




An annotated checklist of Prioninae Latreille, 1802 (Coleoptera, Cerambycidae) of Lithuania

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Abstract. We present the first annotated checklist of the subfamily Prioninae Latreille, 1802 (Coleoptera, Cerambycidae) in Lithuania. At least 140 published and unpublished records of Prioninae were analyzed and collected specimens were verified. As a result, one species, *Aegosoma scabricorne* (Scopoli, 1763), was found to be new for Lithuanian fauna and three species, *Ergates faber* (Linnaeus, 1761), *Tragosoma depsarium* (Linnaeus, 1767), and *Prionus coriarius* (Linnaeus, 1758), were confirmed in the country. The information on the local occurrence, natural history, general distribution, and conservation status of these species is reviewed.

Keywords. Baltic region, distribution, longhorn beetles, species composition

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Introduction

Representatives of the subfamily Prioninae Latreille, 1802 are most remarkable longhorn beetles by their body size, usually ranging between 25 and 70 mm. This subfamily also includes some of the largest known beetles, for example *Titanus giganteus* (Linnaeus, 1771) with a body length up to 16.7 cm and *Xixuthrus heros* (Gräffe, 1868) measuring up to 15 cm. Currently, the smallest representative of this subfamily is the Neotropical *Chariea birai* Monné & Monné, 2015 with a body length of 4.2 mm in males. Adults of Prioninae species usually are brown or black body. They have the pronotum with an elevated, often spined or dentate carina on each side and the mesoscutum without a stridulatory plate (Monné et al. 2017). The larvae of most Prioninae develop in dead and decaying moist wood or roots for at least two years (Švacha 1986). The adults are usually crepuscular or nocturnal, and they either do not feed or feed only on imbibed fluids (Monné et al. 2017).

The Prioninae comprises about 1100 species distributed in all biogeographical regions but predominantly in the tropics and subtropics (Monné et al. 2017). At least 190 species in 53 genera and 10 tribes occur in Palearctic region, and the representatives of 10 species in six tribes are known in Europe (Danilevsky 2022). Only three species have been previously recorded from Lithuania (Pileckis 1960, 1976; Pileckis and Monsevičius 1997; Tamutis et al. 2011). All these species are threatened in Europe, included in the European Red List of saproxylic beetles (Cálix et al. 2018). Two of them are included in Red Data book of Lithuania: *Ergates faber* (Linnaeus, 1761), as Vulnerable since 1990 (Pileckis and Monsevičius 1992; Ferenc 2007) and as Endangered since 2021 (Ferenc 2021) and *Prionus coriarius* (Linnaeus, 1758), as rare since 2003 (Ferenc 2007) and as Endangered since 2021 (Tamutis 2021). The third species, *Tragosoma depsarium* (Linnaeus, 1767), was regarded as “very rare” in the local fauna (Pileckis and Monsevičius 1997). Despite the exceptional attention

given to listing these species as protected insects, targeted studies of their distribution in the country have not been carried out so far.

The aim of our study was a critical summarization of all published and unpublished faunistic information, with a compilation of an annotated checklist and distribution maps of the species of Prioninae that occur in Lithuania. We also considered it useful to include brief information on the biology and the general distribution of the species, as well as to comment on some of the faunistic peculiarities of the taxa.

Study Area

Lithuania is one of the eastern Baltic countries whose territory belongs to the Central European forest and mixed forest zones. It has been estimated that between the eleventh and thirteenth century forests encompassed 55% of the territory, wetlands and water bodies 23%, and agrarian landscapes 22% (Kairiūkštis 2003). These proportions have changed drastically due to an intensified human economic activity during the last century. Lithuanian forests now cover 22,022 km² or 33.8% of the country's total area (Valstybinė miškų tarnyba 2022). In south-western and central Lithuania, the dominating primeval broad-leaved forests have been almost destroyed. Most forests have been planted or are semi-natural. Agricultural lands, covering 53% of the country were formed by cutting down the forests and draining more than half of the wetlands (Kurlavičius 2010). There are no mountains in Lithuania, and the country lies in the western part of the Eastern European lowlands. However, the western and eastern parts of the country are hilly, with the highest point (294 m above sea level) in the south-east (Česnulevičius 2013).

Methods

We have included all available data on Prioninae from Lithuania in this study. Examined material is deposited in the Kaunas Tadas Ivanauskas Zoological Museum (KZM) and, Vilnius University Museum of Zoology (MZVU), Lithuanian Nature Research (NRC), Institute of Forestry, and Lithuanian Research Centre for Agriculture and Forestry (IF).

The classification used is largely as accepted in the catalogues of Palaearctic Prioninae by Drumont and Komiya (2007) and Danilevsky (2022) with some changes suggested by Kim et al (2018) and Biscaccianti (2007). The photographs of the specimens, including those posted on <https://www.inaturalist.org>, <https://macrogamta.lt/lt>, and <https://www.facebook.com>, were examined, and these observations were used here as faunistic data. The IUCN conservation status follows the IUNC Red List of saproxylic beetles (Cálix et al. 2018).

Material examined was collected or observed by Aleksandras Meržijevskis (A.M.), Alfonsas Palionis (A.P.), Algis Saulius (A.S.), Andrius Petrašiūnas (A.Pt.), Aristid Žuravliov (A.Ž.), Armandas Kazlauskas (A.K.),

Artūras Gedminas (A.G.), Artūras Pečkys, (A.Pe.), Asta Girdauskienė (A.Gi.), Bronislaw Houwald (B.H.), Borys Ogijewicz (B.O.), Česlovas Savickas (Č.S.), Daina Žeromskienė (D.Ž.), Donatas Stanionis (D.S.), Eleonora Markiewiczowna (E.M.), Evaldas Čyplys (E.Č.), Giedrius Švitra (G.Š.), Gintaras Kasiulis (G.K.), Gintautas Steiblys (G.S.), Jakaterina Golosujeva (J.G.), Judita Razanaitė (J.R.), Kazimiera Staniulisówna (K.S.), Kazimieras Martinaitis (K.M.), Linas Juozaitis (L.J.), Lineta Dargienė (L.D.), Liudas Vailionis (L.V.), M. Ostrejkwona (M.O.), Mantas Adomaitis (M.A.), Martynas Stanionis (M.S.), Povilas Navickas (P.N.), Povilas Sakalauskas (P.S.), Rimantas Pankevičius (R.P.), Rita Jakučienė (R.J.), Robertas Akstinas (R.A.), Romas Ferenca (R.F.), Sandra Steigvilaitė (S.S.), Sigita Dzimijonienė (S.D.), Simonas Pileckis (S.P.), Šarūnė Pečiukonytė (Š.P.), Tadas Petrikas (T.P.), Virgius Kilinskas (V.K.), Vitalijus Bačianskas (V.B.), Vyktintas Baublys (V.Ba.), Vytautas Inokaitis (V.I.), Vytautė Stončiūtė (V.S.), Ž. Vasiliauskas (Ž.V.), Žydrūnas Preikša (Ž.P.).

Administrative districts in the maps of Lithuania are according to the Government of the Republic of Lithuania, "Order of administrative units and its borders of the Republic of Lithuania" Order I-558, 19 July 1994 (<https://www.e-tar.lt/portal/lt/legalAct/TAR.0120FD7BCFFC/ZhxPsGFEBL>). Geographical names are according to the National Land Service of the Ministry of Agriculture of the Republic of Lithuania "Regulation usage of geographical names on maps" Order 1P-15, 3 February 2004 (<https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/TAIS.227707>). The names of the reserves follow those listed in the regulations of National Protected Areas Service under the ministry of Environment of Republic of Lithuania (<https://www.vstt.lt/VI/index.php#r/57>).

We give the following information for each species: (1) scientific name; (2) material examined (3) information on identification; (4) references and information on previously published local faunistic data; (5) a brief review the general distribution; (6) a brief review of the biology; (7) detailed local occurrence and phenology; (8) comments, including details of species' distribution, taxonomic interpretation, and IUCN conservation status.

Occurrence data are presented by district name (acronym) and include geographic name of the locality (original label data of geographic names of the locality are presented in brackets "[...]"). Geographic coordinates, date of collection or observation (day, month and year), initials of collectors (leg.) or observers (obs.), number of collected or observed specimens, collecting peculiarities (if present), and acronym of institution where specimens are stored.

The abbreviations for administrative districts in the maps are: Akm = Akmenė; Alyt = Alytus; Anyk = Anykščiai; B = Birštonas; Bir = Biržai, Drus = Druskininkai; El = Elektrėnai; Ign = Ignalina (including Visaginas municipality); Jona = Jonava; Joni = Joniškis; Jurb = Jurbarkas; Kaiš = Kašiadorys; Kal = Kalvarija; Kau =

Kaunas; Kel = Kelmė; Kėd = Kėdainiai; Klai = Klaipėda; K.R. = Kazlų Rūda; Kre = Kretinga, Kup = Kupiškis; Laz = Lazdijai; Mar = Marijampolė; Maž = Mažeikiai; Mol = Molėtai; Ner = Neringa; Pag = Pagėgiai; Pak = Pakruojis; Pal = Palanga; Pan = Panevėžys; Pas = Pasvalys; Plu = Plungė; Prie = Prienai; Rad = Radviliškis; Ras = Raseiniai; Rie = Rietavas; Rok = Rokiškis; Sku = Skuodas; Šak = Šakiai; Šal = Šalčininkai; Šiau = Šiauliai; Šila = Šilalė, Šilu = Šilutė; Širv = Širvintos; Šven = Švenčionys; Tau = Tauragė; Tel = Telšiai; Trak = Trakai; Ukm = Ukmergė; Ute = Utena; Var = Varėna; Vilc = Vilkaviškis; Vilm = Vilnius; Zar = Zarasai.

We identified specimens using the keys by Harde (1966). The macrophotographs of *Aegosoma scabricorne* were taken using a Nikon Z 50 camera with a Laowa 100 mm f/2.8 2× Ultra Macro APO lens. Macrophotographs in nature were taken a Pentax K-500 camera with a Pentax 100 mm f/2.8 D-FA Macro lens.

Results

At least 140 published and unpublished records of Prioninae were analyzed, and more than 150 specimens have been examined. The subfamily is confirmed to be represented by four tribes, four genera, and four species in Lithuania. One species, *Aegosoma scabricorne*, was newly discovered in the local fauna. Altogether, the data come from 24 administrative districts of the country.

Annotated checklist of Prioninae (Cerambycidae) of Lithuania

Family Cerambycidae Latreille, 1802
 Subfamily Prioninae Latreille, 1802
 Tribe Aegosomatini J. Thomson, 1864

Genus *Aegosoma* Audinet-Serville, 1832

Aegosoma scabricorne (Scopoli, 1763)

Figures 1, 2

Materials examined. LITHUANIA – Varėna • Čepkelių valstybinis gamtinis rezervatas; 53°58'57"N, 024°30'21"E; alt. 131 m; VII.1978; collector unknown; 1♂, 1♀; KZM, IC-57882, IC-57883.

Identification. Members of the tribe Aegosomatini can be distinguished from other prionines by metepisterna converging posteriorly and the lateral carina of the pronotum lowering to the lateral angle of the procoxal cavities (Lameere 1909). *Aegosoma scabricorne* is the only species of its tribe occurring in Europe; however, it is morphologically quite similar to other *Aegosoma* species (Do 2015). The habitus of our examined specimens completely fit the description of *A. scabricorne* according Plavilstchikov (1936), Harde (1966), and Do (2015). Our specimens have clearly visible costae on the elytra; the third antennomere is about as long as fourth and fifth antennomeres combined; the third antennomere in the male is distinctly thicker than the fourth antennomere and bears numerous short spines on its inner side; and the third antennomere of the female shows a deep inner longitudinal groove and bears only few small denticles on the basal part.

Published local records. No actual faunistic information was published before.

General distribution. This species is distributed mainly in the southern and central part of Europe, north to Germany, southern Poland (Kurzawa 2021), southern Belarus (Kazyuchits and Pisanenko 1985), and northern Ukraine (Zamoroka 2022); it is also known in the Caucasus and the Near East (Danilevsky 2014).

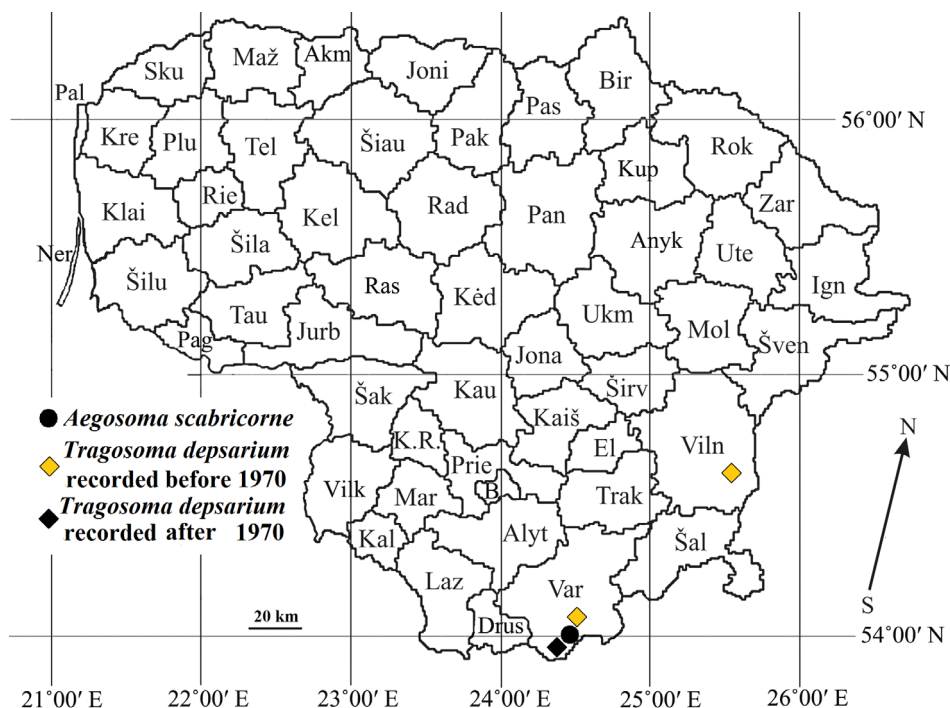


Figure 1. Records of *Aegosoma scabricorne* and *Tragosoma depsarium* in Lithuania.

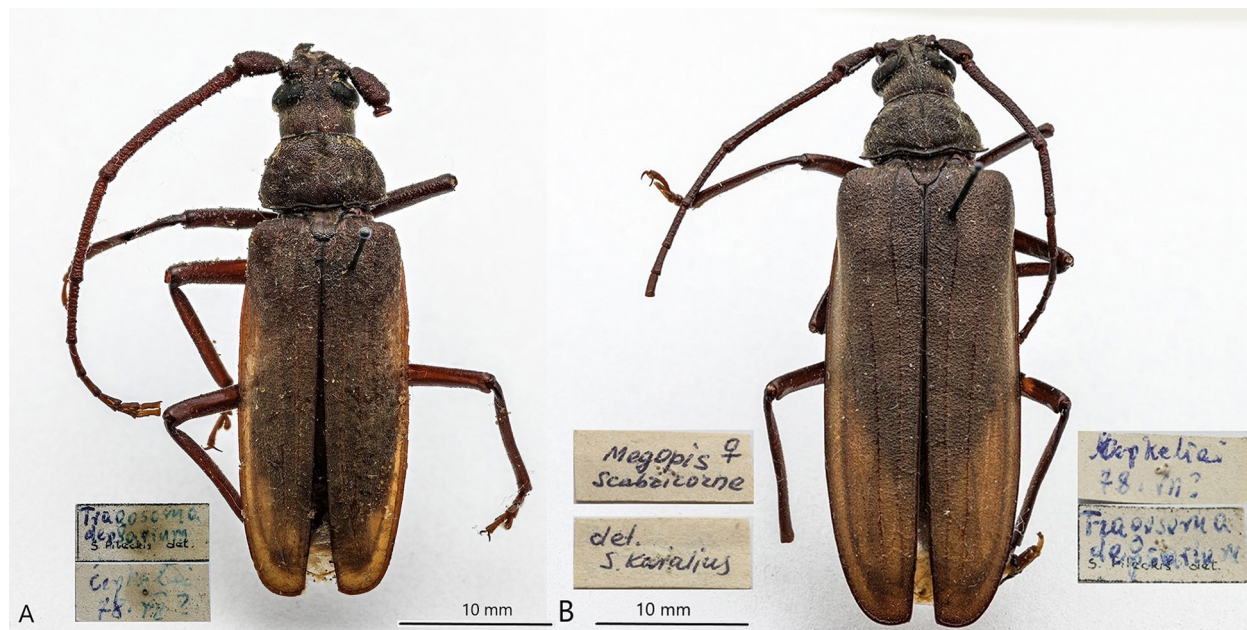


Figure 2. Habitus of *Aegosoma scabricorne* collected in Lithuania and its original labels. **A.** Male. **B.** Female. (Photographs by Kazimieras Martinaitis.)

Notes on biology. The species is polyphagous on deciduous trees, mostly *Populus* ssp. and *Salix* ssp. (Bense 1995; Foit et al. 2016). Larvae develop for at least three years, mostly in the dead stem wood of living trees (Foit et al. 2016) or in weakened living trees (Plavilstchikov 1936). Standing dead trees, fallen logs, and stumps are less attractive for the development of this species (Foit et al. 2016). However, Danilevsky (2014) mentioned that he was able to find larvae of this species in wood heavily affected by white rot. Adults appear in June and are active at night to September (Foit et al. 2016); they can be attracted by artificial light (Plavilstchikov 1936; Danilevsky 2014).

Comments. The materials examined were erroneously determined by Pileckis as *Tragosoma deparium* and published as such in the monograph of Lithuanian beetles by Simonas Pileckis and Monsevičius (1997). During our examination of Prioninae stored in the Kaunas Tadas Ivanauskas Zoological Museum, we found those two specimens previously identified as *T. deparium* (Fig. 2A, B). The male was labeled with two labels with handwritten information: the first label contains information on locality and date where the specimen was collected (“Čepkeliai, 78.VII. ?”); the second one contains information on identification of the specimen (“*Tragosoma deparium*, S. Pileckis det.”) (Fig. 2A). Comparing the handwriting, we infer that Pileckis wrote both labels. The female (Fig. 2B) had three labels, two with the same handwritten information of the male and one with a re-identification of the specimen in third one: “*Megopis scabricorne* ♀, det. S. Karalius”. According to this information, it is seeming likely that the identification of these individuals has been investigated in the past but not published. Incidentally, according to published information “Čepkeliuose [25] ir ten pat 1978 m., liepos mėn. (leg. P.

Ivinskis)” (Pileckis and Monsevičius 1997: 90), this find should be attributed to Dr. Povilas Ivinskis. However, he did not confirm this fact (P. Ivinskis pers. comm.).

IUCN Red List Category (EU): Least Concern.

Tribe Callipogonini J. Thomson, 1860
Genus *Ergates* Audinet-Serville, 1832

***Ergates faber* (Linnaeus, 1761)**

Figures 3, 4A

Materials examined. LITHUANIA – **Druskininkai**

- Druskininkai; 54°00'03"N, 023°59'49"E; alt. 106 m; 30.VII.1932; collector unknown; 1 spec.; MZVU, E1575
- ibidem; VIII.1959; leg. S.P.; 1 spec.; KZM, IC-71520
- ibidem; VII.1961; leg. S.P.; 2 spec.; KZM, IC-71521
- Viečiūnų miškas; 54°02'19"N, 024°04'05"E; alt. 111 m; 10.VII.2017; leg. V.I.; 1 spec.; KZM, IC-67201
- **Kazlų Rūda** • Jūrė forest district; 54°45'27"N, 023°31'20"E; alt. 70 m; 10.VIII.1956; leg. S.P.; 1 spec.; KZM, IC-71522
- **Lazdijai** • Veisiejai forest district; 54°04'59"N, 023°42'53"E; alt. 123 m; 12.VII.1958; leg. S.P.; 2 spec.; KZM, IC-71523-1, IC-71523-2
- ibidem; 19.VI.1986; leg. S.P.; 1 spec.; KZM, IC-71524
- **Pertakas**; 53°56'43"N, 023°32'46"E; alt. 118 m; 16.VIII.2020; obs. unknown; 1 spec.
- **Širvintos** • Širvintos; 55°03'41"N, 024°58'56"E; alt. 124 m; VIII.1960; leg. S.P.; 1 spec.; KZM, IC-71525
- **Trakai** • Trakai forest district; 54°33'20"N, 024°50'44"E; alt. 154 m; 29.VII.1960; leg. S.P.; 2 spec.; KZM, IC-71526-1, IC-71526-2
- **Varėna** • Glūko miškas; 54°18'16"N, 024°33'48"E; alt. 127 m; 14-24.VII.2008; leg. A.G.; 2 spec.; pitfall trap; IF
- **Marcinkonys**; 54°03'57"N, 024°22'50"E; alt. 119 m; 14.VIII.2017; obs. R.J.; 2 spec.
- **Margionys**; 53°59'51"N, 024°16'50"E; alt. 138 m; 6.VIII.2011; leg. V.B.; 1 spec.; KZM, IC-70269
- ibidem; 53°59'52"N, 024°17'12"E;

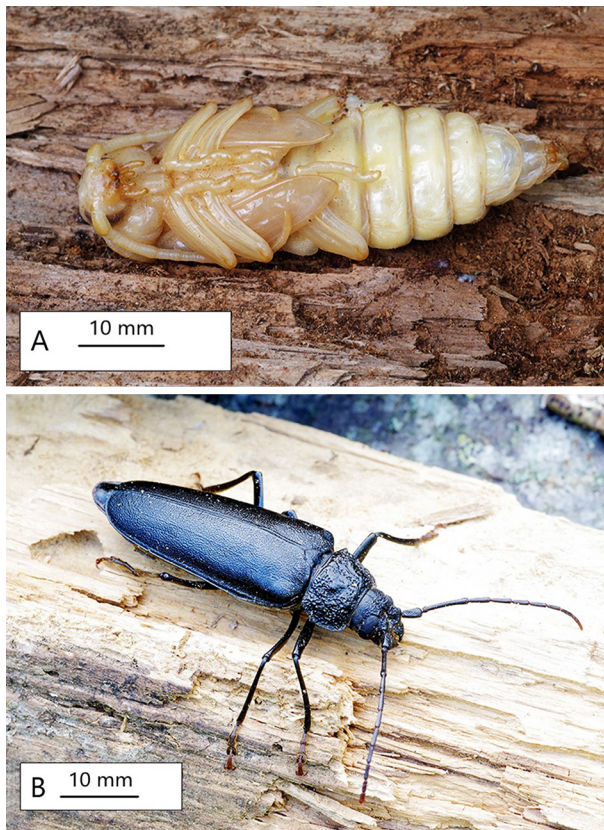


Figure 3. *Ergates faber* observed in Lithuania. **A.** Pupa. **B.** Adult.

alt. 116 m; 12.VII.2019; obs. R.A.; 1 spec. • miškas Drevių Kampas; 54°01'31"N, 024°28'16"E; alt. 133 m; 8.VIII.2013; obs. R.F.; 1 spec. • miškas Paliepė; 54°06'41"N, 024°19'07"E; alt. 101 m; 1.VII.2019; leg. V.I.; 1 spec.; KZM, IC-67331 • Puvočiai; 54°06'56"N, 024°18'24"E; alt. 102 m; 22.VII.2017; leg. K.M.; 1 spec.; KZM, IC54231 • ibidem; 54°06'28"N, 024°18'17"E; alt. 102 m; 22.VII.2019; leg. V.I.; 1 spec.; KZM, IC-67332 • ibidem; 4.VII.2000; leg. A.Pt.; 1 spec.; MZVU, E0399 • ibidem; 30.VII.2022; leg. A.Ž.; 1 spec.; MZVU, E1583 • Užuožerės miškas; 54°02'07"N, 024°24'14"E; alt. 134 m; 24.VIII.2016; obs. R.F.; >5 larvae • ibidem; 1.VII.2019; leg. R.F.; 2 larvae, 1 pupa (Fig. 3A) (the adult (Fig. 3B) was reared in 19.VII.2019); KZM, IC-54229, IC-54230-1, IC-54230-2 • Varėna forest district; 54°16'31"N, 024°33'46"E; alt. 122 m; 28.VIII.1956; leg. S.P.; 1 spec.; KZM, IC-71527 • ibidem; VII.1959; leg. S.P.; 1 spec.; KZM, IC-71528 • Žiūrai; 54°08'49"N, 024°23'39"E; alt. 112 m; 14.VIII.2016; obs. A.N.; 1 spec. – **Vilnius** • Vilnius (Burbiškė) [Burbiszki]; 54°39'27"N, 025°15'27"E; alt. 142 m; 7.VII.1926; leg. M.O.; 1 spec.; MZVU, E1577 • Vilnius; 2.VII.1936; leg. B.O.; 1 spec.; MZVU, E1579.

Identification. *Ergates faber* is the only species of the tribe Callipogonini occurring in central Europe (Danilevsky 2022). Adults are characterized by having a transverse pronotum with a very slightly serrate lateral margin, which bears only one lateral, postmedial tooth (Bily and Mehl 1989; Danilevsky 2014). Our pupa (Fig. 3A) was reared to adult, which was recognized as *E. faber* (Fig. 3B).

Published local records. This species is ranked as rare throughout Lithuania, excluding the North-western region (Pileckis and Monsevičius 1997). Previously published occurrence data are from Druskininkai (Ivinskis et al. 1997), Jonava (Obelevičius 1994), Kazlų Rūda (Pileckis 1958), Lazdijai (Mulerčikas et al. 2011), Panevėžys (Pileckis 1958), Varėna (Šablevičius 2003, 2004; Meržijevskis 2004; Ivinskis et al. 2009), and Vilnius (Zawadzki 1937; Staniulisówna 1939) districts.

General distribution. This species is mainly occurring in southern and central Europe, north to southern Sweden (Lindhe et al. 2010), southern Latvia (Dunskis 2019), central Belarus (Aleksandrowicz et al. 1996), and the Kursk region, Russia (Plavilstchikov 1936). It is known in the Caucasus, Asia Minor, the Near East, and Morocco (Danilevsky 2022).

Notes on biology. The species is polyphagous on conifers, mostly on *Pinus* ssp. (Švácha 1986; Bily and Mehl 1989; Lindhe et al. 2010; Kuźmiński et al. 2014). Larvae develop for at least three years in dead wood, mostly larger-diameter standing or fallen trunks and stumps, or often in roots (Švácha 1986). The development of larvae is highly influenced by the humidity and ambient temperature of the wood (Becker 1942; Kuźmiński et al. 2014). Adults appear in late June and July; they are active during in the evening and at night until September and can be attracted to artificial light (Plavilstchikov 1936; Danilevsky 2014).

Local occurrence and phenology. The species is Endangered according to the Lithuanian Red Data Book (Ferenca 2021). The recent records are locally distributed in three southernmost districts of Lithuania, although historically this species was observed in the south-eastern and central parts of the country (Fig. 4A). It is recorded in 10 districts. Most adults were recorded in July and August; the earliest record was on 19 June and the latest on 3 September.

Comments. The tribe Ergatini Fairmaire, 1864 was erroneously included as separate from the Callipogonini by Drumont and Komiya (2007) and Danilevsky (2022) despite that its synonymy had already been accepted a century earlier (Lameere 1904; 1913). The position of the "Ergatini" inside Callipogonini was confirmed by a molecular analysis by Kim et al. (2018). The identity of *Ergates faber* (Linnaeus, 1761) and *Ergates opifex* Mulsant, 1851, and the subspecies status of *E. opifex* was well explained by Biscaccianti (2007). We doubt the occurrence of *E. faber* in the Baltic Sea coast region of the country because the previous published information (Pileckis and Monsevičius 1997) lacks data and voucher specimens. There are also doubts on the accuracy of the occurrence data of this species in the vicinity of Kaunas (Varžupis) (3.IX.1933, leg. Liudas Vailionis, 1 spec., noted by Alfonsas Palionis; Ferenca 2006), because there are no suitable habitats for this species in that area. Most probably, these specimens were collected by Vailionis in vicinity of Mizarai (Druskininkai municipality, southern Lithuania), which Vailionis often visited between

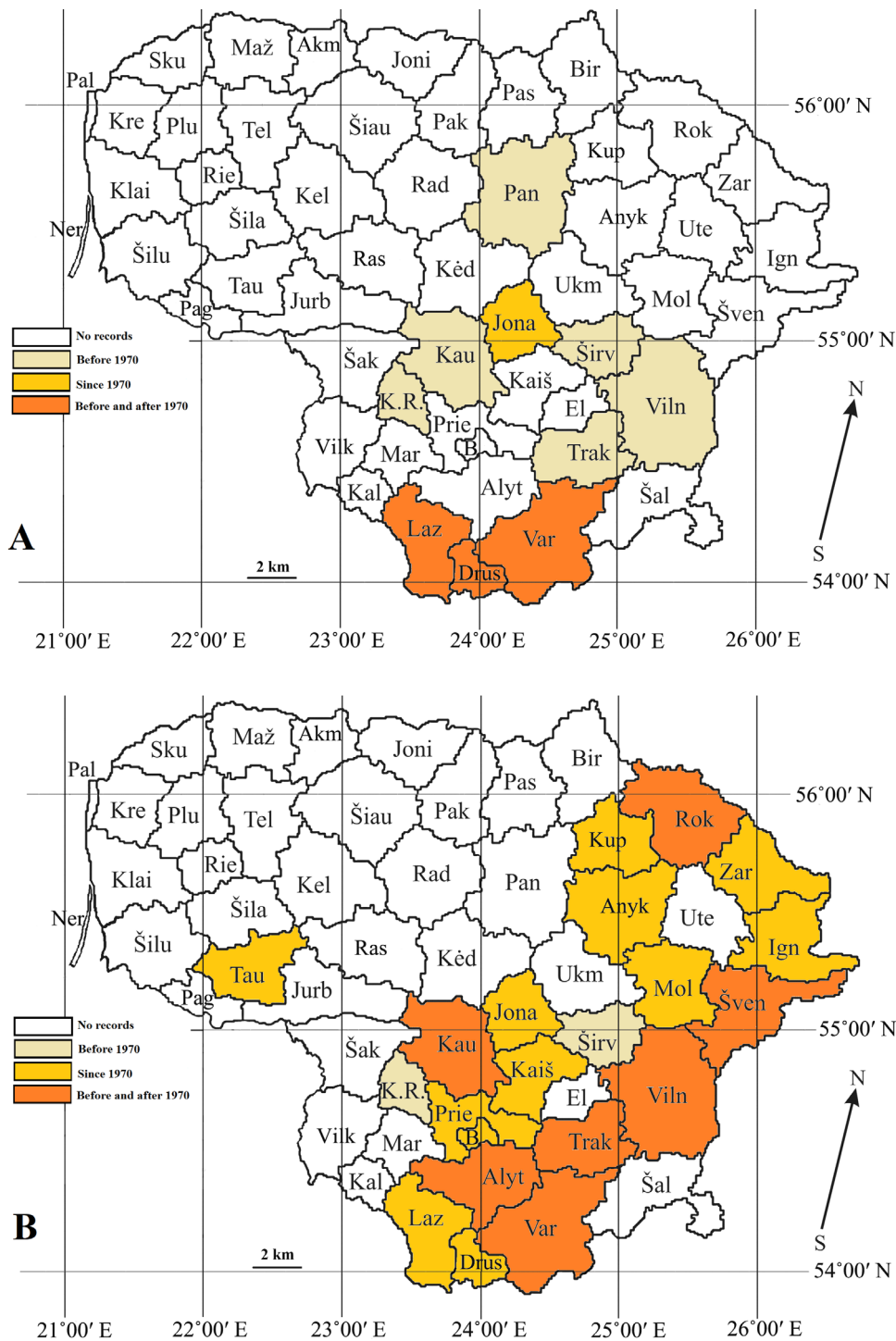


Figure 4. Records of (A) *Ergates faber* and (B) *Prionus coriarius* in Lithuania.

1933 and 1937, or transported from this territory with timbers used to build Vailionis' house in Varžupis (Vailionytė 2021).

IUCN Red List Category (EU): Least Concern.

Tribe Meroscelisini J. Thomson, 1861
Genus *Tragosoma* Audinet-Serville, 183

***Tragosoma depsarium* (Linnaeus, 1767)**

Figures 1, 5

Material examined. LITHUANIA – Varėna • Marčinkonys; 54°03'42"N, 024°25'07"E; alt. 124 m;

VIII.1967; collector unknown; 1♂; KZM, IC-71529 • Aukštakalnio miškas; Miškų telmologinis draustinis; 53°56'18"N, 024°23'30"E; alt. 130 m; 8.VII.2021; leg. V.B.; attracted in artificial light; 1♂; KZM, IC-56576 • ibidem; 53°56'27"N, 024°23'07"E; alt. 130 m; 18–19.VIII.2022; leg. R.F.; 2♂: one specimen was found in daytime under bark of a *Pinus sylvestris* stump and the other was attracted in artificial light (Fig. 5A); KZM, IC-57545, IC-57546.

Identification. *Tragosoma depsarium* is the sole species of Meroscelisini occurring in the Palaearctic region

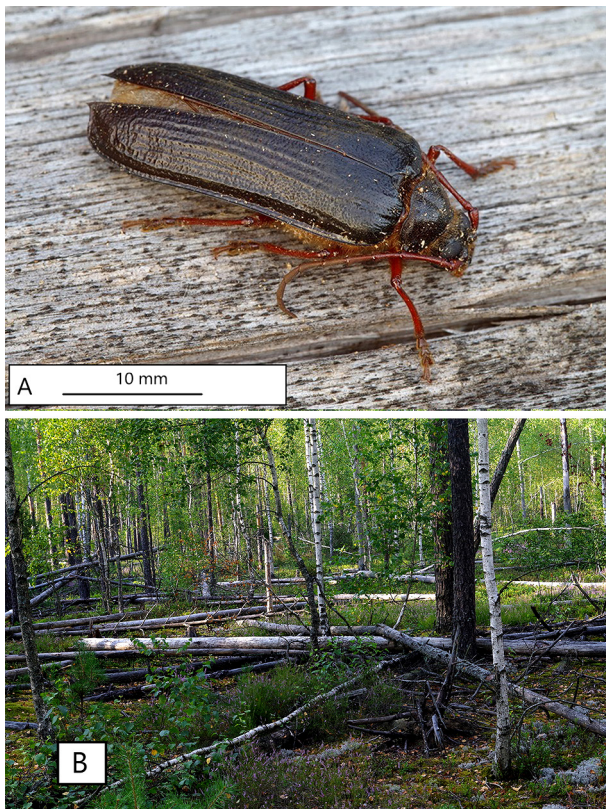


Figure 5. *Tragosoma depsarium* in Lithuania. **A.** Habitus, male. **B.** Habitat.

(Danilevsky 2022). Adults of this species differ from other prionines in having the metepisterna with sharply tapered horizontal edges, antennal sockets almost completely gripped by eyes, and the lateral pronotal margins not serrate and bearing a spine at the middle (Cherepanov 1979; Bílý and Mehl 1989). All our examined specimens of *Tragosoma* have these characteristics.

Published local records. Previously published occurrence data are from Varėna (Pileckis and Monsevičius 1997) and Vilnius (Zawadzki 1937) districts.

General distribution. This is a boreo-montane species which mainly occurs in subboreal and boreal forests of Eurasia, from Scandinavia to Zabaykalsky Krai in Siberia (Anisimov and Bezdorov 2021). It also occurs in mountainous areas of northern Spain, France, Italy, Slovenia, Switzerland, Germany, and Austria.

Notes on biology. Larvae of this species develop in decaying dead wood of various conifers, but they prefer *Pinus* ssp. (Cherepanov 1979; Švácha 1986). They usually live in thick, debarked trunks lying on the ground (Ehnström and Axelsson 2002). The life cycle lasts at least three years (Švácha 1986; Bílý and Mehl 1989). Pupation takes place in wood in June or early July, and adults emerge in late June to August (Švácha 1986). They are nocturnal, do not feed, and can be attracted to artificial light (Bílý and Mehl 1989; Lindhe et al. 2010).

Local occurrence and phenology. *Tragosoma depsarium* was ranked as a very rare species in Lithuania (Pileckis and Monsevičius 1997). Zawadzki (1937)

reported three specimens collected in near Vilnius (22.VIII.1923, 1♂ and 3.VIII.1927 1♂, 1♀ in Naujoji Vilnia [Nowo-Wilejka]). However, it is likely that urbanization in the last century has destroyed the habitat of this species there, and it is likely to have become extirpated in that area. The recent records confirm that this species still occurs in Dzūkija National Park, Varėna district (Fig. 1). The specimens were detected in dead wood rich area of Miškų telmologinis draustinis (Fig. 5B).

Comments. IUCN Red List Category (EU): Near Threatened.

Tribe Prionini Latreille, 1802
Genus *Prionus* Geoffroy, 1762

***Prionus coriarius* (Linnaeus, 1758)**

Figure 4B, 6

Materials examined. LITHUANIA – **Alytus** • Obelijos miškas; 54°18'37"N, 023°58'52"E; alt. 103 m; 27.VII.2019; obs. V.K.; 1 spec. • ibidem; 54°18'36"N, 023°58'49"E; alt. 103 m; 7.VIII.2021; obs. V.K.; 1 spec. • Vidzgirio botaninis draustinis; 54°22'31"N, 024°02' 58"E; alt. 108 m; 24.VII.2021; obs. A.S.; 1 spec. • Punios šilas; 54°32'06"N, 024°02'32"E; alt. 70 m; VIII.2010; obs. Ž.P.; 1 spec. • Geidukonys; 54°20'39"N, 024°28'44"E; alt. 132 m; 29.VIII.2021; obs. D.Ž.; 1 spec. – **Birštonas** • Birštonas; 54°36'20"N, 024°00'11"E; alt. 56 m; 08.VIII.2022; obs. J.G.; 1 spec. • Škėvonys; 54°37'04"N, 023°58'14"E; alt. 70 m; 12.VII.2021; obs. P.N.; 1 spec. – **Druskininkai** • Druskininkai; 54°00'46"N, 023°58'02"E; alt. 95 m; VII.1975; leg. S.P.; 1 spec.; KZM, IC-71530 • Viečiūnų miškas; 54°02'19"N, 024°04'05"E; alt. 111 m; 5.VIII.2016; leg. V.I.; 3 spec.; KZM, IC-66980-1, IC-66980-2, IC-66981 • Vijūninės miškas; 54°02'20"N, 024°08'26"E; alt. 118 m; 29.VII.2020; obs. L.D.; 1 spec. – **Jonava** • Gaižiūnai; 55°01'57"N, 024°20'21"E; alt. 81 m; 8.VIII.1993; leg. R.K.; 1 spec.; MZVU, E1601 – **Kaišiadorys** • Aviliai; 54°49'53"N, 024°25'20"E; alt. 92 m; 5.VIII.2013; leg. V.B.; 1 spec.; KZM, IC-70271 • Kairiškių miškas; 54°46'32"N, 024°21'05"E; alt. 100 m; 7.VIII.2008; leg. V.B.; 1 spec.;



Figure 6. *Prionus coriarius* observed in Lithuania.

KZM, IC-70270 • Kruonis; 54°45'23"N, 024°14'27"E; alt. 102 m; 10.VII.1973; leg. A.M.; 1 spec.; KZM, IC-71541; ibidem; 24.VII.2011; leg. A.M.; 1 spec.; KZM, IC-71531 • ibidem; 5.VIII.2012; leg. A.M.; 1 spec.; KZM, IC-71532 • Stasiūnai; 54°50'54"N, 024°29'15"E; alt. 97 m; 2.VII.2021; obs. J.R.; 1 spec. • Triliškės; 54°49'15"N, 024°27'31"E; alt. 117 m; 31.VIII.2019; obs. D.S.; 1 spec. – **Kaunas** • Ežerėlis; 54°53'08"N, 023°35'44"E; alt. 72 m; 6.VI.1929; leg. A.P.; 1 spec.; KZM, IC-40090 • Dubravos miškas; 54°50'41"N, 024°07'55"E; alt. 69 m; 20.VII.1977; leg. R.F.; 1 spec.; KZM, IC-41475 • Dubravos rezervatinė apyrbė; 54°50'42"N, 024°04'08"E; alt. 75 m; 13.VIII.2020; leg. R.F.; 1 spec.; KZM, IC-55824 (Fig. 6) • Gervėnupis; 54°50'14"N, 024°09'21"E; alt. 75 m; 28.VII.1980; leg. G.K.; 2 spec.; KZM, IC-40088-1, IC-40088-2 • Kamšos miškas; 54°53'59"N, 023°49'44"E; alt. 70 m; VII.0961; leg. S.P.; 1 spec.; KZM, IC-71533 • Pažaislis; 54°52'42"N, 024°01'08"E; alt. 61 m; 26.VII.1983; leg. R.F.; 1 spec.; KZM, IC-40089 • ibidem; 54°52'30"N, 024°01'15"E; alt. 61 m; 1.VIII.2012; leg. A.K.; 1 spec.; KZM, IC-53531 • ibidem; 54°52'29"N, 024°01'12"E; alt. 61 m; 2.VIII.2022; obs. E.Č.; 1 spec. – **Kazlų Rūda** • Jūrės miškas; 54°45'13"N, 023°31'30"E; alt. 65 m; VII.1956; leg. S.P.; 2 spec.; KZM, IC-71534-1, IC-71534-2 • Višakio Rūda; 54°49'11"N, 023°25'25"E; alt. 54 m; VII.1959; leg. S.P.; 1 spec.; KZM, IC-71535 – **Kupiškis** • Šimonių miškas; 55°44'17"N, 25°05'32"E; alt. 110 m; 08.VIII.1998; leg. R.P.; 1 spec.; NRC – **Lazdijai** • Kareivonių miškas; 54°00'31"N, 023°37'23"E; alt. 117 m; 6.VIII.2022; obs. S.D.; 1 spec. • Širvinto miškas; 54°17'01"N, 023°45'05"E; alt. 108 m; 4.VIII.2021; obs. A.Pe.; 1 spec. • Bijotų miškas; 54°17'22"N, 023°44'18"E; alt. 109 m; 17.VIII.2022; obs. A.Pe.; 1 spec. • Raganiškė; 54°12'44"N, 023°51'45"E; alt. 133 m; 15.VIII.2022; obs. A.Gi.; 1 spec. • Žilvičiai; 54°10'52"N, 023°56'53"E; alt. 93 m; 16.VII.2020; obs. Č.S.; 1 spec. – **Molėtai** • Keruojai; 55°11'19"N, 25°38'13"E; alt. 150 m; 19.VIII.2022; obs. L.J.; 1 spec. – **Prienai** • Prienių šilas; 54°37'07"N, 023°55'08"E; alt. 102 m; 9.VIII.2020; obs. P.N.; 1 spec. – **Rokiškis** • Juodupė; 56°04'54"N, 25°36'12"E; alt. 109 m; 29.VII.1926; leg. A.P.; 1 spec.; KZM, IC-40086 • Rokiškis district; VI.1972; leg. S.P.; 1 spec.; KZM, IC-71538 – **Širvintos** • Širvintos district, VIII.1961; leg. S.P.; 1 spec.; KZM, IC-71539 – **Švenčionys** • Parašė; 55°12'47"N, 25°40'22"E; alt. 152 m; 15.VII.2011; obs. V.Ba.; 1 spec. • Švenčionėliai; VII.1958; leg. S.P.; 2 spec.; KZM, IC-71540-1, IC-71540-2 – **Tauragė** • Sakalinės miškas; 55°08'27"N, 22°27'23"E; alt. 38 m; 30.VII.2009; obs. G.S.; 1 spec. – **Trakai** • Spindžiaus miškas; 54°34'22"N, 024°40'37"E; alt. 145 m; 18.07.2021; obs. V.S.; 1 spec. • ibidem; 54°34'46"N, 024°41'09"E; alt. 144 m; 26.VII.2021; obs. Š.P.; 1 spec. • ibidem; 54°34'23"N, 024°41'37"E; alt. 138 m; 5.VIII.2021; obs. T.P.; 1 spec. • Vilūnų miškas; 54°34'28"N, 024°34'10"E; alt. 126 m; 8.VIII.2021; leg. S.S.; 1 spec.; KZM, IC-67375 – **Varėna** • Bazarų miškas; 53°55'14"N, 024°19'35"E; alt. 127 m; 16.VIII.2017; leg. V.I.; 1 spec.; KZM, IC-67202 • Kapiniškiai; 54°00'55"N, 024°17'53"E; alt. 110 m; 24.VII.1999; leg. G.Š.; 1 spec.; KZM, IC-53529 • Karaviškės; 54°01'04"N, 024°41'26"E;

alt. 128 m; 17.VIII.2017; leg. V.I.; 1 spec.; KZM, IC-67203 • miškas Paliepė; 54°06'31"N, 024°19'00"E; alt. 106 m; 8.IX.2015; leg. R.F.; 1 spec.; KZM, IC-53681 • Marcinikonys; 54°03'43"N, 024°25'05"E; alt. 125 m; 4.VIII.2004; leg. G.Š.; 1 spec.; KZM, IC-53530 • Mardasavo miškas; 54°09'43"N, 024°17'31"E; alt. 112 m; 25.VII.2011; obs. P.S.; 1 spec. • Musteika; 53°57'28"N, 024°21'42"E; alt. 125 m; 5.VII.1990; leg. Ž.V.; 1 spec.; MZVU, E1599 • ibidem; 53°57'26"N, 024°21'38"E; alt. 125 m; 4.VIII.2021; obs. M.A.; 1 spec. • Puvočiai; 54°06'48"N, 024°18'43"E; alt. 103 m; 7.VIII.2022; obs. A.Pt.; 1 spec. • Varėna district; VII.1959; leg. S.P.; 1 spec.; KZM, IC-71536 – **Vilnius** • Elniakampio miškas [Legaciszki], 54°46'02"N, 024°59'01"E; alt. 113 m; 18.IX.1927; leg. B.O.; 1 spec.; MZVU, E1598 • ibidem; 19-20.VII.1936; leg. E.M.; 3 spec.; MZVU, E1585, E1593, E1597 • ibidem; 25.VII.1937; leg. E.M.; 1 spec.; VUMZ, E1584 • miškas Ažuolynas; 54°50'01"N, 024°57'16"E; alt. 117 m; 3.VIII.2021; obs. A.G.; 1 spec. • Nemenčinė; 54°50'56"N, 25°28'54"E; alt. 121 m; VIII.1960; leg. S.P.; 1 spec.; KZM, IC-71537 • Paberžė (Medynai) [Medynai]; 54°56'53"N, 25°14'25"E; alt. 129 m; 15.VII.1917; leg. B.H.; 1 spec.; MZVU, E1954 • ibidem; 31.VII.1934; leg. B.H.; 1 spec.; MZVU, E1596 • Vilnius; 7.VII.1936; leg. K.S.; 1 spec.; MZVU, E1587 – **Zarasai** • miškas Gražutė; 55°38'25"N, 26°10'56"E; alt. 158 m; 11.VIII.2022; obs. M.S.; 1 spec.

Identification. *Prionus coriarius* is sole species of its genus in northern Europe (Danilevsky 2022). Adults are characterized by having a transverse pronotum with a smooth lateral margin, which bears three long teeth, finely sculptured, matte pronotal disc, and rounded apex of plates of third tarsomeres (Cherepanov 1979; Bíly and Mehl 1989; Danilevsky 2014). All our examined specimens of *Prionus* have these characteristics.

Published local records. This species is ranked as not rare and occurs throughout Lithuania, excluding the north-western region (Pileckis and Monsevičius 1997). Previously published occurrence data are from Alytus (Pileckis 1958; Ivinskis et al. 2004, 2009), Anykščiai (Obelevičius 2016), Druskininkai (Ivinskis et al. 2004, 2009; Mulerčikas et al. 2011), Ignalina (Šablevičius, 2003, 2007), Kazlų Rūda (Pileckis 1958), Kaišiadorys (Stanionis and Petrikas 2011), Kaunas (Pileckis 1958; Ferenca 2006), Rokiškis (Ferenca 2006), Švenčionys (Mazurowa and Mazur 1939), Trakai (Pileckis 1958; Ivinskis et al. 2004), Varėna (Ivinskis et al. 2004, 2009; Dapkus 2004), and Vilnius (Staniulisová 1939) districts.

General distribution. This species is distributed in western Palaearctic region from the Iberian Peninsula and Great Britain to the Tomsk region in western Siberia, Russia (Danilevsky 2014). It occurs north to southern Norway, Sweden (Lindhe et al. 2010), southern Finland (Rassi et al. 2015), and the Leningrad, Kostroma, and Perm regions of Russia (Danilevsky 2014). The species is widely distributed in southern Europe, and it is also known from Morocco, Algeria, Tunisia, the Caucasus, Transcaucasia, Asia Minor, and northern Iran

(Özdikmen and Turgut 2009; Danilevsky 2022).

Notes on biology. The species is polyphagous on both coniferous and deciduous trees, preferring *Quercus* ssp., *Fagus* ssp., *Pinus* ssp., and *Picea* ssp. (Cherepanov 1979; Bíly and Mehl 1989; Sláma 1998; Danilevsky 2014). Larvae develop mostly underground in dead, decaying roots or the bases of stems for at least three years (Švácha 1986; Bíly and Mehl 1989; Danilevsky 2014). Pupation occurs in the soil, near the host plant (Cherepanov 1979; Švácha 1986; Bíly and Mehl 1989). Adults appear in July and August and are active mainly in dusk. They can be attracted to artificial light (Bíly and Mehl 1989; Lindhe et al. 2010).

Local occurrence and phenology. The species is ranked as Endangered in Lithuanian Red Data Book (Tamutis 2021). The recent records are distributed mostly in the eastern part of the country (Fig. 4B). It has been recorded from 20 districts. Most adults were recorded in July and August; the earliest record was found on 6 June and the latest on 8 September.

Comments. We doubt the presence of *P. coriarius* in the Baltic Sea coast region of Lithuania because the previously published information (Pileckis and Monsevičius 1997) lacks of occurrence data and voucher specimens. We were unable confirm and include some incomplete occurrence records of this species from Kelmė and Kėdainiai districts, which were handwritten in Pileckis' manual index card.

IUCN Red List Category (EU): Least Concern.

Discussion

All four species of Prioninae included here are remarkable saproxylic longhorns, included in the IUNC European Red list of saproxylic beetles (Cálix et al. 2018) and in regional Red Data Books or Red Lists of threatened species in some European countries (Pawlowski et al. 2002; Ødegaard et al. 2010; Kabátek and Skořepa 2017; Ljungberg and Nordström 2020).

Tragosoma depsarium should receive special attention in Lithuania, as it does not currently have any protection, perhaps due to the lack of sufficient knowledge. Fortunately, recent observations suggest that populations of this species still survive in one of the largest protected areas of Lithuania, the Čepkeliai Strict Nature Reserve, which was established in 1975 for protecting the unique complex of bogs in the southern part of the country. The habitats where this species was observed are comparable to those described by Wikars (2004) and Lindman et al. (2022): much fallen, bark-free, large-diameter pine logs, moist soil, and an open canopy, which are important for suitable microclimatic conditions inside dead wood. Undoubtedly, additional areas with this type of habitat exist outside of the reserve; therefore, more effort must be made to assess the suitability of habitats for this species nationally and to adopt appropriate measures for conservation. *Tragosoma depsarium* has much wider distribution

in Northern Europe, for example, in Sweden (Wikars 2004; Lindhe et al. 2010), than in more southern areas where its distribution is fragmented (Anisimov and Bezdorov 2021). We note that the records from eastern Poland and Ukraine are more than 100 years old (Gutowski 1995; Zamoroka 2018) and that only recently has the species been rediscovered in southern Belarus (Solodovnikov et al. 2020).

The discovery of *Aegosoma scabricorne* in Lithuania is also impressive. The population closest to Lithuanian record is in Brest region of Belarus, about 200 km south (Kazyuchits and Pisanenko 1985). In Poland, this species is known only in the southern areas, where it was recently rediscovered (Kurzawa 2021). We hope that the two individuals caught in southern Lithuania are part of a stable, established population. Additional observations and a population assessment are necessary for the conservation of this species in Lithuania. This species is declining in Central Europe (Foit et al. 2016), and it is legally protected or included in the list of endangered species in the Czech Republic, Germany, Slovakia, and Austria (Adlbauer 2001; Schmidl and Bussler 2003; Kabátek and Skořepa 2017).

Ergates faber and *Prionus coriarius* have been legally protected in Lithuania since 1990 and 2003, respectively. The Red List categories were changed from Vulnerable (Pileckis and Monsevičius 1992; Ferenca 2007) or rare (Ferenca 2007) to Endangered (Tamutis 2021), likely due to the application of different categorization methodology (Rašomavičius 2021). *Ergates faber* has very likely declined considerably in the last 50 years, while the population of *P. coriarius* has remained relatively stable. With its populations in decline, there is also concern for *E. faber* in neighboring countries: Latvia, Belarus and Poland (Valainis et al. 2014; Rindevich and Tsinkevich 2015; Kuźmiński et al. 2014).

Observational data of threatened species are very important in reveal faunal and ecological changes and can be used to develop appropriate measures for protection. Our results on the Prioninae of Lithuania may be useful baseline data for further observations, comparisons and recommendations on forest management and nature protection in the region.

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Author Contributions

Conceptualization: VT. Data curation: VT, RF. Investigation: VT, RF, VB. Methodology: VT. Writing – original draft: VT. Writing – review and editing: VT.

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