



The assassin bug *Pygolampis bidentata* Goeze, 1778 (Heteroptera, Reduviidae) in Estonia

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Ensimmäinen tieto kyyrösluteen (*Pygolampis bidentata* Goeze, 1778) esiintymisestä Eestissä on vuodelta 1929, jolloin laji tavattiin maan koillisosasta. Uusimmat havainnot ovat Eestin itäosasta vuodelta 2015. Kaiken kaikkiaan *P. bidentata* on tavattu Eestistä yksitoista kertaa. Uusien havaintojen perusteella se suosii puoliavoimia, kosteita–kuivahkoja, mikroilmastoltaan lämpimiä paikkoja metsämaastossa. Käytettävissä olevien tietojen perustella lajin tarkkoja elinympäristövaatimuksia tai uhanalaisuutta Eestissä ei kuitenkaan pystytty arvioimaan.

The article presents data on the occurrence and distribution of the assassin bug *Pygolampis bidentata* Goeze, 1778 in Estonia. The first known record of *P. bidentata* is from 1929 in north-eastern Estonia. The recent findings of the species are from 2015 in the eastern part of the country. During this 86-year period, the assassin bug has been found only eleven times in Estonia. According to the information about the recent records in Estonia, the species prefers half-open, wet or semi-dry habitats with warmer microclimatic conditions in forested landscapes. However, these few records of the species are not sufficient to make conclusions about the status and certain habitat requirements of *P. bidentata* but the recent findings confirm that the assassin bug is not extinct in Estonia.

Key words: *Pygolampis bidentata*, distribution, biology, Estonia

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Introduction

Reduviidae (the assassin bugs), with approximately 7,000 described species, occur worldwide, but the richness of species clearly decreases towards the poles. In northern Europe, the family of Reduviidae is represented with a relatively low number of species. Altogether there are nine species of assassin bugs found in Fennoscandia and Baltics. The family of Reduviidae is represented in the fauna of Estonia by eight species (Coulianous 2005).

The assassin bug *Pygolampis bidentata* is distributed in Europe and northern Asia (excluding China). The species is more common in the southern part of its distribution area. Contrary, in the northern countries *P. bidentata* is a rare or scarce species and therefore is included in many national Red Lists.

P. bidentata is presumably a nocturnal bug that lives on the ground and therefore has been mainly found under logs and stones or in the ground-level vegetation at daytime (Wachmann et al. 2006). In general, the species has been found in both dry and wet habitats. In Latvia the species was found in the vegetated coastal dunes (Spungis 2005). The last record of *P. bidentata* in Finland came from a humid meadow (Rintala & Rinne 2011). In Norway and Sweden, the species' habitats are semi-natural meadows and grasslands with

open solid ground (Ødegaard et al. 2010). However, the species has also been found in wet habitats such as bog biotopes (Andersson et al. 2015).

Little is known about the diet and life cycle of the assassin bug, particularly in northern Europe. In the literature, Tetrigidae (Orthoptera) has been mentioned as food for *P. bidentata* (Wachmann et al. 2006). However, the assassin bug more likely preys on different ground-living insects and spiders. The species has been reported a two-year life cycle, overwintering the first winter in the 3rd instar and in the second winter as a newly-hatched adult bug in central and southern Europe (Wachmann et al. 2006). However, the species' complete life cycle is unknown in Fennoscandia and Baltics.

Estonian records

There are only eleven known records of *P. bidentata* in Estonia from the period 1929–2015 (Table 1). Six of the records were done during twentieth century (material in the Entomological Collection of the Institute of Agricultural and Environmental Sciences, Estonian University of Life Sciences): the first Estonian record dates back to 1929 and comes from Kiltsi, in north-eastern Estonia, while the last 20th-century occurrence of the species was in 1993 from

south-eastern Estonia. After twenty years of no records, the *P. bidentata* was found again in 2013 at two different locations: Lööne, on the island of Saaremaa, in western part of Estonia (TUZ021399, TUZ021400, deposited in the Natural History Museum of the University of Tartu) and Maramaa, in the eastern part of the country. The latest records of the species are from Tammiku in 2015, which is also in the eastern part of Estonia.

According to the records in Table 1, *P. bidentata* can be seen from May to August in Estonia and it seems that the assassin bug can be found almost all over the country. The species is found in both dry and wet habitats in Estonia. For example, at the Lööne site (an abandoned gravel pit) the specimens "sat" on plants (*Carex* and *Equise-*

Table 1. Records of *Pygolampis bidentata* Goeze, 1778 in Estonia. Abbreviations: F=female, M=male, L=larva, ?=unknown information

Date	Location	Geographical coordinates	No. of individuals/ Gender	Leg
18.VII.1929	Kiltsi, Lääne-Virumaa County		1 M	L. Voore
17.VII.1939	Seanina Beach, Muhu Island, Lääne County		1 L	L. Voore
25.VII.1941	Haaslava, Tartu County		1 ?	?
28.V.1954	Puhtu, Lääne County		1 F	A. Kumari
5.VI.1976	Taagepera, Valga County		1 ?	H. Õunap
15.V.1993	Piusa 1,5 - 3 km at Tuderna, Põlva County		1 F	M. Heidemaa
16.V.2013	Maramaa, Tartu County	58°26'06"N 26°42'50"E	2 M	J. Luig
18.V.2013	Lööne gravel pit, Saaremaa Island	58°25'59"N 22°42'24"E	2 M	P. Tarlap
20.V.2015	Tammiku, Jõgeva County	58°39'29.5"N 26°20'19.2"E	1 M	A. Liivamägi
2.VI.2015	Tammiku, Jõgeva County	58°40'18.6"N 26°19'2.5"E	1 F	A. Liivamägi
4.VI.2015	Tammiku, Jõgeva County	58°40'19.3"N 26°19'1.9"E	1 F	A. Liivamägi

tum spp.) that grew in shallow water. A accompanying species (possible food resources for the species) included *Tetrix subulata*, *Saldula saltatoria* and *Cymus glandicolor*. In the eastern part of Estonia *P. bidentata* was found at forest roadsides and on banks of ditches (Fig 1). Interestingly, despite that *P. bidentata* is a ground-living bug, the recent individuals were noticed above ground on leaves of plants (Fig. 2). The recent specimens were all observed after 4 pm, mainly in warm and cloudy weather conditions.

Discussion

This overview shows that the occurrence data of the assassin bug *P. bidentata* is scarce in Estonia. Similarly, in Fennoscandia there have been few records of the species during the last century. In Finland, *P. bidentata* was rediscovered in 2009 after 45 years (Rintala & Rinne 2011). In Norway, the species was last seen in 1924 (Ødegaard et al. 2010). Furthermore, the first record of the species from Latvia is



Figure 1. Recent findings of *P. bidentata* have been on the banks of drainage ditches (a) and at forest roadsides (b) in the eastern part of Estonia

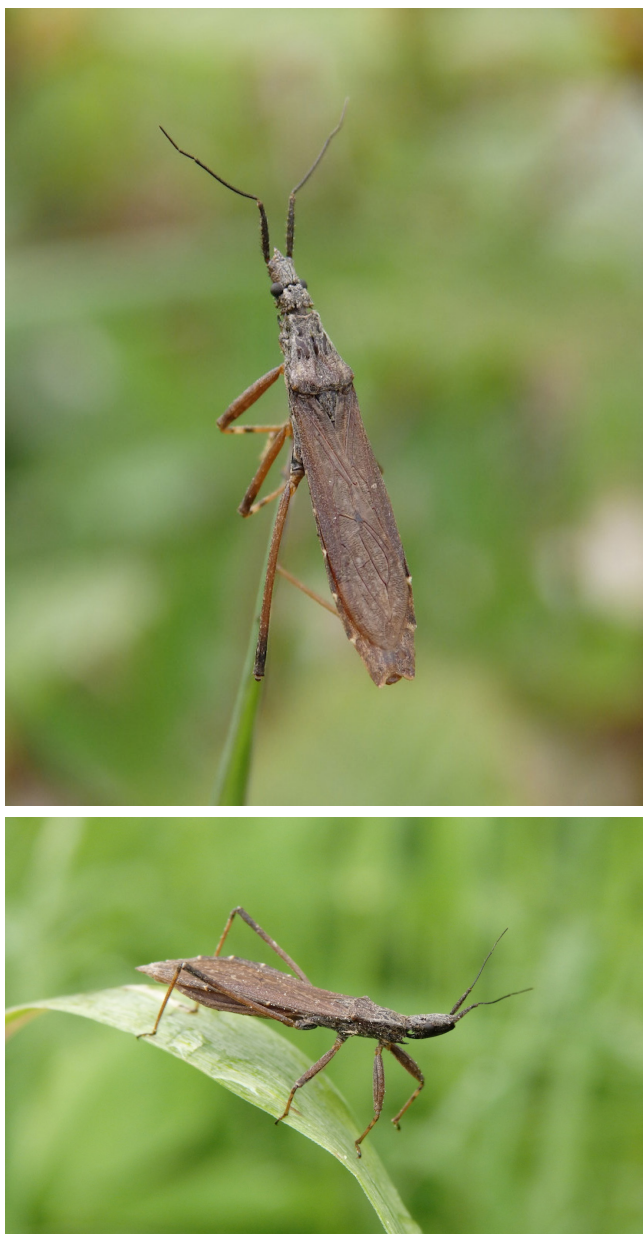


Figure 2. A male (a) and female (b) specimen of the assassin bug species *Pygolampis bidentata* (Goeze, 1778), photos are taken on May 20, 2015 (a) and on June 2, 2015 (b)

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quite recent, from year 2001 (Spungis 2005). A possible explanation for the small number of the records is the rather cryptic way of life of *P. bidentata*. The species is also not abundant in its distribution area, which all makes it quite hard to find. In addition, due to its inconspicuous appearance (greyish-brown protective coloration), *P. bidentata* specimens are most probably overlooked and therefore insufficiently studied.

Accordingly, the ecological demands of the species are unknown. In general, the species has been found in both dry and wet habitats and it seems that *P. bidentata* does not have distinctive habitat requirements. However, based on the recent records in Estonia, it prefers half-open, wet or semi-dry habitats with warmer microclimatic conditions in forested landscapes. Additionally, it seems that bare ground is an important habitat feature the species. Areas of bare ground warm up very readily in the sun, whereas dense vegetation blocks sunlight from warming the ground. Warmth is in turn very important for the development of insect species during pre-maturation stage.

Even though there is very little data about the occurrence of *P. bidentata* in Estonia, the recent findings confirm that the remarkable assassin bug is not extinct in the country. However, it is of great importance to understand the specific requirements of environmental and habitat conditions of the species, in order to ensure the survival of this species in Estonia and other neighbouring countries.