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First record of *Acanthoscelides pallidipennis* (Motschulsky, 1874) (Coleoptera: Chrysomelidae: Bruchinae) in Poland

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Abstract: *Acanthoscelides pallidipennis* (Motschulsky, 1874) is an invasive bruchid species native to North America. Since 1970s, its gradual expansion along with its host plant *Amorpha fruticosa* L., has been observed in Europe and Asia. This study presents the first confirmed record of this species in Poland, specifically in Oblin (Central Mazovia Lowland, Middle Vistula Valley, Maciejowice Muncipality).

Key words: alien species, expansion, faunistic, zoogeography, climate change

Seed beetles (Chrysomelidae: Bruchinae) are a common group of beetles with an economically important role in agriculture. They are well known as serious pests of grain legumes worldwide. Although most bruchid species are native to tropical and subtropical regions, some have expanded into temperate zones due to climate change and human-mediated dispersal along with their host plants. Thanks to their rapid adaptive abilities, they have formed stable populations and become cosmopolitan in distribution. The group mainly consists of important pests affecting leguminous crops, including the genera *Acanthoscelides* Schilsky, 1905; *Callosobruchus* Pic, 1902; and *Zabrotes* Horn, 1885 (Borowiec 1980a; Borowiec 1988).

Borowiec et al. (2011), in Critical Check-list of the Polish Chrysomeloidea, reported 25 species of seed beetles known from Poland, representing the following genera: *Bruchus* Linnaeus, 1767 (12 species), *Bruchidius* Schilsky, 1905 (9 species), *Spermophagus* Schoenherr, 1833 (2 species), *Zabrotes* (1 species) and *Acanthoscelides* (1 species). Stored-product pests belonging to the genus *Callosobruchus*, introduced to many countries including Poland, as well as occasionally introduced species like *Mimosestes mimosae* (Fabricius, 1781) (Borowiec 1983b; Borowiec 1988), which do not form stable populations in natural ecosystems, are not considered native beetle species. In recent years, the invasive species *Megabruchidius dorsalis* (Fåhraeus, 1839) has also been recorded in Poland. It has been found in large urban areas such as Wrocław (Ruta et al. 2017), Kraków (Kadej et al. 2019), and Warsaw (Tatur-Dytkowski & Górski 2022); however, its further expansion in Poland is expected (Ruta et al. 2017).

The genus *Acanthoscelides* comprises about 340 species distributed in North and Central America (Johnson 1990). Currently, three of them were found in Europe (Anton 2010; Anton 2024), all introduced. *Acanthoscelides obtectus* (Say, 1831), one of the most dangerous pests of kidney beans (*Phaseolus* spp.), was introduced to Europe in the 19th century with infested seeds (Beenen & Roques 2010; Yus-Ramos et al. 2014). In Poland, it was first recorded in 1934, initially only as a storage pest (Borowiec 1988). The second species, *Acanthoscelides pallidipennis* (Motschulsky, 1874), was unintentionally introduced into Europe alongside its host plant, invasive false indigo *Amorpha*

fruticosa L. (Fabaceae: *Amorpheae*). This species was originally distributed in the United States, from northern California south to Arizona, east to Texas, and north to Minnesota (Tuda et al. 2001). It was first recorded in Europe in Hungary by Decelle (1979), identified as *Acanthoscelides seminulum* (Horn), and in Bulgaria by Borowiec (1980b), described as a new species *Acanthoscelides tarnawskii* Borowiec, 1980. These names were synonymised by Kingsolver (1979) and Wendt (1981) respectively, what was later confirmed by Borowiec (1983a). Since then, this species has expanded its range across Europe and has been recorded from many locations (Borowiec 1983a; Szentesi 1999; Gagić et al. 2008; Beenen & Roques 2010; Anton 2010; Ponel et al. 2013; Yus-Ramos et al. 2014; Anton 2024). Moreover, it has also been found in several locations in Asia: Korea (Borowiec 1983c), China (Tan et al. 1980; Zhang & Liu 1991), Japan (Tao et al. 1999; Tuda et al. 2001), Kazakhstan (Temreshev & Valieva 2016) and Russia (Kasatkin 2000; Kuprin et al. 2018; Kolyada & Kolyada 2019).

Figure 1. Habitat of *Acanthoscelides pallidipennis* in Oblin. A – *Amorpha fruticosa* shrubs near roadside along shore of Oblin Lake, B–C – a blooming inflorescence of *A. fruticosa* with feeding *A. pallidipennis* specimens, D – living specimen of *A. pallidipennis.*

Acanthoscelides pallidipennis is not listed in the Critical Check-list of the Polish Chrysomeloidea (Borowiec et al. 2011), although it was reported from Poland by Beenen & Roques (2010), but without providing specific records. This information most likely refers to *Acanthoscelides obtectus,* which was not mentioned as occurring in Poland in that paper, despite its presence in the country being well documented (Borowiec 1980a; Borowiec 1983b; Borowiec 1988). *Acanthoscelides pallidipennis* has also not been recorded after 2011 (L. Borowiec, pers. comm.). In all areas outside its natural range, *A. pallidipennis* feeds exclusively on *Amorpha fruticosa.* In its native range, it also feeds on *Amorpha pubescens* Pursh*, Amorpha californica* Nutt., and plants from other genera of the tribe *Amorpheae:* inculding *Errazurizia* Phil. and *Parryella* Torr. & Gray (Szentesi 1999; Tuda et al. 2001). The third species, *Acanthoscelides macrophthalmus* (Schaeffer, 1907), was reported from Europe more recently. It was first recorded in Cyprus (Vassiliou & Papadoulis 2008) on *Leucaena leucocephala* (Lam.) de Wit. Subsequently, it was also found in Spain (Anton 2024).

In this article, we present the first confirmed record of *Acanthoscelides pallidipennis* in Poland. Specimens of this species were observed by first author on flowering shrubs of *Amorpha fruticosa* (Fig. 1) near the roadside along Oblin Lake in Oblin, Mazovia Lowland (zoogeographical division of Poland from KFP: Burakowski et al. 1973), Middle Vistula Valley, Maciejowice Muncipality (51°42’00.5”N, 21°31’04.1”E; UTM: EC32) (Fig. 2). Specimens were collected on 30 June 2024 (12 males, 14 females) and 15 August 2025 (5 males, 3 females). Observations conducted over two years show that this species is able to survive the winter in this location, indicating the presence of a permanent, stable population. The voucher specimens are deposited in authors’ collections.

Acanthoscelides pallidipennis is easily distinguished from the other *Acanthoscelides* species recorded in Poland – *Acanthoscelides obtectus* – by several morphological features: its smaller body length (1.1–2.7 mm, compared to 2.9–4.2 mm in *A. obtectus*); the presence of red maculae of variable shape on each elytron (in *A. obtectus*, the elytra are at most reddish at the apex); black pygidium and abdomen (both red in *A. obtectus*); and a very long inner spine on the hind tibia (shorter in *A. obtectus*) (Yus-Ramos et al. 2014). Comparison of the habitus (Fig. 3) and genitalia (Fig. 4) of collected

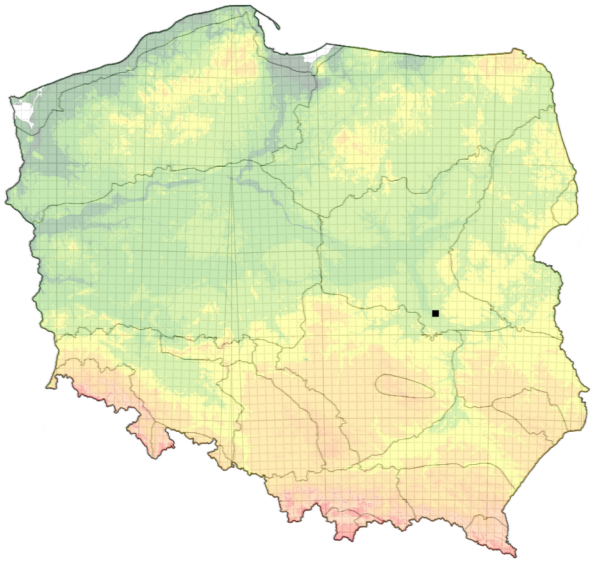

Figure 2. Distribution of *Acanthoscelides pallidipennis* in Poland (map generated with MapaUTM ver. 6: Gierlasiński 2025).

specimens with drawings and photographs from previous publications (Borowiec 1980b; Borowiec 1987; Borowiec 1988; Tuda et al. 2001) allowed us to confirm the identification as *Acanthoscelides pallidipennis* without any doubt.

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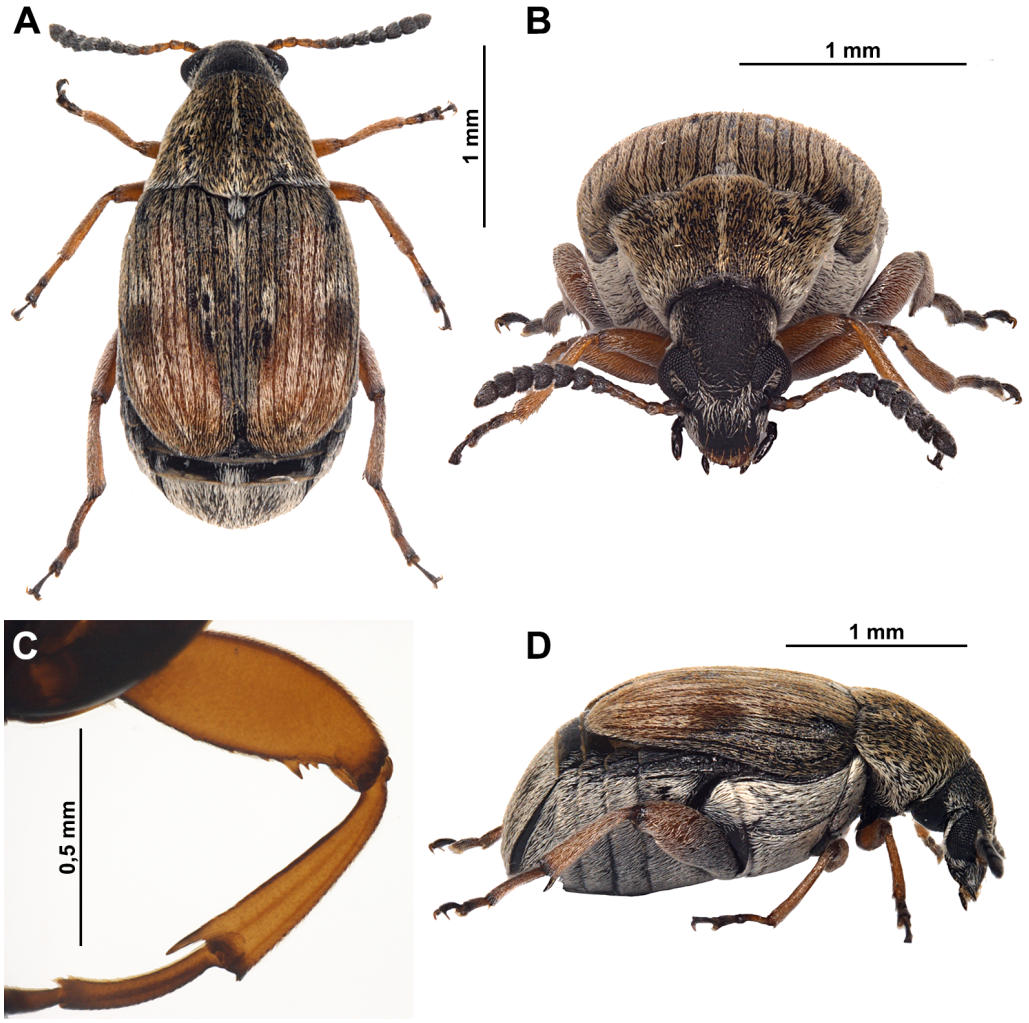

Figure 3. Habitus of *Acanthoscelides pallidipennis*. A – dorsal, B – frontal, C – hind leg with three teeth on inner margin of femur, D – lateral.

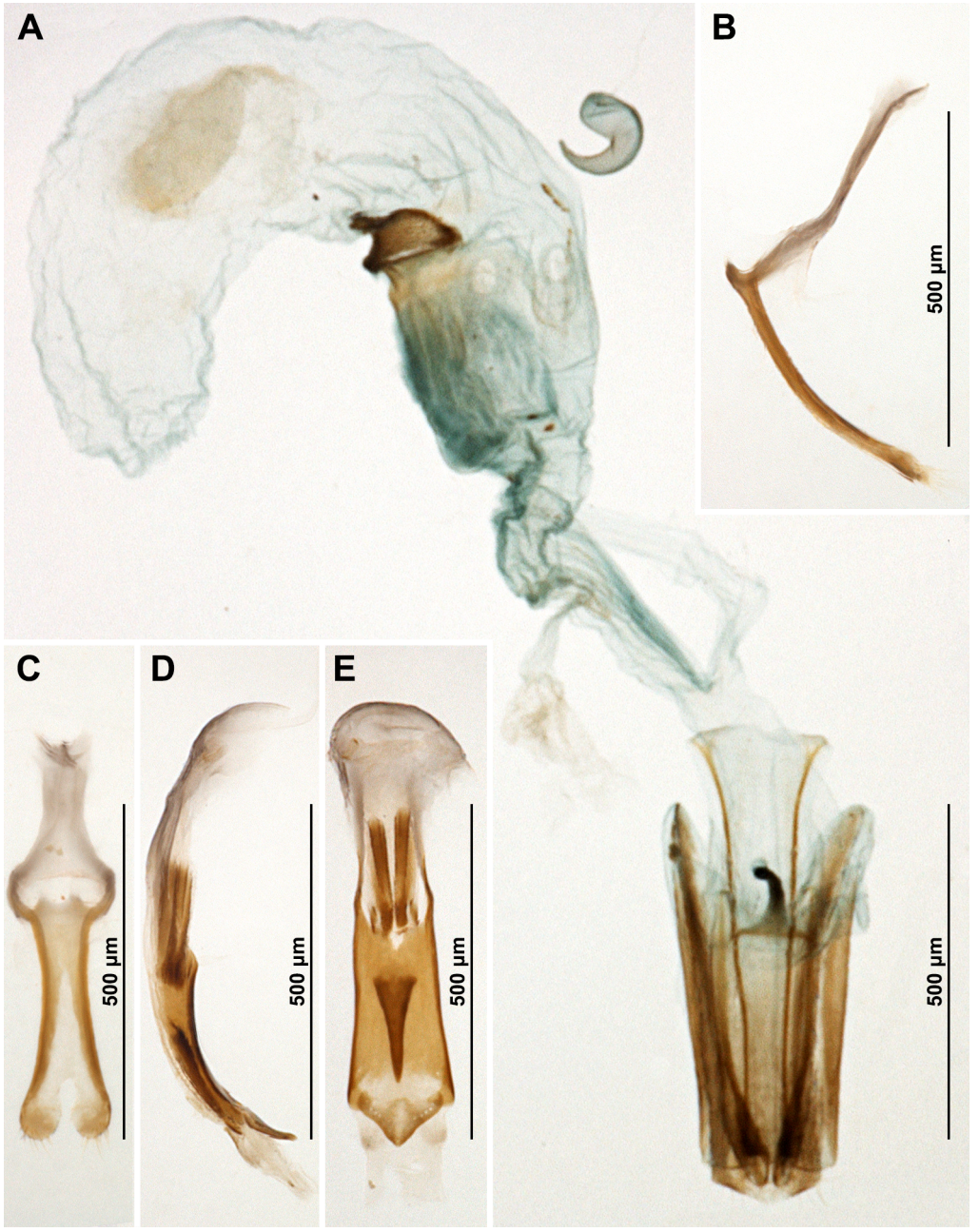

Figure 4. *Acanthoscelides pallidipennis.* A – female genitalia, B–E – male genitalia (B – tegmen, lateral, C – tegmen, inner; D – penis, lateral, E – penis, inner).

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Streszczenie

Pierwsze stwierdzenie strąkowca *Acanthoscelides pallidipennis* (Motschulsky, 1974) (Coleoptera: Chrysomelidae: Bruchinae) w Polsce

Strąkowiec *Acanthoscelides pallidipennis* to inwazyjny gatunek chrząszcza z rodziny stonkowatych (Chrysomeloidae). Pierwotny zasięg występowania tego gatunku obejmuje Amerykę Północną, skąd przedostał się do Palearktyki wraz ze swoją rośliną żywicielską – amorfą krzewiastą (*Amorpha fruticosa*). W Europie po raz pierwszy wykazano ten gatunek z Węgier i Bułgarii w latach 70. XX wieku. Od tego czasu obserwuje się jego stopniową ekspansję w Europie i Azji. W niniejszej pracy przedstawiono pierwszą potwierdzoną informację o występowaniu tego gatunku na terenie Polski. Stanowisko *Acanthoscelides pallidipennis* odkryto na Nizinie Mazowieckiej, w miejscowości Oblin (województwo mazowieckie, powiat garwoliński, gmina Maciejowice), w okolicy Jeziora Oblin. Obserwacje prowadzone w latach 2024 i 2025 potwierdzają, iż gatunek ten jest w stanie przetrwać zimę, co wskazuje na stabilną, trwałą populację w tym miejscu. Jest to drugi – obok strąkowca fasolowego (*Acanthoscelides obtectus*) – przedstawiciel rodzaju *Acanthoscelides* wykazywany na terenie Polski.

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