

Notes on leaf beetles of the Kampinos National Park in Poland – Donaciinae (Coleoptera: Chrysomelidae)

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Abstract: This study presents detailed faunistic information on the occurrence of 19 species of Donaciinae within the Kampinos National Park, representing nearly 70% of the Donaciinae fauna of Poland. This is a remarkably high number for a protected area in which aquatic and hydrogenic habitats occupy only a very small surface area — approximately 160 ha, which constitutes 0.4% of the park's area. Kampinos National Park also compares very favourably with other areas of varying conservation regimes located along large rivers, lakes, or within extensive wetland complexes, where a considerably greater availability of aquatic and riparian habitats would normally be expected to support higher species richness.

Key words: semi-aquatic beetles, new data, Mazovian Lowland, faunistic, Poland

INTRODUCTION

The subfamily Donaciinae is one of the few Chrysomelidae lineages of leaf beetles adapted to aquatic environments. The degree of dependence on water varies among genera being lowest in *Plateumaris* Thomson, 1859, which is associated primarily with marsh vegetation, and highest in *Macrolea* Samouelle, 1819, which spends almost its entire life cycle submerged (Warchałowski 1985).

In Europe, the subfamily Donaciinae comprises 49 species belonging to three genera: *Plateumaris*, *Donacia* Fabricius, 1775, and *Macrolea* (Silfverberg 2010). In Poland, the group is represented by 28 species from all three genera, although most faunistic records of their occurrence in the country are based on observations from the late 19th and early 20th centuries (Burakowski et al. 1990, 2000). Only a few studies published after the year 2000 have reported new localities (Aleksandrowicz & Marczak 2004, Ścibior 2010, Buczyński et al. 2019).

From the area of Kampinos National Park, only three species have been reported to date: *Donacia semicuprea* Panzer, 1796, *Plateumaris consimilis* (Schrank, 1781), and *P. sericea* (Linnaeus, 1758) (Burakowski et al. 1990, Marczak 2020).

STUDY AREA

Kampinos National Park, located in central Poland, is the second largest—and the only national park in this part of the country. Its area covers 385.4 km² and includes a significant fragment of the historical Kampinos Forest. The present-day Kampinos Forest is a remnant of the vast primeval woodlands that once covered the region of Mazovia. As a result of centuries of forest management and intense urbanization pressure, the forest has become an isolated woodland island within Mazovia, separated from other relatively large forest complexes (the Bolimów, Jaktorów, and Korabiew forests),

with which it still formed an extensive continuous woodland as late as the 16th century (Marczak & Królik 2015).

The landscape of Kampinos National Park consists of longitudinal dune belts covered by pine forests, alternating with marsh depressions dominated by alder carrs, mixed broadleaved forests, and extensive meadows (Marczak 2020). Aquatic and hydrogenic habitats occupy only a very small portion of the area—these include mainly drainage ditches and canals, small field- and forest-embedded water bodies, sedge fens with stagnant water, and low peatlands (Danyłow & Marczak 2014). In total, water-covered areas amount to approximately 160 ha, which, given the park's total area of just over 38,500 ha, represents only 0.4% of its surface (Wilk et al. 2023).

Only three water bodies are sufficiently large and stable to retain water throughout the year and to support well-developed marsh vegetation: Lake Tomczyn near Leszno, the peat pools in the village of Nart, and the pond adjacent to the wastewater treatment plant in Truskaw. Despite the small overall extent of aquatic habitats, aquatic and semi-aquatic vegetation is well represented. It comprises 14 types of aquatic plant communities and 18 types of waterside communities, including the majority of plant taxa typical for the Central European lowlands (Korniluk 2023).

MATERIAL AND METHODS

Specimens were collected between 2009 and 2024 within the boundaries of Kampinos National Park, at accessible water bodies, canals, and wet meadows (Fig. 1). Specimens were collected using an entomological sweep net from emergent and waterside vegetation. Additionally, hand collecting was carried out by visually searching aquatic plants, particularly those with floating leaves: yellow water-lily (*Nuphar luteum* L.), white water-lily (*Nymphaea alba* L.), least water-lily (*Nymphaea candida* Presl & Presl), and broad-leaved pondweed (*Potamogeton natans* L.).

All specimens were collected and identified by the author and are deposited in the author's private collection.

For each locality, the corresponding UTM grid square code is provided. Taxonomic nomenclature follows Silfverberg (2010) and Geiser (2023).

RESULTS

Detailed faunistic information on the occurrence of 19 Donaciinae species in the area of Kampinos National Park is presented below.

Donacia aquatica (Linnaeus, 1758)

- Nart, peat excavation pits [DC69], on *Sparganium* spp., 1 ex., 18 Jun 2018;
- Truskaw, Mokre Łąki pond [DC89], on *Sparganium* spp., 1 ex., 3 Jun 2021.

A common species, recorded from almost all regions of Poland (Burakowski et al. 1990). It occurs along water margins in places where its host plant, *Sparganium simplex* Huds., is present (Warchałowski 1985).

Donacia bicolora Zschach, 1788

- Nart, peat excavation pits [DC69], on *Sparganium* spp., 2 exx., 18 Jun 2018;
- Ławy, Zaborowski Canal [DC79], on *Sparganium* spp., 2 exx., 30 May 2024;
- Nowa Dąbrowa, Ł-9 Canal [DC79], on *Sparganium* spp., 2 exx., 11 Jul 2014;

– Truskaw, Mokre Łąki pond [DC89], on *Sparganium* spp., 1 ex., 18 May 2019.

A common species, recorded from almost all of Poland (Burakowski et al. 1990). It is found on the margins of standing waters as well as drainage ditches and small streams. The species is associated with various *Sparganium* L. taxa and is most frequently collected on *Sparganium ramosum* Huds. (Warchałowski 1985).

Donacia brevicornis Ahrens, 1810

– Mały Truskaw, Struga Canal [DC89], on *Typha angustifolia* L., 2 exx., 4 Jul 2016.

A rarely collected species, known from the Baltic Coast, the Wielkopolska–Kujawy Lowland, the Mazovian Lowland, Upper Silesia, the Kraków–Wieluń Upland and the Roztocze Upland (Burakowski et al. 1990). It was also recently recorded in the Podlasie Lowland (Pietrykowska & Staniec 1997). The species is associated with various *Carex* spp., *Bulboschoenus maritimus* L., *Typha angustifolia* L. and *Sagittaria sagittifolia* L. (Warchałowski 1985).

Donacia cinerea Herbst, 1784

- Łazy, a small forest pond in the Maszynka enclave [DC59], on *Typha* spp., 6 exx., 27 May 2016;
- Granica, Olszowiecki Canal [DC69], on *Typha* spp., 2 exx., 11 Jun 2021;
- Nart, peat excavation pits [DC69], on *Typha* spp., 4 exx., 18 Jun 2018;
- Leszno, Tomczyn Lake [DC79], on *Typha* spp., 2 exx., 20 May 2023;
- Ławy, Zaborowski Canal [DC79], on *Typha* spp., 2 exx., 30 May 2024;
- Pociecha, Długie Bagno peat bog [DC89], on *Typha* spp., 1 ex., 20 May 2009;
- Truskaw, small pond [DC89], on *Typha* spp., 3 exx., 18 May 2019;
- Palmiry, Iwie sedge fen [DD80], on *Typha* spp., 2 exx., 3 Jun 2011.

A common species, known from almost all of Poland (Burakowski et al. 1990). It is frequently found in large numbers at sites with *Typha latifolia* L. and *Typha angustifolia* L. (Warchałowski 1985).

Donacia clavipes Fabricius, 1792

- Bieliny, Łasica Canal [DC69], on *Phalaris arundinacea* L., 3 exx., 28 May 2011;
- Karolinów, Łasica Canal [DC69], on *Phragmites australis* (Cav.) Trin., 2 exx., 6 Jun 2017.

A species known from a limited number of localities along the Baltic Coast, the Pomeranian and Masurian Lake Districts, the Wielkopolska–Kujawy Lowland, the Mazovian Lowland, Upper and Lower Silesia, the Roztocze Upland, the Western Sudetes Mountains, and the Eastern Beskids Mountains (Burakowski et al. 1990). It has also been recently recorded in the Podlasie Lowland (Ścibior 2010) and the Lublin Upland (Buczyński et al. 2019). The species is associated with *Phalaris arundinacea* L. and *Phragmites australis* (Cav.) Trin. (Warchałowski 1985).

Donacia crassipes Fabricius, 1775

- Cisowe, Łasica Canal [DC69], on *Nuphar luteum* L., 4 exx., 21 Jun 2020;
- Nart, peat excavation pits [DC69], on *Nymphaea candida* Presl & Presl, 5 exx., 18 Jun 2018;
- Truskaw, Mokre Łąki pond [DC89], on *Nymphaea alba* L., 1 ex., 18 May 2019.

A species known from almost all of Poland (Burakowski et al. 1990). It occurs at sites where its host plants, *Nymphaea* spp. and *Nuphar luteum* L., are present (Warchałowski 1985).

Donacia dentata Hoppe, 1795

- Grabnik, Olszowiecki Canal [DC59], on *Sagittaria sagittifolia* L., 1 ex., 14 Jul 2014;
- Brzozówka, Ł-9 Canal [DC79], on *Alisma plantago-aquatica* L., 2 exx., 26 Jun 2018;
- Roztoka, Zaborowski Canal [DC79], on *Alisma plantago-aquatica* L., 1 ex., 4 Jul 2016;
- Stara Dąbrowa, Łasica Canal [DC79], on *Sagittaria sagittifolia* L., 2 exx., 16 Jun 2012.

A species known from almost all of Poland (Burakowski et al. 1990), although occurring in a highly scattered distribution. It is collected in shallows and along the margins of standing and flowing waters. The species is associated with *Sagittaria sagittifolia* L. and *Alisma plantago-aquatica* L. (Warchałowski 1985).

Donacia impressa Paykull, 1799

- Leszno, Tomczyn Lake [DC79], on *Carex acutiformis* Ehrh., 2 exx., 19 Jul 2021;
- Mały Truskaw, Struga Canal [DC89], on *Schoenoplectus lacustris* L., 1 ex., 4 Jul 2016;
- Palmiry, Iwie sedge fen [DD80], on *Carex acutiformis* Ehrh., 1 ex., 23 Jun 2011.

A species known from almost all of Poland (Burakowski et al. 1990), although occurring in a highly scattered distribution. It is a polyphagous feeder on plants of the family Cyperaceae, most frequently collected on *Carex acutiformis* Ehrh. and *Schoenoplectus lacustris* L. (Warchałowski 1985).

Donacia marginata Hoppe, 1795

- Nart, peat excavation pits [DC69], on *Sparganium* spp., 2 exx., 18 Jun 2018;
- Ławy, Zaborowski Canal [DC79], on *Sparganium* spp., 1 ex., 30 May 2024;
- Nowa Dąbrowa, Ł-9 Canal [DC79], on *Sparganium* spp., 3 exx., 11 Jul 2014.

A species known from almost all of Poland (Burakowski et al. 1990). It occurs along the margins of standing waters and is associated with various *Sparganium* L. species, most frequently collected on *Sparganium ramosum* Huds. (Warchałowski 1985).

Donacia semicuprea Panzer, 1796

- Granica, Olszowiecki Canal [DC69], on *Glyceria maxima* (Hartm.) Holmb., 2 exx., 11 Jun 2021;
- Nowe Budy, Łasica Canal [DC69], on *Glyceria maxima* (Hartm.) Holmb., 2 exx., 30 Jun 2018;
- Karolinów, Łasica Canal [DC69], on *Glyceria maxima* (Hartm.) Holmb., 10 exx., 6 Jun 2017;
- Cybulice Małe, Kromnowski Canal [DC79], on *Glyceria maxima* (Hartm.) Holmb., 4 exx., 28 Jun 2012;
- Ławy, Zaborowski Canal [DC79], on *Glyceria maxima* (Hartm.) Holmb., 7 exx., 30 May 2024;
- Roztoka, Zaborowski Canal [DC79], on *Glyceria maxima* (Hartm.) Holmb., 3 exx., 4 Jul 2016;
- Palmiry, Wilcza Struga Canal [DC89], on *Glyceria maxima* (Hartm.) Holmb., 1 ex., 20 May 2009;
- Truskaw, Mokre Łąki pond [DC89], on *Glyceria maxima* (Hartm.) Holmb., 5 exx., 18 May 2019;
- Truskaw, small pond [DC89], on *Glyceria maxima* (Hartm.) Holmb., 9 exx., 18 May 2019;
- Palmiry, Iwie sedge fen [DD80], on *Glyceria maxima* (Hartm.) Holmb., 2 exx., 3 Jun 2011.



Figure 1. Example sampling sites in Kampinos National Park: A – Leszno, Tomczyn Lake, B – Truskaw, small pond, C – Nart, peat excavation pits, D – Ławy, Zaborowski Canal, E – Palmiry, Iwie sedge fen. Photo by Dawid Marczak.

The most common representative of the genus *Donacia* in Poland (Burakowski et al. 1990). It occurs at sites where its host plant, *Glyceria maxima* (Hartm.) Holmb., is present (Warchałowski 1985).

Donacia sparganii Ahrens, 1810

- Nart, peat excavation pits [DC69], on *Sparganium* spp., 1 ex., 18 Jun 2018;
- Ławy, Zaborowski Canal [DC79], on *Sparganium* spp., 1 ex., 30 May 2024;
- Nowa Dąbrowa, Ł-9 Canal [DC79], on *Sparganium* spp., 4 exx., 11 Jul 2014;
- Truskaw, Mokre Łąki pond [DC89], on *Sparganium* spp., 2 exx., 3 Jun 2021.

A rare species, known from the Baltic Coast, the Mazovian Lowland, the Białowieża Forest, Lower Silesia, the Lublin Upland, and the Roztocze Upland (Burakowski et al. 1990). It has also been recently recorded in the Podlasie Lowland (Pietrykowska & Staniec 1997) and the Masurian Lake District (Aleksandrowicz & Marczak 2004). The species is associated with *Sparganium* spp. (Warchałowski 1985).

Donacia thalassina Germar, 1811

- Zaborówek, Debelskie meadows [DC79], on *Eleocharis palustris* L., 2 exx., 11 Jun 2017.

A species known from almost all of Poland (Burakowski et al. 1990). It occurs along the margins of standing waters, drainage ditches, and in wet meadows. The species is associated with *Eleocharis palustris* L. (Warchałowski 1985).

Donacia tomentosa Ahrens, 1810

– Brzozówka, Małockie meadows [DD70], on *Butomus umbellatus* L., 1 ex., 17 Jun 2020.

A rare species, known from the Masurian Lake District, the Wielkopolska–Kujawy Lowland, the Mazovian Lowland, Lower and Upper Silesia, and the Roztocze Upland (Burakowski et al. 1990). It has also been recently recorded in the Podlasie Lowland (Gutowski & Lasoń 2024). The species occurs in marshy areas, where it feeds on *Butomus umbellatus* L. (Warchałowski 1985).

*Donacia versicolore*a (Brahm, 1790)

- Aleksandrów, Łasica Canal [DC79], on *Potamogeton natans* L., 3 exx., 23 Jun 2021;
- Cybulice Małe, Kromnowski Canal [DC79], on *Potamogeton natans* L., 1 ex., 23 Jun 2021;
- Gorzewnica, Kromnowski Canal [DD50], on *Potamogeton natans* L., 2 exx., 23 Jun 2021.

A species known from almost all of Poland (Burakowski et al. 1990). It occurs in water bodies, ponds, and lakes, and is associated with *Potamogeton natans* L. (Warchałowski 1985).

Donacia vulgaris Zschach, 1788

- Łazy, a small forest pond in the Maszynka enclave [DC59], on *Typha* spp., 3 exx., 27 May 2016;
- Nart, peat excavation pits [DC69], on *Typha* spp., 2 exx., 18 Jun 2018;
- Leszno, Tomczyn Lake [DC79], on *Typha* spp., 1 ex., 20 May 2023;
- Pociecha, Długie Bagno peat bog [DC89], on *Typha* spp., 2 exx., 20 May 2009;
- Truskaw, Mokre Łąki pond [DC89], on *Typha* spp., 2 exx., 18 May 2019.

A species known from almost all of Poland (Burakowski et al. 1990). It occurs along the margins of standing and flowing waters and is associated with two *Typha* species: *Typha latifolia* L. and *Typha angustifolia* L. (Warchałowski 1985).

Plateumaris braccata (Scopoli, 1772)

– Karolinów, Łasica Canal [DC69], on *Phragmites australis* (Cav.) Trin., 4 exx., 6 Jun 2017.

A species occurring throughout Poland, forming very large populations in suitable habitats (Burakowski et al. 1990). It is found in marshy areas and is associated with *Phragmites australis* (Cav.) Trin. (Warchałowski 1985).

Plateumaris consimilis (Schrank, 1781)

– Palmiry, Iwie sedge fen [DD80], on *Phragmites australis* (Cav.) Trin., 4 exx., 3 Jun 2011.

The most common species in the genus (Burakowski et al. 1990). It occurs in wet meadows and along stream margins and is associated with *Carex* L. species and *Phragmites australis* (Cav.) Trin. (Warchałowski 1985).

Plateumaris rustica (Kunze, 1818)

- Karolinów, Łasica Canal [DC69], on *Glyceria maxima* (Hartm.) Holmb., 2 exx., 6 Jun 2017;
- Cybulice Małe, Kromnowski Canal [DC79], on *Glyceria maxima* (Hartm.) Holmb., 1 ex., 28 Jun 2012;
- Truskaw, Mokre Łąki pond [DC89], on *Glyceria maxima* (Hartm.) Holmb., 2 exx., 18 May 2019;
- Palmiry, Iwie sedge fen [DD80], on *Glyceria maxima* (Hartm.) Holmb., 1 ex., 3 Jun 2011.

A species known from almost all of Poland (Burakowski et al. 1990). It is associated with *Carex* spp., as well as *Phragmites australis* (Cav.) Trin. and *Glyceria maxima* (Hartm.) Holmb. (Warchałowski 1985).

Plateumaris sericea (Linnaeus, 1758)

- Nart, peat excavation pits [DC69], on *Iris pseudacorus* L., 1 ex., 18 Jun 2018;
- Brzozówka, Ł-9 Canal [DC79], on *Iris pseudacorus* L., 1 ex., 26 Jun 2018;
- Cybulice Małe, Urokowa meadow [DC79], on *Iris pseudacorus* L., 1 ex., 28 Jun 2012;
- Leszno, Tomczyn Lake [DC79], on *Iris pseudacorus* L., 1 ex., 19 Jul 2021;
- Mały Truskaw, Struga Canal [DC89], on *Iris pseudacorus* L., 1 ex., 4 Jul 2016;
- Pociecha, Długie Bagno peat bog [DC89], on *Iris pseudacorus* L., 1 ex., 20 May 2009;
- Truskaw, small pond [DC89], on *Iris pseudacorus* L., 1 ex., 18 May 2019;
- Palmiry, Iwie sedge fen [DD80], on *Iris pseudacorus* L., 2 exx., 3 Jun 2011.

A species known from almost all of Poland (Burakowski et al. 1990). It occurs along water margins, in peatlands, and wet meadows, and is associated with *Iris pseudacorus* L. (Warchałowski 1985).

DISCUSSION

Original field studies conducted in Kampinos National Park in 2009–2024 documented 19 Donaciinae species, out of the 28 species recorded from Poland (Burakowski et al. 1990, 2000), including three species previously known from this area: *Donacia semicuprea*, *Plateumaris consimilis*, and *P. sericea* (Burakowski et al. 1990, Marczak 2020). At present, nearly 70% of the national Donaciinae fauna occurs within the Park. Undoubtedly, this is a remarkably high number of species for a protected area in which aquatic and hydrogenic habitats occupy a very small proportion of the total area.

In terms of Donaciinae research, Kampinos National Park compares very favorably with other areas under various protection regimes located along large rivers, lakes, or wetland complexes, where a much greater availability of aquatic and riparian habitats would normally be expected. The literature provides relatively little information on Donaciinae diversity in areas protected under less strict, surface-level conservation forms.

Among the remaining 22 Polish national parks, information on this group of leaf beetles is available for only five parks. In each of these parks, fewer species were recorded than in Kampinos National Park: Poleski National Park – 17 species (Pietrykowska & Staniec 1997), Białowieża National Park – 12 species (Borowiec 2001), Ojców National Park – 7 species (Kubisz et al. 2021), Świętokrzyski National Park – 6 species (Buchholz et al. 2021), and Babiogórski National Park – 2 species (Szafranec et al. 2021).

Data are also available from some landscape parks: Mazurski Landscape Park – 12 species (Aleksandrowicz & Marczak 2004), Suwalski Landscape Park – 7 species (Gutowski et al. 2020),

Knyszyńska Forest Landscape Park – 6 species (Gutowski et al. 2024), Spalski Landscape Park – 4 species (Jaskuła et al. 2009), and Stobrawski Landscape Park – 1 species (Mazur et al. 2024), as well as from other valuable natural areas such as the Bug Valley – 8 species (Kubisz et al. 2010) and Polesie – 8 species (Buczyński et al. 2019).

The poor knowledge of Donaciinae fauna in protected areas is mainly due to the lack of specialists and the shift in entomological research away from basic faunistic studies.

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STRESZCZENIE

Materiały do poznania stonkowatych Kampinoskiego Parku Narodowego – Donaciinae (Coleoptera: Chrysomelidae)

Praca przedstawia szczegółowe informacje faunistyczne dotyczące występowania na obszarze Kampinoskiego Parku Narodowego 19 gatunków Donaciinae, co stanowi blisko 70% fauny tej podrodziny stonkowatych w Polsce. Jest to bardzo duża liczba gatunków, jak na obszar chroniony, w którym siedliska wodne i hydrogeniczne zajmują bardzo małą powierzchnię – zaledwie około 160 ha, co stanowi 0,4% powierzchni parku. Kampinoski Park Narodowy, pod kątem zbadania Donaciinae wypada bardzo dobrze, w porównaniu do innych obszarów o różnych reżimach ochrony położonych nad dużymi rzekami, jeziorami czy na obszarach bagiennych, gdzie dostępna jest znacznie większa ilość siedlisk wodnych i nadwodnych.

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