

Notes. Widespread from Ireland to the Russian Far East, introduced in the Oriental region [Schülke, Smetana, 2015]. Lives on all kinds of decaying substances [Schillhammer, 2012]; often found in dung [Grebennikov, 2001b]. In PSER repeatedly recorded in various regions from Crimea to the Volga River basin.

Philonthus politus (Linnaeus, 1758)

Records. Crimea Republic [Gusarov, 1989]; Kalmykia Republic [Khachikov, 1997; Grebennikov, 2001b]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Stavropol Region [Gorkavaya, 2017a, b]; Volgograd Region [Khachikov, 1997; Grebennikov, 2001b; Makarov et al., 2009].

Notes. Widespread Palaearctic species, introduced in other regions of the globe, now cosmopolitan

[Schülke, Smetana, 2015]. Confined to temperate zone; eurytop, preferably on manure and other rotting residues [Schillhammer, 2012]; often reported from animal carcasses [Semenov et al., 2015]. In PSER repeatedly recorded in various regions from Crimea to the Volga River basin.

Philonthus punctus (Gravenhorst, 1802)

Records. Astrakhan Region [Grebennikov, 2001b; Pushkin, 2015, 2016]; Crimea Republic [Gusarov, 1989]; Kalmykia Republic [Khachikov, 1997; Grebennikov, 2001b; Pushkin, 2016]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Saratov Region [Sazhnev et al., 2018]; Volgograd Region [Khachikov, 1997; Grebennikov, 2001b; Makarov et al., 2009; Pushkin, 2015, 2016].

Notes. Widespread from Great Britain eastward to the Russian Far East [Schülke, Smetana, 2015]. Lives on the banks of stagnant and slowly flowing water reservoirs [Schillhammer, 2012]; also reported from forest litter, plant residues and animal excrements [Goreslavets et al., 2002]. In PSER repeatedly recorded in various regions from Crimea Republic to the Volga River basin.

Philonthus quisquiliarius (Gyllenhal, 1810)

Records. Astrakhan Region [Khachikov, 1997]; Crimea Republic [Gusarov, 1989]; Dagestan Republic [Khachikov, 1998a]; Kalmykia Republic [Khachikov, 1997]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Saratov Region [Sazhnev, 2012, 2013a, 2014; Sazhnev, Anikin, 2014a, 2020; Sazhnev et al., 2018, 2019b]; Stavropol Region [Pushkin, 2015, 2016]; Volgograd Region [Khachikov, 1997; Makarov et al., 2009].

Notes. Widespread from Ireland eastward to the Russian Far East, across Middle Asia to China in the south, introduced in the Afrotropical region [Schülke, Smetana, 2015]. Hygrophilic, occurs on the shores of water reservoirs [Schillhammer, 2012]. In PSER common, repeatedly recorded from almost all regions.

Philonthus rectangulus Sharp, 1874

Records. Crimea Republic [Gusarov, 1989]; Kalmykia Republic [Khachikov, 1997]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2021]; Saratov Region [Sazhnev, 2019]; Stavropol Region [Gorkavaya, 2017a, b]; Volgograd Region [Khachikov, 1997; Grebennikov, Komarov, 1998; Grebennikov, 2001b; Makarov et al., 2009].

Notes. Originally Eastern Palaearctic species that widely expanded westwards across the West Palaearctic to Canary Islands, introduced in various regions of the globe, now cosmopolitan [Schülke, Smetana, 2015]; common in Central Europe [Schillhammer, 2012]. Inhabits all kinds of decaying organic matter, especially in disturbed habitats

near human settlements [Smetana, 1995]; often found in dung [Grebennikov, 2001b]. In PSER repeatedly recorded in various regions from Crimea to the Volga River basin.

Philonthus rotundicollis (Ménétriés, 1832)

Records. Krasnodar Region [Khachikov, 1997; Solodovnikov, 1998; Knysh, Solodovnikov, 2004]; Rostov Region [Khachikov, 2017]; Samara Region [Horion, 1965; Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Stavropol Region ? [Khachikov, 1997]; Volgograd Region [Grebennikov, 2001b; Pushkin, 2015, 2016].

Notes. Distributed in almost the entire Palaearctic, except North Africa [Schillhammer, 2003; Schülke, Smetana, 2015]. Eurytop inhabits low and medium altitudes; common in treeless biotopes, often on arable lands [Schillhammer, 2012]; lives in various habitats, on shores of water bodies, in forest litter and in droppings of predatory birds [Solodovnikov, 1998; Goreslavets et al., 2002]. In the foothills of the Caucasus can be confused with very similar *P. picimanus* [Schillhammer, 2003]. In PSER recorded from Krasnodar Region to the Volga River basin with some gaps.

Philonthus rubripennis Stephens, 1832

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014].

Notes. Widespread in the Palaearctic, from Great Britain to the Russian Far East [Schülke, Smetana, 2015]. Eurytopic, especially live on sandy shores with little vegetation [Schillhammer, 2012]. In PSER recorded in the west, in Crimea Republic and Krasnodar Region and from Samara Region in the Volga River basin.

Philonthus rufimanus Erichson, 1840

Records. Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets, 2014]; Saratov Region [Sazhnev, 2013b]; Stavropol Region [Khachikov, 1997]; Volgograd Region [Grebennikov, 2001b].

Notes. Widespread in the Mediterranean region of Europe and eastward to Middle Asia [Tronquet, 1981; Schülke, Smetana, 2015]. Occurs mainly on the shores of water bodies [Schillhammer, 2012]. In PSER recorded from almost all regions from Krasnodar Region to the Volga River basin. Subspecies *Ph. r. grebennikovi* was described as species from the mountains of the North Caucasus based on two female specimens [Khachikov, 2003], but later moved to a subspecies level by the same author [Khachikov, 2006]. *Philonthus r. grebennikovi* hitherto known only from the original description.

Philonthus rufipes (Stephens, 1832)

Records. Crimea Republic [Gusarov, 1989]; Dagestan Republic [Khachikov, 1998a]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 1997,

2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Stavropol Region [Khachikov, 1997].

Notes. Widespread from Europe to West Siberia [Schülke, Smetana, 2015]. Inhabits manure and compost, also occurs on sandy soil [Schillhammer, 2012]. In PSER widely recorded west from the Volga River basin.

Philonthus salinus Kiesenwetter, 1844

Records. Astrakhan Region [Khachikov, 1997; Grebennikov, 2001b]; Crimea Republic [Gusarov, 1989]; Dagestan Republic [Khachikov, 1998a]; Kalmykia Republic [Khachikov, 1997; Grebennikov, 2002a]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002]; Volgograd Region [Grebennikov, 2001b; Makarov et al., 2009].

Notes. Widespread from Central Europe to Middle Asia and West Siberia [Schülke, Smetana, 2015]. Halophilic, occurs on salt marshes and shores of temporary waters [Schillhammer, 2012], also found in plant residues, under rocks and logs [Solodovnikov, 1998]. In PSER repeatedly recorded in almost all regions.

Philonthus sanguinolentus (Gravenhorst, 1802)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004]; Stavropol Region [Khachikov, 1997].

Notes. Widespread across the West Palaearctic and recorded from East Siberia, introduced in the Nearctic [Schülke, Smetana, 2015]. Occurs mainly in compost and excrements [Schillhammer, 2012]; also found on carrion [Gusarov, 1989]. In PSER widespread from Crimea Republic to the Volga River basin with some gaps.

Philonthus spinipes (Sharp, 1874)

Records. Astrakhan Region [Grebennikov, 2002a]; Crimea Republic [Gusarov, 1989]; Kalmykia Republic [Khachikov, 1997; Grebennikov, 2001b]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004]; Saratov Region [Sazhnev, 2019]; Stavropol Region [Khachikov, 1997]; Volgograd Region [Grebennikov, 2001b; Makarov et al., 2009].

Notes. Described by Sharp [1874] from Japan, this Eastern Asian species rapidly extended its distribution westwards and became Transpalaearctic [Schülke, Uhlig, 1989; Schillhammer, 1999b]. Distinct habitus of this East Palaearctic species and in addition teneral specimen with deformed aedeagus misled Bolov [1969] who described populations of *Ph. spinipes* in the Caucasus as a new genus and species *Kirschenblatia kabardensis* Bolov et Kryzhanovskij in Bolov, 1969, and then Boháč [1977] who described *K. buhari* Boháč, 1977, based on normal non-teneral material of *Ph. spinipes*. Eventually all these were synonymized [Tikhomirova, 1973; Schülke, Uhlig, 1986] with *Ph. spinipes*. Li and Chen [1993] described a subspecies *Ph. s. hulunbeieriensis* Li et Chen, 1993

from Northeast China distinguishing it from the material from Europe based on a complex of external characters, while Schillhammer [1999b] noted that specimens from Japan and the mainland of the Far East differ by having black and yellow elytral pubescence, respectively, suggesting possible existence of two respective subspecies. Schillhammer [2000: 159] noted that the mainland subspecies would already have two available names, of which the senior was “*P. kabardensis* (Bolov & Kryzhanovskiy, 1969)”. Schülke and Smetana [2015: 23, 24, 1049] follow Schillhammer’s suggestion and list the now widely distributed mainland subspecies with yellow elytral pubescence as “*Philonthus spinipes kabardensis* Bolov & Kryzhanovskij, 1969”, contrary to the nominotypical subspecies with black elytral pubescence restricted to Japan. They list *Ph. buchari* and *Ph. hulunbeirensis* as synonyms of *Ph. s. kabardensis*, apparently on the assumption that both latter taxa come from the mainland Eurasia. However, there was no explicit investigation of the variability of *Ph. spinipes* at the wide geographic scale and update of the status of all involved names. *Philonthus spinipes* is often found on decaying substrates, on carrion, plant residues and especially excrements [Solodovnikov, 1998; Schillhammer, 2012]. In Central Europe it competes with an ecologically similar *Ph. nitidus* [Schillhammer, 1999b, 2009]. In PSER *Ph. spinipes* is commonly recorded in almost all regions.

[*Philonthus splendens* (Fabricius, 1792)]

Records. Krasnodar Region ? [Solodovnikov, 1998]; Samara Region ? [Goreslavets et al., 2002; Goreslavets, 2021].

Notes. Widespread from Europe and North Africa to East Siberia [Schillhammer, 2000; Schülke, Smetana, 2015]. Occurs mainly in forests [Schillhammer, 2012]; often found in forest litter [Goreslavets et al., 2002], also reported from dung and bear droppings [Solodovnikov, 1998]. In the Caucasus and Turkey known as a separate subspecies *Ph. splendens sideropterus* Kolenati, 1846 [Schülke, Smetana, 2015], the taxonomic status and distribution of both subspecies has never been rigorously investigated. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level. Records from Krasnodar Region are adjacent to PSER, from foothills and mountains.

[?! *Philonthus subvirescens* (Thomson, 1884)]

Records. Rostov Region ? [Khachikov, 2003, 2017].

Notes. Apparently boreo-montane Holarctic species [Smetana, 1995]; in the Palaearctic region mainly in the Northern Eurasia, from Scandinavia to the Russian Far East, where in Central Europe, for example, it is known only from Poland [Schillhammer, 2012; Schülke, Smetana, 2015]. Ripicolous, inhabits sandy, gravel and muddy banks [Smetana, 1995]. In PSER reported only from Rostov Region, based on material that included males. Due to the known distribution pattern of this species, these records need to be confirmed.

Philonthus succicola Thomson, 1860

Records. Krasnodar Region [Solodovnikov, 1998; Pushkin, 2015, 2016]; Rostov Region [Khachikov, 2017 (as *Ph. chalceus*)]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2021]; Stavropol Region [Pushkin, Maksimova, 2014; Pushkin, Minav, 2015]; Volgograd Region [Grebennikov, 2001b].

Notes. According to Schillhammer [2012], West Palaearctic species with the easternmost records from Altai Republic (confirmed in Psarev [2019]). Schülke and Smetana [2015], on the contrary, give Transpalaearctic distribution for this species. Common in Central Europe [Schillhammer, 2012]; inhabits various decaying matter, like carrion and dung [Grebennikov, 2001b; Schillhammer, 2012; Mazurov, 2017]. In PSER reported in several regions from Krasnodar Region to the Volga River basin.

Philonthus tenuicornis Mulsant et Rey, 1853

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Khachikov, 1997; Solodovnikov, 1998]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2021]; Stavropol Region [Khachikov, 1997; Pushkin, 2015, 2016]; Volgograd Region [Grebennikov, 2001b].

Notes. Widespread in the West Palaearctic eastwards reaching Iran [Schillhammer, 2000; Schülke, Smetana, 2015], record from Siberia needs verification [Schillhammer, 2012]; introduced to the Nearctic [Smetana, 1995]. Eurytop, lives in forest litter, manure and other rotting debris [Schillhammer, 2012]. In PSER repeatedly recorded from Crimea Republic to the Volga River basin with some gaps.

Philonthus umbratilis (Gravenhorst, 1802)

Records. Astrakhan Region [Grebennikov, Komarov, 1998; Grebennikov, 2001b]; Crimea Republic [Gusarov, 1989]; Kalmykia Republic [Khachikov, 1997]; Krasnodar Region [Khachikov, 1997]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Saratov Region [Sazhnev, 2013a; Sazhnev et al., 2018, 2019b, c]; Volgograd Region [Grebennikov, 2001b].

Notes. Widely distributed in the Palaearctic, from Canary Islands to East Siberia [Smetana, 1995; Schülke, Smetana, 2015]; introduced to the Nearctic [Smetana, 1995]. Inhabits different plant residues around water bodies, also occurs in forest litter [Goreslavets et al., 2002; Schillhammer, 2012]. In PSER known from almost all regions.

Philonthus varians (Paykull, 1789)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Stavropol Region [Khachikov, 1997; Pushkin, Maksimova, 2014; Pushkin, Minav, 2015; Pushkin, 2015, 2016]; Volgograd Region [Kirschenblatt, 1936].

Notes. Cosmopolitan, widely distributed throughout the Palaearctic [Schülke, Smetana, 2015]. Occurs in all kinds of decaying organic matter, especially in dung; often found on disturbed areas near human settlements [Smetana, 1995; Schillhammer, 2012]. In PSER recorded from Crimea Republic to the Volga River basin.

[? *Philonthus variipennis* Kraatz, 1859]

Notes. Oriental species, in the Palaearctic Region found only in Egypt, Saudi Arabia, Afghanistan and Japan [Schülke, Smetana, 2015]. Never recorded from Russia or PSER. Single record from “Caucasus” [Coiffait, 1967a] needs clarification.

Philonthus velatipennis Solsky, 1870

Records. Astrakhan Republic [Solsky, 1870; Grebennikov, 2001b]; Kalmykia Republic [Khachikov, 1997; Grebennikov, 2001b, 2002a]; Rostov Region [Khachikov, 1997, 2017]; Volgograd Region [Grebennikov, 2001b; Makarov et al., 2009].

Notes. Distributed from South European territory of Russia, through Turkey, Georgia and Azerbaijan to Middle Asia [Schülke, Smetana, 2015]. Occurs near water bodies, more often on salt marshes [Grebennikov, 2001b]. In PSER known from the Lower Volga region, where it was described from Astrakhan Region [Solsky, 1870], from Kalmykia Republic, Volgograd and Rostov regions.

Philonthus ventralis (Gravenhorst, 1802)

Records. Crimea Republic [Gusarov, 1989]; Rostov Region [Khachikov, 2017]; Samara Region [Goreslavets, 2014]; Volgograd Region [Grebennikov, 2001].

Notes. Cosmopolitan, originally the West Palaearctic, introduced in other regions of globe [Smetana, 1995; Schülke, Smetana, 2015]. Usually inhabits dung or compost, also occurs in forest litter [Grebennikov, 2001b; Schillhammer, 2012]. In PSER recorded from Crimea Republic and Rostov Region in the west and from the Volga River basin in the east.

Philonthus viridipennis Fauvel, 1875

Records. Astrakhan Region [Grebennikov, 2001b]; Kalmykia Republic [Khachikov, 1997]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Volgograd Region [Khachikov, 1997; Grebennikov, 2001b].

Notes. Widely distributed in Southeastern Europe westward to Italy, in the Black Sea and Mediterranean Sea regions [Schillhammer, 2012]. Occurs near water bodies, in forest litter and decaying plant residues [Grebennikov, 2001b; Goreslavets et al., 2002]. In PSER distributed from Rostov to Samara Region.

Philonthus wuesthoffi Bernhauer, 1939

Records. Krasnodar Region [Khachikov, 2003]; Rostov Region [Khachikov, 1997, 2017]; Volgograd Region [Grebennikov, 2001b].

Notes. Distributed in Europe in the west and in Japan, South Korea, North Korea and China in the east [Schülke, Smetana, 2015]. Biology is poorly known, but reported from dung, carcasses and decaying matter [Grebennikov, 2001b; Hoffmann, Zanetti, 2020]. In PSER recorded only in Krasnodar and Rostov regions in the west and in the Volga River basin in the east.

Physetops tataricus (Pallas, 1773)
(Fig. 17D)

Records. Astrakhan Region [Grebennikov, Komarov, 1998; Grebennikov, 2001b]; Rostov Region [Khachikov, 2017]; Samara Region [Goreslavets et al., 2002]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2001b; Solodovnikov, Grebennikov, 2005; Makarov et al., 2009].

Notes. Thermophilic species distributed from southeastern European Russia, eastern Transcaucasia and Near East to Middle Asia where it is more common [Grebennikov, 2001b; Solodovnikov, Grebennikov, 2005]. Comprehensive data can be found in the revision of Solodovnikov and Grebennikov [2005]. Biology is poorly known, but apparently confined to arid plain and mountainous landscapes, usually can be found around salt deserts and lakes [Solodovnikov, Grebennikov, 2005]. In PSER recorded from dry areas of Rostov Region and in the Volga River basin.

Platydracus chaltocephalus (Fabricius, 1801)

Records. Krasnodar Region [Solodovnikov, 1998; Knysh, Solodovnikov, 2004; Khachikov, 2013b]; Samara Region [Goreslavets et al., 2002]; Stavropol Region [Khachikov, 1997; Pushkin, Maksimova, 2014; Pushkin, Minav, 2015].

Notes. Distributed from Western Europe to South European Russia and Asia Minor [Schillhammer, 2012; Schülke, Smetana, 2015]. Found in forests at various altitudes [Pilon, 1998; Solodovnikov, 1998]. Inhabits plant debris, dung, places under tree bark, litter [Solodovnikov, 1998; Goreslavets et al., 2002]. In PSER recorded from Krasnodar and Stavropol regions (from lowland to low elevations), and from Samara Region.

[? *Platydracus flavopunctatus* (Latreille, 1804)]

Notes. Distributed in Europe, Western and Middle Asia [Schillhammer, 2012; Schülke, Smetana, 2015]. Confined to diverse decaying substrates [Pilon, 1998; Bebermans et al., 2016]; can be found on banks of streams under stones [Petrenko, 1980; Çiftçi, Hasbenli, 2018]. Never unambiguously mentioned from PSER; records from “Caucasus” [Petrenko, 1980; Bebermans et al., 2016] need clarification.

Platydracus fulvipes (Scopoli, 1763)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998; Knysh, Solodovnikov, 2004]; Rostov Region [Khachikov, 1997, 2013b, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004];

Saratov Region [Sazhnev et al., 2017]; Stavropol Region [Khachikov, 1997].

Notes. Distributed from Western Europe to Asia Minor and West Siberia; not common [Schillhammer, 2012; Schülke, Smetana, 2015]. Eurytopic, hydrophilous, can be found at various altitudes (up to 2000 m), often found around forest swamps [Pilon, 1998; Schillhammer, 2012]. In PSER recorded in most regions from Crimea Republic to Samara Region.

[? *Platylabus hypocrita* (J. Müller, 1925)]

Notes. Known only from Turkey and the Caucasus [Coiffait, 1974; Schülke, Smetana, 2015]. Inhabits decaying organics and dung [Altunsoy et al., 2017]; in Turkey collected mostly from mountains [Özdemir, Sert, 2009; Altunsoy et al., 2017]. Never unambiguously mentioned from PSER; unspecified record from "Caucasus" [Coiffait, 1974] needs verification.

Platylabus latebricola (Gravenhorst, 1806)
(Fig. 17f)

Records. Rostov Region [Khachikov, 2013b]; Samara Region [Goreslavets et al., 2002].

Notes. Distributed from Western Europe to West Siberia [Schillhammer, 2012; Schülke, Smetana, 2015]. Often found in open unforested landscapes [Schillhammer, 2012], also known as xerophilic and myrmecophilous [Pilon, 1998]. In PSER recorded only from Rostov and Samara regions.

Platylabus stercorarius (Olivier, 1795)

Records. Astrakhan Region [Horion, 1965]; Crimea Republic [Gusarov, 1989]; Dagestan Republic [Khachikov, 1998a]; Krasnodar Region [Solodovnikov, 1998; Knysh, Solodovnikov, 2004]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1997, 2013b, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2001b].

Notes. Widespread from Western Europe to Middle Asia and West Siberia [Schillhammer, 2012; Schülke, Smetana, 2015]. Often found in open landscapes from lowlands to mountains (up to 2000 m); eurytopic, known as xerophilous and saprophilous (mostly prefers dung) [Pilon, 1998; Schillhammer, 2012; Dittrich et al., 2020]. In PSER recorded in several regions from Crimea Republic to Samara Region.

Quedionuchus glaber (O. Müller, 1776)

Records. Samara Region [Goreslavets, 2016a, 2021 (as *Q. plagiatus*)].

Notes. According to the revision of Brunke et al. [2020], only a boreo-montane Transpalearctic *Q. glaber* and montane *Q. caucasicus* Brunke, 2019 are found in European Russia, while *Q. plagiatus* Mannerheim, 1843 is confined to the Nearctic. *Quedionuchus glaber* is found under tree bark in the West Palearctic, known as predator

of Scolytinae [Brunke et al., 2020]. In PSER so far known only from Krasnosamarskiy forest. Other records from Samara Region are not specified and may also come outside PSER.

[?! *Quedius acuminatus* Hochhuth, 1849]

Records. Samara Region ? [Goreslavets, 2004].

Notes. According to Salnitska and Solodovnikov [2019], all records of *Q. acuminatus* from Russia are recognized as doubtful because the identity of this species needs clarification. Apparently, it is a synonym of some species from *Q. boops*-group.

Quedius balticus Korge, 1960

Records. Crimea Republic [Gusarov, 1989]; Rostov Region [Khachikov, 1998a, 2017]; Volgograd Region [Grebennikov, 2001b].

Notes. Widely distributed, but not common West Palearctic species that occurs from Europe to Middle Asia [Schülke, Smetana, 2015]. Confined to various debris around water bodies; appears tolerant to floodings [Salnitska, Solodovnikov, 2019]. In Russia recorded only from PSER, as summarized here.

[*Quedius boops* (Gravenhorst, 1802)]

Records. Crimea Republic? [Gusarov, 1989]; Krasnodar Region ? [Solodovnikov, 1998; Knysh, Solodovnikov, 2004]; Stavropol Region ? [Khachikov, 1998a].

Notes. Transpalearctic; widespread and common in Europe, becomes rarer towards the east where it reaches the Russian Far East [Salnitska, Solodovnikov, 2019]; unknown from Middle Asia [Salnitska, Solodovnikov, 2018]. Can be confused with similar *Q. boopoides* Munster, 1923 [Salnitska, Solodovnikov, 2019]. Next to PSER known only from the foothills of Crimea Republic, Krasnodar and Stavropol regions. As a widespread species included here as it may be potentially found at lowlands next to montane habitats.

[*Quedius brevis* Erichson, 1840]

Records. Samara Region ? [Goreslavets, 2002, 2016a, b; Goreslavets et al., 2002].

Notes. Widely distributed Palearctic myrmecophilous species [Salnitska, Solodovnikov, 2019]; lives in the nests of various *Formica* species [Lapeva-Gjonova, Lieff, 2012; Parmentier et al., 2016]. Georeferenced records in Samara Region come from Samarskaya Luka and Zhiguli, i.e. the forest zone. Included here because of a number of records from Samara Region without further geographic specification. In PSER known only from unspecified records from Samara Region. General record from "VOLGO-DON" [Salnitska, Solodovnikov, 2019] include an area comprising Saratov, Volgograd and Rostov regions. Apparently, distribution of this species is limited by forested areas preferred by their host ants and thus mainly outside PSER.

Quedius cinctus (Paykull, 1790)

Records. Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 1998a, 2017]; Stavropol Region [Khachikov, 1998a, 2017].

Notes. Widespread West Palaearctic species; prefers various ground-based debris in diverse landscapes [Salnitska, Solodovnikov, 2019]. In PSER known in the western regions only.

[? *Quedius cohaesus* Eppelsheim, 1888]

Notes. In the most inclusive concept of this species as a synonym of *Q. pseudonigriceps* Reitter, 1909 ([Assing, 2019]; contrary to Salnitska, Solodovnikov [2018] where *Q. cohaesus* and *Q. pseudonigriceps* are considered distinct species), it is distributed in the Southwestern Palaearctic from Bulgaria to Middle Asia. Never recorded from PSER; a dubious record from "Caucasus" [Coiffait, 1978] apparently belongs to an area outside PSER.

Quedius cruentus (Olivier, 1795)

Records. Crimea Republic [Gusarov, 1989]; Rostov Region [Khachikov, 2017].

Notes. Widespread West Palaearctic species; introduced to the Nearctic and Oriental regions; common in European part of Russia [Salnitska, Solodovnikov, 2019]. Can be found in organic remains (litter, under bark of rotten trees, in rotten mushrooms, in debris of nests) [Hoebeke, 2008; Solodovnikov, 2012]. In PSER recorded only from Crimea Republic and Rostov Region. In Crimea both in the plains and mountains.

Quedius curtipennis Bernhauer, 1908

Records. Crimea Republic [Gusarov, 1989; Koval, 2001; Salnitska, Solodovnikov, 2019]; Rostov Region [Khachikov, 1998a, 2017].

Notes. Western Palaearctic species known from wide areas from Faroe Island to Ural Mountains and Middle Asia; introduced to the Nearctic. Polytopic, found in different ground-based debris predominantly in open woodlands, also recorded from caves [Koval, 2001] and high elevations [Outerelo, 1978]. Broadly recorded in European Russia including the North Caucasus. In PSER recorded only in Crimea Republic and Rostov Region.

Quedius dilatatus Fabricius, 1787

Records. Rostov Region [Khachikov, 2003, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004]; Volgograd Region [Grebennikov, 2002a].

Notes. Transpalaearctic, known from Europe to the Russian Far East [Salnitska, Solodovnikov, 2019]; associated with nests of *Vespa crabro* Linnaeus, 1758, where its larvae hunt in debris around the nest [Strassen, 1957]. In PSER recorded only in the north, from Rostov, Samara and Volgograd regions.

Quedius edmundi Coiffait, 1969

Records. Krasnodar Region [Solodovnikov, 1998].

Notes. So far known from the North-Western Caucasus in Russia and from Georgia [Reitter, 1909; Coiffait, 1967b, 1978]; found in the forest leaf litter [Salnitska, Solodovnikov, 2019]. The only record from PSER comes from the lowland forest patches in Krasnodar Region, close to the foothills of the North-Western Caucasus where this species is mainly recorded.

Quedius fulgidus (Fabricius, 1793)

Records. Astrakhan Region [Khachikov, 1998a; Grebennikov, 2001b]; Crimea Republic [Gusarov, 1989]; Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets, 2016a]; Volgograd Region [Khachikov, 1998a].

Notes. Cosmopolitan Palaearctic species introduced around the world [Herman, 2001]; ecologically flexible, occurs from common leaf litter microhabitats to caves and ant nests [Bordoni, 1982; Shulaev, Bogdanov, 2008; Salnitska, Solodovnikov, 2019]. In Russia distributed from its European part to East Siberia. In PSER repeatedly but sporadically recorded in the area from Crimea to the Volga River basin.

Queidus fuliginosus (Gravenhorst, 1802)
(Fig. 17L)

Records. Crimea Republic [Gusarov, 1989; Salnitska, Solodovnikov, 2019]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 2003, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2016b]; Stavropol Region [Khachikov, 1997; Pushkin, Maksimova, 2014; Pushkin, Minav, 2015].

Notes. One of the most common Palaearctic *Quedius* species, widespread from Europe to Tien Shan mountains; introduced to North America. In Russia known from European part throughout Siberia to Baikal region, obviously confined to forest zone [Salnitska, Solodovnikov, 2019]. In PSER recorded from Crimea Republic to the Volga River region. Records from Crimea Republic, Stavropol and Krasnodar regions come from the wide elevation range, from lowlands to the mountains. Due to the confusion with the very similar *Q. curtipennis* some of these records need revision.

Quedius invreae Gridelli, 1924

Records. Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2014].

Notes. The distribution requires clarification due to the confusion with the similar, but mainly nidicolous *Q. puncticollis*. According to the latest data, definitely known from southern Europe including Russia and Transcaucasia [Assing, 2019d; Salnitska, Solodovnikov, 2019]. Bionomics is unclear, but apparently inhabits leaf litter and similar debris [Salnitska, Solodovnikov, 2019]. All records from PSER, in view of the provided bionomic details, most likely correctly refer to *Q. invreae*.

[?! *Quedius kvashei* Khachikov, 2005]

Records. Rostov Region ? [Khachikov, 2005, 2017].

Notes. Described and hitherto known only from the single male specimen collected in Rostov Region [Khachikov, 2005, 2017]. Salnitska and Solodovnikov [2019] state that the species is identical with *Q. infuscatus* and will be synonymized with the latter.

Quedius limbatus (Heer, 1839)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998; Knysh, Solodovnikov, 2004]; Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets, 2002, 2004; Goreslavets et al., 2002]; Stavropol Region [Khachikov, 1998a; Pushkin, Maksimova, 2014; Pushkin, Minav, 2015]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 200b; Pushkin, 2015].

Notes. Distributed from Europe to Middle Asia and Transbaikalia; common; inhabits various ground-based debris and can be found in both forested and open landscapes [Salnitska, Solodovnikov, 2019]. Widely recorded throughout PSER from Crimea to the Volga River basin only with some gaps, which probably can be explained by the shortage of collecting.

Quedius longicornis Kraatz, 1857

Records. Krasnodar Region [Solodovnikov, 1998].

Notes. Widespread in Central and Northern Europe, confined to forest zone [Solodovnikov, 2012]; in Russia known only from European part with the easternmost record in southwestern Siberia [Salnitska, Solodovnikov, 2019]. The only record in the plains of PSER [Solodovnikov, 1998] comes from the island forest patch in Azov-Kuban plain in Krasnodar Region.

Quedius meridiocarpaticus Smetana, 1958

Records. Crimea Republic [Horion, 1965; Gusarov, 1989]; Dagestan Republic [Khachikov, 1998b]; Krasnodar Region [Khachikov, 1998b; Solodovnikov, 1998; Knysh, Solodovnikov, 2004]; Rostov Region [Khachikov, 1998b, 2017].

Notes. South European species with the easternmost records from the West Caucasus and Turkey; in Russia known only from its southern regions [Salnitska, Solodovnikov, 2019]. Usually can be found in wet debris near water bodies preferably at open landscapes [Salnitska, Solodovnikov, 2019]. In PSER repeatedly recorded from various regions with the easternmost finding from northern Dagestan.

Quedius mesomelinus (Marshall, 1802)

Records. Rostov Region [Khachikov, 1998b, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2016b].

Notes. Originally Palaearctic species, introduced worldwide; in Russia known from the European part to the Far East, but more common in the northern than in

the southern part. The species considered boreo-montane and usually can be found in various ground-based debris (leaf litter, rotten wood), but also in caves, ant and mammal nests, in fungi etc. [Herman, 2001; Salnitska, Solodovnikov, 2019]. In PSER recorded only at the north, at the periphery of the forest-steppe zone, from Rostov and Samara regions.

[*Quedius molochinus* (Gravenhorst, 1806)]

Records. Samara Region ? [Goreslavets, 2002, 2016b].

Notes. Widely distributed in northern parts of the West Palaearctic with the easternmost records from the mountains in Transbaikalia [Shavrin, 2000], in the southern areas of its distribution gradually moves to a higher elevations; introduced to North America [Majka, Smetana, 2007]. Usually can be found in various ground-based debris in forests and open landscapes. We are not certain if the records from Samara Region belong to PSER because they lack geographic details within the region level.

[?! *Quedius muscorum* Brisout de Barneville, 1863]

Records. Samara Region ? [Goreslavets, 2014].

Notes. Hitherto known only from southern France and Spain [Herman, 2001; Schülke, Smetana, 2015]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level. Based on the distribution, this record is an apparent misidentification.

Quedius ochripennis (Ménétriés, 1832)

Records. Crimea Republic [Gusarov, 1989; Salnitska, Solodovnikov, 2019]; Krasnodar Region [Solodovnikov, 1998; Knysh, Solodovnikov, 2004]; Samara Region [Goreslavets, 2021]; Stavropol Region ? [Khachikov, 1998a].

Notes. Common West Palaearctic species [Salnitska, Solodovnikov, 2019] reaching Middle Asia [Salnitska, Solodovnikov, 2018]; prefers humid plant debris usually near water, also often associated with decaying wood and nests of mammals, wasps and ants [Solodovnikov, 2012]. In PSER recorded from few regions west of the Volga River basin. Record from Stavropol Region [Khachikov, 1998a] comes from foothills of the North-Western Caucasus.

Quedius persimilis Mulsant et Rey, 1876

Records. Krasnodar Region [Solodovnikov, 1998; Knysh, Solodovnikov, 2004].

Notes. European species, most common in Central Europe; in Russia occurs only in its European part; confined to open landscapes and can be found in different ground-based debris [Salnitska, Solodovnikov, 2019]. The record from Krasnodar Region comes from Azov-Kuban plain [Solodovnikov, 1998].

[?! *Quedius puncticollis* (Thomson, 1867)]

Records. Saratov Region ? [Sazhnev, Khalilov, 2015].

Notes. Because of the confusion with *Q. invreae*, distribution of the nidicolous *Q. puncticollis* needs

clarification [Assing, 2019d]. It is reliably known only from Central Europe; Russian records from European part and Kuznetskiy Alatau require revision [Salnitska, Solodovnikov, 2019], but the species undoubtedly can be found in Central European part of Russia (our unpublished material). Based on the biological details mentioned in the publications, the only record of *Q. puncticollis* adjacent to PSER that seems reliable comes from Khvalynskiy National Reserve in Saratov Region [Sazhnev, Khalilov, 2015]. Other records of *Q. puncticollis* from Rostov [Khachikov, 2017] and Volgograd [Grebennikov, 2001b] regions or a record from Samara Region [Goreslavets, 2004] may in fact belong to *Q. invrae*.

Quedius scintillans (Gravenhorst, 1806)

Records. Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets, 2002, 2016a; Goreslavets et al., 2002].

Notes. Widespread in the West Palaearctic with the easternmost records from Middle Asia [Solodovnikov, 2012; Salnitska, Solodovnikov, 2018]; in Russia known only from its European part [Salnitska, Solodovnikov, 2019]. Found in different ground-based debris at forest and open landscapes [Solodovnikov, 2012]. In PSER repeatedly recorded from Krasnodar, Rostov and Samara regions.

Quedius semiobscurus (Marshall, 1802)

Records. Dagestan Republic [Khachikov, 1998a]; Krasnodar Region [Solodovnikov, 1998].

Notes. West Palaearctic species that occurs mainly in the southern regions from Europe to Middle East [Schülke, Smetana, 2015]; in Russia known only from the foothills of the Caucasus in various ground-based debris in open and forested landscapes [Salnitska, Solodovnikov, 2019]. In PSER known from Krasnodar Region and Dagestan Republic only.

Quedius sofiri Khachikov, 2005

Records. Rostov Region ? [Khachikov, 2005, 2017].

Notes. The species was described and known from a single female specimen collected in Rostov Region [Khachikov, 2005, 2017] until Salnitska and Solodovnikov [2019] checked the type material and provided an additional male-based record of *Q. sofiri* from northern Turkey.

Quedius suramensis Eppelsheim, 1880

Records. Krasnodar Region ? [Solodovnikov, 1998; Knysh, Solodovnikov, 2004]; Rostov Region [Khachikov, 2017]; Stavropol Region ? [Pushkin, Maksimova, 2014; Pushkin, Minav, 2015].

Notes. Known from the Caucasus including Transcaucasia and from Turkey; in Russia predominantly occurs in the mountains and foothills of the North-Western Caucasus; prefers mostly forest leaf litter and other organic debris [Salnitska, Solodovnikov, 2019]. In PSER known from a single recent record from Rostov Region [Khachikov, 2017]. Adjacent records from Krasnodar and Stavropol regions come from foothills and montane habitats.

[?! *Quedius tetrapunctatus* Coiffait, 1977]

Records. Rostov Region ? [Khachikov, 1998a, 2017].

Notes. Described and known only from Armenia [Coiffait, 1977; Assing, Schülke, 2019]. In PSER known only from records from Rostov Region based on material identified by one of us (A.Yu. Solodovnikov) in the past, that identification may need verification.

[*Quedius truncicola* Fairmaire et Laboulbène, 1856]

Records. Samara Region ? [Goreslavets et al., 2002].

Notes. Mostly Central European forest species, stated as saproxylic [Fowles et al., 1999], not common [Solodovnikov, 2012], recorded from Southern European territory of Russia (ST) in Schülke and Smetana [2015]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

Quedius umbrinus Erichson, 1839
(Fig. 18F)

Records. Krasnodar Region [Knysh, Solodovnikov, 2004; Salnitska, Solodovnikov, 2021]; Samara Region [Goreslavets et al., 2002]; Stavropol Region [Salnitska, Solodovnikov, 2021]; Volgograd Region [Grebennikov, 2001b].

Notes. According to the revision by Salnitska and Solodovnikov [2021], two species of the *Q. umbrinus* complex may occur in PSER: *Q. pseudoumbrinus* (for details see above that species) and *Q. umbrinus*, which often can be distinguished by shape of the paramere and always, i.e. unambiguously, by DNA-barcode. Under such concept *Q. umbrinus* is widespread from Europe (including European Russia till West Siberia) to Turkey, the Caucasus and Iran. Available sampling from PSER and adjacent territories in Salnitska and Solodovnikov [2021] suggests that *Q. umbrinus* occurs in Ciscaucasian plains and foothills of the Caucasus there. Considering a very subtle morphological difference between *Q. umbrinus* and *Q. pseudoumbrinus*, as revealed by Salnitska and Solodovnikov [2021] and a period when *Q. pseudoumbrinus* was a junior synonym of *Q. umbrinus*, records of *Q. umbrinus* from Rostov [Khachikov, 2017] and Saratov [Kovalev et al., 2011] regions may in fact belong to *Q. pseudoumbrinus* and thus need verification.

[?! *Quedius unicolor* Kiesenwetter, 1847]

Records. Rostov Region ? [Minoranskiy, Lomakin, 1978].

Notes. Confined to alpine zone of Central and Southern Europe, never recorded from Russia. Record from Rostov Region is definitely a misidentification.

Quedius vexans Eppelsheim, 1881

Records. Crimea Republic [Gusarov, 1989].

Notes. Not common, predominantly Central European nidicolous species; usually occurs in the nests of small

mammals [Smetana, 1957; Nowosad, 1990; Solodovnikov, 2012]. Patchy Russian records come from its European part to Republic of Khakassia [Salnitska, Solodovnikov, 2019]. In PSER known only from the Kerch Peninsula in Crimea Republic [Gusarov, 1989].

Quedius vicinus Ménétriés, 1832

Records. Dagestan Republic [Khachikov, 2003].

Notes. South-western Palaearctic species distributed from southern Anatolia to Middle Asia; prefers humid habitats around water bodies and occurs in leaf litter and under rocks, also known from high elevations [Korge, 1971]. In Russia known only from PSER, from Dagestan Republic [Khachikov, 2003].

Rabigus abauriae Gridelli, 1924

Records. Dagestan Republic [Khachikov, 1998a (as *R. tenuis*); Khachikov et al., 2021].

Notes. Distributed in the Caucasus region and Southern Europe [Schülke, Smetana, 2015]. Biology is unknown. In PSER so far recorded only from the plain territories of Dagestan Republic.

Rabigus fomitschevi Khachikov, 2005

Records. Kalmykia Republic [Khachikov, 1997 (as *R. pullus*), 2005].

Notes. Similar to *R. pullus*, known from the original description only which is based on four female specimens collected in Kalmykia from soil at the beach of the salt lake [Khachikov, 2005]. Even though the author provided external and genital distinguishing female characters, male specimens are needed to further clarify the identity of this species.

Rabigus formosus (Motschulsky, 1860)

Records. Dagestan Republic [Motschulsky, 1860]; Stavropol Region [Khachikov, 1997]; Krasnodar Region [Solodovnikov, 1998]; Volgograd Region [Grebennikov, 2002a].

Notes. Distributed in Middle Asia, Near East and the Caucasus (e.g., Coiffait [1974], Yakubova [2017], summary in Schülke and Smetana [2015]); originally described from Dagestan [Motschulsky, 1860] without any additional information on locality. Apparently, the species confined to mountains and foothills and inhabits leaf litter in the river valleys and meadows [Scheerpeltz, 1963; Yakubova, 2017]. In PSER additionally to the original description known from the foothills of the North Caucasus in Stavropol Region [Khachikov, 1997], Azov-Kuban plain in Krasnodar Region [Solodovnikov, 1998] and Volgograd Region [Grebennikov, 2002a].

Rabigus pullus (Nordmann, 1837)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 2017].

Notes. Distributed from Western Europe through Russia to the Far East [Schülke, Smetana, 2015]. Apparently prefers humid microhabitats in open landscapes [Smetana, 1958]. In PSER recorded from several western regions.

Rabigus tenuis (Fabricius, 1792)

Records. Samara Region [Goreslavets et al., 2002; Goreslavets, 2002, 2014].

Notes. West Palaearctic species distributed from Europe to Mongolia, not common [Schillhammer, 2012]; in Russia known from European part to East Siberia [Poppius, 1909]. Eurytopic, but prefers unforested landscapes and microhabitats around water, also recorded from the mole nests [Nowosad, 1990; Staniec, Pietrykowska-Tudruj, 2007; Schillhammer, 2012]. In PSER known only from Samara Region.

Remus filum (Kiesenwetter, 1849)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Khachikov, 1997; Solodovnikov, 1998].

Notes. Confined to the coasts of the Mediterranean and Black seas [Schülke, Smetana, 2015] where it occurs in various ground-based debris and drifted seaweed [Assing, Wunderle, 2001; Frank, Ahn, 2011]. Recorded from the sea coasts of Crimea Republic and Krasnodar Region including areas of PSER.

Remus sericeus (Holme, 1837)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Khachikov, 1997; Solodovnikov, 1998].

Notes. Widely distributed along sea shores of the North Atlantic, Baltic, Mediterranean, and Black seas, introduced to Australia [Schülke, Smetana, 2015]; inhabit various debris and drifted seaweed on coastlines [Frank, Ahn, 2011]. Recorded from the sea coasts of Crimea Republic and Krasnodar Region including areas of PSER.

Staphylinus caesareus Cederhjelm, 1798

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Khachikov, 1997; Solodovnikov, 1998; Knysh, Solodovnikov, 2004]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets, 2014]; Stavropol Region [Khachikov, 1997; Pushkin, Maksimova, 2014; Pushkin, Minav, 2015]; Volgograd Region [Grebennikov, 2001b; Pushkin, 2015, 2016].

Notes. Widespread in the West Palaearctic, also common in European Russia [Schülke, Smetana, 2015]. Inhabits various forests, including ravine and floodplain forests [Khachikov, 1997, 2017; Goreslavets, 2014]. Recorded in most regions of PSER.

Staphylinus erythropterus Linnaeus, 1758
(Fig. 17E)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998; Knysh, Solodovnikov, 2004]; Rostov Region [Khachikov, 1997, 2017]; Samara Region

[Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Stavropol Region [Khachikov, 1997; Pushkin, Maksimova, 2014; Pushkin, Minav, 2015]; Volgograd Region [Grebennikov, 2001b].

Notes. Transpalearctic species with easternmost records from China; common in Central Europe [Schillhammer, 2012; Schülke, Smetana, 2015]. Records from the Nearctic region considered misidentifications and belong to *S. ornaticauda* LeConte, 1863 [Majka, Klimaszewski, 2008]. Inhabits soil surface and forest litter [Giska et al., 2015]. In PSER recorded from Crimea to the Volga River basin, with gaps.

[? *Staphylinus rubricornis* (Ádám, 1987)]

Notes. Distributed in Central and Southern Europe, with easternmost records from Asia Minor [Schillhammer, 2012]. Inhabits plant debris, can be found under leaves, moss and stones [Smetana, 1958]. Never unambiguously recorded from PSER; unspecified record from “Caucasus” [Coiffait, 1974] needs clarification.

Tasgius ater [Gravenhorst, 1802]

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1997, 2017]; Orenburg Region [Nagumanova, 2005b, 2006]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2002, 2014]; Volgograd Region [Khachikov, 1997; Grebennikov, 2001b, 2002a; Makarov et al., 2009].

Notes. Widespread in Europe, North Africa, Middle East, Turkey, introduced to the Nearctic region [Newton, 1987; Schillhammer, 2012; Schülke, Smetana, 2015]; in Russia known from its European part [Horion, 1965; Shilov, 1975]. Found in a variety of ground-based microhabitats, reported as predator of isopods [Whitehead, 1999]. Widely recorded in PSER, from Crimea eastwards to Orenburg Region.

Tasgius eppelsheimianus (Jakobson, 1909)

Records. Krasnodar Region [Solodovnikov, 1998; Knysh, Solodovnikov, 2004].

Notes. Known from the North-Western Caucasus, northern Turkey, Georgia and Azerbaijan [Solodovnikov, 2000; Schülke, Smetana, 2015]; can be found in various ground-based debris from leaf litter to carrion, mainly in open habitats [Solodovnikov, 1998]. In Russia recorded from the Caucasus mountains and plains in Krasnodar Region and from Karachay-Cherkessia Republic [Solodovnikov, 1998, 1999]. In PSER it was found in the riverine willow scrub near Krasnodar city [Solodovnikov, 1999].

Tasgius falcifer (Nordmann, 1837)

Records. Crimea Republic [Fauvel, 1874; Ganglbauer, 1895; Horion, 1965; Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998; Knysh, Solodovnikov, 2004]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets, 2002; Goreslavets et al., 2002]; Volgograd Region [Horion, 1965; Grebennikov, 2002a].

Notes. South European species with the easternmost records from Turkey, Georgia and European Russia [Schillhammer, 2012; Schülke, Smetana, 2015], not common [Horion, 1965; Bordoni, 1976; Özgen, 2017]. Biology is poorly known but recorded from leaf litter and under stones [Gusarov, 1989; Goreslavets et al., 2002], in Central Europe only in the south and very rare [Schillhammer, 2012]. In PSER repeatedly recorded from several regions from Crimea Republic to the Volga River basin. Due to the taxonomic confusion with *T. messor* [Nordmann, 1837] (see that species below), some of the records need verification. As a rare species suggested for the Red Book of Samara Region by Goreslavets [2002].

Tasgius fulvipes (Ménétriés, 1849)

Records. Dagestan Republic [Khachikov et al., 2021]; Krasnodar Region [Grebennikov et al., 2017 (as *T. ammiculus*)].

Notes. Described from, and distributed in, Middle Asia [Smetana, 2016], few records from South European part of Russia belongs to PSER. Biology is unknown.

Tasgius globulifer (Geoffroy, 1785)

Records. Crimea Republic [Gusarov, 1989].

Notes. West Palaearctic species with the easternmost records from Asia Minor, more common in Central Europe, becoming rarer eastwards [Samin et al., 2011; Schillhammer, 2012]; records from the Nearctic region in fact belong to *T. melanarius* [Newton, 1987; Brunke et al., 2011]. Biology is poorly known, but recorded from open landscapes, in cultivated lands and also known from the xerothermous sites [Schillhammer, 2012; Assing, 2001b]. In PSER, and Russia overall, known from a single record from Kerchenskiy Peninsula in Crimea Republic.

Tasgius gracilicornis (Hochhuth, 1849)

Records. Kalmykia Republic [Khachikov, 1997]; Krasnodar Region [Solodovnikov, 1998; Knysh, Solodovnikov, 2004]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavet et al., 2002; Goreslavets, 2014].

Notes. Distributed in Southeastern Europe, Turkey, through the Caucasus eastwards to Iran [Smetana, 1971; Schülke, Smetana, 2015]. Can be found in leaf litter, under stones and other ground-based debris from lowland open landscapes to subalpine zone [Khachikov, 1997; Solodovnikov, 1998]. In PSER known from several western regions, these are the only records from Russia.

Tasgius inderiensis (Motschulsky, 1845)

Records. Volgograd Region [Grebennikov, 2002a; Makarov et al., 2009 after Grebennikov, 2002a].

Notes. Rare poorly known halophilous species; described based on a single female specimen from the bank of salt Indersk Lake in eastern Kazakhstan [Motschulsky, 1845]. Bohác [1988] examined the type specimen of *T. inderiensis* stored at the Zoological Institute of the

Russian Academy of Sciences (St Petersburg, Russia). Also, he found a conspecific male specimen from Temir (400 km NNE from Indersk Lake). Bohác [1988] redescribed the species and provided aedeagal and additional external characters. Record from Turkmenistan [Herman, 2001] apparently is erroneous and comes from the mention [Motschulsky, 1858] of the *T. inderiensis* type locality under the old name for this region called “Turkmenie”. We are unaware of the material behind the record from Kyrgyzstan in Schülke and Smetana [2015]. In PSER known from a single specimen collected dead in debris of salt Elton Lake in Volgograd Region situated near the border with Eastern Kazakhstan (350 km W from Indersk Lake).

[? *Tasgius limbifrons* (Hochhuth, 1849)]

Notes. Known only from the original description based on a single specimen with unspecified sex and locality in Armenia [Hochhuth, 1849]. We are unaware of any evidence behind the distribution “Asia Mineure, Transcaucasie, sud de la Russie” provided for this species by Coiffait [1974: 546] and echoed in Schülke and Smetana [2015]. To our knowledge, there were no any taxonomic work published on *T. limbifrons* since its original description and Coiffait [1974] stated that the species was unknown to him. This species was not found among the material examined by Assing and Schülke [2019] in the monograph on rove beetles of Armenia and listed there based on literature only. Presumably, like some other species described by Hochhuth [1849], it was overlooked by subsequent authors and in fact now is a potential synonym.

Tasgius melanarius (Heer, 1839)
(Fig. 17I)

Records. Astrakhan Region [Horion, 1965]; Crimea Republic [Gusarov, 1989]; Rostov Region [Khachikov, 1997, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2014]; Volgograd Region [Grebennikov, 2001b].

Notes. West Palaearctic species distributed from Western Europe to Turkey, Middle East and Middle Asia, common in Central Europe, introduced to North America [Müller, 1926; Schillhammer, 2012; Schülke, Smetana, 2015]. From Kazakhstan known as a separate subspecies *T. m. sahlbergi* J. Müller, 1926. Usually occurs in leaf litter, often around water bodies [Gusarov, 1989; Schillhammer, 2012; Khachikov, 2017]. In Russia known from Central and South European parts [Shulaev, 2008]. In PSER recorded from Crimea Republic and Rostov Region in the west and from the Volga River basin.

[?! *Tasgius messor* (Nordmann, 1837)]

Records. Krasnodar Region ? [Solodovnikov, 1998]; Volgograd Region ? [Grebennikov, 2001b, 2002a; Makarov et al., 2009].

Notes. Described from a number of specimens from Sicily in the same paper with similar *Tasgius falcifer*, the latter described from a number of specimens and unclear locality in Italy [Nordmann, 1837]. Erichson [1840] examined the type material of both species and stated that

the difference between them is related to sex only, i.e. the type material of one species is of male sex, while the type material of another species is of female sex. Thus, he placed *T. messor* in synonymy with *T. falcifer*. This synonymy was followed by various authors until Coiffait [1974] cited both as valid species and while correctly stating Italy as the type locality for *T. falcifer*, he wrote “Caucasus” as the type locality for *T. messor*, which suggests that Coiffait’s concept of this species may not fit the original one. After Coiffait [1974], both species were cited as valid [Smetana, Davies, 2000; Herman, 2001; Schülke, Smetana, 2015] or still as synonyms [Solodovnikov, 1998; Knysh, Solodovnikov, 2004]. In PSER *T. messor* was recorded as valid species from Krasnodar and Volgograd regions. Given the described confusion, the species identity behind the PSER records needs clarification.

Tasgius pedator (Gravenhorst, 1802)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Khachikov, 1997; Solodovnikov, 1998]; Rostov Region [Khachikov, 1997, 2017].

Notes. Widespread in Europe where it is more common in the south and almost absent in the north; known from North Africa, easternmost records reach Middle East [Schillhammer, 2012; Schülke, Smetana, 2015; Firat, Sert, 2016]. Prefers warm microhabitats mostly in open landscapes, can be found in leaf litter and under stones [Smetana, 1958]. In PSER known from several regions in the west, these are the only records in Russia.

Tasgius pliginskii (Bernhauer, 1915)

Records. Crimea Republic [Bernhauer, 1915]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2001b].

Notes. Described from PSER, from Sevastopol in Crimea Republic based on a single specimen with unspecified sex [Bernhauer, 1915]. Coiffait [1974] cited it with general distribution comment “Crimee, Transcaucasus” without any additional information. In Schülke and Smetana [2015] also Turkey and Iran are mentioned as records for this species, but we were not able to find respective publications. Gontarenko [2005] and Grebennikov [2002a] are the only publications with new records for *T. pliginskii* that we are aware of. The former reports new material from the shores of the Black Sea in southwestern Ukraine, close to the type locality, the latter – from the Lower Volga region. Identity and records of *T. pliginskii* in comparison with *T. solskyi* need a revision.

[? *Tasgius rubripennis* (Reiche et Saulcy, 1856)]

Records. Dagestan Republic [Khachikov et al., 2021].

Notes. Distributed in Middle East, also recorded from Cyprus [Schülke, Smetana, 2015]. Biology is unknown. Records from PSER [Coiffait, 1974; Khachikov et al., 2021] need to be verified, this species must be compared to *T. inderiensis*.

Tasgius solskyi (Fauvel, 1875)

Records. Crimea Republic [Coiffait, 1974; Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 1997, 2017]; Volgograd Region [Fauvel, 1875b; Grebennikov, 2001b; Makarov et al., 2009].

Notes. Described from PSER, from "Sarepta" (currently Volgograd Region) based on unspecified number of female specimens [Fauvel, 1875b]. Coiffait [1974] redescribed the species based on a female type specimen and a newly found male specimen from Crimea. *Tasgius solskyi* was also recorded from Turkey based on the original description of its synonym *Staphylinus bosphoranus* [Müller, 1926]. Confined to open landscapes, especially steppe, found in plant debris and near water [Gusarov, 1989; Solodovnikov, 1998; Grebennikov, 2001b]. In PSER known from several western regions; these are the only records of this species from Russia. Identity and records of *T. solskyi* in comparison with *T. pliginskii* need a revision.

Subfamily Steninae*Stenus argus* Gravenhorst, 1806

Records. Crimea Republic ? [Gusarov, 1989]; Krasnodar Region [Ryvkin, 1990; Solodovnikov, 1998]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004]; Saratov Region [Sazhnev et al., 2013a].

Notes. Known from Europe including European Russia and from Siberia east to the Yenisey River [Ryvkin, 1990; Schülke, Smetana, 2015]. Prefers swampy areas, in wet grasslands [Puthz, 2012]. In PSER known from Krasnodar Region and the Volga River basin. Adjacent to PSER records come from foothills in Crimea Republic.

Stenus argutus Puthz, 1972

Records. Crimea Republic [Gusarov, 1989; Puthz, 1972; Ryvkin, 1990]; Rostov Region [Khachikov, 2017]; Stavropol Region [Pushkin, Maksimova, 2014; Pushkin, Minav, 2015]; Volgograd Region [Puthz, 1972; Ryvkin, 1990; Grebennikov, 2002a; Makarov et al., 2009].

Notes. Distributed in the south of European Russia, Ukraine, Turkey and the Caucasus [Ryvkin, 1990; Schülke, Smetana, 2015]. Found in steppes, sometimes in gully forests, in litter [Khachikov, 2017]. In PSER recorded from Crimea Republic, Stavropol, Rostov and Volgograd regions.

[?! *Stenus asphaltinus* Erichson, 1840]

Records. Samara Region ? [Goreslavets, 2016b].

Notes. Widespread in Europe, except north [Schülke, Smetana, 2015]. Found in mountain talus on dry slopes, also in sand pits and other heat-favored places [Puthz, 2012]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level; it is the only record from Russia. Given that and numerous other dubious records by I. Goreslavets discussed in this paper, this record needs verification.

Stenus ater Mannerheim, 1830

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Ryvkin, 1990; Solodovnikov, 1998]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 2017].

Notes. Widespread in Europe including European Russia, recorded in North Africa, in the Caucasus and in Middle Asia [Schülke, Smetana, 2015], however Ryvkin [1990] considered records from Middle Asia erroneous. Found both in dry biotopes and in damp places as running on the ground and in ground-based detritus [Puthz, 2012]. In PSER recorded from Crimea Republic, Krasnodar and Rostov regions.

Stenus aterrimus Erichson, 1839

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Ryvkin, 1990; Solodovnikov, 1998]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2016b]; Volgograd Region [Grebennikov, 2002a; Grebennikov, Riga, 2014].

Notes. Widespread from Europe to East Siberia, known from Middle Asia [Schülke, Smetana, 2015]. Confined to the nests of *Formica* ants; found in anthills located mainly in open landscapes like glades, sometimes in open woodlands [Ryvkin, 1990; Grebennikov, 2002a; Goreslavets, 2016b]. In PSER recorded from Crimea Republic, Krasnodar, Samara and Volgograd regions.

Stenus biguttatus (Linné, 1758)

Records. Krasnodar Region [Ryvkin, 1990; Solodovnikov, 1998]; Rostov Region [Minoranskiy, Lomakin, 1978]; Samara Region [Goreslavets, 2016a]; Stavropol Region [Pushkin, Maksimova, 2014; Pushkin, Minav, 2015].

Notes. Widespread from Europe including European Russia, to the Russian Far East and Japan [Schülke, Smetana, 2015], however with very fragmentary distribution east from the Yenisey River [Ryvkin, 1990]. Mostly occurs in soil microcaverns in shaded areas with damp ground and rich vegetation [Goreslavets, 2016a]. In PSER recorded from Krasnodar, Stavropol, Rostov and Samara regions.

Stenus bimaculatus Gyllenhal, 1810

Records. Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2014]; Volgograd Region [Grebennikov, 2002a].

Notes. Distributed from Europe to East Siberia, in the Caucasus and in Kazakhstan [Ryvkin, 1990; Schülke, Smetana, 2015]. Eurytopic, found in damp places, plant detritus, meadows [Puthz, 2012; Khachikov, 2017]. In PSER recorded from Krasnodar and Rostov regions in the west and from the Volga River basin.

Stenus bipunctatus (Ljungh, 1804)

Records. Samara Region [Goreslavets et al., 2002; Goreslavets, 2004].

Notes. Distributed from Europe to East Siberia, and Middle Asia [Schülke, Smetana, 2015]. Prefers wetlands

and cultivated lands [Puthz, 2012]. In PSER recorded only from Krasnosamarskiy forest in Samara Region. Another Samara Region record comes from Samarskaya Luka.

Stenus boops Ljungh, 1810

Records. Astrakhan Region [Grebennikov, 2002a]; Crimea Republic [Gusarov, 1989]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Volgograd Region [Grebennikov, 2002a; Makarov et al., 2009].

Notes. Transpalaeartic, distributed from Europe including European part of Russia to the Russian Far East; also recorded from China and Japan [Schülke, Smetana, 2015]. In the Alps represented by the subspecies *S. b. ludmilae* Hromádka, 1979. Found in open, vegetation-free, sandy muddy spots and in litter [Puthz, 2012; Khachikov, 2017]. In PSER recorded in almost all regions.

Stenus brunnipes Stephens, 1833

Records. Crimea Republic ? [Gusarov, 1989]; Krasnodar Region [Ryvkin, 1990; Solodovnikov, 1998]; Stavropol Region ? [Bernhauer, 1915].

Notes. Widespread in Europe including European Russia, occurs in the Caucasus, Middle East, Middle Asia, Nepal and North India [Ryvkin, 1990; Schülke, Smetana, 2015]. In Europe, the Caucasus and Middle Asia represented by the nominotypical subspecies, while subspecies *S. b. castigator* Cameron, 1931 is confined to Nepal and North India, *S. b. lepidus* Weise, 1875 to Southern Europe, Cyprus, Syria and Turkey and *S. b. maximus* Puthz, 1968 to Southwestern Europe and North Africa. Can be found restricted to mountain ranges [Serri, Frisch, 2016]. In PSER recorded only from Azov-Kuban plain in Krasnodar Region. Adjacent records from Crimea Republic and Stavropol Region come from foothills and mountains.

Stenus calcaratus Scriba, 1864

Records. Rostov Region [Khachikov, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2014]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread from Europe to East Siberia [Schülke, Smetana, 2015]. Sporadic, can be found in meadows [Khachikov, 2017]. In PSER recorded from Rostov, Samara and Volgograd regions.

Stenus canaliculatus Gyllenhal, 1827

Records. Kalmykia Republic [Grebennikov, 2002a]; Rostov Region [Ryvkin, 1990; Khachikov, 2017]; Samara Region [Goreslavets, 2004, 2014].

Notes. Holarctic, in the Palearctic distributed from Europe to the Russian Far East and China, absent in the southern regions [Ryvkin, 1990; Schülke, Smetana, 2015; Serri, Frisch, 2016]. Prefers muddy and sandy microhabitats, sparsely vegetated soils, in plant detritus [Puthz, 2012]. In PSER recorded from Kalmykia Republic, Rostov and Samara regions.

Stenus carbonarius Gyllenhal, 1827

Records. Samara Region [Goreslavets, 2004, 2014, 2016a]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread from Europe to East Siberia and Kazakhstan [Schülke, Smetana, 2015]. Found mainly on floodplain terraces along shores of lakes [Goreslavets, 2016a]. In PSER recorded in Samara and Volgograd regions.

Stenus cautus Erichson, 1839

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998; Ryvkin, 2014]; Samara Region [Ryvkin, 2014]; Stavropol Region [Ryvkin, 1990].

Notes. Transpalaeartic, distributed from Europe to the Russian Far East; and Middle Asia [Schülke, Smetana, 2015]. Found on decaying plant matter like hay, straw, compost [Puthz, 2012]. In PSER recorded from Crimea Republic to the Volga River basin, with gaps.

Stenus cicindeloides (Schaller, 1783)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Ryvkin, 1990; Solodovnikov, 1998]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2002, 2004, 2014]; Volgograd Region [Grebennikov, 2002a].

Notes. Transpalaeartic, distributed from Europe including European part of Russia to the Russian Far East; also recorded from China and wider in the Oriental region [Schülke, Smetana, 2015]. Hygrophilous, everywhere in damp locations rich in vegetation like meadows [Puthz, 2012; Khachikov, 2017]. In PSER recorded in most regions.

Stenus circularis Gravenhorst, 1802

Records. Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 2017].

Notes. Widespread from Europe to East Siberia and Middle Asia [Schülke, Smetana, 2015]. Found in rotting plant materials, both in dry places and moist meadows [Puthz, 2012]. In PSER recorded in Krasnodar and Rostov regions; old records from unclear localities [Horion, 1963; Puthz, 1965a] in the Caucasus, also noted in Ryvkin [1990] without further details need revision.

Stenus clavicornis (Scopoli, 1763)

Records. Crimea Republic [Gusarov, 1989]; Dagestan Republic [Puthz, 1983]; Krasnodar Region [Ryvkin, 1990; Solodovnikov, 1998]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2016b]; Volgograd Region [Grebennikov, 2002a, b].

Notes. Widespread from Europe to the Russian Far East; introduced to China and North America [Schülke, Smetana, 2015]. Eurytopic; in forests, heaths, moors, gardens, in fields, in the litter and in vegetable detritus [Puthz, 2012]. In PSER recorded from almost all regions.

Stenus coarcticollis Eppelsheim, 1890

Records. Krasnodar Region [Ryvkin, 1990; Solodovnikov, 1998]; Samara Region [Goreslavets, 2004]; Stavropol Region [Puthz, 1983]; Volgograd Region [Grebennikov, 2002a].

Notes. Caucasian species that also occur in Balkan Peninsula as a separate subspecies *S. c. drepanensis* Puthz, 1980 [Schülke, Smetana, 2015], records from Turkey considered dubious [Ryvkin, 1990]. Found in banks of water bodies of different nature, in leaf litter, under rocks and logs, in mushrooms (fresh and rotting) and cavities in dead woods and under bark [Solodovnikov, 1998]. In PSER recorded from Krasnodar and Stavropol regions and from the Volga River basin.

Stenus comma LeConte, 1863
(Fig. 19C)

Records. Astrakhan Region [Pushkin, 2015, 2016]; Crimea Republic [Gusarov, 1989]; Krasnodar Region [Ryvkin, 1990; Solodovnikov, 1998]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Stavropol Region [Pushkin, Maksimova, 2014; Pushkin, Minav, 2015]; Volgograd Region [Grebennikov, 2002a; Pushkin, 2015, 2016].

Notes. Holarctic, distributed from Europe to the Russian Far East and China, also known from North America [Schülke, Smetana, 2015], but clearly absent in North Africa, Iberian Peninsula, Middle Asia and Afghanistan [Ryvkin, 1990]. In southern Europe represented by subspecies *S. c. aeneiceps* Rey, 1884 and *S. c. peroculatus* Puthz, 1986 [Schülke, Smetana, 2015]. Found on sandy banks of rivers and streams, in gravel pits [Puthz, 2012]. Widespread in PSER, not recorded east from the Volga River.

Stenus crassus Stephens, 1833

Records. Kalmykia Republic [Grebennikov, 2002a]; Krasnodar Region [Ryvkin, 1990; Solodovnikov, 1998]; Rostov Region [Khachikov, 2017]; Samara Region [Goreslavets, 2014, 2016a, 2021].

Notes. Known from Europe to West Siberia; Turkey, Kazakhstan and Mongolia [Schülke, Smetana, 2015]. Found mainly from river floodplains in soil microcaverns near water, also recorded from mushrooms [Goreslavets, 2016a]. In PSER recorded from Kalmykia Republic, Krasnodar, Rostov and Samara regions.

Stenus cribratus Kiesenwetter, 1850

Records. Crimea Republic ? [Gusarov, 1989]; Volgograd Region [Ryvkin, 1990].

Notes. Distributed in southeast of Central Europe, south of European Russia and Turkey [Schülke, Smetana, 2015]. Thermophilic; probably a guest of harvest ants [Puthz, 2012]. In PSER recorded only from Volgograd Region. Adjacent record in Crimea comes from foothills.

[*Stenus europaeus* Puthz, 1966]

Records. Samara Region ? [Goreslavets, 2014].

Notes. Widespread from Europe to East Siberia [Schülke, Smetana, 2015], for a long time was confused with *Stenus cautus* Erichson, 1839, for details see Ryvkin [2014]. Hygrophilous, found on grassy banks, on meadows, in swampy places, in various ground-based debris, also occurs in moss [Ryvkin, 2014]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

Stenus exspectatus Puthz, 1965

Records. Rostov Region [Ryvkin, 1990]; Samara Region [Goreslavets, 2014].

Notes. Distributed from Central Europe to East Siberia and Kazakhstan [Schülke, Smetana, 2015]. Prefers damp meadows, in alder and willow leaves on river banks [Puthz, 2012]. In PSER recorded only from Rostov and Samara regions.

Stenus formicetorum Mannerheim, 1843

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Ryvkin, 1990; Solodovnikov, 1998]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2021]; Volgograd Region [Grebennikov, 2002a].

Notes. Distributed from Europe to the Russian Far East, introduced to North America [Schülke, Smetana, 2015]. Hygrophilous, moor-loving, on wet meadows, at lake shores [Puthz, 2012]. In PSER recorded from several regions.

Stenus fornicatus Stephens, 1833

Records. Krasnodar Region [Ryvkin, 1990; Solodovnikov, 1998]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2002, 2004, 2014]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread from Europe to East Siberia and Middle Asia [Schülke, Smetana, 2015]. Found in damp to very wet biotopes [Puthz, 2012]. In PSER recorded from Krasnodar, Samara and Volgograd regions.

Stenus fuscicornis Erichson, 1840

Records. Krasnodar Region [Solodovnikov, 1998]; Samara Region [Goreslavets, 2014, 2016a].

Notes. Widespread from Europe to the Caucasus region and Middle East [Schülke, Smetana, 2015]. Thermophilic; in dry deciduous forests, in moss and rotten plant parts [Puthz, 2012]. In PSER recorded from Krasnodar and Samara regions.

[*Stenus fuscipes* Gravenhorst, 1802]

Records. Samara Region ? [Goreslavets et al., 2002; Goreslavets, 2014].

Notes. Distributed from Europe to East Siberia and India [Schülke, Smetana, 2015]. Hygrophilous, in

constantly moist, often grass-rich biotopes, in willow and alder leaf litter and other debris [Puthz, 2012]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level. Old records from "Caucasus" [Kolenati, 1846; Hochhuth, 1849; Fauvel, 1873b] need revision [Ryvkin, 1990].

Stenus ganglbaueri Bernhauer, 1905

Records. Crimea Republic ? [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998].

Notes. Known from Europe, the Caucasus and Middle East [Ryvkin, 1990; Schülke, Smetana, 2015]. Found from lowlands up to 2960 m of elevation [Serri, Frisch, 2016]. In PSER recorded from Azov-Kuban plain in Krasnodar Region. Adjacent record from Crimea Republic comes from foothills.

Stenus humilis Erichson, 1839

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Ryvkin, 1990; Solodovnikov, 1998]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Stavropol Region [Gorkavaya, 2017a].

Notes. Distributed from Europe to Turkey, East Siberia, Kazakhstan and Turkmenistan [Schülke, Smetana, 2015]. Prefers damp biotopes rich in vegetation, also in forests [Puthz, 2012]. In PSER recorded from Crimea Republic to the Volga River basin, with gaps.

Stenus hypoproditor Puthz, 1965

Records. Crimea Republic [Ryvkin, 1990; Gusarov, 1989]; Krasnodar Region [Ryvkin, 1990; Solodovnikov, 1998]; Orenburg Region [Ryvkin, 1990]; Rostov Region [Ryvkin, 1990; Khachikov, 2017]; Saratov Region [Ryvkin, 1990]; Volgograd Region [Puthz, 1965b; Ryvkin, 1990; Grebennikov, 2002a; Makarov et al., 2009].

Notes. Widespread in Europe except Northern but including European Russia, to West Siberia and Middle Asia, also in the Caucasus [Ryvkin, 1990; Schülke, Smetana, 2015]. Found in open landscapes on river banks among vegetation and in detritus [Puthz, 2012]. Widespread in PSER.

Stenus incautus Ryvkin, 2000

Records. Samara Region [Ryvkin, 2014; Goreslavets, 2014, 2016a]; Volgograd Region [Ryvkin, 2014].

Notes. Recently described from Krasnoyarsk Region in Siberia, this species was later recorded in PSER from Samara and Volgograd regions, in the latter it occurs on sandy patches of river banks [Goreslavets, 2016a].

Stenus incrassatus Erichson, 1839

Records. Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 2017]; Samara Region [Goreslavets, 2014, 2016a]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread in Europe except Southern, including European Russia, to the Russian Far East and China, found in Transcaucasia and southern Altai [Ryvkin, 1990; Schülke, Smetana, 2015]. Inhabits swampy, muddy places, in gravel pits [Puthz, 2012], in floodplains, in debris near water [Goreslavets, 2016a]. In PSER recorded from Azov-Kuban plain in Krasnodar Region, Samara, Rostov and Volgograd regions.

Stenus intermedius Rey, 1884

Records. Crimea Republic [Gusarov, 1989]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004].

Notes. Widespread in Europe, including European Russia [Schülke, Smetana, 2015]. Halophilic, on saline coasts; also recorded in the mountains [Puthz, 2012]. In PSER recorded from Crimea Republic and Samara Region.

Stenus intricatus Erichson, 1840

Records. Astrakhan Region [Grebennikov, 2002a]; Rostov Region [Khachikov, 2017]; Samara Region [Goreslavets, 2014, 2016a]; Volgograd Region [Grebennikov, 2002a; Makarov et al., 2009].

Notes. Widespread from Southwestern Europe and North Africa, through rest of Europe except north, but including South European Russia, to Middle Asia; most of the species range is covered by the subspecies *S. i. zoufali* Fleischer, 1909 while the nominotypical subspecies is confined to Southwestern Europe and North Africa [Schülke, Smetana, 2015]. Common in humid meadows and in marshlands [Puthz, 2012]. In PSER recorded from Rostov Region and the Volga River basin.

Stenus junco (Paykull, 1789)

Records. Krasnodar Region [Ryvkin, 1990; Solodovnikov, 1998]; Rostov Region [Minoranskiy, Lomakin, 1978]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Saratov Region [Sazhnev et al., 2017]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread from Europe to the Russian Far East and China, also in North America [Ryvkin, 1990; Schülke, Smetana, 2015]. Prefers swampy and vegetation-rich places [Puthz, 2012]. In PSER recorded from Krasnodar and Rostov regions, and from the Volga River basin.

[*Stenus laetificus* Ryvkin, 1990]

Records. Krasnodar Region ? [Ryvkin, 1990; Solodovnikov, 1998].

Notes. Endemic of the North-Western Caucasus [Schülke, Smetana, 2015]. Recorded next to PSER from very low elevations of the mountain foothills in Krasnodar Region, where it can be found on banks of various water bodies [Solodovnikov, 1998] and thus potentially may be found along rivers in the plain.

Stenus latifrons Erichson, 1839

Records. Crimea Republic ? [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998].

Notes. Widespread from Europe to Middle Asia, recorded in Turkey [Schülke, Smetana, 2015], mentioned for West Siberia [Ryvkin, 1990]. Found in wetlands and moors [Puthz, 2012]. In PSER recorded from Azov-Kuban plain in Krasnodar Region. Adjacent record from Crimea Republic comes from foothills.

Stenus ludyi Fauvel, 1886

Records. Samara Region [Goreslavets, 2016a].

Notes. Distributed from Europe to East Siberia and Kazakhstan [Schülke, Smetana, 2015]. Can be found in damp places, riverine forests, plains and mountains, moss and leaf litter [Puthz, 2012]. In PSER recorded only from Krasnosamarskiy forest in Samara Region.

[?! *Stenus macrocephalus* Aubé, 1863]

Records. Samara Region ? [Goreslavets, 2014].

Notes. Known in France, Italy, Slovenia and Switzerland [Schülke, Smetana, 2015]. Bionomics is unknown. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level. Since this record appears far from the known distribution of the species, we consider it questionable.

Stenus melanarius Stephens, 1833

Records. Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014].

Notes. Holarctic, known from Europe, the Caucasus, Siberia, China, Japan and North America; in China and the Oriental region represented by the subspecies *S. m. annamita* Fauvel, 1895 [Puthz, 2012; Schülke, Smetana, 2015]. Not common; inhabits moss and muddy banks of ponds and swamps [Puthz, 2012]. In PSER recorded only from Krasnosamarskiy forest in Samara Region. We are not certain if other records from Samara Region belong to PSER because they lack geographic details within the region level.

[?! *Stenus mendicus* Erichson, 1840]

Records. Astrakhan Region ? [Grebennikov, 2002a]; Samara Region ? [Goreslavets et al., 2002]; Volgograd Region ? [Grebennikov, 2002a].

Notes. Known from Southern, Western and Central Europe and from North Africa [Puthz, 2006; Schülke, Smetana, 2015]. Bionomics is poorly known, collected from plains to 1200 m of elevation [Gamarra et al., 2015; Puthz, 2010]. In PSER repeatedly recorded from the Volga River basin, remote location of these records from the main known distribution area of the species, however, suggests that they need verification.

Stenus morio Gravenhorst, 1806

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Ryvkin, 1990; Solodovnikov, 1998]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 2017]; Samara Region [Goreslavets, 2014].

Notes. Holarctic, in the Palaearctic distributed from Europe except its southwestern part to the Russian Far East and China [Ryabukhin, 1999; Puthz, 2012; Schülke, Smetana, 2015]. Ryvkin [1990] noted that populations from the Caucasus, Middle Asia and the Far East morphologically differ from the European, pending taxonomic revision. Inhabits swampy soils and decaying organics [Puthz, 2012]. In PSER recorded from several regions.

Stenus nanus Stephens, 1833

Records. Crimea Republic ? [Gusarov, 1989]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 2017]; Samara Region [Goreslavets, 2014].

Notes. Distributed from Western Europe to Turkey, East Siberia and China [Ryvkin, 1990; Puthz, 2012; Schülke, Smetana, 2015]. Inhabits decaying organics, both humid and dry biotopes, found at various altitudes [Puthz, 2012]. In PSER recorded from Rostov and Samara regions. Adjacent record from Crimea comes from the mountains.

Stenus nigrutilus Gyllenhal, 1827

Records. Krasnodar Region ? [Solodovnikov, 1998]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 2017].

Notes. Distributed from Western Europe to Asia Minor, the Caucasus, Middle Asia and East Siberia [Ryvkin, 1990; Puthz, 2012; Schülke, Smetana, 2015]. Inhabits humid biotopes, occurs near temporary water bodies [Puthz, 2012]. In PSER from Rostov Region. Adjacent records come from Krasnodar Region, from the foothills of the North-Western Caucasus.

Stenus nitens Stephens, 1833

Records. Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 2017]; Samara Region [Goreslavets, 2014].

Notes. Distributed from Western Europe to East Siberia [Poppius, 1909; Puthz, 2012; Schülke, Smetana, 2015]. Not common; inhabits swampy shores and moss [Puthz, 2012]. In PSER recorded from Rostov and Samara regions.

[?! *Stenus oblitus* Sharp, 1874]

Records. Samara Region ? [Goreslavets, 2014].

Notes. Known from Korea, China, Japan, the Russian Far East, Vietnam and the Oriental region [Ahn et al., 2017]. Biology is unknown. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level. Taking into consideration the hitherto known distribution of the species, this outlier record maybe based on misidentification.

Stenus obscuripalpis Hubenthal, 1911

Records. Orenburg Region [Ryvkin, 1990]; Rostov Region [Ryvkin, 1990; Khachikov, 2017]; Samara Region [Ryvkin, 1990; Goreslavets, 2014]; Volgograd Region [Ryvkin, 1990; Grebennikov, Komarov, 1998; Grebennikov, 2001b].

Notes. Distributed from Central Europe to South European Russia and Kazakhstan [Schülke, Smetana, 2015]. Rare; occurs on humid meadows [Puthz, 2012]. Widespread in PSER, except the North Caucasus and Crimea.

Stenus ochropus Kiesenwetter, 1858

Records. Crimea Republic [Gusarov, 1989; Ryvkin, 1990]; Krasnodar Region [Ryvkin, 1990; Solodovnikov, 1998]; Samara Region [Goreslavets et al., 2002]; Stavropol Region [Ryvkin, 1990].

Notes. Ponto-Mediterranean; distributed from Western Europe to Near East and Middle Asia [Puthz, 2012; Schülke, Smetana, 2015]. Inhabits dry biotopes, litter, grass, moss [Puthz, 2012]. In PSER recorded from several regions, in Crimea Republic and Krasnodar Region recorded from lowlands and higher altitudes as well.

Stenus opticus Gravenhorst, 1806

Records. Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Volgograd Region [Grebennikov, 2002a].

Notes. Distributed from Western and Northern Europe to Kazakhstan and East Siberia [Poppius, 1909; Puthz, 2012; Schülke, Smetana, 2015]. Inhabits lake and pond banks with developed vegetation [Puthz, 2012]. In PSER recorded from the Volga River basin.

Stenus pallitarsis Stephens, 1833

Records. Krasnodar Region ? [Solodovnikov, 1998]; Saratov Region [Sazhnev, Anikin, 2014b].

Notes. Distributed from Europe and North Africa to China. In the Caucasus, Turkey and South European Russia represented by the subspecies *S. p. abanticola* Puthz, 1972 [Puthz, 2012; Schülke, Smetana, 2015]. Occurs on shores of rivers and lakes, found in reeds [Puthz, 2012]. In PSER recorded from from Sadki pond in Saratov Region without details on subspecies. Also found in the nearby Caucasus foothills from Krasnodar Region as *S. p. abanticola*.

Stenus palposus Zetterstedt, 1838

Records. Samara Region [Goreslavets et al., 2002; Goreslavets, 2002, 2004, 2014]; Saratov Region [Sazhnev, 2013b].

Notes. Known from Europe except Southern, from Siberia and Kazakhstan [Puthz, 2012; Schülke, Smetana, 2015]. Inhabits open sandy shores without vegetation [Puthz, 2012]. In PSER recorded from Krasnosamarskiy forest and Novokuybyshevsk town in Samara Region. Adjacent to PSER record from Lysye Gory District in Saratov Region. We are not certain if other records from Samara Region belong to PSER because they lack geographic details within the region level. Records from "Caucasus" [Horion, 1963; Puthz, 1971] need clarification, but this species is expected from Ciscaucasia [Ryvkin, 1990].

Stenus planifrons Rey, 1884

Records. Crimea Republic [Gusarov, 1989; Ryvkin, 1990]; Krasnodar Region [Ryvkin, 1990; Solodovnikov,

1998]; Rostov Region [Ryvkin, 1990; Khachikov, 2017]; Samara Region [Goreslavets et al., 2002].

Notes. Distributed from Southern and Central Europe, to Eastern Europe and Asia Minor [Schülke, Smetana, 2015]. Dwells in leaf litter of alder and willow forests [Puthz, 2012]. In PSER widespread from Crimea to the Volga River basin with some gaps.

[*Stenus proditor* Erichson, 1839]

Records. Samara Region ? [Goreslavets, 2014].

Notes. Widespread in Europe, except the south, and eastward to East Siberia [Schülke, Smetana, 2015]. Inhabits swamps and peat bogs [Puthz, 2012]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

Stenus providus Erichson, 1839

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Ryvkin, 1990; Solodovnikov, 1998]; Rostov Region [Khachikov, 2017]; Samara Region [Goreslavets, 2014]; Saratov Region [Kovalev et al., 2011].

Notes. Distributed from Europe excluding the north, North Africa southeastward to Asia Minor and Kazakhstan [Schülke, Smetana, 2015]. Ryvkin [1990] stated the need of the taxonomic revision of this species to clarify its distribution. Inhabits swamps, rotting plant matter, grass, leaves, and damp places [Puthz, 2012]. In PSER reported from Crimea to the Volga River basin with gaps.

[*Stenus pubescens* Stephens, 1833]

Records. Samara Region ? [Goreslavets, 2004].

Notes. Widespread in Europe except Southern, across Siberia and China eastward to the Far East [Schülke, Smetana, 2015]. On the banks of water bodies, in coastal detritus and vegetation [Puthz, 2012]. In PSER known only from the isolated Krasnosamarskiy forest in Samara Region.

Stenus ruralis Erichson, 1840

Records. Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014].

Notes. Widespread in Europe except Southern, across Siberia and China eastward to Japan [Benick, 1924; Schülke, Smetana, 2015]. In Central Europe mainly in the mountains, inhabits sandy rivers and streams [Puthz, 2012]. In PSER known only from Krasnosamarskiy forest. We are not certain if other records from Samara Region belong to PSER because they lack geographic details within the region level. Old records from the Caucasus apparently belong to closely related species [Ryvkin, 1990].

Stenus scrutator Erichson, 1840

Records. Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014].

Notes. Widespread in Europe, east to Ukraine [Schülke, Smetana, 2015]. Occurs in marsh meadows with

rich vegetation [Puthz, 2012]. In PSER repeatedly reported from Krasnosamarskiy forest. We are not certain if other records from Samara Region belong to PSER because they lack geographic details within the region level.

Stenus similis Herbst, 1784

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2002, 2014]; Saratov Region [Sazhnev et al., 2018, 2019c].

Notes. Widespread throughout Europe and North Africa eastward to West Siberia and Mongolia [Ryvkin, 1990; Schülke, Smetana, 2015]. Inhabits humid biotopes, banks of various water bodies and forest litter [Goreslavets et al., 2002; Puthz, 2012]. In PSER found from Crimea to the Volga River basin with some gaps.

Stenus solutus Erichson, 1840

Records. Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 2017]; Samara Region [Goreslavets, 2014].

Notes. Widespread from Great Britain through Central and Eastern Europe to the Caucasus and Turkey [Schülke, Smetana, 2015]. Dwells in damp shores of ponds and marshes with developed vegetation [Puthz, 2012]. In PSER reported from Krasnodar, Rostov and Samara regions.

Stenus stigmula Erichson, 1840

Records. Krasnodar Region [Ryvkin, 1990; Solodovnikov, 1998]; Rostov Region [Ryvkin, 1990; Khachikov, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014].

Notes. Widespread in Europe including European Russia south of the Oka River, recorded in the Caucasus and Turkey [Ryvkin, 1990; Schülke, Smetana, 2015]. Lives on the banks of fast-flowing rivers, often in a litter among stones [Ryvkin, 1990; Puthz, 2012]. In PSER reported from several regions.

Stenus subditus L. Benick, 1920

Records. Krasnodar Region [Ryvkin, 1990; Solodovnikov, 1998]; Stavropol Region ? [Puthz, 1983].

Notes. Distributed in the Caucasian region and Turkey [Schülke, Smetana, 2015; Anlaş, Puthz, 2019]. Ryvkin [1990] mentions this species also from Crimea and adjacent Odessa Region, without exact data. Mainly in forest litter [Ryvkin, 1990]. In PSER reliably known only from plains at the foothills of the Caucasus, from Goryachiy Klyuch and Ubinskaya in Krasnodar Region and Zheleznovodsk in Stavropol Region.

Stenus sylvester Erichson, 1839

Records. Krasnodar Region ? [Ryvkin, 1990; Solodovnikov, 1998]; Samara Region [Goreslavets, 2004, 2014].

Notes. Widespread in Europe including European Russia, southward to the Caucasus areas and eastward to Kazakhstan [Ryvkin, 1990; Puthz, 2012; Schülke, Smetana, 2015]. Inhabits wetlands, usually in decaying plant debris [Puthz, 2012]. In PSER reported from Krasnosamarskiy forest in Samara Region. We are not certain if other records from Samara Region belong to PSER because they lack geographic details within the region level. Records adjacent to PSER come from the foothills of the Caucasus mountains in Krasnodar Region.

Stenus wuesthoffi Benick, 1941

Records. Astrakhan Region [Grebennikov, 2002a]; Crimea Republic [Gusarov, 1989; Ryvkin, 1990]; Rostov Region [Ryvkin, 1990]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2014, 2016a]; Saratov Region [Sazhnev, Anikin, 2014a; Sazhnev et al., 2017]; Volgograd Region [Benick, 1941; Grebennikov, 2002a; Makarov et al., 2009].

Notes. Distributed from Ukraine across the southern territory of Russia eastward to Kazakhstan and Uzbekistan and to West Siberia [Ryvkin, 1990; Schülke, Smetana, 2015]. Inhabits shores of various water bodies [Goreslavets, 2016a; Sazhnev et al., 2017]. In PSER reported from Crimea and from the Volga River basin.

Subfamily Tachyporinae

Cilea silphoides (Linnaeus, 1767)

(Fig. 12M)

Records. Crimea Republic [Gusarov, 1989]; Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets, 2002; Goreslavets et al., 2002]; Stavropol Region [Khachikov, 1998a]; Volgograd Region [Grebennikov, Komarov, 1998].

Notes. Cosmopolitan coprobiont, originally Palaearctic, introduced to Oriental, Nearctic and Neotropical regions [Schülke, 2012a; Schülke, Smetana, 2015]. In PSER recorded from Crimea Republic, Stavropol Region and from the Volga River basin.

Coproporus colchicus Kraatz, 1858

(Fig. 12J)

Records. Crimea Republic [Gusarov, 1989]; Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Horion, 1967; Goreslavets, 2021]; Saratov Region [Sazhnev, Volodchenko, 2021].

Notes. Mediterranean, easternmost records come from European Part of Russia, invasive in Scandinavia [Schülke, 2012a; Schülke, Smetana, 2015]. Biology is poorly known, but recorded in decaying wood and under bark [Horion, 1967; Schülke, 2012a], from dung and up to 1185 m [Tezcan et al., 2019]. In PSER recorded from Crimea Republic and Rostov Region and from the Volga River basin.

[? *Lamprinodes fairmairei* (Leprieur, 1853)]

Notes. Distributed in Southwestern Europe: Portugal, Spain, Italy; from North Africa and Middle East [Schülke,

Smetana, 2015]. Biology is unknown. Never unambiguously recorded from PSER, unspecified records from “Caucasus” [Luze, 1901b] need verification.

Sepedophilus bipunctatus (Gravenhorst, 1802)
(Fig. 12G)

Records. Samara Region [Goreslavets, 2002, 2004, 2021]; Volgograd Region [Grebennikov, Komarov, 1998].

Notes. Distributed from Western Europe to European Russia and Near East [Schülke, 2012a; Schülke, Smetana, 2015]. Sometimes included in Red books [Gamarra et al., 2012]. Prefers humid deciduous forests, inhabits tree trunks, stumps; saproxylic, mycophagous [Brin et al., 2011; Gamarra et al., 2012; Schülke, 2012a]. In PSER recorded from the Volga River basin.

Sepedophilus bipustulatus (Gravenhorst, 1802)
(Fig. 12N)

Records. Samara Region [Goreslavets et al., 2002; Goreslavets, 2002, 2004, 2021]; Saratov Region [Sazhnev, Mironova, 2019]; Volgograd Region [Grebennikov, 2002a].

Notes. Distributed from Western Europe to Near East and West Siberia [Schülke, 2012a; Schülke, Smetana, 2015]. Mycophagous; mainly inhabits tree fungi [Krasutsky, 1995; Schülke, 2012a]. In PSER recorded from the Volga River basin.

Sepedophilus immaculatus (Stephens, 1832)

Records. Crimea Republic [Gusarov, 1989]; Dagestan Republic [Khachikov, 1998a]; Rostov Region [Khachikov, 1998a]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2021]; Saratov Region [Sazhnev et al., 2019a]; Stavropol Region [Khachikov, 1998a]; Volgograd Region [Grebennikov, 2002a].

Notes. Distributed from West Siberia and Near East through Southwestern Europe, Western and Central Europe to the south of Northern Europe [Schülke, 2012a; Schülke, Smetana, 2015]. Inhabits litter [Schülke, 2012a]. In PSER recorded from most regions west of the Volga River.

Sepedophilus littoreus (Linnaeus, 1758)

Records. Crimea Republic [Gusarov, 1989]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2021].

Notes. Transpalaeartic, distributed from Spain to Japan, introduced to the Nearctic [Schülke, 2012a; Schülke, Smetana, 2015]. Saproxylic, found in tree fungi, often collected on the fly [Fowles et al., 1999; Hågvar, 1999; Schülke, 2012a]. In PSER recorded from Krasnosamarskiy forest in Samara Region. We are not certain if other records from Samara Region belong to PSER because they lack geographic details within the region level. Records from Crimea Republic come from the mountains. Old unspecific records from “Caucasus” [Hochhuth, 1849; Pandellé, 1869; Fauvel, 1875a; Luze, 1902b] need revision.

Sepedophilus marshami (Stephens, 1832)

Records. Astrakhan Region [Khachikov, 1998a; Grebennikov, 2002a]; Crimea Republic [Gusarov, 1989]; Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2016b]; Saratov Region [Sazhnev, Mironova, 2019]; Stavropol Region [Pushkin, Maksimova, 2014; Pushkin, Minav, 2015; Pushkin, 2015, 2016]; Volgograd Region [Grebennikov, 2002a].

Notes. Distributed from Spain to East Siberia, introduced to the Nearctic [Schülke, 1998; Schülke, Smetana, 2015]. Inhabits litter, dead wood and fungi [Schülke, 2012a]. In PSER widely recorded west from the Volga River.

Sepedophilus nigripennis (Stephens, 1832)

Records. Crimea Republic ? [Motschulsky, 1860; Gusarov, 1989]; Dagestan Republic [Brüge, 1999]; Samara Region [Goreslavets, 2004, 2014, 2016a, b, 2021].

Notes. Distributed from England and France to South European Russia, Turkey, Cyprus and Israel [Schülke, 2012a; Schülke, Smetana, 2015]. Prefers dry habitats, but also recorded from wet water-edge habitats [Assing, 2001b; Schülke, 2012a]. In PSER recorded from unspecified localities at the Caspian Sea shores in the north of Dagestan Republic and from Krasnosamarskiy forest in Samara Region. We are not certain if other records from Samara Region belong to PSER because they lack geographic details within the region level. Adjacent to PSER records from Crimea Republic come from foothills and mountains. Old record from “Caucasus” [Luze, 1902b] lacks geographic precision.

Sepedophilus pedicularius (Gravenhorst, 1802)

Records. Crimea Republic ? [Motschulsky, 1860; Hochhuth, 1862]; Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2016a, 2021]; Saratov Region ? [Sazhnev et al., 2019a].

Notes. Transpalaeartic species with easternmost records from China [Schülke, 2012a; Schülke, Smetana, 2015]. Inhabits litter, moss and dead wood [Schülke, 2012a]. In PSER recorded from Rostov and Samara regions. Adjacent to PSER records come from the foothills of Crimean mountains and from Balashov town in Saratov Region.

[? *Sepedophilus rufulus* (Hochhuth, 1849)]

Records. Dagestan Republic ? [Luze, 1902c].

Notes. Described from unspecified locality in the Caucasus based on the unclear number of specimens; later recorded from Middle East, Middle Asia, East Siberia, Pakistan and India [Hochhuth, 1849; Schülke, Smetana, 2015; Guéorguiev et al., 2018]. Biology is unknown. The only presumably PSER record from Dagestan lacks geographic precision.

Sepedophilus testaceus (Fabricius, 1792)
(Fig. 12P)

Records. Crimea Republic [Gusarov, 1989]; Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2016b]; Saratov Region [Sazhnev et al., 2019a]; Stavropol Region [Pushkin, Maksimova, 2014; Pushkin, Minav, 2015]; Volgograd Region [Grebennikov, 2002a; Pushkin, 2015, 2016].

Notes. Transpalaeartic species with easternmost record from Japan, introduced to the Nearctic [Schülke, 2012a; Schülke, Smetana, 2015]. Occurs under tree bark, in rotten wood and leaf litter [Schülke, 2012a]. In PSER recorded from Crimea to the Volga River basin with some gaps.

Tachinus (Tachinus) bipustulatus (Fabricius, 1792)
(Fig. 12N)

Records. Samara Region ? [Goreslavets et al., 2002]; Rostov Region [Khachikov, 2017].

Notes. Transpalaeartic species with easternmost record from Japan [Schülke, 2012a; Schülke, Smetana, 2015]. Saproxyllic species, inhabits decaying organics and bird nests [Fowles et al., 1999; Schülke, 2012a]. In PSER recorded from Rostov Region. In Samara Region recorded from Samarskaya Luka next to PSER and from other non-specified localities.

[? *Tachinus corticinus* Gravenhorst, 1802]

Notes. Transpalaeartic species with easternmost record from Japan, introduced to the Nearctic [Schülke, 2012a; Schülke, Smetana, 2015]. Prefers open landscapes, inhabits litter and decaying rotting organics [Schülke, 2012a]. Never unambiguously recorded from PSER; here included because of the indefinite records from "Caucasus" [Fauvel, 1875a; Ganglbauer, 1895; Luze, 1900; Horion, 1967] which need clarification.

Tachinus discoideus Erichson, 1839

Records. Crimea Republic [Gusarov, 1989]; Kalmykia Republic [Khachikov, 1998a]; Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets, 2014]; Volgograd Region [Grebennikov, 2002a; Makarov et al., 2009].

Notes. Ponto-Mediterranean, distributed from Central Europe to the Caucasus and Middle Asia [Schülke, 2012a; Schülke, Smetana, 2015]. Rare; biology is poorly known, but recorded from leaf litter [Grebennikov, 2002a; Schülke, 2012a]. In PSER recorded from several regions, in Crimea recorded from lowlands and foothills.

[*Tachinus elongatus* Gyllenhal, 1810]
(Fig. 12O)

Records. Samara Region ? [Goreslavets et al., 2002].

Notes. Holarctic species, distributed from England and France to China, the Russian Far East and Japan [Schülke, 2012a; Schülke, Smetana, 2015]. In Central

Europe primarily prefers mountains but can be found in lowlands; inhabits humid biotopes: litter, moss, compost, fungi [Schülke, 2012a]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level. Also known from unspecified records from "Caucasus" [Horion, 1967].

[? *Tachinus fimetarius* Gravenhorst, 1802]

Notes. Widespread from Portugal to China [Schülke, 2012a; Schülke, Smetana, 2015]. Occurs on plants, especially on flowering bushes [Schülke, 2012a]. Never unambiguously recorded from PSER, records from "Caucasus" [Luze, 1900; Ullrich, 1975a] need clarification.

[? *Tachinus humeralis* Gravenhorst, 1802]

Notes. Distributed from Western Europe to the Caucasus and Near East [Schülke, 2012a; Schülke, Smetana, 2015]. In the Caucasus and Asia Minor represented by the subspecies *T. h. marginicollis* Kolenati, 1846. Inhabits decaying organics [Schülke, 2012a]. Never unambiguously recorded from PSER; included here because of unclear records from "Caucasus" [Horion, 1967; Ullrich, 1975a].

Tachinus laticollis Gravenhorst, 1802

Records. Rostov Region [Khachikov, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2021]; Stavropol Region [Khachikov, 1998a].

Notes. Widespread in Europe and the Caucasus, reaches Turkey, Siberia, Middle Asia, Mongolia and China [Schülke, 2012a; Schülke, Smetana, 2015]. Found in reed beds, mole nests, fungi *Russula* and *Pleurotus calyptratus* [Nowosad, 1990; Krasutsky, 1995; Krasutskiy, 1997; Owen, 1997]. In PSER recorded from Rostov and Samara regions. Adjacent to PSER records come from Kislovodsk in Stavropol Region.

[*Tachinus lignorum* (Linnaeus, 1758)]

Records. Samara Region ? [Goreslavets et al., 2002; Goreslavets, 2014].

Notes. Widespread in Europe, also known from Algeria, Turkey and West Siberia [Schülke, 2012a; Schülke, Smetana, 2015]. Inhabits decaying organics [Schülke, 2012a]. In Samara Region known only from Samarskaya Luka. We are not certain if other records from Samara Region belong to PSER because they lack geographic details within the region level.

[?! *Tachinus marginatus* (Fabricius, 1792)]

Records. Krasnodar Region ? [Horion, 1967].

Notes. Transpalaeartic species with easternmost records from China and the Russian Far East [Ryabukhin, 1999; Schülke, 2012a; Schülke, Smetana, 2015]. Rare; occurs in forests and flood plains, inhabits litter, decaying mushrooms, rotten grass, excrements and carrion [Ryabukhin, 1999]. The presumed PSER record from Horion [1967] from Krasnodar Region is vaguely indicated

on a distribution map without exact locality data; it needs taxonomic verification.

[*Tachinus marginellus* (Fabricius, 1781)]

Records. Krasnodar Region ? [Schülke, 2019b]; Samara Region ? [Goreslavets et al., 2002; Goreslavets, 2014, 2021]; Stavropol Region ? [Khachikov, 1998a].

Notes. Comprises three subspecies altogether distributed throughout Europe to East Siberia: *T. m. marginellus* (Fabricius, 1781) is widespread in Western, Central and northern part of Southern Europe with easternmost record from Baltic area and Ukraine; *T. m. angelinii* Schülke, 1996 is confined to Italy; and *T. m. rufulus* J. Sahlberg, 1876 is known from Scandinavia, as well as Russia and Kazakhstan up to East Siberia. Eurytopic; inhabits litter, occurs on mushrooms and dung [Schülke, 2019b]. We are not certain if records from Samara Region belong to PSER because they lack geographic details within the region level. Based on distribution, there records must belong to *T. m. rufulus*. This subspecies is also known next to PSER from Krasnodar Region, from high altitude, and from Kislovodsk town in Stavropol Region.

[? *Tachinus pallipes* (Gravenhorst, 1806)]

Notes. Transpalaeartic species with easternmost records from the Far East and China, introduced to the Nearctic [Ryabukhin, 1999; Schülke, 2012a; Schülke, Smetana, 2015]. Inhabits litter, decaying plants, dung, rotten mushrooms [Ryabukhin, 1999]. Never unambiguously recorded from PSER; old records from “Caucasus” [Hochhuth, 1849; Horion, 1967] need revision.

[? *Tachinus proximus* Kraatz, 1855]

Notes. Distributed from Western Europe to Siberia, in the north prefers plains, in the south higher elevations [Schülke, 2012a; Schülke, Smetana, 2015]. Inhabits mostly decaying organics [Schülke, 2012a]. Never unambiguously recorded from PSER, record from “Caucasus” [Horion, 1967] needs revision.

[?! *Tachinus punctipennis* (Sahlberg, 1876)]

Records. Samara Region ? [Luze, 1900].

Notes. Known from Finland, European Russia and East Siberia, Mongolia and China, also from Turkey and Armenia [Schülke, Smetana, 2015]. Biology is unknown. A single record from “Samara” comes from an old publication and needs verification.

Tachinus rufipes (Linnaeus, 1758)

Records. Crimea Republic [Ullrich, 1975b; Gusarov, 1989]; Krasnodar Region [Khachikov, 1998a]; Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014]; Stavropol Region [Khachikov, 1998a; Gorkavaya, 2017a]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a].

Notes. Transpalaeartic with easternmost record from the Russian Far East, introduced to the Nearctic

[Ryabukhin, 1999; Schülke, Smetana, 2015]. Inhabits moist litter and decaying organics [Ryabukhin, 1999; Schülke, 2012a]. In PSER recorded from several regions west to the Volga River basin.

Tachinus subterraneus (Linnaeus, 1758)

Records. Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002].

Notes. Transpalaeartic species with easternmost record from the Russian Far East; introduced to the Nearctic [Ullrich, 1975b; Schülke, 2012a; Schülke, Smetana, 2015]. Inhabits decaying organics, compost and tree sap, also found in caves and in nests of small mammals [Schülke, 2012a]. In PSER recorded from Rostov and Samara regions. Old Records from “Caucasus” [Horion, 1967; Ullrich, 1975b] need clarification.

Tachyporus abdominalis (Fabricius, 1781)

Records. Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2016b]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2002a].

Notes. Holarctic species, known from Europe to the Far East in Eurasia and from North America [Schülke, Smetana, 2015]. Prefers wetlands, especially leaf litter of ravine and floodplain forests [Schülke, 2012a; Khachikov, 1998a, 2017]. In PSER recorded from Rostov, Samara and Volgograd regions.

Tachyporus chrysomelinus (Linné, 1758)

Records. Astrakhan Region [Khachikov, 1998a; Grebennikov, 2002a]; Rostov Region [Khachikov, 1998a, 2017]; Samara Region [Goreslavets, 2004, 2014, 2016b]; Stavropol Region [Pushkin, Maksimova, 2014; Pyskhin, Minav, 2015; Pushkin, 2015, 2016; Gorkavaya, 2017a]; Volgograd Region [Khachikov, 1998a; Grebennikov, 2002a; Makarov et al., 2009].

Notes. Transpalaeartic, distributed from Europe including European part of Russia to the Russian Far East and China [Schülke, Smetana, 2015]. Prefers open landscapes where it can be found in grass litter but also occur in moss in woodlands [Schülke, 2012a]. In PSER recorded in several regions.

Tachyporus formosus (Gravenhorst, 1806)

Records. Crimea Republic [Gusarov, 1989]; Rostov Region [Khachikov, 1998a, 2017]; Volgograd Region [Grebennikov, 2002a].

Notes. Known in Europe including European Russia [Schülke, Smetana, 2015]. Eurytopic, usually found in leaf litter of ravine and floodplain forests [Khachikov, 1998a, 2017]. In PSER known from Crimea Republic, Rostov and Volgograd regions.

Tachyporus hypnorum (Fabricius, 1775)
(Fig. 12K)

Records. Crimea Republic [Gusarov, 1989]; Dagestan Republic [Khachikov, 1998a]; Kalmykia Republic

[Khachikov, 1998a]; Krasnodar Region [Khachikov, 1998a]; Orenburg Region [Nagumanova, 2005b, 2006]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2016b]; Saratov Region [Sazhnev et al., 2017]; Stavropol Region [Khachikov, 1998a].

Notes. Widespread from Europe to West Siberia and Middle Asia [Schülke, Smetana, 2015]. Can be found mostly in open biotopes, in ground-based debris and in leaf litter of ravine and floodplain forests. [Schülke, 2012a; Khachikov, 1998a, 2017]. In PSER nearly everywhere.

[? *Tachyporus lederi* Luze, 1901]

Notes. Known only from the original description based on a single male specimen from an unspecified locality in "Caucasus" [Luze, 1901b; Schülke, Smetana, 2015]. Bionomics is unknown. No unambiguous records from PSER.

Tachyporus nitidulus (Fabricius, 1781)

Records. Crimea Republic [Gusarov, 1989]; Dagestan Republic [Khachikov, 1998a]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 1998a, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2016b]; Saratov Region [Sazhnev et al., 2017]; Stavropol Region [Khachikov, 1998a; Pushkin, Maksimova, 2014; Pushkin, Minav, 2015]; Volgograd Region [Kirschenblat, 1936; Khachikov, 1998a; Grebennikov, 2002a; Makarov et al., 2009].

Notes. Cosmopolitan, known from almost all continents [Schülke, Smetana, 2015]. Found mostly in open habitats, usually in leaf litter and on vegetation [Schülke, 2012a]. In PSER nearly everywhere except east from Volgograd Region.

Tachyporus obtusus (Linné, 1767)
(Fig. 12Q)

Records. Samara Region [Goreslavets et al., 2002; Goreslavets, 2002, 2014]; Volgograd Region [Grebennikov, 2002a].

Notes. Distributed from Europe to East Siberia [Schülke, Smetana, 2015]. Prefers open landscapes and usually can be found in moss and litter, also on vegetation [Schülke, 2012a]. In PSER recorded only from Samara and Volgograd regions.

Tachyporus pulchellus Mannerheim, 1843

Records. Samara Region [Goreslavets, 2002, 2004].

Notes. Distributed from Europe to the Russian Far East [Schülke, Smetana, 2015]. Found on plains in wetlands, but also at banks of water bodies, on moors and in moss [Schülke, 2012a]. In PSER recorded only from Krasnosamarskiy forest in Samara Region.

Tachyporus pusillus Gravenhorst, 1806

Records. Crimea Republic [Gusarov, 1989]; Rostov Region [Khachikov, 1998a, 2017]; Samara Region

[Goreslavets, 2002, 2004]; Volgograd Region [Grebennikov, 2002a].

Notes. Distributed from Europe to East Siberia, occurs in the Caucasus, North Africa, Middle Asia and the Oriental region [Schülke, Smetana, 2015]. Mainly in the plains, rarely in higher elevations [Schülke, 2012a]. In PSER recorded from Crimea Republic, Rostov and Volgograd regions.

Tachyporus scitulus Erichson, 1839

Records. Samara Region [Goreslavets, 2004, 2014, 2016b].

Notes. Widespread from Europe to the Russian Far East; also, in Middle Asia [Schülke, Smetana, 2015]. In open landscapes, often on lawns [Schülke, 2012a]. In PSER recorded only from Krasnosamarskiy forest and unspecified localities in Samara Region.

Tachyporus solutus Erichson, 1839

Records. Crimea Republic ? [Gusarov, 1989]; Samara Region [Goreslavets, 2004, 2014]; Saratov Region ? [Sazhnev, Mironova, 2019]; Stavropol Region ? [Khachikov, 1998a].

Notes. Widespread West Palaearctic species which occurs in ground-based plant debris and on vegetation [Schülke, 2012a; Schülke, Smetana, 2015]. In PSER reported from Krasnosamarskiy forest in Samara Region. Also recorded from a number of unspecified localities in Samara and Saratov regions. The Volga River basin. In Crimea Republic and Stavropol Region reported from the foothills.

[*Tachyporus tersus* Erichson, 1839]

Records. Samara Region ? [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2016b, 2021].

Notes. Known from Europe including European Russia and from West Siberia [Schülke, Smetana, 2015]. Prefers humid biotopes from lowlands to higher elevations [Schülke, 2012a]. We are not certain if the record from Samara Region belongs to PSER because it lacks geographic details within the region level.

Tachyporus transversalis Gravenhorst, 1806

Records. Samara Region [Goreslavets, 2004, 2014].

Notes. Distributed in Europe including European Russia; introduced to North America [Schülke, Smetana, 2015]. In wet habitats like moors and swamps, on water bodies banks, in moss and wet litter [Schülke, 2012a]. In PSER recorded only from Krasnosamarskiy forest. We are not certain if another record from Samara Region belongs to PSER because it lacks geographic details within the region level.

Subfamily Xantholininae

Allolinus laeviusculus (Solsky, 1864)

Records. Volgograd Region [Solsky, 1864; Reitter, 1908b; Coiffait, 1972 after Solsky, 1864].

Notes. Described from “Sarepta” (presumably Volgograd); the number and sex of type material not specified [Solsky, 1864]; no additional material has been reported. Identity and distribution of this species needs clarification.

Gauropterus fulgidus (Fabricius, 1787)
(Fig. 18L)

Records. Crimea Republic [Gusarov, 1989]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 2017]; Samara Region [Goreslavets, 2002, 2004, 2014; Goreslavets et al., 2002]; Volgograd Region [Grebennikov, 2015].

Notes. Holarctic species, not common at the northern parts of the distribution area; in Russia stretches from the European part to East Siberia [Assing, 2012b; Bordoni, 2017]. In Central Europe (only in the southern regions) occurs in various humid ground-based debris from decaying organics in forests to the banks of rivers [Assing, 2012b]. In PSER repeatedly recorded from regions westward to the Volga River basin.

Gauropterus sanguinipennis (Kolenati, 1846)

Records. Krasnodar Region [Solodovnikov, 1998; Bordoni, 2011, 2017]; Samara Region [Bordoni, 2017].

Notes. Confined to the countries of the Caucasus region and Middle East [Assing, 2009g; Özgen, 2017]; in Russia recorded only from the foothills and higher elevations of the Caucasus mountains [Solodovnikov, 1998]. Biology is poorly known but recorded from the banks of rivers and at the high elevations [Solodovnikov, 1998; Assing, 2009g]. In PSER known from the plains and forested areas of Krasnodar Region. Adjacent to PSER record from Samara is questionable.

Gyrophypnus angustatus Stephens, 1833
(Fig. 18S)

Records. Crimea Republic [Gusarov, 1989]; Dagestan Republic [Bordoni, 2011]; Krasnodar Region [Solodovnikov, 1998; Bordoni, 2011]; Rostov Region [Minoranskiy, Lomakin, 1978; Bordoni, 2011; Khachikov, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2014, 2016b; Bordoni, 2017]; Volgograd Region [Grebennikov, 2002a].

Notes. Transpalaeartic eurytopic species introduced to North America [Smetana, 1982; Assing, 2012b]; in Russia occurs from European part to East Siberia [Shavrin et al., 1999]. Repeatedly recorded from PSER, from Crimea to the Volga River.

[?! *Gyrophypnus atratus* Heer, 1839]

Records. Rostov Region ? [Minoranskiy, Lomakin, 1978].

Notes. West Palaeartic myrmecophilous species [Assing, 2012b; Schülke, Smetana, 2015] with easternmost records from European Russia [Schülke, Smetana, 2015] and Kazakhstan [Kascheev, 1999]. Apparently myrmecophagous, usually associated with *Formica*, rarer with *Lasius* [Janák, Vysoký, 1992; Assing, 2012b]. The only old record from PSER, from Rostov Region, needs verification.

Gyrophypnus fracticornis (O. Müller, 1776)

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998; Bordoni, 2017]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 2017]; Saratov Region [Sazhnev et al., 2019a]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2001b].

Notes. Widespread Palaearctic species introduced to Nearctic, Neotropical and Australian regions [Smetana, 1982; Assing, 2012b]; in Russia widespread from European part to Siberia [Shilov, 1975; Pavlov, 2005]. Inhabits various decaying debris, dung and carrion [Assing, 2012b; Gusarov, 1989]. In PSER recorded from Crimea to the Volga River basin.

[?! *Gyrophypnus ochripennis* Eppelsheim, 1892]

Records. Rostov Region ? [Bordoni, 2011].

Notes. Distributed in Middle Asia and Mongolia [Schülke, Smetana, 2015]; Coiffait [1972] in general distribution note mentioned it from southern territory of Russia. Biology is poorly known [Smetana, 1975]. In PSER recorded only from Rostov-on-Don in Rostov Region, which is rather remote from the known distribution of this species, requires verification.

Hypnogyra angularis (Ganglbauer, 1895)

Records. Rostov Region [Bordoni, 2011].

Notes. Distributed throughout the West Palaeartic, also recorded from Japan [Assing, 2012b; Shibata, 1974]. In Russia known only from its Central and South European parts [Horion, 1965; Bordoni, 2011]. Saproxyllic, usually associated with decaying wood, usually co-occurs with *Nudobius lentus* [Fowles et al., 1999; Assing, 2012b]. In PSER known only from Krymskiy village in Rostov Region.

Leptacinus astrakhanicus Grebennikov, 2001

Records. Astrakhan Region [Grebennikov, 2001b].

Notes. Known only from the original description based on three male specimens collected in Dosang village in Astrakhan Region without any bionomic information [Grebennikov, 2001b].

Leptacinus batychrus (Gyllenhal, 1827)
(Fig. 18G)

Records. Crimea Republic [Gusarov, 1989]; Dagestan Republic [Bordoni, 2011]; Rostov Region [Khachikov, 2019]; Samara Region [Goreslavets, 2004]; Volgograd Region [Grebennikov, 2002a].

Notes. Cosmopolitan species; originally from, and common in, Europe [Assing, 2012b]. Inhabits forest litter, plant debris, humid habitats [Ryabukhin, 1999]. In PSER collected from several regions.

Leptacinus formicetorum Märkel, 1841

Records. Crimea Republic ? [Gusarov, 1989]; Rostov Region [Khachikov, 2019]; Samara Region [Goreslavets, 2014, 2016a, b]; Volgograd Region [Kirschenblatt, 1936].

Notes. Transpalearctic species; widespread in Central Europe, especially in its northern part [Assing, 2012b]. Inhabit in *Formica* anthills, can be found in rotten wood [Ryabukhin, 1999], dung, plant debris [Goreslavets, 2016a]. In PSER recorded from Rostov, Samara and Volgograd regions; in Crimea Republic collected from the mountains.

Leptacinus intermedius Donisthorpe, 1936

Records. Rostov Region [Khachikov, 2017].

Notes. West Palaearctic species; common in Europe, North Africa and Asia Minor [Assing, 2012b]; introduced to the Nearctic region [Smetana, 1982]. Inhabit plant debris and rotting residues [Smetana, 1982; Assing, 2012b]. In PSER recorded only from Rostov Region.

Leptacinus khachikovi Bordoni, 2011

Records. Dagestan Republic [Bordoni, 2011].

Notes. Hitherto known only from the original description [Bordoni, 2011] based on two male specimens collected in northern Dagestan in PSER: the holotype from Agachaul village near Makhachkala city and the paratype from Kochubey village. Biology is unknown.

Leptacinus othioides Baudi di Selve, 1870

Records. Crimea Republic [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 2017]; Samara Region [Goreslavets et al., 2002; Bordoni, 2017].

Notes. West Palaearctic species, but distribution is unclear because of some taxonomic confusion [Assing 2012b]; undoubtedly known from Southern Europe throughout Middle East to Mongolia [Shavrin, 2010]. Inhabit various decaying substrates [Goreslavets et al., 2002; Assing, 2012b]. In PSER recorded from several regions from Crimea to the Volga River basin.

Leptacinus pusillus (Stephens, 1833)

Records. Crimea Republic ? [Gusarov, 1989]; Volgograd Region [Grebennikov, 2002a].

Notes. Palaearctic species; distributed from the Canary Islands to West Siberia; introduced to Palearctic, Nearctic and Australian regions [Assing, 2012b; Schülke, Smetana, 2015]. Inhabit rotting residues [Assing, 2012b]. In PSER known only from Volgograd Region. Adjacent to PSER record from Crimea comes from foothills and mountains.

[? *Leptacinus rufonitens* Coiffait, 1966]

Notes. Known only from the original description from "Caucasus" without any bionomic details [Coiffait, 1966a]. Species identity needs clarification.

Leptacinus stradomskyi Khachikov, 2019

Records. Rostov Region [Khachikov, 2019].

Notes. Known only from the original description based on material from PSER, from Rostov Region collected in the burrows of marmots.

Leptacinus sulcifrons (Stephens, 1833)

Records. Astrakhan Region [Grebennikov, 2002a]; Crimea Republic [Gusarov, 1989]; Dagestan Republic [Bordoni, 2011]; Krasnodar Region [Solodovnikov, 1998; Bordoni, 2011, 2017]; Orenburg Region [Bordoni, 2017]; Rostov Region [Minoranskiy, Lomakin, 1978; Bordoni, 2011; Khachikov, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2014, 2016a]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread in the Palaearctic region; introduced to the Afrotropic region [Assing, 2012b; Schülke, Smetana, 2015]. Inhabit rotting residues [Assing, 2012b], dung [Gusarov, 1989; Goreslavets, 2016a], bear feces, places under stones [Solodovnikov, 1998]. In PSER recorded from Crimea to Orenburg Region with a gap in Saratov Region. Also found in the adjacent foothills or mountains in Crimea and the North-Western Caucasus.

Nudobius lentus (Gravenhorst, 1806)
(Fig. 18N)

Records. Samara Region [Goreslavets et al., 2002; Goreslavets, 2004; Bordoni, 2017]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2001b].

Notes. Widespread Transpalearctic species distributed from Europe to the Russian Far East [Ryabukhin, 1999; Assing, 2012b]; in Russia common, known throughout all territory [Horion, 1965; Ryabukhin, 1999]. Usually occurs under bark of mostly coniferous trees, known as predator of bark beetles and other xylophagous insects [Ryabukhin, 1999]. In PSER recorded only from Volgograd and Samara regions.

Nudobius umbratus (Motschulsky, 1860)

Records. Crimea Republic ? [Gusarov, 1989]; Krasnodar Region [Solodovnikov, 1998; Bordoni, 2017].

Notes. Southeastern European mostly mountainous species [Solodovnikov, 1998; Schülke, Smetana, 2015]. Usually occurs under tree bark [Gusarov, 1989; Aiydov, 2014]. In PSER known only from the Azov-Kuban plain in Krasnodar Region [Solodovnikov, 1998]. Records from Crimea and some from Krasnodar Region come from the foothills and higher up in the mountains.

[*Othius grandis* Hochhuth, 1849]

Records. Crimea Republic ? [Reitter, 1908a]; Krasnodar Region ? [Solodovnikov, 1998]; Stavropol Region ? [Khachikov, 1998a].

Notes. Caucasian species extended into northeast of Turkey [Assing, 1997b; Schülke, Smetana, 2015]. Occurs in various types of biotopes, in forest litter, under stones, on the shores of water bodies and salt marshes from foothills to 1200–3000 m of elevation in the mountains [Assing, 1997b; Solodovnikov, 1998]. Records from Krasnodar and Stavropol regions comes mostly from foothills and mountainous areas, however, the species comes very low to the adjacent plains of PSER. An old record from Crimea apparently is based on the misidentification of *O. punctulatus* (Goeze, 1777).

[Othius laeviusculus Stephens, 1833]

Records. Dagestan Republic ? [Assing, 1997b]; Stavropol Region ? [Assing, 1997b].

Notes. Widespread in the West Palaearctic from North Africa and Northwestern Europe westward to Iran [Assing, 2005d; Schülke, Smetana, 2015]. Reported from various altitudes, from plains to up to 2800 m in the mountains [Assing, 1997b]. Thermophilic, prefers open landscapes, especially grasslands and humid habitats [Assing, 1997b, 2012b]. Nearby PSER recorded only from Stavropol Region, from foothills of the North Caucasus. Record from Dagestan lacks geographic precision.

Othius punctulatus (Goeze, 1777)

Records. Crimea Republic [Gusarov, 1989; Assing, 1999b, 2005d]; Rostov Region [Khachikov, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004]; Saratov Region [Sazhnev et al., 2017]; Stavropol Region [Gorkavaya, 2017a]; Volgograd Region [Grebennikov, 2002a].

Notes. Widespread in the West Palaearctic with the easternmost records from Middle East and West Siberia [Schülke, Smetana, 2015]. Eurytopic, but prefers leaf litter in forested landscapes [Assing, 2012b]. In PSER recorded from Crimea Republic, Rostov and Stavropol regions in the west and from the Volga River basin; absent in Ciscaucasia.

Phacophallus pallidipennis (Motschulsky, 1858)

Records. Astrakhan Region [Khachikov, 2018c].

Notes. Widely distributed in the East Palaearctic, also known from Nearctic and Oriental regions, introduced to Europe and North Africa [Assing, 2012b; Schülke, Smetana, 2015]. Usually occurs in compost [Assing, 2012b]. First record from PSER, which is at the same time the only record of this species in Russia, comes from Rassvet village in Astrakhan Region [Khachikov, 2018].

Phacophallus parumpunctatus (Gyllenhal, 1827)
(Fig. 18Q)

Records. Crimea Republic [Gusarov, 1989]; Dagestan Republic [Bordoni, 2011; Khachikov, 2018c]; Krasnodar Region [Solodovnikov, 1998]; Rostov Region [Khachikov, 2017, 2018c].

Notes. Cosmopolitan, more common in the West than East Palaearctic where apparently it is replaced by *P. pallidipennis*; introduced to the Nearctic [Assing, 2012b; Schülke, Smetana, 2015]. Synanthropic, usually occurs in compost and various rotten organics [Gusarov, 1989; Assing, 2012b]. In PSER collected from several western regions.

[?! *Stenistoderus caucasicus* (Fleischer, 1914)]

Notes. Known only from the original description based on a single specimen of unspecified sex from "Kaukasischem Bestimmungsmaterial" [Fleischer, 1914: 144]. The identity of the species needs verification.

Stenistoderus cephalotes (Kraatz, 1858)

Records. Krasnodar Region [Ushakov, 1988; Solodovnikov, 1998].

Notes. Mediterranean species widespread to the Middle East and the Caucasus [Coiffait, 1966b; Assing, 2012b]; biology is unknown, but recorded from open landscapes around water bodies [Solodovnikov, 1998]. In PSER recorded only from the Azov-Kuban plain in Krasnodar Region.

Stenistoderus nothus (Erichson, 1839)

Records. Volgograd Region [Stierlin, 1867].

Notes. Distributed from Southern Europe and North Africa to South territory of Russia and Iraq, also recorded from Japan [Assing, 2012b; Schülke, Smetana, 2015]. Biology is poorly known but recorded as a hygrophilous species, confined to swampy banks and floodplains rich in plant organics [Bordoni, 1995]; recorded from lowlands to higher elevations (up to 1430 m) [Assing, 2010a]. In PSER known from a single record from "Sarepta" (presumably in Volgograd Region) from the original description of its junior synonym *Lathrobium sareptanus* [Stierlin, 1867].

Stenistoderus versicolor Solsky, 1871

Records. Astrakhan Region [Solsky, 1871; Bordoni, 2017]; Crimea Republic [Gusarov, 1989; Bordoni, 2017]; Rostov Region [Bordoni, 2011; Khachikov, 2017]; Krasnodar Region [Solodovnikov, 1998; Bordoni, 2017]; Volgograd Region [Grebennikov, Komarov, 1998; Grebennikov, 2001b; Makarov et al., 2009].

Notes. Widespread in Southeastern Europe, Georgia, Middle Asia and Middle East [Schülke, Smetana, 2015]. Described from Astrakhan Region [Solsky, 1871]. In PSER rather widespread; occurs mostly at open landscapes. In Crimea and the North-Western Caucasus also can be found in the mountain foothills [Gusarov, 1989; Solodovnikov, 1998].

Xantholinus audrasi Coiffait, 1956

Records. Crimea Republic [Gusarov, 1989; Bordoni, 2017]; Dagestan Republic [Bordoni, 2011]; Krasnodar Region [Solodovnikov, 1998; Knysh, Solodovnikov, 2004; Bordoni, 2017]; Samara Region [Bordoni, 2017]; Rostov Region [Bordoni, 2017; Khachikov, 2017].

Notes. Distributed from Northern and Western Europe to Middle Asia [Schülke, Smetana, 2015; Assing, 2019e]. Often identified incorrectly [Assing, 2019e]. Inhabits forests: in litter, under roots, stones, near water [Assing, 2012b]. In PSER recorded from several western regions, in Crimea Republic and Krasnodar Region occurs from plains to foothills.

Xantholinus distans Mulsant et Rey, 1853

Records. Crimea Republic ? [Gusarov, 1989]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2016a, b]; Volgograd Region [Grebennikov, 2002a; Makarov et al., 2009].

Notes. According Assing [2012b], the species has Atlanto-Mediterranean distribution type, but the distribution needs clarification. In litter, near water, in glassy biotopes, in the north of its distribution occur in warmer places [Assing, 2012b]. In PSER recorded along the Volga River basin. Adjacent to PSER records from Crimea comes from foothills.

Xantholinus dvoraki Coiffait, 1956
(Fig. 18P)

Records. Rostov Region [Bordoni, 2011, 2017]; Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2014, 2016a; Bordoni, 2017]; Stavropol Region [Bordoni, 1975]; Volgograd Region [Grebennikov, 2002a].

Notes. Distributed from Central Europe to Asia Minor, Middle Asia and West Siberia [Assing, 2012b; Schülke, Smetana, 2015]. Rare; inhabits unforested landscapes, humid meadows and shores of water bodies [Assing, 2012b]. In PSER recorded from several regions.

Xantholinus fortepunctatus Motschulsky, 1860

Records. Crimea Republic [Gusarov, 1989; Bordoni, 2017]; Krasnodar Region [Solodovnikov, 1998; Bordoni, 2017]; Rostov Region [Bordoni, 2011, 2017; Khachikov, 2017]; Volgograd Region [Grebennikov, 2002a].

Notes. Distributed from eastern Central Europe throughout the Caucasus and Asia Minor to Middle Asia [Assing, 2012b; Anlaş, 2014; Schülke, Smetana, 2015]. Inhabits litter; known as herpetobionic [Aiydov, 2015]. In PSER recorded from several regions west from the Volga River basin.

[? *Xantholinus haematodes* Kolenati, 1846]

Records. Dagestan Republic ? [Bordoni, 1975].

Notes. Distributed in Azerbaijan and Southern Territory of Russia (ST) [Schülke, Smetana, 2015]. Biology is unknown. Old records with unspecified localities from "Caucasus" [Coiffait, 1972] and Dagestan [Bordoni, 1975] which probably formed the base for the ST record in Schülke and Smetana [2015] need verification. Never unambiguously recorded from PSER.

[*Xantholinus laevigatus* Jacobsen, 1849]
(Fig. 18O)

Records. Krasnodar Region ? [Bordoni, 1975; Solodovnikov, 1998]; Samara Region ? [Goreslavets et al., 2002; Bordoni, 2017].

Notes. Distributed from France, British Islands and Scandinavia to Asia Minor and West Siberia [Assing, 2012b; Schülke, Smetana, 2015]. Inhabits forest litter, also can be found in open landscapes [Assing, 1993, 2012b]. Bordoni [1975] described *X. hochhuthi* from Krasnaya Polyana (Krasnodar Region), but later [Bordoni, 2017] synonymized it with *X. laevigatus*. Recorded next to PSER from Tolyatti city in Samara Region and from the North-Western Caucasus foothills or mountains in Krasnodar Region. Some records from Samara Region are not specified and may also come outside PSER.

[*Xantholinus linearis* (Olivier, 1795)]
(Fig. 18R)

Records. Samara Region ? [Goreslavets et al., 2002; Goreslavets, 2004, 2014; Bordoni, 2017].

Notes. Transpalaeartic species, in Russia reaches East Siberia and the Far East; introduced to the Nearctic; common in Central Europe [Assing, 2012b; Schülke, Smetana, 2015; Bordoni, 2017]. Eurytopic; inhabits mostly unforested landscapes, can be found in anthropogenic biotopes [Assing, 2012b]. We are not certain if records from Samara Region belong to PSER because they lack geographic details within the region level.

Xantholinus longiventris Heer, 1839

Records. Crimea Republic ? [Bordoni, 2017]; Rostov Region [Minoranskiy, Lomakin, 1978; Bordoni, 2017].

Notes. Widespread in the Palaearctic; introduced to the Nearctic; common in Central Europe [Assing, 2012b; Schülke, Smetana, 2015]. Eurytopic, prefers humid habitats; found in forests and agricultural areas [De Kesel, 1998; Assing, 2012b]. In PSER recorded only from Rostov Region. Records from Crimea Republic come from the mountains; old record from "Caucasus" [Hochhuth, 1849] needs clarification.

[? *Xantholinus maykopensis* Coiffait, 1966]

Records. Krasnodar Region [Solodovnikov, 1998; Knysh, Solodovnikov, 2004].

Notes. Distributed in the North-Western Caucasus and Georgia [Schülke, Smetana, 2015; Anlaş, 2019b]; described from around Maykop town in the West Caucasus [Coiffait, 1966b]. Montane species that inhabits leaf litter, plant debris or dung at various altitudes [Solodovnikov, 1998]. Bordoni [2011] designated a neotype from Krasnodar Region, near Krasnaya Polyana (1200 m). In PSER recorded only from Krasnodar Region, from forest patches at lowlands. In view of the latest taxonomic work of Bordoni [2011], identity of the specimens recorded from PSER as *X. maykopensis* become unclear, pending a more thorough revision of *Xantholinus*.

Xantholinus procerus Erichson, 1839

Records. Samara Region [Goreslavets, 2016a]; Stavropol Region ? [Assing, 2007e].

Notes. Distribution poorly known due to the history of taxonomic confusion, but unambiguously known from Poland, Romania, Albania, Bosnia Herzegovina, Ukraine, Turkey and the Caucasus [Assing, 2007e; Merkl et al., 2011; Schülke, Smetana, 2015; Wojas, 2016]. Rare; occurs under stones near water [Merkl et al., 2011]. In PSER recorded only from Krasnosamarskiy forest in Samara Region. Adjacent to PSER record come from the Caucasus foothills in Stavropol Region.

Xantholinus tricolor (Fabricius, 1787)

Records. Krasnodar Region ? [Bordoni, 2017]; Rostov Region [Minoranskiy, Lomakin, 1978; Khachikov, 2017];

Samara Region [Goreslavets et al., 2002; Goreslavets, 2004, 2016b]; Volgograd Region [Grebennikov, 2002a].

Notes. Common in Central Europe, distributed from France to Turkey, Tajikistan and Siberia [Assing, 2012b; Babenko, Nuzhnyh, 2014; Schülke, Smetana, 2015]. In Central Europe inhabits forested and unforest areas, prefers sandy and acid soil; can be confused with *X. distans* [Assing, 2012b]. In PSER recorded from Rostov Region and along the Volga River basin. Adjacent record comes from the town Betta in the foothills of the North-Western Caucasus near the Black Sea coast in Krasnodar Region.

Xantholinus samarensis Bordoni, 2017

Records. Samara Region [Bordoni, 2017].

Notes. Described and hitherto known from five male specimens collected in Siniy Syrt hills and Abdul-Zavod village in Pokhvistnevo District in Samara Region in PSER [Bordoni, 2017]. Biology is unknown.

Xantholinus variabilis Hochhuth, 1851

Records. Dagestan Republic [Bordoni, 2011]; Krasnodar Region [Khachikov et al., 2021]; Rostov Region [Khachikov et al., 2021].

Notes. Distributed in Southern Russia, Georgia, Turkey, Armenia and Azerbaijan [Schülke, Smetana, 2015; Assing, 2019e]. Can be found at foothills and mountains [Assing, 2019e]. In PSER recorded from Krasnodar and Rostov regions in the west, and from northern Dagestan.

[*Zeteotomus scripticollis* (Hochhuth, 1849)]

Records. Krasnodar Region [Solodovnikov, 1998; Bordoni, 2017].

Notes. Described from Georgia, reported from Azerbaijan, South European territory of Russia, Hungary and Serbia [Schülke, Smetana, 2015]. Biology is poorly known, but recorded from cavities of the wood and under the bark [Hochhuth, 1849; Solodovnikov, 1998]. In PSER reported only from the forests in the plains in Krasnodar Region, where it is also found at higher elevations.

Discussion

Summing up all literature, we compiled an annotated catalogue of 874 species of Staphylinidae relevant for the study region. Of them, 642 species are those that are reliably recorded for PSER, i.e. they form the core of this fauna. Most of these core species are more or less widespread in the Palaearctic region and in PSER where they are found across various administrative regions. For example, *Oxytelus piceus* is a Transpalearctic species recorded nearly everywhere in PSER. *Philonthus longicornis* is a cosmopolitan species, in PSER recorded from Crimea to the Volga River basin. *Stenus ater* is a widespread West Palaearctic species with the easternmost records from Middle Asia, in PSER recorded only in the western part, from Crimea Republic through Krasnodar Region to Rostov Region. Some species in this category are clearly thermophilic and characteristic for areas like

PSER. One such example, *Achenium depressum*, is a South European species repeatedly recorded across PSER with the easternmost record from Orenburg Region. Another thermophilic species, *Throbalium kochi* is distributed in the Transcaucasus and South European Russia, in PSER recorded from Crimea Republic to the Volga River basin. Some of the species, not always as widespread, were described from PSER. Their examples are: *Aleochara parvicornis* described from “Sarepta” (presumably in Volgograd Region) and currently known from Armenia, West Siberia, and Mongolia; *Throbalium komarovi* described from Dosang village in Astrakhan Region and later recorded from Turkmenistan; *Brachygluta retowskii* described from Feodosia in Crimea Republic and currently known from Southern and Eastern Europe including Saratov Region in PSER, and from Georgia.

Ninety one species are found as potentially expected in PSER because they are reliably recorded only from the borderlines with PSER. For example, the Transpalearctic *Aleochara lata* is known only from the foothills of the North Caucasus in Stavropol Region. Given its biology, however, this species is likely to be more widespread in PSER. *Phloeonomus minimus*, a species distributed in Central and Southern Europe and also recorded from the Far East, is found next to PSER around Gelendzhik near the Black Sea coast in Krasnodar Region. It is included in our PSER list because such widespread species found in the westernmost foothills area of the Caucasus, are also found in the adjacent plains. *Carpelimus blinsteini*, a species described from the bank of lake Sivash in Kherson Region, is included in the PSER list as it is very likely to be found in similar habitats nearby in Crimea Republic. Some other species in our annotated catalogue fall in such “potentially expected in PSER” category because there is no clear data if they occur in PSER or nearby. Most of these, like for example the West Palaearctic *Euaesthetus ruficapillus*, are species recorded by Goreslavets [2014] from Samara Region without any more detailed geographic data.

Seventy species are taxonomically very poorly known or very imprecisely recorded from the areas that potentially belong to PSER. Examples of such species are *Bledius picipennis*, *Brachygluta xanthoptera* and *Philonthus laminatus*. *Bledius picipennis* is known only from the original description based on the material from an unclear locality in the Caucasus. *Brachygluta xanthoptera* is a widespread species distributed from Europe to Middle East with a single ambiguous record “Taur”, presumably meaning Crimea. *Philonthus laminatus* is a common species in Europe that reaches Turkey and is known from the Caucasus region only from a general “Caucasus” record echoed in various publications.

Finally, 71 species are likely recorded for PSER incorrectly, mainly based on misidentifications. Mostly, suspicions about wrong identifications come from the biogeographic reasons because such records are not documented with any taxonomic notes, illustrations of characters, or any other justification. For example, *Astenus cribrellus* is a poorly known species which is often confused with similar congeners. Its verified records come from Italy, France and Turkey. Thus, the only record from

Crimea Republic needs verification. *Platydomena picipes* is distributed in Southern Europe and North Africa, the Caucasus region and Near East where it occurs mainly at banks of the mountain rivers. A remote PSER record from Orenburg Region seems questionable for a species with such distribution and bionomics. *Phanerota fasciata* is a native Nearctic species, with the only record from the Palaearctic region coming from Samara Region. We consider this Palaearctic record questionable, to be verified. It should be noted that most of the apparently wrong identifications come from the papers by I. Goreslavets for Samara Region suggesting the need of a careful evaluation of his other records where misidentifications could be less obvious.

Geographically western regions of PSER such as Rostov Region, Crimea Republic and Krasnodar Region, or regions along the Volga River are studied much better than some other regions. This is largely due to the targeted projects by V. Gusarov (for Crimea) or A. Solodovnikov (Krasnodar Region) in the past and even more so due to the long-term continuing effort of local researchers like E. Khachikov (Rostov Region and surrounding areas), I. Goreslavets (Samara Region) or K. Grebennikov (the Lower Volga region). On the contrary, for big areas of PSER like Kalmykia Republic, Stavropol Region or Orenburg Region east from the Volga River basin there were neither targeted faunistic projects, nor continuing local research. For example, for the large and diverse Orenburg Region, there is only a few targeted publications [Nagumanova, 2005a, b, 2006] or single scattered records [Ryvkin, 1990; Štourač, 2000; Schülke, 2012b; Bordoni, 2017].

Taxonomically rove beetles of PSER are also explored very unevenly. There is an obvious bias towards the subfamilies Staphylininae and Paederinae, while many other subfamilies are significantly lesser explored. The most acute shortage of knowledge is for the subfamily Aleocharinae which is entirely omitted in many faunistic works for large areas ([Gusarov, 1989; Solodovnikov, 1998; Grebennikov, 2002a, b], numerous papers by E. Khachikov and others). Most of the Aleocharinae recorded in PSER or near come from the papers by I. Goreslavets, which, as discussed above, do not always appear as the most reliable. Large subfamilies Omaliinae, Oxytelinae and Tachyporinae are covered better than Aleocharinae, but also very insufficiently. Interestingly that even among the better-known groups there are obvious knowledge gaps, for example taxonomic problems to be solved in some species of Xantholininae or the *Staphylinus*-complex from Staphylininae.

With all these geographic biases and knowledge gaps, it is premature to draw macroecological patterns that characterize the rove beetle fauna of PSER. This is a task for the future, when a more balanced and detailed dataset of occurrences and local bionomics for every species everywhere becomes available. Also, much is left to be done to draw the exact distribution ranges and bionomic requirements for many species, to allow a meaningful biogeographic analysis of the fauna based on the species distribution types, a common and informative approach in large-scale studies [e.g., Akhmetova, Frolov, 2014].

A desired progression towards a more detailed snapshot of the PSER fauna and its deeper understanding

depends on the reliability of the records which we tried to sum up here. Unfortunately, only a small fraction of records from PSER come from recent taxonomic revisions where species identifications are well documented by the species concepts of the authors and where the depository of the respective specimens is also clearly indicated. Examples of such contributions are the papers on *Gyrophana* by Enushchenko and Shavrin [2011] or Enushchenko and Semenov [2016], taxonomic revisions by V. Assing on Paederinae, Xantholininae and Aleocharinae, or focused revisionary work on Oxytelinae by Gildenkova [2001, 2015]. A great majority of records we dealt with come from the generalist faunistic contributions where we have to trust an expertise of the authors. In this case, a possibility to trace and restudy exact specimens underlying certain records is critical. Since the majority of specimens on which the records from PSER are based are scattered in private collections, this may be difficult. It is only in some cases that the depository of the material examined in faunistic papers is indicated as clearly as it would be in the taxonomic papers [Gildenkova, Khachikov, 2012; Pushkin, 2015; Sazhnev et al., 2019a; Khachikov, Gontarenko, 2020, and others] or at least similarly [Grebennikov, 2001b; Kovalev et al., 2011; Pushkin, 2016, and others]. A significant amount of the faunistic literature [e.g., Nagumanova, 2005b; Goreslavets, 2016a, b, 2021] does not have any information about depositories of the examined material. At best such papers are based on the material collected and identified by the authors. But often they comprise data that come from diverse sources such as literature and various collections. In this case verification of individual records is hardly possible until the new material from these areas is examined.

Another concerning issue is that a substantial number of records were published without geographic precision. For example, the faunistic lists by Gusarov [1989] and Solodovnikov [1998] recorded species for larger natural provinces of their study regions without listing examined material. A series of papers by I. Goreslavets overall record large number of species confined to particular types of habitats for Samara Region in general, without any further geographic specification. These records do not have much value given that Samara Region alone is about as large as some of the European countries and stretches from forest to steppe zones. Therefore, one of the main aspirations of our work here is to stimulate collecting and identification of the well georeferenced material. Complemented with the DNA barcoding and specimen imaging, the identified material ideally should be registered in the publicly web available databases and deposited in the main and regional institutional collections. Such approach, yet to be propagated, will facilitate a more sustainable growth of the so hard-to-get faunistic knowledge for PSER and other areas of Russia.

Acknowledgements

We sincerely thank Prof. Andrey Tolstikov, the Head of Institute of Environmental and Agricultural Biology (X-BIO) of the University of Tyumen and a Deputy Rector at the University of Tyumen (UTMN, Russia)

who endorsed and largely supported the initiation and growth of the systematic entomology laboratory at UTMN X-BIO which made a study like that possible. We are very thankful to Evgeny Meyke (Helsinki, Finland), the Earthcape database developer for the daily support of the database and adjustments to our tasks, a resource crucial for data accumulation and analysis for this paper. We also acknowledge developers of the excellent synoptic collection of the Danish beetle fauna and the image collection of Danish Beetle Bank that turned out instrumental for the construction of generic keys and illustrating many species here, even though the faunas only partly overlap. For similar reasons special thanks go to Jan Pedersen (Copenhagen, Denmark) for bringing to our attention the draft unpublished keys for Danish Aleocharinae by late Michael Hansen. Contrary to the expectations due to faunal difference, this manuscript turned to be very useful for our key construction. Roman Dudko (Novosibirsk, Russia) kindly provided some of his landscape photos. As always, we are thankful to the staff of the Coleoptera section of the Zoological Institute of the Russian Academy of Science (St Petersburg, Russia) for the access to the Staphylinidae collection, important for this project. We are grateful to our colleagues Mikhail Gildenkov, Oleg Semionov (both from Smolensk, Russia), Eduard Khachikov (Rostov-on-Don, Russia) and György Makranczy (Budapest, Hungary) who suggested many important corrections and provided bits of useful unpublished information that led to the improvement of this manuscript after their peer review.

This paper received funding from the Russian Science Foundation (RSF) grant 20-74-00130 to MS. Development of the database for easy processing of the taxonomic and bibliographic data for this paper was supported by the RSF grant 20-14-00097.

Supplementary material: Excel file “Catalogue of Staphylinidae species of PSER” (for conventions see section “Annotated catalogue of Staphylinidae species of PSER”: <https://doi.org/10.5281/zenodo.7434753>).

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Received / Поступила: 25.04.2022

Accepted / Принята: 19.07.2022

Published online / Опубликована онлайн: 16.12.2022

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Rove beetles of the open plains of the South European Russia:

a review with the key to genera and annotated species checklist (Coleoptera: Staphylinidae)

М.А. Сальницкая, В.А. Кривошеева, К.П. Воронова, А.А. Гебремескел, А.Ю. Солодовников

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(Coleoptera: Staphylinidae)..... 3–149

Подписано в печать 15.12.2022.

Формат 60×90/8. Бумага мелованная глянцевая.

Печать цифровая. Усл. печ. л. 18,75. Тираж 60 экз.

Подготовлено и отпечатано DSM.

ИП Лункина Н.В. Св-во № 002418081. г. Ростов-на-Дону, ул. Седова, 9.

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