Occurrence and distribution of *Epitrix* species in Luxembourg (Coleoptera: Chrysomelidae)

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Rauch, S., F. Vitali & C. Bragard, 2025. Occurrence and distribution of *Epitrix* species in Luxembourg (Coleoptera: Chrysomelidae). *Bulletin de la Société des naturalistes luxembourgeois* 127: 191-200. https://doi.org/10.59513/snl.2025.127.191

Published online 24 October 2025 (ISSN 2716-750X), printed volume 5 December 2025 (ISSN 0404-9620).

Abstract. The genus *Epitrix* Foudras, 1860 is widely distributed across the globe, with only four species autochthonous to continental Europe. These beetles predominantly affect plants in the Solanaceae family, with several species particularly targeting potatoes and other cultivated crops as their main hosts. Because of their potential impact on agriculture, the European Union has regulated the introduction and spread of some species since 2012, following the introduction of one of them into the Azores and Madeira. In Luxembourg, systematic national monitoring has been conducted since 2013, with no regulated *Epitrix* species detected to date. However, the National Museum of Natural History and the Administration of Agricultural Technical Services have documented two autochthonous species: *Epitrix atropae* Foudras, 1860 and *E. pubescens* (Koch, 1803). The earliest records of *Epitrix pubescens* in the country date back to before World War I and this species remains consistently prevalent and broadly distributed, while *E. atropae* has been reported only sporadically up to 2020.

Keywords. *Epitrix*, Chysomelidae, Luxembourg, flea beetle, Solanaceae, potato.

1. Introduction

The genus *Epitrix* Foudras, 1860, also known as nightshade flea beetles (Deczynski 2016) is worldwide spread with 162 species and 11 subspecies. Most of them occur in America, though only a few species are autochthonous to Europe (Bieńkowski & Orlova-Bienkowskaja 2017).

Epitrix are tiny leaf beetles measuring 1.2 to 2 mm, which are easily distinguishable from all European Alticini by their elytra covered with rows of short hairs. They primarily feed on Solanaceae: during their lifecycle, adults feed on leaves and larvae on roots and tubers (Kenyon et al. 2021). Some species are known to be pests of potatoes, tomatoes, tobacco, eggplants, and other cultivated plants (Bieńkowski & Orlova-Bienkowskaja 2017).

In 2012, the European Commission had adopted the decision (European Commission 2012) for preventing introduction and spread of some nightshade flea beetles, namely *Epitrix cucumeris* (Harris, 1851), *E. subcrinita* (LeConte, 1857), *E. tuberis* Gentner, 1944 and *E. papa* Orlova-Bienkowskaja, 2015. These beetles are classified in Europe as quarantine pests. The first three species are widespread in the Americas and the first one was detected in the Azores in 1979 (Gruev 1981; Döberl 2000; Boavida & Germain 2009), in Madeira in 2001 (Gruev & Döberl 2005), and in mainland Europe,

in Northern Portugal (Doguet 2009) from where it spread southwards to other locations in Portugal and in Spain (EPPO 2017). *E. papa* Orlova-Bienkowskaja, 2015, previously misidentified as the Nearctic *E. similaris* Gentner, 1944, is an Iberian endemic pest of potato tubers (Bieńkowski & Orlova-Bienkowskaja 2017).

The *Epitrix* population in Luxembourg is regularly monitored to assess the prevalence, distribution, and implementation of European legislation. To address these aspects, the Administration of Agricultural Technical Services is carrying out annual controls for *Epitrix* on potato plants and tubers since 2013, completed by monitoring with sticky traps in 2024. In addition, the National Museum of Natural History, Luxembourg (MNHNL) and its scientific collaborators are performing yearly inventories of the national insects' population in biotopes and green areas.

This study was initiated within the framework of Luxembourg's potato flea beetle surveillance, incorporating additional observational data from green spaces and biotopes. It aims to highlight the different Chrysomelidae species identified so far in the country. Among these, two different *Epitrix* species have been recorded: *Epitrix atropae* Foudras, 1860 and *E. pubescens (*Koch, 1803). Accordingly, the taxonomy and host plant descriptions will focus primarily on these two species.

2. Materials and Methods

The occurrence and distribution of *Epitrix* species were assessed through a range of survey methods, including the analysis of museal specimens, bibliographic data, nationwide observation in biotopes and green spaces, field survey on potato plants and tubers, inspections on harvested potato tubers both from national production and imports, as well as targeted monitoring using sticky traps in random selected fields.

Nationwide observations across biotopes and green spaces were conducted as part of insect population surveys. The beetles were captured using nets, and their preliminary identification was based on morphological characters observed through magnifiers or binocular microscopes. These inventory observations were recorded by the MNHNL (2024a).

Since 2013, seed potato plants in Luxembourg have been regularly monitored throughout the vegetation period for signs of nightshade flea beetle activity. Potato leaves were visually checked for the characteristic 'shot-hole' feeding damage, while tubers were examined for larvae. Official field inspectors conducted pest surveys at least twice on each seed potato field, covering 100% of Luxembourg's seed potato production area.

Additionally, annual inspection of potato tuber samples has been conducted since 2013 on both national production and imported potato tubers. In the laboratory of the phytopathology department of the Administration of Agricultural Technical Services, tubers were visually examined for typical signs of shallow furrows caused by larval feeding of potato flea beetles. Each sample comprised at least 200 tubers, which were washed prior to examination.

In 2024, in addition to the previously mentioned survey methods, weekly monitoring using sticky traps was conducted until harvest (calendar week 23 to 39) in five sugar beet fields across Luxembourg (Tab. 1). These fields were located in the Éislek, in Basbellain, Troisvierges and Drinklange (municipality of Troisvierges) and in the Gutland, in Kahler and Fingig (municipality of Garnich and Käerjeng). The phytopathology department of the Administration of Agricultural Technical Services performed this monitoring.

Table 1. Locations of the installed sticky traps in 2024.

Location	Coordinates	Altitude
Basbellain	5.99074 E, 50.14225 N	489 m
Troisvierges	5.99419 E, 50.12730 N	477 m
Drinklange	6.02035 E, 50.13350 N	502 m
Kahler	5.93783 E, 49.62376 N	363 m
Fingig	5.89748 E, 49.60799 N	393 m

In each field, two traps were set 100 m apart. The insects were sampled in fields using sticky traps (Econex, Spain) consisting of chromatic, transparent, light-resistant polyethylene sheets without pheromones (40 mm long, 25 mm wide). Binder clips were used to install the traps on a 1000 mm long plastic stake. Traps were changed weekly, and their height adjusted to the vegetation level (Fig. 1).

The identification of the beetles was based on morphological criteria observed with a binocular microscope and using the taxonomic key in Bieńkowski & Orlova-Bienkowskaja (2016).

The distribution patterns of the different *Epitrix* species identified through this research are illustrated in figures 2 and 3, which depict global distribution maps generated using MapChart, (accessible at https://www.mapchart.net/world.html). Figure 4 presents the nationwide distribution and was created using ArcGIS Pro software.

Fig. 1. Sticky trap in a sugar beet field in Fingig, 2024. Photo: Serena Rauch.

3. Results

Surveys on *Epitrix* have confirmed the presence of two distinct species in Luxembourg. The earliest documented occurrence of *Epitrix* in Luxembourg dates back to before World Word I (Mousset 1984), with *E. pubescens*. Global distribution of these species is outlined through an in-depth review of the existing literature, which forms the basis for the distribution maps (Figs 2–3).

3.1. Worldwide distribution of *Epitrix atropae* and *E. pubescens*

Epitrix atropae Foudras, 1860 (Fig. 2) is a west Palaearctic species widespread in:

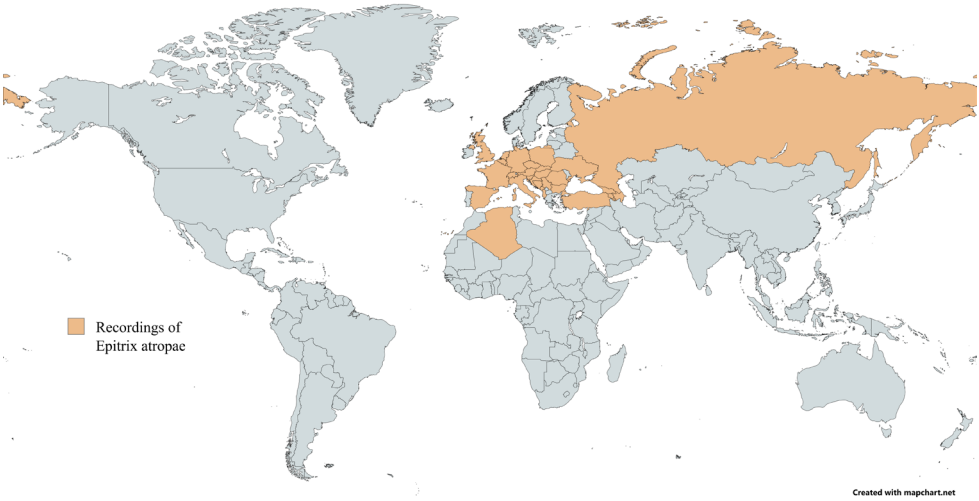

Fig. 2. Worldwide distribution of *Epitrix atropae*.

Europe: Albania, Austria, Azerbaijan, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, France, Germany, Hungary, Italy, Luxembourg, Macedonia (Döberl 2010), Montenegro (Gruev & Döberl 1997), Netherlands, Poland, Romania (Döberl 2000), Serbia (Gruev & Döberl 1997), Slovakia, Slovenia, Spain, Switzerland, Ukraine, United Kingdom (Döberl 2000), European Russia (Bieńkowski & Orlova-Bienkowskaja 2016).

Asia: Armenia, Turkey (Döberl 2000), Republic of Abkhazia (Okhrimenko 1992).

Africa: Algeria (Döberl 2000).

Epitrix atropae is commonly known as belladonna flea beetle. Larvae develop on *Atropa belladonna* L. and its subspecies *A. caucasica* Kreyer, on *Datura stramonium* L., *Hyoscyamus niger* L., *Lycium barbarum* L. and *Solanum nigrum* L. (Medvedev & Roginskaja 1988; Cox 2007).

In the NCBI Taxonomy database, *Epitrix atropae* is listed as TaxID 1587272 (Schoch et al. 2020).

Epitrix pubescens (Koch, 1803) (Fig. 3) is a Palaearctic species, recently detected in North America (Deczynski 2019). More precisely, findings have been recorded in:

Europe: Albania, Austria, Azerbaijan (Döberl 2010), Azores (Israelson 1985), Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Moldova (Döberl 2010), Montenegro (Gruev & Döberl 1997), Netherlands (Döberl 2000), Norway (VKM et al. 2019), Poland, Portugal, Romania (Döberl 2000), Serbia (Gruev & Döberl 1997), Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom (Döberl 2000), European Russia (Bieńkowski & Orlova-Bienkowskaja 2016).

Asia: Cyprus, Iran, Israel, Kazakhstan, Kirgizstan (Döberl 2000).

North America: Canada (Nova Scotia, Ontario, Quebec) and USA (Illinois, Massachusetts, New Hampshire, New York, Oregon, Wisconsin) (Deczynski 2019).

Africa: Nigeria (Natural History Museum 2025). The authors of this work wanted to add, that these data appear to be highly improbable and are not supported by any published literature.

Larvae of *Epitrix pubescens* feed on *Atropa belladonna*, *Hyoscyamus niger*, *Lycium barbarum*, *Solanum dulcamara*, *Solanum nigrum* (Medvedev & Roginskaja 1988); *Solanum villosum* Mill. (Furth 1997); *Solanum melon-*

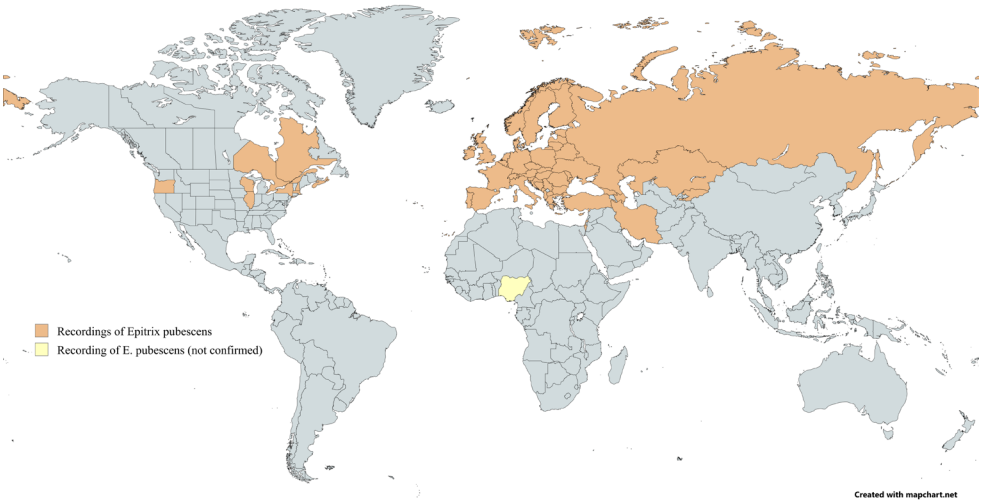

Fig. 3. Worldwide distribution of *Epitrix pubescens*.

gena L. (Tölg 1938; Cox 2007), *Datura stramonium*, *Lycopersicon esculentum*, *Lycium barbarum*, *Nicotiana* (Cox 2007) and *Solanum tuberosum* (Highet & Pearson 2015). There are records of damage to *Solanum melongena* in Turkey (Tölg 1938) and *Solanum tuberosum* leaves in Europe (Steinhausen 1994). However, no records have been found reporting damages on potato tubers and Ferrant (1907, 1911) did not consider this species as a pest.

The NCBI Taxonomy database lists *Epitrix pubescens* as TaxID 346777 (Schoch et al. 2020).

3.2. Distribution of *Epitrix* species in Luxembourg

This study offers a comprehensive overview of all officially recorded *Epitrix* findings in Luxembourg, drawing on biodiversity assessments, official monitoring data, and nationwide field observations. The surveys reveal the presence of two species, namely *E. atropae* Foudras, 1860 and *E. pubescens (*Koch, 1803) (Tab. 2), with species *E. pubescens* being particularly widespread (Fig. 4).

According to collection data and literature (Mousset 1984), *Epitrix pubescens* is the first species recorded in the country, with a

Table 2. Number of records and findings of *Epitrix* species in Luxembourg.

Year	Number of records	Number of individuals	Species	Data source
1890	1	1	*Epitrix pubescens*	MNHNL collection
1990	1	2	*Epitrix pubescens*	MNHNL collection
1995	1	1	*Epitrix pubescens*	MNHNL collection
2001	2	12	*Epitrix pubescens*	MNHNL (2025) observation
2002	28	138	*Epitrix pubescens*	MNHNL (2025) observation
2002	1	1	*Epitrix atropae*	MNHNL (2025) observation
2003	28	50	*Epitrix pubescens*	MNHNL (2025) observation
2004	17	27	*Epitrix pubescens*	MNHNL (2025) observation
2004	1	7	*Epitrix atropae*	MNHNL (2025) observation
2005	10	15	*Epitrix pubescens*	MNHNL (2025) observation
2005	4	5	*Epitrix atropae*	MNHNL (2025) observation
2006	1	1	*Epitrix pubescens*	MNHNL (2025) observation
2006	3	5	*Epitrix atropae*	MNHNL (2025) observation
2007	1	1	*Epitrix pubescens*	MNHNL (2025) observation
2008	1	1	*Epitrix atropae*	Köhler (2012)
2009	1	1	*Epitrix pubescens*	Köhler (2011)
2010	3	5	*Epitrix pubescens*	MNHNL (2025) observation
2014	1	1	*Epitrix pubescens*	MNHNL (2025) observation
2015	1	1	*Epitrix pubescens*	MNHNL (2025) observation
2019	2	4	*Epitrix pubescens*	MNHNL (2025) observation
2020	5	28	*Epitrix pubescens*	MNHNL (2025) observation
2020	1	1	*Epitrix atropae*	Gerend (2020) observation
2021	3	5	*Epitrix pubescens*	MNHNL (2025) observation
2024	3	3	*Epitrix pubescens*	MNHNL (2025) observation, this work

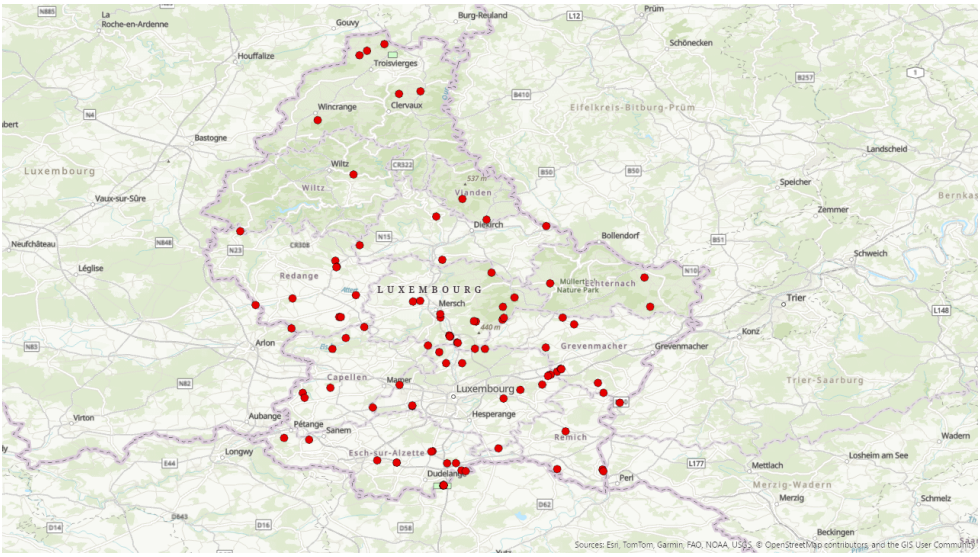

Fig. 4. Distribution of *Epitrix pubescens* in Luxembourg based on records from 2001 to 2024.

specimen in the collection of the National Museum of Natural History, Luxembourg (MNHNL138572) that Victor Ferrant collected in Mamer before World War I, possibly even before 1890 (Fig. 5). Moreover, the MNHNL conserves three other specimens

Fig. 5. *Epitrix pubescens*, Mamer, 16.VI.[1890], V. Ferrant leg. MNHNL138572. The first *Epitrix* collected in Luxembourg. Photo: Francesco Vitali.

that Alfred Mousset collected in Bertrange on 27.V.1990 (MNHNL138573-4) and 7.X.1995 (MNHNL138575). Later, Köhler (2011) recorded another specimen from the Nature Reserve „Enneschte Bësch". Finally, Köhler (2012) recorded for the first time a single specimen of *Epitrix atropae* from the Nature Reserve "Beetebuerger Bësch".

Between 2002 and 2006 some findings of *E. atropae* have been documented in the southern part of Luxembourg and Köhler (2012) officially recorded this species from Luxembourg (Beetebuerger Bësch). Another finding was reported in the same locality (Gerend 2020). Since then, *E. atropae* has not been observed in Luxembourg.

Yearly inventories of the national insects' population of MNHNL counted 103 observations of *E. pubescens* between 2001 and 2024 (MNHNL 2025). Thereof, 71 observations were Coleoptera bycatches for the 'Atlas of cicadas', 19 originate from the MNHNL Data Portal, nine arise out of the project 'Käferfauna des "Därebësch"/Dudelange', one was recorded in 2015 during the biodiversity weekend observations on the Recorder-Lux database (MNHNL 2024b) and two results from inventories of Baggerweiher (2005-06-27 until 2005-07-11),

Water beetles of Luxembourg (2004-07-12) and Wetland beetles (2004-04-12).

Recent surveys in 2024 of the phytopathology department of the Administration of Agricultural Technical Services showed findings of *E. pubescens* (Fig. 6) during their monitoring in two locations in the southern part of Luxembourg, in Kahler (5.93783 E, 49.62376 N) and Fingig (5.89748 E, 49.60799 N).

The largest observation so far, consisting of 103 individuals, was observed in 2002 near Eisenborn in a wetland meadow. All other findings counted 15 or less individuals (MNHNL 2025, this work).

To provide a complete overview, it should be noted that since 2013, the Administration of Agricultural Technical Services has been carrying out yearly controls for nightshade flea beetles, namely *E. cucumeris, E. papa, E. subcrinita* and *E. tuberis*, on potato plants and tubers, with additional monitoring through sticky traps in 2024. Annually from 2013, surveys on potato plants covered 100% of the national seed potato production and around 3% of the national ware potato production. Controls on the potato tubers were conducted with an average of 225 samples per year since 2013, covering the national seed production and potato imports. To date, the *Epitrix* species restricted by legislative provisions, commonly known as nightshade flea beetles, which primarily affect potato plants, have not been found in Luxembourg.

Fig. 6. *Epitrix pubescens* found in Luxembourg in 2024 during the yearly control carried out by the Administration of Agricultural Technical Services. Photo: ASTA.

Luxembourg's *Epitrix* findings are summarized in Table 2.

Due to the limited number of *Epitrix atropae* reports prior to 2020, the previous map focuses primarily on *E. pubescens,* which continues to be present and widely spread without any noticeable preference for specific locations. The map (Fig. 4) is based on survey data and consolidates findings between 2001 to 2024, with each dot representing a recorded finding ranging from 1 to 103 individuals.

The adult of *E. pubescens* is typically found in Luxembourg from April to September, with peak occurrences in June and July (Backlund 2024). Aside from the notable discovery of 103 individuals in 2002, reports are relatively scarce. Currently, the population of *E. pubescens* seems declining, with only a few sightings recorded each year (Fig. 7).

4. Discussion

The detection of *Epitrix* species carries several key implications, particularly in the fields of agriculture and pest management. These beetles not only represent a potential threat to crops but also serve as indicators of biodiversity and ecosystem health. Their presence offers valuable insight into species distribution and population dynamics. Monitoring *Epitrix* populations contributes to understanding broader ecological trends, as fluctuations in beetle numbers may reflect changes driven by climate change, land use, or the introduction of invasive species. Mapping their distribution is essential for identifying areas at risk of infestation, enabling timely interventions and the implementation of targeted management strategies to mitigate their impact.

From an agricultural perspective, *Epitrix* species can pose a significant threat to potato plants and other crops. Their larvae feed on potato tubers, leading to reduced

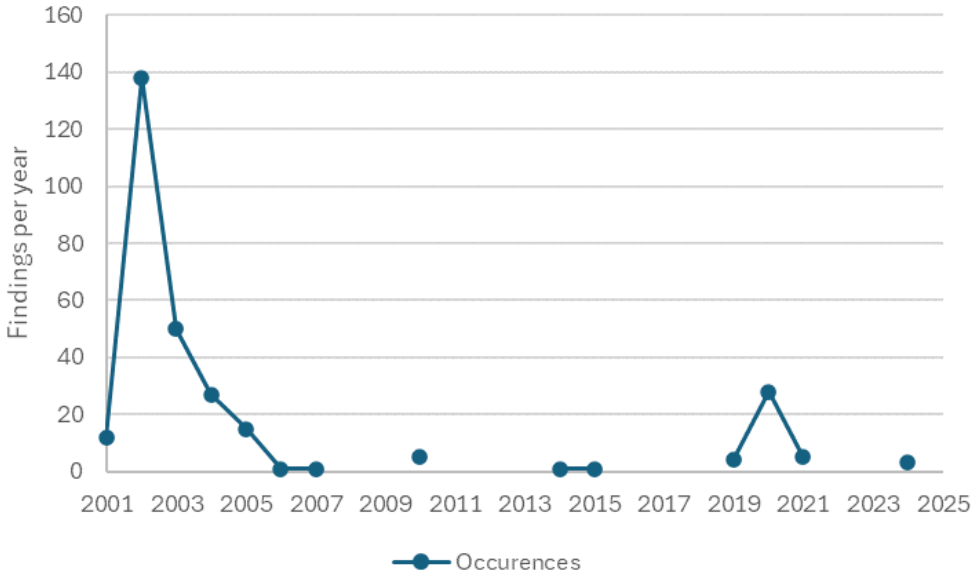

Fig. 7. Findings of *Epitrix pubescens* in Luxembourg (2001-2024).

yield quality and quantity, making their presence a major concern for farmers. The detection of regulated or restricted *Epitrix* species necessitates surveillance and control measures and may require formal reporting to plant health authorities to prevent further spread, especially for species subject to quarantine regulations.

Moreover, each *Epitrix* finding presents an opportunity for deeper investigation into its population dynamics, life cycle, and ecological role. It may also prompt research into how environmental factors, such as climate change, influence their distribution, behaviour and potential expansion into new areas.

The purpose of this study was to assess the occurrence and distribution of *Epitrix* species in Luxembourg. Surveys confirmed the presence of two native *Epitrix* species, namely *E. atropae* and *E. pubescens*. From 2021 until today, only *E. pubescens* could be found in Luxembourg with few findings per year, though the insect has spread nationwide.

The European Commission had adopted the decision for preventing the introduction and spread of specific *Epitrix* species, namely *E. cucumeris*, *E. papa*, *E. subcrinita* and *E. tuberis*. The required controls on those species were carried out by the Administration of Agricultural Technical Services since 2013 on potato plants and tubers, completed by monitoring with sticky traps in 2024. Up until now, all monitoring in Luxembourg on regulated nightshade flea beetles were negative.

All these findings, particularly the confirmation of the absence of certain species, emphasize the importance of environmental monitoring in managing emerging threats and understanding insect biodiversity, especially in the context of climate change. Therefore, continued monitoring is vital and should be maintained in the future.

Acknowledgements

We wish to express our sincere gratitude to Raoul Gerend (Dudelange, Luxembourg) for kindly sharing valuable information, to Jean Fagot (Jalhay, Belgium) for providing bibliographic resources and for his constructive input during our discussions, and to Nico Schneider (Luxembourg) for his insightful and constructive suggestions, which greatly contributed to the improvement of the manuscript. We thank Claude Meisch for the editorial work and Thierry Helminger for his careful attention to the page layout's presentation.

References

Backlund, M., 2024. *Dyntaxa. Svensk taxonomisk databas. SLU Artdatabanken*. Check-

list dataset https://doi.org/10.15468/j43wfc [Accessed 2024-10-29]

Bieńkowski, A.O. & M.J. Orlova-Bienkowskaja, 2016. Key to Holarctic species of *Epitrix* flea beetles (Coleoptera: Chrysomelidae: Galerucinae: Alticini) with review of their distribution, host plants and history of invasions. *Zootaxa* 4175: 401–435. http://dx.doi.org/10.11646/zootaxa.4175.5

Bieńkowski, A.O. & M.J. Orlova-Bienkowskaja, 2017. World checklist of flea-beetles of the genus *Epitrix* (Coleoptera: Chrysomelidae: Galerucinae: Alticini). *Zootaxa* 4268 (4): 523–540. https://doi.org/10.11646/zootaxa.4268.4.4

Boavida, C. & J.F. Germain, 2009. Identification and pest status of two exotic flea beetle species newly introduced in Portugal: *Epitrix similaris* Gentner and *Epitrix cucumeris* (Harris). *EPPO Bulletin 39*: 501–508.

Cox, M.L., 2007. Atlas of the Seed and Leaf Beetles of Britain and Ireland (Coleoptera, Bruchidae, Chrysomelidae, Megalopodidae and Orsodacnidae). Pisces Publications, Newbury, VII + 336 pp.

Deczynski, A.M., 2016. Morphological systematics of the nightshade flea beetles *Epitrix* Foudras and *Acallepitrix* Bechyné (Coleoptera: Chrysomelidae: Galerucinae: Alticini) in America North of Mexico. Unpublished Master of Science thesis 2479. Clemson University, Clemson, SC. IX + 175 pp.

Deczynski, A.M., 2019. The Palearctic flea beetle *Epitrix pubescens* (Koch) (Coleoptera: Chrysomelidae: Galerucinae: Alticini) established in North America. *Insecta Mundi* 0721: 1–5. https://digitalcommons.unl.edu/insectamundi/1207

Döberl, M., 2000. Beitrag zur Kenntnis der Gattung *Epitrix* Foudras, 1860 in der Paläarktis. (Coleoptera: Chrysomelidae: Alticinae). *Mitteilungen des Internationalen Entomologischen Vereins e. V.* 25: 1–23.

Döberl, M., 2010. Subfamily Alticinae. In: *Catalogue of Palaearctic Coleoptera: Chrysomeloidea,* vol. 6: 491–563 (I. Löbl & A. Smetana, eds). Apollo Books, Stentrup.

Doguet, S., 2009. Présence en Europe de deux espèces nord-américaines d'*Epitrix* (Coleoptera Chrysomelidae Alticini). *L'Entomologiste* 65: 89-90.

EPPO 2017. Article: 2017/163. *EPPO Reporting Service no. 09 - Pests,* Paris.

European Commission, 2012. Commission Implementing Decision 2012/270/EU of 16 May 2012 as regards emergency measures to prevent the introduction into and the spread within the Union of *Epitrix cucumeris* (Harris), *Epitrix similaris* (Gentner), *Epitrix subcrinita* (Lec.) and *Epitrix tuberis* (Gentner). *Official Journal of the European Union* L132: 18–26.

Ferrant, V., 1907. Die der Landwirtschaft schädlichen Insekten, deren Lebensweise und Bekämpfung (Fortsetzung). *Bulletin de la Société des naturalistes luxembourgeois* 17: 359-364.

Ferrant, V., 1911. Die schädlichen Insekten der Land- u. Forstwirtschaft, ihre Lebensweise und Bekämpfung. Praktisches Handbuch für Ackerbautreibende, Gärtner u. Forstwirte. P. Worré-Mertens, Luxemburg, 615 pp.

Furth, D.G., 1997. Alticinae of Israel and adjacent areas: Smaller genera (Coleoptera: Chrysomelidae). *Israel Journal of Entomology* 31: 121–146.

Gerend, R., 2020. *Epitrix atropae* [observation]. iNaturalist https://www.inaturalist.org/observations/46015224

Gruev, B., 1981. A new species of *Epitrix* Foudras from the Azores (Insecta, Coleoptera, Chrysomelidae). *Boletim da Sociedade Portuguesa de Entomologia* 10: 1–2.

Gruev, B. & M. Döberl, 1997. General distribution of flea beetles in the Palaearctic subregion (Coleoptera, Chrysomelidae: Alticinae). *Scopolia, Journal of the Slovenian Museum of Natural History* 37: 1–496.

Gruev, B. & M. Döberl, 2005. General distribution of the flea beetles in the Palaearctic Subregion (Coleoptera, Chrysomelidae: Alticinae). Supplement. Pensoft, Sofia, 239 pp.

Highet, F. & K. Pearson, 2015. *Epitrix pubescens* can cause damage to potato (*Solanum tuberosum). EPPO Bull.* 45: 221–222.

Israelson, G., 1985. Notes on the coleopterous fauna of the Azores, with description of new species of *Atheta* Thomson. *Boletim do Museu Municipal do Funchal* 37: 5–19.

Kenyon, D., F.M. Highet, R. Caims, M. Nicolaisen, R. Mouttet, A. Loomans, C. Boavida, E. de Andrade, H. Douglas & A. Deczynski, 2021. *Epitrix* (flea beetle) species, life cycles and detection methods (*Epitrix* II). *Zenodo*. https://doi.org/10.5281/zenodo.5668350

Köhler, F., 2011. Die Totholzkäfer (Coleoptera) des Naturwaldreservates „Enneschte Bësch" (2007–2009). In: Zoologische und botanische Untersuchungen „Enneschte Bësch" 2007–2010 (D. Murat, ed.). *Naturwaldreservate in Luxemburg* 8: 78–136. Naturverwaltung Luxemburg.

Köhler, F., 2012. Die Totholzkäfer (Coleoptera) des Naturwaldreservates "Beetebuerger Bësch" (2007–2008). In: Zoologische und botanische Untersuchungen „Beetebuerger Bësch" 2005–2011 (D. Murat, ed.). *Naturwaldreservate in Luxemburg* 9: 76–129. Naturverwaltung, Luxemburg.

Medvedev, L.N. & E.J. Roginskaja, 1988. A catalogue of foodplants of USSR Chrysomelidae. PEM VNIIIS Gosstroya USSR, Moscow, 191 pp.

Mousset, A., 1984. Atlas provisoire des Insectes du Grand-Duché de Luxembourg. Coleoptera 5. Cartes 622 à 846. Musée d'histoire naturelle, Luxembourg.

MNHNL 2024a. Collections and observation data National Museum of Natural History Luxembourg. Occurrence dataset https://doi.org/10.15468/s2iu7d [Accessed 2024-10-29].

MNHNL 2024b. Biodiversity weekend observations, Recorder-Lux database. Version 1.9. Occurrence dataset https://doi.org/10.15468/grbhmn [Accessed 2024-10-29].

MNHNL 2025. Recorder-Lux, database on the natural heritage of the Grand Duchy of Luxembourg. National Museum of Natural History, Luxembourg. Occurrence dataset through MNHNL-mdata https://mdata.mnhn.lu [Accessed 2025-05-30].

Natural History Museum 2025. Data Portal query on 1 resources created at 2025-04-18 10:00:02.469726 PID https://doi.org/10.5519/qd.x8gq8f5t [Accessed 2025-06-01].

Okhrimenko, N.V., 1992. Leaf-beetles (Coleoptera, Chrysomelidae) of North-western Caucasus. PhD thesis. A.N. Severtsov, Institute of Ecology and Evolution, Russian Academy of Sciences, Moscow, 181 pp.

Schoch, C.L. et al., 2020. NCBI Taxonomy: a comprehensive update on curation, resources and tools. Database (Oxford). 2020: baaa062. PubMed: 32761142 PMC: PMC7408187

Steinhausen, W.R., 1994. Familie Chrysomelidae. In: Die Larven der Käfer Mitteleuropas 2: 231–314 (B. Klausnitzer, ed.). Goecke & Evers, Krefeld.

Tölg, F., 1938. Feststellungen von Nahrungspflanzen kleinasiatischer Halticinen und Ceuthorrhynchinen. *Koleopterologische Rundschau* 24 (6): 234–241.

VKM, J.A. Stenberg, D. Flø, L. Kirkendall, P. Krokene, B. Alsanius, C. Magnusson, M. Nicolaisen, I.M. Thomsen, S.A.I. Wright & T. Rafoss, 2019. *Pest risk assessment of selected* Epitrix *species. Opinion of the Panel on Plant Health*. VKM report 2019:17, Norwegian Scientific Committee for Food and Environment (VKM), Oslo, 111 pp.