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A synopsis of the family Aderidae in Poland (Coleoptera: Tenebrionoidea)

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Abstract. Data on distribution, morphology, and biology of all species of Aderidae occurring in Poland are summarized, with new regional records based on over 370 specimens from institutional and private collections. *Cobososia pruinosa* (Kiesenwetter), previously reported from the Polish territory is removed from the checklist of the Coleoptera of Poland. An illustrated identification key to the Polish Aderidae is provided.

Key words: entomology, faunistics, Insecta, Coleoptera, Aderidae, new records, review, key to species, Poland.

INTRODUCTION

The distribution of beetle species belonging to the family Aderidae in Poland is exceptionally poorly known. Except for a popular identification key by Borowiec & Tarnawski, 1983 (presently out of date in regard of the species list, systematics and nomenclature), and a catalogue summary of all known records (Burakowski et al. 1987), papers specifically dedicated to the study of Polish aderids have never been published. Faunistic records are scattered in numerous contributions to the knowledge of local beetle communities, with majority of data coming from the first half of 20th and even

19th century (summarized by Burakowski et al. 1987). Certainly some old records are based on misidentified specimens, as found out during the present study. A necessity of providing a comprehensive review and modern identification keys to all species known to occur in Poland became evident when we compared descriptions of various structures from available literature sources. Some of the available German- and Polish-language keys contain inaccuracies that may result in misidentifications. On the basis of a survey of museum and private collections, we provide new records of all Aderidae recorded from the Polish territory, a distributional summary for each of them, brief descriptions of species morphology and an illustrated identification key.

MATERIAL AND METHODS

The present contribution is based on over 370 specimens of Aderidae from private and institutional Polish collections. The localities are assigned to the regions of Poland following the division adopted from the Catalogue of the Fauna of Poland (Burakowski et al. 1987), and the UTM grid code referring to a square 10 × 10 km is given in parentheses for each collecting site.

Images were taken by a Nikon Coolpix 4500 camera mounted on a Nikon Eclipse 1500 stereoscopic microscope (Nikon, Tokyo, Japan); image stacks were processed using COMBINE ZP (Hadley 2010).

Depositories:

[AL] – A. Üllwitz historical collection of MIZ;

[EGM] – E. Mazur and G. Mazur historical collection of MIZ;

[ISEA] – Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, Kraków;

[JB] – coll. J. Borowski, Warszawa;

[JK] – coll. J. Kania, Wrocław;

[KolC] – W. Kolbe historical collection of MNHW;

[KotC] – B. Kotula historical collection of NHC;

[LB] – coll. L. Borowiec, Wrocław;

[MIZ] – Museum and Institute of Zoology, Polish Academy of Sciences, Warszawa;

[MNHW] – Museum of Natural History, University of Wrocław, Wrocław;

[MS] – Stettiner Museum historical collection of MIZ;

[MW] – coll. M. Wanat, Wrocław;

[NHC] – Natural History Collection, Faculty of Biology, Adam Mickiewicz University (AMU), Poznań;

[PolC] – G. Polentz historical collection of MNHW;

[PJ] – coll. P. Jałoszyński, Wrocław;

[RR] – coll. R. Ruta, Wrocław;

[SchC] – R. Scholz historical collection of MNHW;

[SzK] – coll. Sz. Konwerski, Poznań;

[TM] – coll. T. Mokrzycki, Warszawa;

[USMB] – Upper Silesian Museum, Bytom.

Collectors:

AB – A. Bartoszyński; AG – A. Gawroński; BB – B. Burakowski; BK – B. Kotula; DB – D. Bajerlein; EB – E. Baraniak; FF – F. Fejfer; JB – J. Borowski; JG – J. M. Gutowski; JK – J. Kania; JM – J. K. Młynarski; JS – J. Sawoniewicz; JZ – J. Zabłocki; LB – L. Borowiec; LBU – L. Buchholz; MB – M. Bunalski; MK – M. Kaźmierczak; MM – M. Mleczak; MW – M. Wanat; PJ – P. Jałoszyński; PS – P. Stachowiak; RM – R. Matusiak; RB – R. Bielawski; RR – R. Ruta; SP – S. Popek; SzK – Sz. Konwerski; SzT – S. Tenenbaum; TM – T. Mokrzycki; UW – U. Walczak; WK – W. Kubasik; WM – W. Mączyński.

Other abbreviations:

L.P. – landscape park; nat. res. – nature reserve; N.P. – national park. The administrative division of public forests in Poland is as follows: forest divisions (f. div.; "nadleśnictwo") are divided into forest districts (f. distr.; "leśnictwo"), and the latter are subdivided into forest compartments (f. comp.; "oddział").

Aderus populneus (Creutzer, 1796)

(Figs 1-2, 21)

Material examined

POLAND (149 exx.): **Pomeranian Lake District**: Gozdowice (VU54) ad Mieszkowice, 30 IX 2010, 24 exx. sifted from a hollow at base of an old *Aesculus*, leg. PJ [PJ]; Długie (WU46), 24 III 2003, 1 ex. under bark of an apple tree, leg. RR [RR]; Zakrzewo (XV41), near Proboszczowskie Lake, 6 XII 1998, 1 ex., leg. RR [RR]. **Wielkopolska-Kujawy Lowland**: Kościelec (CC38) ad Koło, IV 1999, 3 exx., leg. RM [SzK]; Koło (CC38), 2 XII 1999, 2 exx. in a hollow in *Salix* sp., leg. MK [SzK]; Karszew (CC57) ad Dąbie, 18 XII 1999, 3 exx. in a rotten trunk of *Acer* sp., leg. SzK [SzK]; Łęczyca (CC76), 13 II 1935, 3 exx., leg. AB [MIZ]; Ruda Milicka ad Milicz, Słoneczny Górny Pond (XT61), 30 X 1999, 1 ex., leg. MW [MW]; Ruda Milicka (XT61), 25 VII-8 VIII 1989, 1 ex., leg. LB [LB]; Glińsk (WT39), 5 VI 1999, 1 ex. ad lucem, leg. MM [PJ]; Poznań (XU30), V 1999, 1 ex., leg. PJ [PJ]; Poznań-Ogrody (XU20), VI 2005, 2 exx. ad lucem, leg. WK [SzK], 6-8 VIII 2009, 1 ex. ad lucem in a garden of Poznań University of Life Sciences, leg. MB [PJ]; Piła-Kalina (XU28), 20 IV 2001, 1 ex., leg. RR [RR]; Piła-Górne (XU18), Kotuńska Droga, 30 IV-2 V 2001, 1 ex. in a rotten wood of *Populus nigra* L., leg. RR [RR]; Lusowo (XU11) ad Poznań, 10 XII 1999, 1 ex. and 1 IV 2000, 1 ex. - all under bark of *Salix* sp. near a pond surrounded by a crop field, leg. SzK [SzK]; Toruń (CD37), 1 XI 1935, 1 ex., 1 XI 1937, 2 exx., leg. AB [MIZ], 1 ex. [EGM]. **Mazovian Lowland**: Łomna (DD80) ad Warszawa, 16 III 1993, 27 exx., leg. MW [MW]; Warszawa (EC08), 9 VI 1940, 1 ex., leg. SzT; 23 IX 1954, 1 ex., leg. BB [MIZ]; Warszawa-Bielany (DC99), 23 I 1953, 1 ex., 25 IV 1970, 4 exx., leg. BB [MIZ]; Warszawa, Skarpa Ursynowska (EC07), 9 X 1993, 1 ex., leg. JB [JB]; Warszawa-Łazienki (EC08), 1 X 1904, 1 ex., leg. WM [USMB]; Warszawa-Morysinek (EC07), 12 III 1967, 1 ex., leg. BB [MIZ]; Warszawa-Wawer (EC18), 8 VI 1898, 1 ex., leg. WM [USMB]. **Podlasie**: Sobibór (FC80) ad Włodawa, 20 VII 2001, 1 ex. ad lucem; 1-10 VII

2002, 2 exx. ad lucem; 19 VIII 2003, 1 ex., leg. MW [MW]; Majdan Stuleński (FB89) ad Wola Uhruska, 29 VII 2003, 1 ex., leg. MW [MW]. **Białowieża Primeval Forest**: Browska Droga (FD94), 19 IX 2004, 1 ex. in a hollow oak, leg. RR [RR], 9-12 IX 2005, 1 ex., leg. TM [TM]; Białowieża, Headquarter Park (Park Dyrekcyjny) (FD94), 10 VII 1993, 1 ex., 26 VII 1997, 1 ex., 4 VIII 1999, 1 ex., 11-13 VI 1999, 1 ex., 6 VIII 2001, 1 ex., 10-11 VI 2004, 1 ex., leg. TM [TM]. **Lower Silesia**: Wrocław-Świniary (XS37), 24 IV 1992, 1 ex., leg. LB [LB], 12 III 1994, 9 exx., leg. JK [JK], 5 V 1995, 9 exx., leg. MW [MW]; Grodzanów (XS18), 1 V 1993, 1 ex., leg. MW [MW]; Laski (XS18) ad Kępno, 1 V 1993, 1 ex., leg. MW [MW]; Złotoryja env. (WS66) (label data: "Sil., Umgebg. Goldberg"), 1 ex. [SchC]; Dunino (WS76) ad Legnica (label data: "Dohnau b. Liegnitz"), 4 exx. [SchC]; Legnica env. (WS87) (label data: "Sil., Umgebg. Liegnitz"), 1 ex. [SchC]; Legnica (WS87) (label data: "Liegnitz"), 1 ex. [KolC]; Nowa Ruda (XS00) (label data: "Neurode"), 4 exx. [KolC]. **"Silesia"**, 2 exx. (misidentified as *E. pygmaeus*) [SchC]. **Kraków-Wieluń Upland:** Kraków-Prądnik Czerwony (DA24), 30 III 1941, 3 exx., leg. JZ [ISEA, EGM]. **Małopolska Upland**: Przedborski L.P., Bukowa Góra ad Dobromierz, forester's lodge "Poręba" vic. (DB25), 30 IX 2007, 1 ex., leg. MW [MW]; Krzętów (DB14) ad Przedbórz, 29 IX 2007, 4 exx. sifted from a hollow lime tree, leg. MW [MW]; Miedzianka (Dolinki) (DB53) ad Chęciny, 30 VIII 2008, 1 ex., leg. MW [MW]. **Świętokrzyskie Mts**: Bodzentyn (DB94), 29 VIII 2008, 1 ex. in a hollow maple tree, leg. MW [MW]. **Eastern Beskidy Mts**: Przemyśl (FA21) (label data: "Galicya wsch. / Przemyśl / B. Kotula"), 2 exx. [KotC].

Additionally identifications of previously published specimens were confirmed: **Masurian Lake District:** "Dęby w Krukach Pasłęckich" nat. res. (Byk & Byk 2004) and **Eastern Beskidy Mts**: Przemyśl vic. (Trella 1923).

Morphology

Body (Figs 1-2) 1.8-2.4 mm in length, light brown with lighter short setae forming on elytra variously visible transverse stripes; head with rudimentary tempora; antennae thick, with antennomeres II and III strikingly small, together about as long as antennomere IV, antennomeres IV-XI distinctly elongate in males (Fig. 1) and indistinctly elongate in females (Fig. 2), antennomere XI twice as long as broad, with subcylindrical basal part and rapidly narrowing and pointed subconical distal part (Fig. 21). Pronotum approximately pentagonal in shape, with lateral margins variously (in some specimens barely noticeably) divergent from base to anterior 1/3-1/4, then rapidly narrowing anterad so that sides of pronotum are distinctly angulate. Elytra oval, broadest in posterior part (more distinctly in females).

Distribution in Poland

Aderus populneus is a common species known from most regions of Poland. Previously reported to occur in the Baltic Coast, Masurian Lake District, Wielkopolska-Kujawy Lowland, Mazovian Lowland, Białowieża Primeval Forest, Lower Silesia, Upper Silesia, Kraków-Wieluń Upland, Świętokrzyskie Mts, Sandomierska Lowland, Western Sudety Mts and Eastern Beskidy Mts. In the present paper recorded for the first time from the Pomeranian Lake District, Podlasie and Małopolska Upland.

Notes on Biology

Aderus populneus was reported to develop in a rotten wood of deciduous trees, larvae feed on a dead wood infested by fungi, pupate in late summer or autumn and adults overwinter under loose bark and in hollow trees to come up in May (Burakowski et al. 1987). Our experience confirms that adults of *A. populneus* can be found in large numbers in a rotten wood, especially in hollows of deciduous trees located near ground, in early spring (March) or in autumn (late September), while during summer beetles are most commonly collected by beating bushes and trees, but usually in a small number of individuals.

Remarks

Aderus populneus is a remarkable species dissimilar to any other member of Aderidae known from Poland; only *Cobososia pruinosa* has angulate sides of pronotum, but the latter species differs clearly in darkened metafemora (always light brown in *A. populneus*), a different pigmentation of elytra, proportions of antennomeres II, III and IV (compare Fig. 21 and 22) and in the protibial tooth in males (absent in males of *C. pruinosa*).

Anidorus nigrinus (Germar, 1842)

(Figs 3-4, 15)

Material examined

POLAND (66 exx.): **Baltic Coast**: Koszalin (WA70) (label data: "Coeslin"), 3♀♀, 2♂♂ [AL]; Wolin Is., Lubiń (VV66), 31 VII - 8 VIII 1991, 1 ex., leg. MW [MW]. **Pomeranian Lake District**: 2 km SE of Zawada (XU19), f. comp. 173, 29 V 2000, 3 exx. from grasses on a clearing in a pine forest, by beating net, leg. RR [RR]; "Bocheńskie Błoto" nat. res. (XV36) ad Sporysz, 26 VI 2005, 1 ex., leg. AG & RR [RR]; "Bielinek nad Odrą" nat. res. (VU46), 4 VII 1987, 1♀, beating, leg. LBU [ISEA]; Szczecin (VV72) (label data: "Stettin"), 1♀ [MS]. **Masurian Lake District**: Osowiec-Twierdza (FE02), 7 VI 1998, 1 ex., leg. MW [MW]; ad Dręstwo Lake, f. comp. 65 (FE15), 8 VI 1998, 1 ex., leg. MW [MW]; Puszcza Romincka Forest, Stańczyki (FF01), 5 VIII 2005, 1 ex., leg. MW [MW]. **Wielkopolska-Kujawy Lowland**: Włocławek (CD63), 10 VI 1996, 1 ex., leg. PJ [PJ]; Zielonagóra (XU04) ad Obrzycko, 2-15 VI 2002, 1 ex., leg. RR [RR], 16-20 VI 2003, 2 exx., leg. SzK [SzK]; Krzyszkowo (XU12) ad Rokietnica, 5 VII 2001, 1 ex. in pitfall trap baited with dung, leg. DB [SzK]; Dziembowski Jar (XU28) ad Dziembowo, 4 VI 2010, 1 ex., leg. RR [RR]; Poznań-Malta (XU30), 14 VI 2004, 1 ex. in a glue trap on *Pinus sylvestris* L., leg. SzK [SzK]; Poznań-Umultowo (XU31), 10 VI 2013, 1♀ near Collegium Biologicum of AMU, leg. SzK [SzK]; Górzyca (VU71), xerothermous grassland, 27 VI 2009, 1 ex., leg. RR [RR]; "Krajkowo" nat. res. (XT38) ad Poznań, 28 VII 1984, 1♀, beating, leg. MB [ISEA]; Nowogród Bobrzański (WT13), 19 VI 1982, 2♂♂, 2♀♀, leg. PS [ISEA]; Sieciejów (WT01) ad Żary, 19 VI 1983, 1♂, 1♀, leg. PS [ISEA]; Ruda Milicka (XT61) ad Milicz, 3 VIII 1982, 2 exx., leg. LB [LB]. **Mazovian Lowland**: Porządzie (ED23) ad Wyszków, 7 X 1962, 1♂, leg. BB [MIZ]; Warszawa-Pyry (EC07), 6 VI 1931, 1♂, leg. SzT [MIZ].

Podlasie: Białystok-Pietrasze (FD49), IX-X 2001, yellow pans in a garden, 1 ex., leg. JS [MW]; Mielnik ad Siemiatycze, "Głogi" Nature & Landscape Park (FD30), 16 VI 2003, 1 ex., leg. MW [MW]; Mień (FD14) ad Brańsk, 15 VII 1997, 1 ex., 2-14 VII 2004, 2 exx., leg. TM [TM]. **Białowieża Primeval Forest**: f. comp. 454 (FD94), 4 VII 2000, 1♀, leg. JG [ISEA]; 11 VII 2001, 1♂, leg. JG [ISEA]; f. comp. 453C, 2 VII 1991, 1 ex., leg. TM [TM]; Siemianówka (FD96), 4 VI 1998, 1 ex., leg. MW [MW]; Białowieża, Headquarter Park (Park Dyrekcyjny) (FD94), 5 VII 1982, 1 ex., leg. TM [TM]; Białowieża (Pastawnik) (FD94), 14 VI 2001, 1 ex., leg. MW [MW]; Białowieski N.P., f. comp. 104A (FD85), 17 VI 2001, 1 ex., leg. MW [MW]; f. comp. 128C, 16 VI 2001, 1 ex., leg. MW [MW]. **Lower Silesia**: Wrocław-Wojnów (XS56), 6 VI 1993, 1 ex., leg. MW [MW]; Mt. Górzec (WS75) ad Jawor (label data: "Hessberg bei Jauer"), 2 exx. [SchC]; Legnica (WS87) (label data: "Liegnitz"), 2 exx. [SchC]; Polkowice (WT70) (label data: "Polkwitz"), 3 exx., [KolC]; Zimna Woda (WS78) (label data: "Kaltw."), 3 exx., [KolC]. **Trzebnickie Hills**: Działosza (XS88) ad Syców, 24 VII 2005, 1 ex. under bark of a coniferous tree, leg. SzK [SzK]. **Małopolska Upland**: Przedborski L.P., "Murawy Dobromierskie" nat. res. (DB25) ad Dobromierz, 16 VI 2007, 1 ex., leg. MW [MW]. **Świętokrzyskie Mts**: Klonów Range, Smuga ad Ciekoty, f. comp. 133 (DB84), 1 ex. sifted from a wildlife feeder, leg. MW [MW]. **Lubelska Upland**: Puławy (EB69), VI 1908, 1♂, leg. SzT [MIZ]. **Roztocze**: Florianka (FB30), 5 VI 1913, 1♂, leg. FF [MIZ]. **Eastern Sudety Mts**: Niedźwiedzia Cave vic. (XR36), 4 VII 1993, 1 ex., leg. LB [LB]. **Eastern Beskidy Mts:** Przemyśl-Lipowica (FA21), 2 VII 1884, 1♂, leg BK [ISEA].

Moreover, correct identifications of the following previously published specimens were confirmed: **Pomeranian Lake District:** Łękinia ad Miastko (Byk 2011); f. div. Przymuszewo, f. comp. 275 (Gutowski et al. 2006); Bory Tucholskie Forest: f. div. Osie, f. comp. 156 (Gutowski et al. 2006); Bory Tucholskie N.P., f. comp. 198 (Gutowski et al. 2006). **Masurian Lake District**: Puszcza Piska Forest, Pogobie Średnie vic., f. comp. 90 (Gutowski et al. 2010), f. comp. 106 (Gutowski et al. 2010); Biebrzański N.P., f. comp. 123 (Gutowski et al. 2006). **Białowieża Primeval Forest**: f. comp. 288C/318A (Kubisz 2004), f. comp. 131C (Gutowski et al. 2006); "Rezerwat Krajobrazowy im. Władysława Szafera" nat. res. (Borowiec et al. 1992). **Upper Silesia:** f. div. Świerklaniec, f. comp. 101 (Gutowski et al. 2006). **Małopolska Upland:** f. distr. Trzemoszna ad Łagów (Byk 2007, Mokrzycki 2007); f. div. Kozienice, f. comp. 81 (Gutowski et al. 2006).

Morphology

Body 2.1-2.5 mm in length, slender in males (Fig. 3) and more oval in females (Fig. 4); head and elytra dark brown, nearly black, pronotum lighter, from reddish-brown to dark brown; front and middle legs with dark brown femora and light brown tibiae and tarsi, hind legs distinctly darker, antennae yellowish-brown in basal part and darkening distally. Tempora nearly as long as eyes (Fig. 15); antennae in males modified, with strikingly elongate antennomere III. Pronotum with rounded sides. Elytra in males slender and nearly parallel-sided, with lateral elongate impressions covered

with modified setae; in females elytra oval, with rounded sides, broadest in middle or slightly behind middle, without modifications. Hind legs in males distinctly elongated, with strikingly enlarged tarsomere I.

Distribution in Poland

Anidorus nigrinus is known from most regions of Poland. Previously reported to occur in the Baltic Coast, Masurian Lake District, Pomeranian Lake District, Wielkopolska-Kujawy Lowland, Mazovian Lowland, Białowieża Primeval Forest, Świętokrzyskie Mts, Lower Silesia, Trzebnickie Hills, Upper Silesia, Kraków-Wieluń Upland, Małopolska Upland, Lubelska Upland, Roztocze, Western Sudety Mts, Eastern Sudety Mts and Eastern Beskidy Mts. In the present paper recorded for the first time from Podlasie.

Notes on Biology

Anidorus nigrinus is usually collected in a small number of individuals by sweeping and beating bushes and trees. According to Burakowski et al. (1987) larvae develop in a rotten and fungi-infested wood of coniferous trees, especially pines and spruces; adults come up in spring and can be collected till July. Our data demonstrate that *A. nigrinus* is active much longer, it was collected from vegetation in August and even as late as September and October into yellow pans.

Remarks

Anidorus nigrinus cannot be confused with any other species of Aderidae known from Poland; the remarkably dark pigmentation, shiny cuticle, long tempora and male secondary sexual characters on antennae and hind tarsi are unmistakable features that allow for unambiguous identification.

Euglenes oculatus (Paykull, 1798)

(Figs 5-6, 18, 24)

Material examined

POLAND (87 exx.): **Pomeranian Lake District**: "Bielinek nad Odrą" nat. res. (VU46), 28 VI 2010, 2 exx. from an oak branch, leg. RR [RR]; Szczecin (VV72) (label data: "Stettin"), 1♂ [MS]. **Wielkopolska-Kujawy Lowland**: Malin (XS47) ad Trzebnica, 21 VI 1998, 1 ex., leg. MW [MW]; Strugi (XT91) ad Antonin, f. comp. 72, 23 VII 2010, 2 exx., leg. MW [MW]; f. comp. 71/72, 26 VII 2010, 4 exx., leg. MW [MW]; Goszczyn (XT91) ad Antonin, f. comp. 81, 82, 1 ex. from an oak near a pond, leg. MW [MW]. **Mazovian Lowland**: Jabłonna (DD90), 7 VII 1893, 1♀, leg. WM [USMB]; Świder (EC17), 15 VII 1900, 4♀♀, 1♂, leg. WM [USMB]; Warszawa, Las Bielański forest (DC99), 27 VI 1898, 1♀, leg. WM [USMB], 8 VI 1962, 7♂♂, 6♀♀, 17 IV 1965, 1♂, 1♀, 28 IV 1970, 5♂♂, 2♀♀, 7 III 1973, 3♀♀, leg. BB [MIZ], 5 VI 2002, 1 ex., leg. TM [TM]; Warszawa-Ursynów (EC07), 5 VI 2002, 1 ex., leg. TM [TM]. **Białowieża Primeval Forest**: Białowieża, Palace Park (Park Pałacowy) (FD94), 1 VII 1991, 5 exx.; 11 VI 2001, 10 exx. beaten from branches of live oaks; 3 VI 1998,

12 exx.; 16 VI 2000, 5 exx., all leg. MW [MW]; Białowieża, Headquarter Park (Park Dyrekcyjny) (FD94) , 16-17 VII 2002, 2 exx., 13 VIII 1997, 1 ex., 22 VII 1998, 3 exx., all leg. TM [TM]; Białowieża, Polana Białowieska (FD94), 15-27 VI 1991, 1 ex., leg. LB [LB]. **Lower Silesia:** Trzebnica (XS48) (label data: "Trebnitz, 7.41"), VII 1941, 2 exx. (misidentified as *E. pygmaeus*) [PolC]. **Kraków-Wieluń Upland**: Ojcowski N.P., Iwiny (DA16), 1-14 VII 2004, 1 ex. in a trap, fir-beech forest, leg. LBU [RR].

Identifications of previously published specimens were confirmed: **Wielkopolska-Kujawy Lowland:** Rogaliński L.P. (Mokrzycki et al. 2008), **Podlasie:** Kopna Góra ad Supraśl (Kubisz & Szwałko 1991). It was also found that 1♂ and 6♀♀ of *E. oculatus* ([ISEA]) were misidentified and reported by Trella (1923) from **Eastern Beskidy Mts:** Przemyśl-Budy Wielkie (FA21) as *E. pygmaeus*.

Morphology

Body 1.6-2.4 mm in length, head nearly black, pronotum variously dark brown, elytra light brown, legs and antennae light brown to yellowish (Figs 5-6). Tempora very short (Fig. 18); eyes in males very large and nearly connecting in middle, in females smaller and broadly separated in middle; antennae in males (Fig. 24) slightly longer than body, with antennomere XI as long or even slightly longer than IX-X combined, antennomeres VII-X indistinctly serrate, in females antennae shorter than body, not serrate. Pronotum approximately bell-shaped, with sides rounded in anterior half, with or without indistinct impressions near base, when impressions present then indistinctly demarcated. Scutellum with rounded or truncate posterior margin (but see Remarks). Elytra in males nearly parallel-sided, in females with slightly rounded sides.

Distribution in Poland

Euglenes oculatus is known from scarce findings scattered in only a part of geographical regions of Poland. Previously reported to occur in the Baltic Coast, Wielkopolska-Kujawy Lowland, Białowieża Primeval Forest, Podlasie, Małopolska Upland, Świętokrzyskie Mts, Lower Silesia, Upper Silesia, and Kraków-Wieluń Upland. In the present paper recorded for the first time from two large lowland regions: the Pomeranian Lake District and Mazovian Lowland, and actually from the Eastern Beskidy Mts.

Notes on Biology

Euglenes oculatus is usually collected in a small number of individuals by sweeping and beating bushes and trees. Its distribution and biology is poorly known because of problems with determinations discussed below. According to Burakowski et al. (1987) larvae develop in a red, rotten and fungi-infested wood of branches of deciduous trees, especially of oaks, and adults fly on warm evenings near trees. The individuals reported in the present study were collected from the beginning of March till the middle of August.

Remarks

Males of *E. oculatus* can be easily distinguished from *E. pygmaeus* solely on the basis of shorter and less distinctly serrate antennae with strikingly elongate antennomere

XI. Females are much more difficult to identify and during the present study several females were found showing intermediary characters between these two species. In typical females of *E. oculatus* the base of pronotum is not impressed or only indistinctly impressed and the impression has very indistinct margins (Fig. 18). In typical females of *E. pygmaeus* the base of pronotum has a pair of oblique and oval impressions connected in middle (forming one broadly heart-shaped impression), and margins of the impressed area are well-defined (Fig. 17). Moreover, the scutellum in females of *E. oculatus* has rounded or truncate posterior margin (Fig. 18), while that of *E. pygmaeus* is emarginated (Fig. 17). However, the shape of scutellum is sometimes difficult to assess, as in some specimens of *E. oculatus* the posterior margin seems to be barely noticeably emarginate. A larger sample from various populations of both species must be examined to clarify whether this character is useful for identifications or not. The pigmentation of elytra in *E. oculatus* is usually lighter that in *E. pygmaeus*, but this character is clear only when series of both species can be compared. Despite the name "*pygmaeus*", both species have comparable (and rather variable) body lengths, but the smallest specimens more often belong to *E. oculatus*.

Using the popular key presented in Die Käfer Mitteleuropas (Kaszab 1969) may lead a beginner to determine all specimens as *E. oculatus*, independently of their true identity. Correct illustrations can be found in Borowiec & Tarnawski (1983), but characters used in the key may also lead to misidentifications. Useful and illustrated keys were given by Lohse (1992), and Gompel & Barrau (2002).

Euglenes pygmaeus (De Geer, 1775)

(Figs 7-8, 17, 23)

Material examined

POLAND (21 exx.): **Pomeranian Lake District**: Goleniów (VV83) (label data: "Gollnow"), 1♀ [AL]. **Wielkopolska-Kujawy Lowland**: Wielkopolski N.P., Wiry (XT29), 16 VII 1995, 5 exx. ad lucem, leg. EB [SzK]; Chludowo (XU22) ad Poznań vic., military range, 14 VIII 2000, 1 ex. ad lucem, leg. UW [SzK]. **Białowieża Primeval Forest**: f. comp. 314 (FD95), 19 IV 1967, 1♀, leg. BB [MIZ]; f. comp. 454 (FD94), 16 VI 1998, 1 ex., leg. JG [TM]; Białowieża, Headquarter Park (Park Dyrekcyjny), 18 VIII 1998, 1 ex., leg. TM [TM]. **Lower Silesia:** Wrocisławice (XS06) ad Środa Śląska (data label: "Obsendorf Kr. Neumarkt, 6.1940"), VI 1940, 1 ex., ?leg. Lanzke, [PolC]; Trzebnica (XS48) (label data: "Trebnitz"), 1 ex., VII 1941, [PolC]. **Roztocze**: Majdanek (FA79), 1♀, leg. FF [MIZ]; Florianka (FB30), 1 VIII 1918, 1♀, leg. FF [MIZ]. **Western Beskidy Mts**: Zawoja (CV99), 12 VII 1938, 1♀, leg. SP [ISEA]; Izdebnik (DA12) ad Lanckorona, VIII 1983, 1♂, leg. JM [ISEA]; Zakliczyn (DA82), VIII 1986, 2♂♂, 1♀, leg. JM [ISEA]; Ruda Kameralna (DA81) ad Zakliczyn, VII 1988, 1♀, leg. JM [ISEA]; **Pieniny Mts**: Krościenko (DV57), 25 VII 1925, 1♀, leg. SzT [MIZ].

Identifications of the following previously published specimens were confirmed: **Podlasie:** Kopna Góra ad Supraśl (Kubisz & Szwałko 1991), **Białowieża Primeval Forest:** f. comp. 288C (Kubisz 2004) and **Świętokrzyskie Mts:** f. div. Cisów ad Łagów (Mokrzycki 2007). Specimens preserved at [ISEA] and reported by Trella (1923) from

Eastern Beskidy Mts: Przemyśl-Budy Wielkie as *E. pygmaeus* were misidentified and in fact belong to *E. oculatus*.

Morphology

Body (Figs 7-8) 2.1-2.3 mm in length, nearly identical to *E. oculatus*, and only differences are given here. Antennae in males distinctly longer than body, distinctly serrate from antennomere IV to X, antennomere XI shorter than IX-X combined (Fig. 23). Pronotum in females (Fig. 17) typically with a pair of oblique oval impressions connected in middle with well-defined margins. Scutellum with concave posterior margin (Fig. 17).

Distribution in Poland

Euglenes pygmaeus has been known from scarce findings scattered in most geographical regions of Poland. However, older records need verification due to possible misidentifications as the apparently much more common *E. oculatus*, as demonstrated by four times as many specimens of the latter species found during the present study in comparison to *E. pygmaeus*. Previously reported to occur in the Baltic Coast, Pomeranian Lake District, Wielkopolska-Kujawy Lowland, Mazovian Lowland, Podlasie, Białowieża Primeval Forest, Lower Silesia, Trzebnickie Hills, Upper Silesia, Małopolska Upland, Świętokrzyskie Mts, Roztocze, Western Sudety Mts, Western Beskidy Mts, Nowy Targ Basin and Pieniny Mts. Erroneously recorded from Eastern Beskidy Mts.

Notes on Biology

Euglenes pygmaeus is usually collected in a small number of individuals by sweeping and beating bushes and trees or on screens at light. Its distribution and biology is poorly known because of problems with determinations. According to Burakowski et al. (1987) larvae develop in a red or brown and rotten fungi-infested wood, and adults fly on warm evenings. Individuals reported in the present study were collected from the middle of April till the middle of August.

Remarks

See Remarks for *E. oculatus*.

Cobososia pruinosa pruinosa (Kiesenwetter, 1861)

(Figs 9-10, 22)

Material examined

BULGARIA, FRANCE, HUNGARY, ITALIA, ROMANIA, SLOVAKIA: 23 exx. from various localities [MIZ, MS, PJ & MNHW].

Morphology

Body (Figs 9-10) 1.8-2.4 mm long, ochre-brown, with distinctly darkened metafemora and usually darkened elongate areas along elytral suture and lateral elytral margins (only rarely absent or indistinct, as in Fig. 9). Tempora rudimentary. Antennae (Fig. 22)

shorter than body, with all antennomeres elongate, antennomere XI more than twice as long as broad, with subcylindrical basal part and abruptly narrowing, subconical distal part. Pronotum approximately pentagonal, with sides divergent from base to anterior 1/4 and then rapidly narrowing anterad, so that pronotum has distinct lateral angles. Elytra both in males and females oval, with rounded sides and broadest in or behind middle. Males with curved protibiae bearing on their internal margin distinct subapical denticle (Fig. 9).

Remarks

Alonso-Zarazaga (2010) discussed nomenclatural problems with the generic names *Olotelus* Mulsant & Rey and *Otolelus* Mroczkowski, both considered by him as invalid according to provisions of the present Code (ICZN, 1999) and despite the subsequent attribution of the latter name to Klinger (2000). Apart from proposal of a new replacement name *Gompelia* for several species originally placed in *Olotelus* by Mulsant & Rey, Alonso-Zarazaga (2010) transferred the species originally described as *Xylophilus pruinosus* Kiesenwetter to the genus *Cobososia* Collado & Alonso-Zarazaga, 1996.

This species was included in the Polish fauna by Jakobson (1915) and Borowiec & Tarnawski (1983). The Catalogue of Palaearctic Coleoptera (Nardi 2008) also cites Poland at *Otolelus pruinosus* (Kiesenwetter), presumably on the basis of the above-mentioned authors. We were not able to locate any voucher specimens of this species in Polish collections and *Cobososia pruinosa* should be removed from the list of Polish species. However, judging from the general distribution, the occurrence of *C. pruinosa* in Poland is not improbable.

The darkened metafemora, protibial tooth in males and often darkened elytral sutures and lateral margins allow for unambiguous identification of this species.

Phytobaenus amabilis Sahlberg, 1834

(Fig. 11)

Material examined

POLAND (14 exx.): **Mazovian Lowland**: Świder (EC17), 15 VII 1900, 1♂, leg. WM [USMB]. **Białowieża Primeval Forest**: Białowieski N.P., f. comp. 398 (FD94), 27 VI 1991, 1 ex., leg. MW [MW]; f. comp. 318D, 5 VII 2000, 1 ex., leg. TM [TM]; Białowieża (FD94), VII 1935, 1 ex., 27 IX 1951, 1 ex., leg. BB, 26 X 1951, 1 ex., leg. BB [MIZ], gravel pit vic., 17 VII 1998, 1 ex. beaten from an oak, leg. MW [MW]; Headquarter Park (Park Dyrekcyjny), 3 VIII 1997, 1 ex., 6 VIII 2001, 1 ex., leg. TM [TM]. **Kraków-Wieluń Upland**: Kraków-Borek Fałęcki [DA23], 27 VIII 1986, 1 ex., leg. JM [ISEA]. **Małopolska Upland**: Chroberz-Złota (DA68) ad Pińczów, 22 IX 1953, 1 ex., leg. RB [MIZ]. **Eastern Beskidy Mts**: Średnia Wieś (EV97) ad Lesko, VIII 1935, 3 exx., leg. JZ [EGM].

Additionally identities of previously reported specimens were confirmed: **Białowieża Primeval Forest** (Kubisz 1995, 2004) and **Eastern Beskidy Mts**: Przemyśl env. (Trella 1923).

Morphology

Body (Fig. 11) 2.2-2.5 mm in length, head, pronotum and elytra dark brown, elytra bearing cream-white lateral, adsutural and posterior spots; antennae, fore and middle legs light brown, hind legs darkened. Head in dorsal view barely visible, always strongly deflexed, tempora rudimentary. Antennae shorter than body, with antennomeres as long as broad or elongate, antennomere XI with subcylindrical basal part and rapidly narrowing, asymmetrical and pointed distal subconical part. Pronotum bell-shaped, with lateral margins in posterior third distinctly recurved. Elytra elongate and nearly parallel-sided. Sexual dimorphism indistinct, females similar to males.

Distribution in Poland

Phytobaenus amabilis is a very rare species of Aderidae, known from several scattered localities. Previously reported to occur in the Masurian Lake District, Białowieża Primeval Forest, Małopolska Upland, Roztocze, Eastern Beskidy Mts and Bieszczady Mts. During the present study found for the first time in the Mazovian Lowland and Kraków-Wieluń Upland.

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Notes on Biology

Phytobaenus amabilis is in Poland known from a small number of individuals collected by sweeping and beating bushes and trees. The biology of this rare species is almost unknown, except for collecting dates and circumstances. According to Burakowski at al. (1987) adults can be found from an early spring till July. Individuals reported in the present study were collected mainly during summer months, but also in autumn (from the end of June till the end of October), and therefore it is evident that adults survive much longer than previously thought.

Remarks

This is the most remarkable species of Aderidae found in Poland, hardly possible to be confused with any other representative of this family.

Pseudanidorus pentatomus (Thomson, 1864)

(Figs 12-13, 20)

Material examined

POLAND (14 exx.): **Mazovian Lowland**: Grabie (DC46) ad Skierniewice, forester's lodge "Prochowy Młynek", 25-31 VII 1994, 1 ex., ad lucem, leg. MW [MW]. **Białowieża Primeval Forest**: Białowieski N.P., "Głuszec" nat. res., f. comp. 135C (FD95), 20 VI 2000, 1 ex., leg. MW [MW]; Białowieski N.P., 20 VI - 20 VII 2000, 3 exx., 20 VII - 30 VIII 2000 1 ex., 1 V - 10 VI 2000, 2 exx., 10 VI 2000, 2 exx., 10 VII - 20 VII 2000, 1 ex., 30 VIII 2000, 2 exx., all leg. JB [JB & PJ]. **Świętokrzyskie Mts**: Świętokrzyski N.P., Wzorki ad Św. Katarzyna, f. comp. 62A (DB94), 20 VI 2007, 1 ex., leg. MW [MW].

Morphology

Body (Figs 12-13) 2.0-2.3 mm in length, moderately dark brown, with legs and antennae slightly lighter. Tempora very short. Antennae (Fig. 20) much shorter than elytra, antennomeres II, VI and X about as long as broad, XI less than twice as long as broad, with strongly rounded sides, antennomeres I, III-V and VII-IX slightly longer than broad. Pronotum with rounded sides, with distinct but irregular in shape and diffused impressions near base. Elytra in both sexes with only slightly rounded sides, broadest behind middle. Sexual dimorphism expressed in the vestiture of hind femora, which in males have dense and short setae of equal length along the ventral margin of metafemora, while in females in the posterior part of a similar setal row there is a bunch of strikingly long setae (illustrated by Lohse 1992; Fig. 4a).

Distribution in Poland

Pseudanidorus pentatomus is one of the rarest species of Aderidae in its entire range, in Poland known only from the 14 specimens reported herein. Previously reported to occur in the Mazovian Lowland, but without exact collecting data (Kowalczyk et al. 2002); this is the specimen from Grabie ad Skierniewice listed above. During the present study found for the first time in the Białowieża Primeval Forest and Świętokrzyskie Mts. This species was erroneously not recorded from Poland in the Catalogue of Palaearctic Coleoptera (Nardi 2008).

Notes on Biology

Almost nothing is known about the biology of this extremely rare species. In Poland it has been collected from June till the end of August by sweeping and on a screen at light in forests; in France (Gompel & Barrau 2002) in May and June, but also there it is an extremely rare aderid.

Remarks

Pseudanidorus pentatomus is similar to *Vanonus brevicornis* in the body length, shape and fine dense vestiture. Proportions of antennomeres offer unambiguous key characters: in *P. pentatomus* antennomeres VII-X are never distinctly transverse, while the width of these antennomeres in *V. brevicornis* is clearly larger than length. Moreover, females of *P. pentatomus* have the ventral margin of metafemora not expanded in its distal part and bearing a row of dense and short setae with a strikingly long bunch of setae behind middle, while in females of *V. brevicornis* a broad subtriangular and setose expansion of the posterior femoral margin can be seen (illustrated by Lohse 1992; Figs 4 and 4a).

Vanonus brevicornis brevicornis (Perris, 1869)

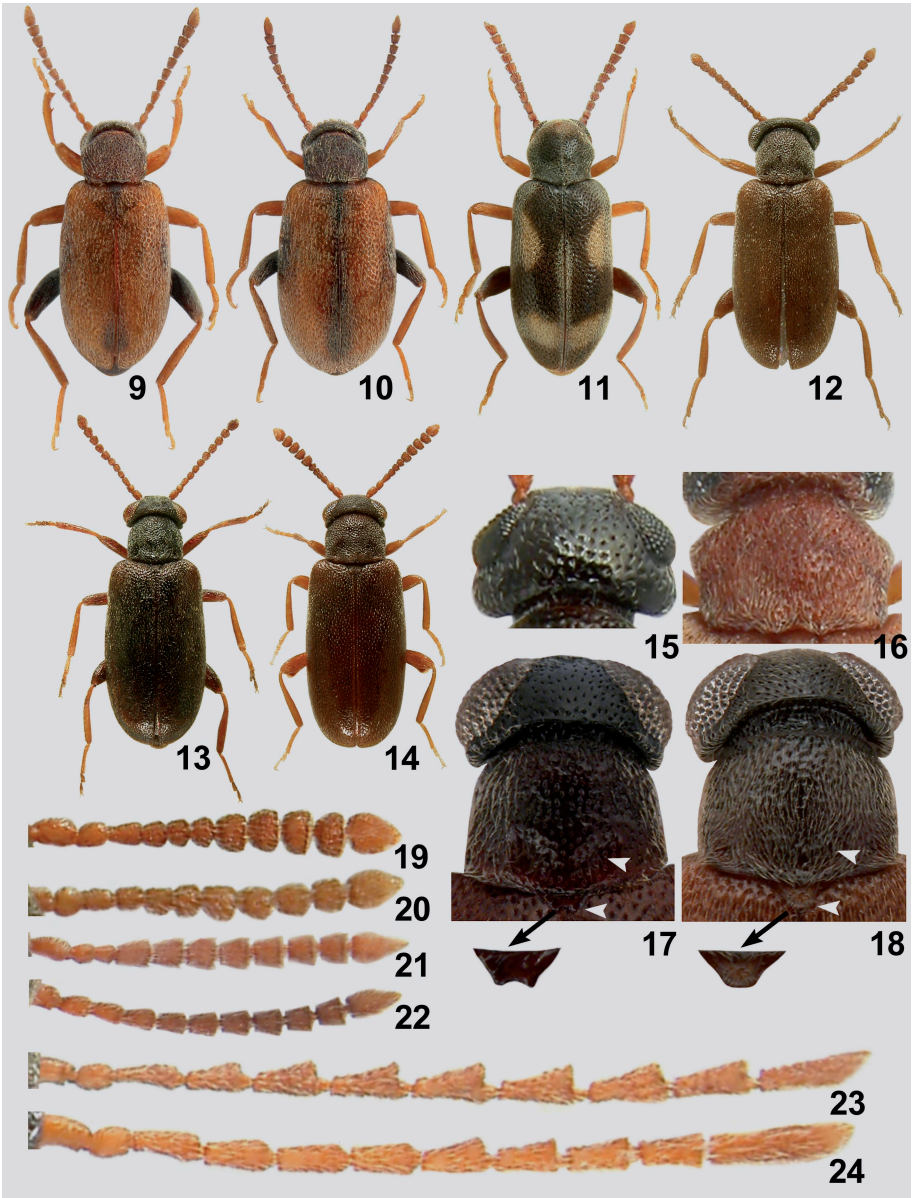
(Figs 14, 19)

Material examined

POLAND (2 exx.): **Wielkopolska-Kujawy Lowland**: Grabice vic. (VT74), 28 VIII 2011, 1 ex. under bark of old *Quercus robur* L., leg. SzK [SzK]. **Podlasie:** Sobibór

(FC80) ad Włodawa, Popówka, 21 VII 2000, 1♀ taken from a dry silique of *Alliaria petiolata* (M. Bieb.) Cavara & Grande on the edge of a mixed pine-oak forest, leg. MW [MW].

1-8. Dorsal habitus of Aderidae: *Aderus populneus*, male (1) and female (2); *Anidorus nigrinus*, male (3) and female (4); *Euglenes oculatus*, male (5) and female (6); *Euglenes pygmaeus*, male (7) and female (8)



9-24. Dorsal habitus (9-14) and structural details (15-24) of Aderidae: *Cobososia pruinosa*, male (9), female (10) and antenna of female (22); *Phytobaenus amabilis*, male (11); *Pseudanidorus pentatomus*, male (12), female (13) and antenna of male (20); *Vanonus brevicornis*, female (14) and antenna of female (19); *Anidorus nigrinus*, head of female in dorsal view (15); *Aderus populneus*, antenna of male (21); *Euglenes pygmaeus*, antenna of male (23); *Euglenes oculatus*, antenna of male (24)

Morphology

Body (Figs 1-2) 1.50-1.55 mm, moderately dark brown with slightly lighter legs and antennae, slender. Tempora very short. Antennae (Fig. 19) much shorter than elytra, with antennomeres I-IV elongate, V about as long as broad, VI-X transverse, and XI about 1.5× as long as broad, with strongly convex, rounded sides. Pronotum with weakly rounded sides, with a pair of shallow lateral impressions near base and median area between impressions slightly raised. Elytra nearly parallel-sided. Males and females similar except for metafemora, which in males have a dense row of setae along a non-modified ventral margin, while in females the metafemora have expanded posterior margin in the subapical region to form a broad subtriangular tooth, and a dense setation is restricted to the distal margin of this expansion (Fig. 14; also illustrated by Lohse 1992; Fig. 4).

Distribution in Poland

Vanonus brevicornis is extremely rare in Poland. The only previously known Polish record (Brynek, Upper Silesia) was given by Szołtys (2008). Also this species was not recorded from Poland in the Catalogue of Palaearctic Coleoptera (Nardi 2008).

Notes on Biology

This species is a great rarity everywhere in its range and almost nothing is known about its biology.

Remarks

Vanonus brevicornis can be confused with *Pseudanidorus pentatomus*, differences are given in the Remarks for the latter species.

IDENTIFICATION KEY TO THE SPECIES OF ADERIDAE REPORTED FROM POLAND

1. Elytra with cream-white spots on dark background (Fig. 11) .... *Phytobaenus amabilis*
-. Elytra without white spots 2
2. Tempora nearly as long as eyes (Fig. 15) ..... *Anidorus nigrinus*
-. Tempora several times shorter than eyes (Fig. 17), sometimes barely discernible 3
3. Antennomere VII distinctly transverse (Fig. 19) ..... *Vanonus brevicornis*
-. Antennomere VII elongate or as long as broad (Fig. 20) 4
4. Antennomere XI about 1.5x as long as broad; antennomere VI transverse (Fig. 20) ..... *Pseudanidorus pentatomus*
-. Antennomere XI at least twice as long as broad; antennomere VI elongate (Figs 21-24) 5
5. Lateral margins of pronotum in dorsal view in anterior 1/3-1/4 rapidly narrowed anterad and forming distinct lateral angles (Fig. 16) 6
-. Lateral margins of pronotum rounded in anterior half, not forming lateral angles (Fig. 17) 7

6. Antennomere IV much longer than III (Fig. 21); all femora light brown; elytra with variously distinct pattern of transverse stripes composed of light and dense setae (Figs 1-2) ..... *Aderus populneus*
-. Antennomere IV as long as III (Fig. 22); metafemora distinctly darkened; elytra without stripes of light setae, usually with darkened adsutural area and lateral margins (Figs 9-10) ..... *Cobososia pruinosa*
7. Eyes nearly connecting, separated by frontal area as narrow as about two ommatidia 8
-. Eyes broadly separated by frontal area as wide as about half width of eye 9
8. Antennomere XI shorter than IX-X combined; antennomeres IV-IX strongly asymmetrical, distinctly serrate (Fig. 23) ..... *Euglenes pygmaeus*, male
-. Antennomere XI as long or slightly longer than IX-X combined; antennomeres IV-VI symmetrical, VII-X slightly asymmetrical, indistinctly serrate (Fig. 24) ..... *Euglenes oculatus*, male
9. Base of pronotum with a pair of distinct oval and oblique impressions connected in middle; posterior margin of scutellum emarginate (Fig. 17) .... *Euglenes pygmaeus*, female
-. Base of pronotum without impressions or with indistinct and diffused impressions; posterior margin of scutellum rounded or truncate (Fig. 18) .... *Euglenes oculatus*, female

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