

DISTRIBUTION OF *GARGARA GENISTAE* (HEMIPTERA: CICADOMORPHA, MEMBRACIDAE) IN LITHUANIA*ANDRIUS PETRAŠIŪNAS*

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Introduction

The knowledge on planthoppers and leafhoppers (Auchenorrhyncha: Fulgoromorpha et Cicadomorpha) of Lithuania is not very sufficient and mainly sporadic additions to the initial species list, comprised of 300 species and compiled by Vilbaste (1974), were made in recent decades (Söderman & Dapkus, 2009; Söderman & Rintala, 2009; Söderman *et al.*, 2009; Ivanauskas *et al.*, 2014; Petrašiūnas, 2021), expanding the list to 334 species. *Gargara genistae* (Fabricius, 1775) was added to the list just recently (Petrašiūnas, 2021) and was selected by the Lithuanian Entomological Society as the “Insect of the Year 2022”, with the aim to collect data on the distribution of this species in Lithuania. This paper summarizes the data on distribution of *Gargara genistae* collected during of the “Insect of the Year 2022” campaign and adds to our sparse knowledge about the populations of this species in Lithuania.

Material and Methods

Insects were collected by entomological net or directly observed on food plant *Cytisus scoparius* (L.) Link. Observations were made by the author of this publication, Andrius Petrašiūnas (A.P.) and data was provided by other participants of the “Insect of the Year” campaign: Romas Ferenca (R.F.), Rasa Bernotienė (R.B.), Mantas Adomaitis (M.A.), Modestas Ružauskas (M.R.), Vitalijus Bačianskas (V.B.), Gintautas Steiblys (G.S.), Giedrius Švitra and Darius Mikalauskas (G.Š.&D.M.), Antanas Petraška (Ant.P.), Eglė Vičiuvienė (E.V.), Arūnas Juknevičius (A.J.), Kazimieras Martinaitis (K.M.). Additional observation data were acquired from the websites iNaturalist.org – observations of users bizarre_jojo and urte34, and macrogamta.lt – photographs of Žilvinas Pūtys (Ž.P.) and Kazimieras Martinaitis.

List of localities

Locality	Administrative district	Coordinates (LAT, LONG)
Alytus	Alytus mun.	54.41833, 24.07083
Alytus (2)	Alytus mun.	54.42080, 24.04892
Antaliedė	Švenčionys distr.	55.22249, 25.92388
Baranava Miškas f.	Švenčionys distr.	55.18335, 25.96154
Beržėnai	Kelmė distr.	55.82556, 22.82874
Bundoriai	Alytus distr.	54.50569, 24.03149
Būtingės Miškas f.	Palanga mun.	56.07166, 21.12111
Darbėnai	Kretinga distr.	56.02666, 21.23361

Debeikiai (1)	Radviliškis distr.	55.60894, 23.34599
Debeikiai (2)	Radviliškis distr.	55.60747, 23.34350
Didžiųjų Burbiškių mound	Telšiai distr.	55.76361, 22.50111
Dovilai	Klaipėda distr.	55.68361, 21.36611
Dubininkas	Varėna distr.	54.09676, 24.28503
Galvydiškė	Kelmė distr.	55.78222, 22.97416
Grybaulia	Varėna distr.	54.00296, 24.38175
Gudaraistis	Varėna distr.	54.23361, 24.17472
Inkūnai	Anykščiai distr.	55.64972, 25.17805
Jablanavo Miškas f.	Varėna distr.	54.13736, 24.21177
Jonionys	Varėna distr.	54.15197, 24.13424
Juodkrantė	Neringa mun.	55.53392, 21.10018
Jusiai	Švenčionys distr.	55.20027, 25.95416
Juškinės Miškas f.	Šakiai distr.	55.01391, 23.46228
Krokšlio Miškas f.	Varėna distr.	54.04718, 24.64115
Liūlinė	Švenčionys distr.	55.10361, 25.95527
Malinovka	Švenčionys distr.	55.05251, 26.02254
Mardasavas	Varėna distr.	54.13851, 24.31918
Margai	Druskininkai distr.	54.14972, 23.93555
Matuizos	Varėna distr.	54.27442, 24.69183
Melnragė I	Klaipėda mun.	55.73277, 21.08722
Melnragė II	Klaipėda mun.	55.75388, 21.08333
Miškas Beržalapis	Druskininkai distr.	53.96670, 23.97037
Miškas Bijotai f. (1)	Lazdijai distr.	54.27777, 23.75638
Miškas Bijotai f. (2)	Lazdijai distr.	54.28513, 23.74613
Miškas Diniškės f.	Varėna distr.	54.08859, 24.19664
Miškas Luciškė f.	Varėna distr.	54.08227, 24.38234
Miškas Paravė	Druskininkai distr.	54.04887, 24.11897
Miškas Plokštinė (1)	Plungė distr.	56.01194, 21.86777
Miškas Plokštinė (2)	Plungė distr.	56.02641, 21.90495
Musteika	Varėna distr.	53.95750, 24.37056
Narezkai	Trakai distr.	54.62581, 24.97958
Naujieji Valkininkai	Varėna distr.	54.34861, 24.74111
Naujieji Valkininkai (2)	Varėna distr.	54.35237, 24.72432
Pajuodžiai	Širvintos distr.	54.88445, 24.95911
Pakrempė	Trakai distr.	54.49250, 25.11305
Palkabalio Miškas f.	Varėna distr.	54.14994, 24.59989
Pamerkio Miškas f.	Varėna distr.	54.27299, 24.58505
Panerių 1 Miškas f.	Elektrėnai distr.	54.77666, 24.93611
Pašekštis	Švenčionys distr.	55.24220, 25.81192
Platumai	Švenčionys distr.	55.17138, 25.97995
Prienų šilas f.	Prienai distr.	54.60001, 23.92501
Prienų šilas f. (2)	Prienai distr.	54.59820, 23.92400
Pučkornių Miškas f.	Varėna distr.	54.34886, 24.74533
Pušinė	Mažeikiai distr.	56.11137, 22.14587
Puvočiai (1)	Varėna distr.	54.11442, 24.30835
Puvočiai (2)	Varėna distr.	54.11377, 24.31255

Skersabalės Miškas f.	Varėna distr.	54.09170, 24.37692
Šipiniškis	Švenčionys distr.	55.26388, 25.75305
Užmarkija	Telšiai distr.	56.11151, 22.17887
Užuožerės Miškas f.	Varėna distr.	54.01890, 24.41286
Vadų Miškas f.	Kaišiadorys distr.	54.95586, 24.33768
Varėnos 2 Miškas f.	Varėna distr.	54.17793, 24.59801
Verkliai	Vilnius mun.	54.75642, 25.30385
Vėžionių Miškas f.	Varėna distr.	54.36210, 24.42403
Vidušilio Miškas f.	Šakiai distr.	55.01167, 23.39309
Vyžuonų Miškas f. (1)	Utena distr.	55.58944, 25.52833
Vyžuonų Miškas f. (2)	Utena distr.	55.59333, 25.54694
Žeimiai	Varėna distr.	54.08172, 24.10792

List of species

Gargara genistae (Fabricius, 1775) (Fig. 1)

All observations on *Cytisus scoparius* (L.) Link: Alytus, 09 08 2022, >10 spec. (A.P.); Alytus (2), 21 08 2022, 2 spec. (Ant.P.); Baranava miškas f., 15 08 2022, >10 spec. (A.P.); Bundoriai, 21 08 2022, 1 spec. (Ant.P.); Dubininkas, 27 07 2022, >10 spec., 08 08 2023, >10 spec. (A.P.); Grybailia, 04 09 2022, 8 spec. (Ant.P.); Gudaraistis, 04 09 2022, 1 spec. (Ant.P.); Jablanavo miškas f., 08 09 2022, 5 spec. (K.M.); Jonioniai, 04 09 2022, 1 spec. (Ant.P.); Jusiai, 15 08 2022, >10 spec. (A.P.); Krokšlio miškas f., 20 08 2022, ~200 spec. (G.Š.&D.M.); Mardasavas, 08 08 2022, >10 spec. (A.P.); Margai, 03 08 2022, >10 spec. (A.P.); Matuizos, 12 08 2022, 10 spec. (G.S.); Miškas Beržalapis f., 17 08 2022, ~20 spec. (V.B.); Miškas Bijotai f. (1), 03 08 2022, >10 spec. (A.P.); Miškas Bijotai f. (2), 18 07 2023, 1 spec. (R.F.); Miškas Diniškės f., 08 09 2022, 3 spec. (K.M.); Miškas Luciškė f., 19 08 2022, ~180 spec. in three places along the powerline (R.F.); Miškas Paravė f., 30 07 2022, 5 spec. (M.R.); Musteika, 25 07 2022, 3 spec. (M.A.); Narezikai, 15 09 2022, 1 spec. photographed (<https://www.inaturalist.org/observations/135796455>) (jo_jo); Naujieji Valkininkai, 14 08 2022, >10 spec. (A.P.); Naujieji Valkininkai (2), 12 08 2022, 5 spec. (G.S.); Pajuodžiai, 24 08 2022, 50 spec. (E.V.); Pakrempė, 06 08 2022, >10 spec. (A.P.); Palkabalio miškas f., 20 08 2022, ~50 spec. (G.Š.&D.M.); Pamerkio miškas f., 20 08 2022, ~20 spec. (G.Š.&D.M.); Pašekštis, 15 08 2022, >10 spec. (A.P.); Platumai, 15 08 2022, >10 spec. (A.P.); Prienų šilas f., 25 08 2022, 1 spec. photographed (<https://www.inaturalist.org/observation/132254185>) (Urtė P.); Prienų šilas f. (2), 25 08 2022, 5 spec. (Ant.P.); Pučkornių miškas f., 20 08 2022, ~20 spec. (G.Š.&D.M.); Puvočiai (1), 07 08 2022, >10 spec. (A.P.); Puvočiai (2), 05 09 2022, 6 spec. (A.P.); Skersabalės Miškas f., 08 09 2022, ~50 spec. (R.F.); Šipiniškis, 15 08 2022, >10 spec. (A.P.); Užuožerės Miškas f. 06 09 2022, ~30 spec. (R.F.); Vadų Miškas f., 30 08 2022, 1 spec. photographed (<https://macrogamta.lt/lt/fotografija/prozirninė-kuprotoji-cikada-gargara-genistae-28428>) (K.M.); Varėnos 2 Miškas f., 20 08 2022, ~50 spec. (G.Š.&D.M.); Verkliai, 23 08 2022, 5 spec. (A.P.); Vėžionių Miškas f., 20 08 2022, 1 spec. photographed (<https://macrogamta.lt/lt/fotografija/prozirninė-kuprotoji-cikada-gargara-genistae-28428>) (Ž.P.); Žeimiai, 04 09 2022, 3 spec. (Ant.P.).

Gargara genistae was not found on *Cytisus scoparius* in: Antaliedė, 15 08 2022;

Beržėnai, 24 08 2022; Būtingės Miškas f., 23 08 2023; Darbėnai, 23 08 2023; Debeikiai (1), 24 08 2022; Debeikiai (2), 24 08 2022; Didžiųjų Burbiškių mound, 24 08 2022; Dvilai, 23 08 2023; Galvydiškė, 24 08 2022; Inkūnai, 25 08 2022; Liūlinė, 15 08 2022; Malinovka, 15 08 2022; Melnragė I, 23 08 2023; Melnragė II, 23 08 2023; five places along the road between Miškas Plokštinė (1) and Miškas Plokštinė (2), 23 08 2023; Panerių 1 Miškas f., 19 09 2022; Pušinė, 24 08 2022; Užmarkija, 24 08 2022; Vyžuonų Miškas f. (1), 25 08 2022; Vyžuonų Miškas f. (2), 25 08 2022 (all A.P.); Juodkrantė, 13 09 2023 (R.B.); Juškinės Miškas f., 29 07 2022 (R.F.); Vidušilio Miškas f. (R.F.), 28 07 2022.

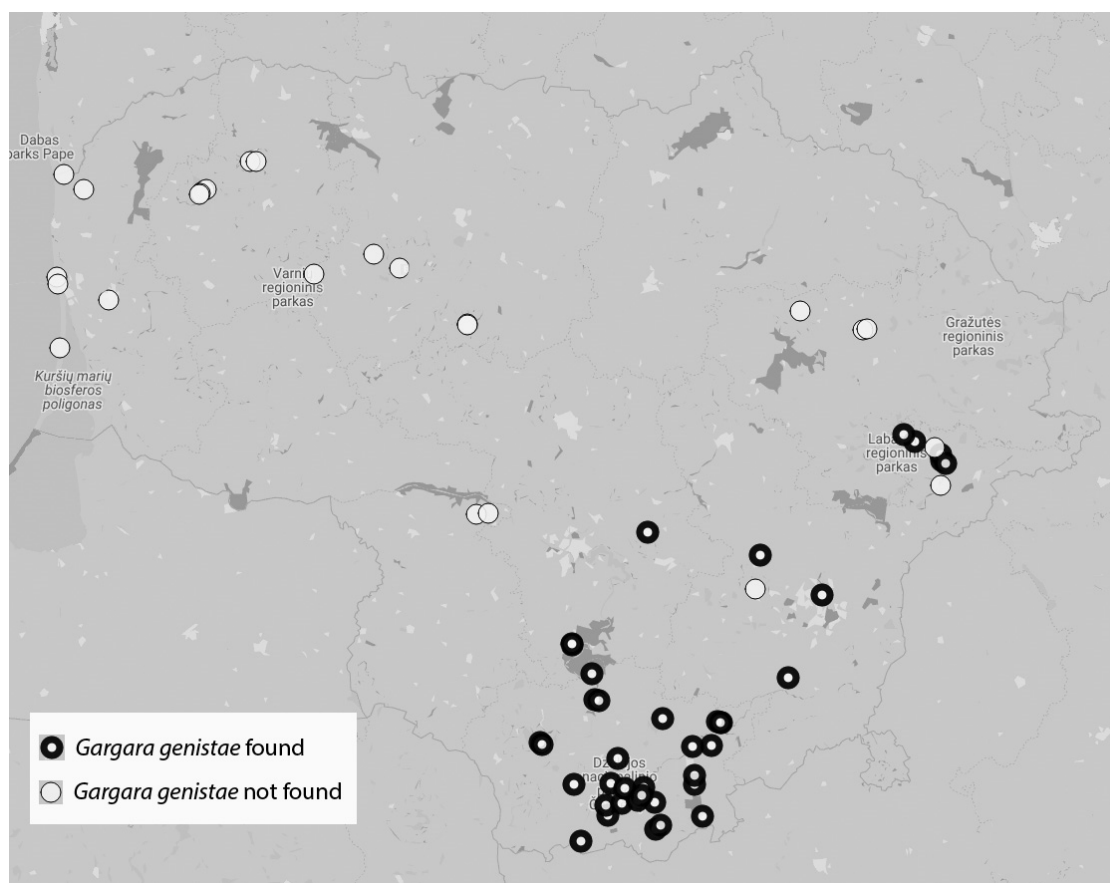


Fig. 1. Distribution of localities in Lithuania, where *Gargara genistae* was found (black circles with a white dot) and was not found (white circles), during inventory in 2022 and 2023 (Map produced with Map Maker, www.maps.co).

Discussion

The first specimen of *G.genistae* was collected accidentally in Puvočiai, Southern Lithuania and only later connection of this species to one of its food plants, *Cytisus scoparius*, became clear to the author of this paper (Petrašiūnas, 2021). This plant-insect connection gave an idea to select *Gargara genistae* as the “Insect of the Year”, because its host plants are rather easily found and hardly mistaken as other species. Moreover, *C.scoparius* is included into the List of Invasive Species of Lithuania (Taura, Gudžinskas, 2020) and it was expected that search for the insect would reveal additional distribution localities of this invasive plant.

Current distribution map (Fig.1) shows that *Gargara genistae* is mainly found in

southern and southeastern parts of Lithuania, reaching from Varėna to Prienai district in the south, Molėtai and Švenčionys districts in the east of the country. It is interesting to observe that *G. genistae* were not detected in the central and western parts of Lithuania, although *C. scoparius* is rather widely spread in those parts. It was reasonable to expect *G. genistae*, being a more southern species, to be also found in territories closer to the Baltic sea, but all the search efforts there were fruitless so far. Such pattern of current distribution of *G. genistae* in Lithuania could be due to it firstly reaching Lithuania from the south, through Poland or Belarus and not from the west, along the Baltic sea coast. This southern route is more probable if published records of *G. genistae* from Poland are taken into account – they are distributed from southwest towards northeast of the country, with none in the north, closer to the Baltic sea (BioMap, 2023).

Gargara genistae might have been introduced to Lithuania together with *Cytisus*, but *G. genistae* are also known to aggregate on other woody species of Fabaceae (*Colutea*, *Coronilla*, *Genista* and others) (Holzinger *et al.*, 2003) and it might have just moved from one plant to another, when *Cytisus* appeared in Lithuania. Genetic studies of *G. genistae* from the whole distribution area of this species could bring more clarity about the possible timings and paths of the spread of this species, but it was not the scope of this paper.

It could be expected that *Gargara genistae* will spread more northwards through central Lithuania, into Samogitia region and towards the Baltic sea and this paper will serve as a reference point for tracking the future changes in distribution of this species.

References

- BioMap [online] 2023. Krajowa Sieć Informacji o Bioróżnorodności. *Gargara genistae* https://baza.biomap.pl/en/taxon/species-gargara_genistae [Accessed: 08 11 2023]
- Holzinger, W.E., Kammerlander I., Nickel, H. 2003. The Auchenorrhyncha of Central Europe, Fulgoromorpha, Cicadomorpha excl. Cicadellidae. Brill Publishers, 673 pp.
- Ivanauskas, A., Valiūnas, D., Ivinskis, P. & Rimšaitė, J. 2014. Some data on Cicadomorpha and Fulgoromorpha (Insecta, Hemiptera) of Lithuania. *New and rare for Lithuania insect species* 26: 26–30.
- Petrašiūnas A. 2021. *Gargara genistae* and *Stictocephala bisonia* (Hemiptera: Cicadomorpha, Membracidae) new for Lithuanian fauna. *Bulletin of the Lithuanian Entomological Society* 5 (33): 23–25.
- Söderman, G., Dapkus, D. 2009. New records of Hemiptera from the Čepkeliai strict Nature Reserve (Southern Lithuania) in 2007. *New and rare for Lithuania insect species* 21: 12–14.
- Söderman, G., Gillerfors, G. Endrestøl, A. 2009. An annotated catalogue of the Auchenorrhyncha of Northern Europe (Insecta, Hemiptera: Fulgoromorpha et Cicadomorpha). *Cicadina* 10: 33–69.
- Söderman G., Rintala T. 2009. Heteroptera and Auchenorrhyncha (Hemiptera) collected from southeastern Lithuania in 2008. *New and Rare for Lithuania Insect Species* 21: 15–20.
- Taura L., Gudžinskas Z. 2020. Life Stages and Demography of Invasive Shrub *Cytisus scoparius* (Fabaceae) in Lithuania. *Botanica* 26(1): 1–14.
- Vilbaste J. 1974. Preliminary list of Homoptera – Cicadinea of Latvia and Lithuania. *Eesti NSV Tead. Akad. Toimet.* 23: 131–163.

***Gargara genistae* (Hemiptera: Cicadomorpha, Membracidae) paplitimas Lietuvoje**

A. PETRAŠIŪNAS

Santrauka

Pateikti duomenys apie 2022 metų „Metų vabzdžio“ akcijos objekto, prožirninės kuprotosios cikados *Gargara genistae*, paplitimą Lietuvoje. Daugiausia šios rūšies individų aptikta ant šluotinio raipsto *Cytisus scoparius* pietų ir rytų Lietuvoje ir visiškai neaptikta Žemaitijoje bei pajūryje. Toks paplitimas galimai rodo rūšies atsiradimą Lietuvoje iš pietų, per Baltarusiją ar Lenkiją, o ne iš vakarų, plintant palei Baltijos jūrą.

Received: 6 November, 2023