

DISTRIBUTION OF *BOLORIA AQUILONARIS* (STICHEL, 1908) (LEPIDOPTERA, NYMPHALIDAE) IN LITHUANIA

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Introduction

Boloria aquilonaris (Stichel, 1908) (Lepidoptera, Nymphalidae) is a boreo-montane species strongly associated with peat bogs in Central Europe while it is also found outside peatlands (e.g., wet meadows) in the northern latitudes (Mikkola & Spitzer, 1983; Spitzer & Danks, 2006). It is widely distributed in Fennoscandia, while it is quite local in Central Europe living in lowland bogs at sea level (e.g., France, The Netherlands) and subalpine region up to 2000 m (Switzerland) (Mousson *et al.*, 1999). Verified records after 1960 of the species are from six faunistic territories out of 10 in Latvia (Savenkov & Šulc, 2010), while it is found throughout Estonia (Jürivete & Õunap, 2008). It lives in peat bogs of Belarus (Goldenkov & Pristavko, 1988). *B. aquilonaris* occurs in the northern, north-eastern and south-eastern regions of Poland and became extinct in other parts of the country due to the loss of habitats, so it is protected since 2001 (Oleksa, 2004). In general, *B. aquilonaris* is considered to be among the species most at risk from global warming (Van Swaay *et al.*, 2010).

The aim of this article is to summarize data on the distribution of *B. aquilonaris* in Lithuania.

Material and Methods

The data was collected during field studies in peat bogs and adjacent habitats of Lithuania by D. Dapkus (D.D.) and G. Švitra (G.Š.) in 1994–2011 using standard entomological methods. Some data was presented by B. Gliwa (B.G.), R. Kazlauskas (R.K.), D. Mikalauskas (D.M.), V. Pacevičius (V.P.), V. Ramonas (V.R.), A. Rudminaitienė (A.R.), G. Sidabrienė (G.S.), V. Uselis (V.U.) and A. L. Viborg (A.L.V.).

The majority of the material is preserved in the collections of Lithuanian University of Educational Sciences and personal collection of G. Švitra.

List of localities

Akmenė district	Kamanos Nat. R.	56°18'42,4"N, 22°38'32,0"E
Alytus district	Žuvintas Nat. R.	54°28'18,3"N, 23°33'46,8"E
Anykščiai district	Juodkalnio Miškas f.	55°40'12,4"N, 25°25'11,3"E
	Lake Ešerinis env.	55°25'42,5"N, 25°02'16,7"E
Ignalina district	Ginučiai	55°23'00,9"N, 25°59'52,3"E
	Adutiškis telmological reserve (1)	55°16'10,3"N, 26°42'48,3"E

	Adutiškis telmological reserve (2)	55°15'54,6"N, 26°43'40,0"E
Joniškis district	Mūšos Tyrelio Pelkė Bog	56°13'06,0"N, 23°15'51,0"E
Kelmė district	Juodlės Miškas f.	55°49'16,5"N, 22°56'48,3"E
	Pakėvis, Kėvės Ežeras Lake env.	55°41'23,6"N, 22°49'02,0"E
Klaipėda district	Tyrų Pelkė Bog	55°32'59,0"N, 21°13'58,9"E
Lazdijai district	Dainaviškiai	54°05'22,6"N, 23°40'13,3"E
Molėtai district	Dumblio Ežeras Lake env.	55°22'25,0"N, 25°40'55,1"E
	Suginčiai	55°20'20,3"N, 25°31'25,0"E
	The Dumblis river env.	55°15'28,8"N, 25°45'44,7"E
Plungė district	Liepkalnio Miškas forest	56°02'23,0"N, 21°56'10,1"E
	Paburgė	56°01'18,2"N, 21°55'58,9"E
	Šarnelė	56°07'50,8"N, 21°56'06,3"E
Prienai district	Palios Durpynas Bog	54°35'44,0"N, 23°42'18,4"E
Radviškis district	Praviršulio Tyrulis telmological reserve	55°30'58,3"N, 23°26'19,0"E
Šilalė district	Plynosios Pelkė bog	55°19'25,2"N, 22°09'01,8"E
Širvintos district	Bartkuškis telmological reserve	54°54'07,8"N, 24°58'42,6"E
	Grauzių Miškas f.	54°58'42,5"N, 25°00'55,6"E
	Jauniūnų Pelkė bog	54°57'09,5"N, 25°01'00,5"E
	Paežerėlio Ežeras Lake env.	54°53'55,2"N, 24°53'14,3"E
	Šešuolių Pelkė bog	55°05'09,1"N, 25°04'32,5"E
	Lake Viesys env.	55°05'56,3"N, 24°47'29,7"E
Švenčionys district	Algirdėnai telmological reserve	54°54'37,9"N, 25°44'41,7"E
	Antaliedė	54°14'22,3"N, 25°54'06,2"E
	Bėlys Lake env.	55°09'38,8"N, 26°13'57,2"E
	Durpynas Baluoša peatland	54°53'44,2"N, 25°48'10,1"E
Tauragė district	Artoji Pelkė Bog	55°08'58,2"N, 22°25'55,2"E
	Laukėsos Durpynas peatland	55°08'38,5"N, 22°16'31,3"E
Telšiai district	Reiskių Tyras telmological reserve	55°49'53,1"N, 21°34'11,8"E
Trakai district	Varnikai, Ilgelių Pelkė bog	54°38'37,5"N, 24°58'05,1"E
Ukmergė district	Dirvonai Lake env.	55°14'04,2"N, 24°41'29,4"E
	Gaiveniai	55°21'20,2"N, 24°44'41,0"E
	Girelė	55°11'10,5"N, 25°00'08,3"E
	Kazimierava telmological reserve	55°11'23,8"N, 25°00'31,3"E
	Kertušas bog	55°08'23,0"N, 24°54'06,9"E
	Laukėnai telmological reserve	55°11'33,8"N, 25°03'52,0"E
	Šešuolių Giria f.	55°11'42,6"N, 25°00'42,3"E
Utena district	Aknystėlis Lake env.	55°31'17,0"N, 25°24'49,4"E
	Kuktiškės	55°23'36,9"N, 25°40'44,0"E
	Lake Kermėžys env.	55°28'45,0"N, 25°27'10,8"E
	Pastasiūnė	55°20'56,3"N, 25°45'29,8"E
Varėna district	Bakanausko Ežeras Lake env.	54°02'16,8"N, 24°16'41,3"E
Vilkaviškis district	Tadarinės Miškas f.	54°28'04,4"N, 22°48'59,4"E
Vilnius district	Giedraitėškės	54°51'38,4"N, 25°10'45,9"E
	Raudonoji Bala telmological reserve	54°51'00,2"N, 25°13'09,3"E

Results

Adutiškis telmological reserve, 16 06 2007, few spec. (G.Š.); Aknystėlis Lake env., 25 07 1996, few spec. (G.Š.); Algirdėnai telmological reserve, 22 06 2000, 4 spec. (D.D.); Antaliedė, 09 07 2002, 1 spec. (G.Š.); Artoji Pelkė Bog, 10 07 1994, 1 spec. (G.Š.); Bakanausko Ežeras Lake env., 23 07 1998, 1 spec. (G.Š.), 12 06 2011, few spec. (A.L.V.); Bartkuškis telmological reserve, 21 06 2000, 1 spec. (D.D.); Bėlys Lake env., 01 07 1992, few spec. (G.Š.); Dainaviškiai, 09 07 2001, few spec. (G.Š.); Dirvonai Lake env., 29 06 1991, few spec. (G.Š.), 10 06 2000, 48 spec. (D.D.), 24 06 2000, 119 spec. (D.D.), 06 07 2000, 10 spec. (D.D.), 29 06 2001, 42 spec. (D.D.), 09 07 2001, 17 spec. (D.D.); Dumblio Ežeras Lake env., 04 07 1999, few spec. (G.Š.); the Dumblis river env., 01 07 2001, few spec. (G.Š.); Durpynas Baluoša peatland, 22 06 2000, 14 spec. (D.D.); Gaiveniai, 07 07 1995, 1 spec. (G.Š.); Giedraitškės, 20 06 2012, 1 spec. (D.D.); Ginučiai, 25 07 1975, 1 spec. (R.K.); Girelė, 18 06 1995, few spec. (G.Š.), 11 06 2000, 7 spec. (D.D.), 24 06 2000, 9 spec. (D.D.), 05 07 2000, 2 spec. (D.D.), 29 06 2001, 13 spec. (D.D.), 09 07 2001, 9 spec. (D.D.), 22 06 2002, 60 spec. (D.D.), 14 07 2002, 13 spec. (D.D.), 14 06 2012, 4 spec., (D.D.), 06 07 2012, 2 spec. (D.D.); Graužių Miškas f., 06 07 1999, few spec. (G.Š.), 10 07 2001, 3 spec. (D.D.); Jauniūnų Pelkė bog, 10 07 2001, 3 spec. (D.D.); Juodkalnio Miškas f., 29 06 1996, few spec. (G.Š.); Juodlės Miškas f., 26 06 2010, 1 spec. (G.Š.); Kamanos Nat. R., 16 06–07 24 1975, 11 spec. (A.R.); Kazimierava telmological reserve, 11 06 2000, 2 spec. (D.D.), 24 06 2000, 2 spec. (D.D.); Kertušas bog, 17 06 1992, 5 spec. (D.D.), 17 07 1992, 1 spec. (D.D.), 22 06 1999, 2 spec. (D.D.), 11 06 2000, 1 spec. (D.D.), 24 06 2000, 2 spec. (D.D.), 22 06 2002, 2 spec. (D.D.); Kuktiškės, 29 07 1978, 6 spec. (V.P.); Lake Ešerinis env., 29 05 2012, few spec. (G.Š.); Lake Kermėžys env., 30 06 1997, few spec. (G.Š.); Lake Viesys env., 01 06 2000, 1 spec. (G.Š.); Laukėnai telmological reserve, 16 07 1987, few spec. (G.Š.), 20 06 1990, 4 spec. (D.D.), 11 06 2000, 5 spec. (D.D.), 18 06 2000, 1 spec. (D.D.), 24 06 2000, 3 spec. (D.D.), 05 07 2000, 1 spec. (D.D.), 29 06 2001, 16 spec. (D.D.), 09 07 2001, 5 spec. (D.D.); Laukėsos Durpynas peatland, 09 07 1994, 1 spec. (G.Š.); Liepkalnio Miškas f., 05 07 2006, few spec. (G.Š.); Mūšos Tyrelio Pelkė Bog, 26 06 2008, 1 spec. (V.R.); Paburgė, 05 07 2006, few spec. (G.Š.); Paežerėlio Ežeras Lake env., 25 06 2003, few spec. (G.Š.); Pakėvis, Kėvės Ežeras Lake env., 22 06 2011, 1 spec. (G.Š.); Palios Durpynas Bog, 14 06 2000, 2 spec. (D.D.); Pastasiūnė, 18 07 1996, few spec. (G.Š.); Plynosios Pelkė bog, 20 06 2005, 1 spec. (D.D.); Praviršulio Tyrulis telmological reserve, 27 06 2011, 5 spec. (B.G.); Raudonoji Bala telmological reserve, 20 06 2012, 4 spec. (D.D.); Reiskių Tyras telmological reserve, 13 06 2008, few spec. (G.S.); Suginčiai, 21 06 1975, 8 spec. (V.P.), 07 07 1975, 1 spec. (V.P.); Šarnelė, 05 07 2006, few spec. (G.Š.); Šėšuolėlių Pelkė bog, 21 07 2000, 7 spec. (D.D.), 05 07 2000, 2 spec. (D.D.), 29 06 2001, 14 spec. (D.D.), 10 07 2001, 5 spec. (D.D.); Šėšuolių Giria f., 18 06 1995, few spec. (G.Š.), 16 07 1996, 1 spec. (D.D.), 22 06 1999, 4 spec. (D.D.); Tadarinės Miškas f., 28 06 1998, 1 spec. (G.Š.); Tyrų Pelkė Bog, 23 07 1987, few spec. (V.U.); Varnikai, Ilgelių Pelkė bog, 20 06 2012, 2 spec. (D.M.); Žuvintas Nat. R., 14 06 2000, 7 spec. (D.D.), 08 07 2000, 1 spec. (D.D.), 04 07 2001, 6 spec. (D.D.).

Discussion

The first data on *Boloria aquilonaris* in Lithuania was presented from Ežerėlis (Kaunas district), Juodupė (Rokiškis district) and Žuvinto Palios bog (Alytus district) by A. Palionis (1932). The author mentioned that individuals of the species were quite rare. J. Prüffer (1947) mentioned four localities of *B. aquilonaris*: Trakai district (Totoriškių Ežeras lake environs) and Vilnius district (Medynai, Kalinas and Pailgė).

Some data on the distribution of *B. aquilonaris* was presented later (Ivinskis, 1993, 1998, 2004). Distribution map of *B. aquilonaris* was presented by P. Ivinskis & J. Augustauskas (2004) with some generalized data. Our supplementary data revealed broader distribution of the species in Lithuania (Figure 1).

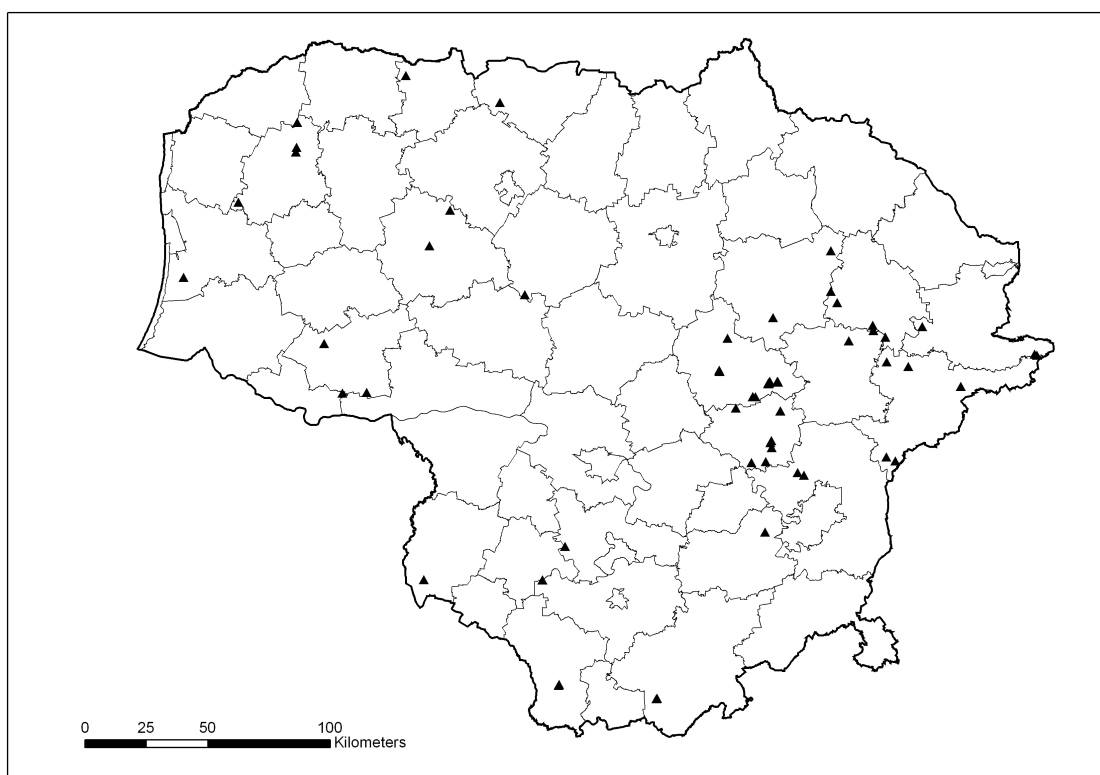


Figure 1. Finding localities of *Boloria aquilonaris* in Lithuania.

A. Palionis (1932) registered *B. aquilonaris* in raised bogs, J. Prüffer (1947) indicated wet meadows and bogs as habitats of the species. The species was considered as the dweller of peatlands (Kazlauskas, 1984) and bigger raised bogs (Ivinskis, 1998, 2004), so *B. aquilonaris* is the tyrphobiontic species in Lithuania (Dapkus, 2001). It is mainly associated with raised bogs, while it is also lives in transitional bogs that surround lakes, and sometimes such habitats are not very large. *B. aquilonaris* is found in such small localities where other tyrphobiontic species of butterflies (e.g. *Colias palaeno*, *Plebejus optilete*) do not live. Specimens of *B. aquilonaris* can be found throughout a raised bog, while it is more numerous in the lagg zone or margin of the bog, where adults visit flowering plants that are not associated to bogs (e.g., blossoms of *Geum rivale*). The

results of the transect count in a peat bog surrounding the Dirvonai Lake (Ukmergė district) in 2001 revealed that the abundance of *B. aquilonaris* was approximately 3 specimens per 100 meter in the peat bog and approximately 12 specimens in the margins.

According to the literary sources, the larvae of *B. aquilonaris* feed on *Viola* and *Oxycoccus* plants (Ivinskis & Augustauskas, 2004). The latter species should be the main food plant as it is quite common on bogs *B. aquilonaris* was registered. Besides, we observed a female laying single eggs on the underside of *Oxycoccus palustris* leaves (Kazimierava telmological reserve, 24 06 2000).

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***Boloria aquilonaris* (Stichel, 1908) (Lepidoptera, Nymphalidae) paplitimas Lietuvoje**

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Santrauka

Straipsnyje pateikiami apibendrinti literatūros šaltiniuose skelbti ir autorių 1987–2012 metais Lietuvoje surinkti duomenys apie aukštapelkėms prierašią dieninių drugių rūšį – pelkinį perlinuką (*Boloria aquilonaris*). Pateiktos radvietės, paplitimo žemėlapis, stebėjimo datos, individų skaičius ir stebėtojai, aptariamose būdingos buveinės.

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