



The first records of *Pachyrhinus lethierryi* (Desbrochers des Loges, 1875) (Coleoptera: Curculionidae: Entiminae) in Poland

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Abstract: Here we present the first Polish records of *Pachyrhinus lethierryi* (Desbrochers des Loges, 1875) from three locations in different parts of the country – Gorzów Wielkopolski (2020), Warsaw metropolitan area (2020, 2021, 2022) and Gdańsk (2022). This weevil species has most likely entered Poland in root balls of ornamental cypresses since their larvae feed on roots of these plants.

Key words: weevil, expansion, synanthropic, new records, citizen science

INTRODUCTION

Range of animal species can expand due to natural colonization (often made possible by changes in the environment, like climate change) or it can be mediated by humans. Species can be introduced by humans intentionally and unintentionally, as stowaway, by transportation of consumer goods. With globalization accelerating, the latter is increasingly evident in hubs of global trade. Reptiles (e.g. *Anolis sagrei* Duméril & Bibron, 1837 (Tan & Lim 2012)), amphibians (e.g. *Eutherodactylus johnstonei* Barbour, 1914 (Moravec et al. 2020)) and insects (e.g. *Cydalima perspectalis* (Walker, 1859), *Otiorynchus armadillo* (Rossi, 1792)) are believed to having been transported into new countries on ornamental plants that constitute their shelter and/or food. Such incomers may become pests like in the case of *C. perspectalis* (Mally & Nuss 2010) and *O. armadillo* (Magnano et al. 2008).

Pachyrhinus lethierryi (Desbrochers des Loges, 1875) is a weevil species native to Sicily, Corsica, Sardinia and the Mediterranean region of France (Hoffman 1950). Though, throughout the years, expansion can be observed. Introduced specimens were found in the Netherlands, Spain, Ukraine, Germany, Czech Republic, Turkey, Greece, Switzerland, Belgium, Luxembourg, Northern France and England (Alonso-Zarazaga et al. 2021) with the latter two places having the most sizeable invasive populations of the species. Although having good flying skills, it is presumed that range of that species expands by its larvae being transported across borders with Cupressaceae trees, in their root balls. Eggs are laid on leaves of these plants, and hatched larvae, after having fallen down, are fossorial, and feed on the roots, however little is known about magnitude of the damages that they might cause (Gosik et al. 2010). Some of the host plants, in particular *Thuja* spp., are commonly planted in gardens for ornamental purposes.

RESULTS OF OBSERVATIONS IN POLAND

On 29 May 2020 one imago of *Pachyrhinus lethierryi* was encountered inside a detached house at outskirts of Gorzów Wielkopolski (western Poland; GPS: N 52.765432°, E 15.240053°), the habitat with numerous potential host plants – e.g. *Thuja* spp., *Juniperus* spp., *Cupressus* spp.,

Metasequoia sp.. The locus is about 700 m away from the nearest plant nursery – potential source of *P. lethierryi*. Only photographic documentation has been made.

On 15 Jun 2020, 26 Jun 2021 and 23 May 2022 in Kobyłka (Warsaw metropolitan area; GPS: N 52.34921°, E 21.21768°), a place with many *Thuja* spp., including many recently planted ones, three specimens of *P. lethierryi* were found on a bench of a backyard garden, on an outer wall of a house and on outer wall of a building, respectively. All three specimens were conserved and are in the collection of Robert Lasecki.

On 7 May 2022, 24 Jun 2022 and 11 Jul 2022 in Gdańsk (northern Poland), in a residential district consisting of newly built blocks of flats (GPS: N 54.351044°, E 18.533477°) two imagines were observed on outer walls of residential buildings and an additional dead specimen was found in an apartment of a block of flats (Fig. 1.). The place is planted with some *Thuja* spp. and has a plant nursery 2 km away. Only photographic documentation has been made.



Fig 1. Dead imago of *Pachyrhinus lethierryi* found in Gdańsk on 11 Jul 2022. Photo by Bogdan Mazur.

We identified the genus and species using morphological criteria described by Hoffmann (1950) and Smreczyński (1966), and photographs of the weevils provided by e.g. Lillig (2017), Benedikt et al. (2018). In comparison to *Pachyrhinus mustela* (J. F. W. Herbst, 1797), *P. lethierryi* is smaller in size 4–5.5 mm vs. 6–8 mm and is covered with oval (not pointed like in *P. mustela*) scales of green (not brown and golden like in *P. mustela*) color.

Furthermore, four additional records of this species in Poland were found in iNaturalist, a popular citizen science platform. The observations of imagines were made in Poznań (23 May 2022), Łostkowice (27 May 2022), Tczew (1 Jun 2022) and Gniewno (18 Jun 2022) (GBIF 2023). The last three locations are within 50 km radius from Gdańsk.

DISCUSSION

We can observe a continuous but spotted distribution of *P. lethierryi* from Ukraine to Western Europe. The species is probable to appear in other countries since the key factor restricting its distribution seems to be the absence of host plants, not the climate (Heijerman 2008). However, we cannot exclude global warming playing a role.

To our knowledge this is the first case of detection of a weevil species new to Poland with the use of citizen science. Therefore, we want to emphasize the potential and importance of big-scale citizen science projects like the iNaturalist platform in monitoring expansion of invasive and introduced species, since some of them (like ours) are synanthropic so probable to be documented by citizen scientists, and relatively easy to be identified by experts from photographs provided by citizen scientists (Encarnação et al. 2021; Trzópek & Kaczmarek 2021).

As far as we know, this species has not yet been observed outside of human altered environments. It is probably the case due to shortage of host plants in wild locations.

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REFERENCES

- ALONSO-ZARAZAGA M. A., BARRIOS H., BOROVEC R., BOUCHARD P., CALDARA R., COLONNELLI E., GÜLTEKIN L., HLAVÁČ P., KOROTYAEV B., LYAL C. H. C., MACHADO A., MEREGALLI M., PIEROTTI H., REN L., SÁNCHEZ-RUIZ M., SFORZI A., SILFVERBERG H., SKUHROVEC J., TRÝZNA M., VELÁZQUEZ DE CASTRO A. J. & YUNAKOV N. N. 2021. Cooperative Catalogue of Palearctic Coleoptera Curculionioidea - Work Version 2.7. Available at <https://weevil.myspecies.info/sites/weevil.info/files/CCPCC%20version2.7%20part1.pdf>
- BENEDIKT S., KRÁTKÝ J. & JANSÁ P. 2018. Dva doplňky do seznamu nosatců (Coleoptera: Curculionidae) České republiky. Západočeské entomologické listy 9: 48–51.
- ENCARNAÇÃO J., TEODÓSIO CHÍCHARO M. & MORAIS, P. 2021. Citizen Science and Biological Invasions: A Review. *Frontiers in Environmental Science* 8. 602980. <http://dx.doi.org/10.3389/fenvs.2020.602980>
- GBIF.org. 2023. GBIF Occurrence Download <https://doi.org/10.15468/dl.53yt57>
- GOSIK, R., HIRSCH J. & SPRICK, P. 2010. Biology and molecular determination of *Pachyrhinus lethierryi* (Desbrochers, 1875) with description of the mature larva and pupa (Entiminae: Polydrusini). *Snudebiller* 11: 80–95.
- HEIJERMAN T. 2008. De snuitkever *Pachyrhinus lethierryi* nieuw voor Nederland (Coleoptera: Curculionidae). *Nederlandse Faunistische Mededelingen* 28: 35–39.
- LILLIG M. 2017. Zwei für das Saarland neue südeuropäische Rüsselkäfer (Coleoptera, Curculionidae). *Abhandlungen der Delattinia* 42: 183–186.
- HOFFMANN A. 1950. Faune de France. 52 - Coléoptères Curculionides (Première Partie), Lechevalier, Paris, 486 pp.
- MAGNANO L., HEIJERMAN T. & GERMANN C. 2008. On the species status of *Otiorhynchus armadillo* (Rossi, 1792) and *Otiorhynchus salicicola* Heyden, 1908 (Coleoptera, Curculionidae, Entimini). *Mitteilungen der Schweizerischen Entomologischen Gesellschaft* 81: 155–163.
- MALLY R. & NUSS M. 2010. Phylogeny and nomenclature of the box tree moth, *Cydalima perspectalis* (Walker, 1859) comb. n., which was recently introduced into Europe (Lepidoptera: Pyraloidea: Crambidae: Spilomelinae). *European Journal of Entomology* 107: 393–400.
- MORAVEC J., KODEJŠ K., MILLER V. & VELENSKÝ P. 2020. Johnston's whistling frog in Prague: report of populations of *Eleutherodactylus johnstonei* (Anura: Eleutherodactylidae) in the Czech Republic. *Acta Societatis Zoologicae Bohemicae* 84: 39–46.
- SMRECZYŃSKI S. 1966. Ryjkwce - Curculionidae. Podrodziny Otiorhynchinae, Brachyderinae. *Klucze do oznaczania owadów Polski*. 19, 98b. PWN, Warszawa, 130 pp.
- TAN H. H. & LIM K. K. P. 2012. Recent introduction of the Brown Anole *Norops sagrei* (Reptilia: Squamata: Dactyloidea) to Singapore. *Nature in Singapore* 5: 359–362.
- TRZÓPEK M. & KACZMAREK M. 2021. Rozmieszczenie stanowisk obcych gatunków żółwi w Poznaniu na podstawie danych zebranych przez mieszkańców. *Przegląd Przyrodniczy* 32 (3): 44–57.

STRESZCZENIE

[Pierwsze stwierdzenie *Pachyrhinus lethierryi* (Desbrochers des Loges, 1875) (Coleoptera: Curculionidae: Entiminae) w Polsce]

Publikacja prezentuje pierwsze doniesienia dowodzące obecności zacięcia cyprysowca (*Pachyrhinus lethierryi*) na terenie Polski. Obserwacje pochodzą z przydomowych ogrodów: Gorzowa Wielkopolskiego (2020 r.), Kobyłki (aglomeracja warszawska; 2020, 2021, 2022 r.) oraz Gdańska (2022 r.). Ten gatunek ryjkowca został najprawdopodobniej zawleczony z sadzonkami roślin cyprysowatych w ich bryłach korzeniowych, gdyż jego larwy żerują na korzeniach tychże roślin. Sprzyja temu szkółkarstwo oraz popularność cyprysowatych jako roślin ogrodowych.

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