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Halophilic species of the genus *Scrobipalpa* Janse, 1951 (Lepidoptera: Gelechiidae) in Poland

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ABSTRACT. **Halophilic species of the genus *Scrobipalpa* Janse, 1951 (Lepidoptera: Gelechiidae) in Poland.**

Three halophilic species of the genus *Scrobipalpa* Janse were found in Poland. They inhabit inland salt marshes of anthropogenic origin and their larvae are associated with local halophytes. *Scrobipalpa stangei* (E. Her.) was reared from *Triglochin maritimum* L., *Scrobipalpa salicorniae* (E. Her.) from *Salicornia europaea* L. and *Scrobipalpa nitentella* (Fuchs) from *Salicornia europaea* L. and *Atriplex prostrata* Boucher ex DC.

KEY WORDS: Lepidoptera, Gelechiidae, *Scrobipalpa nitentella*, *Scrobipalpa salicorniae*, *Scrobipalpa stangei*, halophytes, salt marshes.

INTRODUCTION

Salt marshes are extreme habitats due to the high salinity of the ground water which limits the occurrence of most plant species. Only a small group of halophytes, which are perfectly adapted to the saline environment, can survive there. In Poland, natural saline habitats are scarce and they are situated on the Baltic coast, usually near river estuaries. The salinity of the Baltic Sea is low, limiting the number of halophytes. On the other hand, the inland salt marshes are usually of anthropogenic origin and associated with the soda industry, where salt is one of the necessary components in industrial processes. Along pipelines and in dump places of salt water, soil attains a high concentration of salt. These such places are developing associations of halophytes chiefly belonging to the community *Puccinellio distantis-Salicornietum brachystachyae* (Wilkoń-Michalska 1963). Occasionally, in few inland sites natural effusions of salt waters are present and accompanied by few species of halophytes (Piernik 2003). Lepidoptera of salt marshes were not thoroughly investigated, field data were not summarized and a complete list of species has not been compiled so far. Out of 212 Gelechiidae species found in Poland (Baran & Rynarzewski 2017), only three are halophilic. Our exploration of the salt marshes took place in the Inowrocław-Mątwy site. Supplementary research was carried out in nearby Janikowo and Ciechocinek.

METHODS

Moths were collected during the day by sweeping with a net over the vegetation. Larvae were searched for on food plants and collected for further rearing under laboratory conditions. The obtained specimens are stored in authors' collections.

RESULTS

Scrobipalpa stangei (E. Hering, 1889) (Figs. 1, 2)

Material examined:

CD14 Inowrocław-Mątwy: 1 ex, 2 VII 1995, T. Rynarzewski leg.; 12 exx, e.l. 1-10 VI 1997, T. Rynarzewski leg., larvae 5 V 1997 on *Triglochin maritimum* L.; 5 exx, e.l. 19 VI 2002, J. Buszko leg., larvae 22 V 2002 on *Triglochin maritimum* L.; 9 exx, e.l. 8-11 VI 2008, J. Buszko leg., larvae 22 V 2008, *Triglochin maritimum* L.

The species is known from a single locality in Poland. Otherwise known from scattered localities from Great Britain, northern Germany, southern Scandinavia to Latvia. Isolated records are known from Austria, Hungary and Altai Mountains (Elsner *et al.* 2000, Huemer & Karsholt 2010). In the mentioned locality the adults appear in June and July. The larvae were found in April and May on *Triglochin maritimum* L. mining leaves and finally feeding in shoots or roots making wide galleries. The presence of larva is evidenced by greenish or reddish excrements which are dumped in the feeding place. Full grown larva search for pupation site in plant debris nearby. In some seasons the species is very abundant.

Scrobipalpa salicorniae (E. Hering, 1889) (Fig. 3)

Material examined:

CD14 Inowrocław-Mątwy: 3 exx, 19 V 1993, T. Rynarzewski leg.; 9 exx, 19 V 1993, J. Buszko leg.; 6 exx, 27 V 2002, J. Buszko leg.; 1 ex, e.l. 13 VII 2002, J. Buszko leg., larva 24 VI 2002 on *Salicornia europaea* L.; 1 ex, 27 V 2003, J. Buszko leg.; 1 ex, 28 V 2008; 6 exx, e.l. 7-12 VII 2014, T. Rynarzewski leg.; larvae 19 VI 2014 on *Salicornia europaea* L.

Salt marsh in Inowrocław-Mątwy is the only known locality of this species in Poland, where the species is being continuously recorded since 1974. In Europe known from scattered localities in northern and central parts of the continent. Also found in southern area of Ural Mountains (Elsner *et al.* 2000, Huemer & Karsholt 2010). The adults are present in two generations, from end of April to the beginning of June and again in July and August. Larvae were found feeding under slight web on top shoots of *Salicornia europaea* L. in June and again in August and September. Pupation occurs in plant debris under the host plants. In some seasons the species is very abundant.

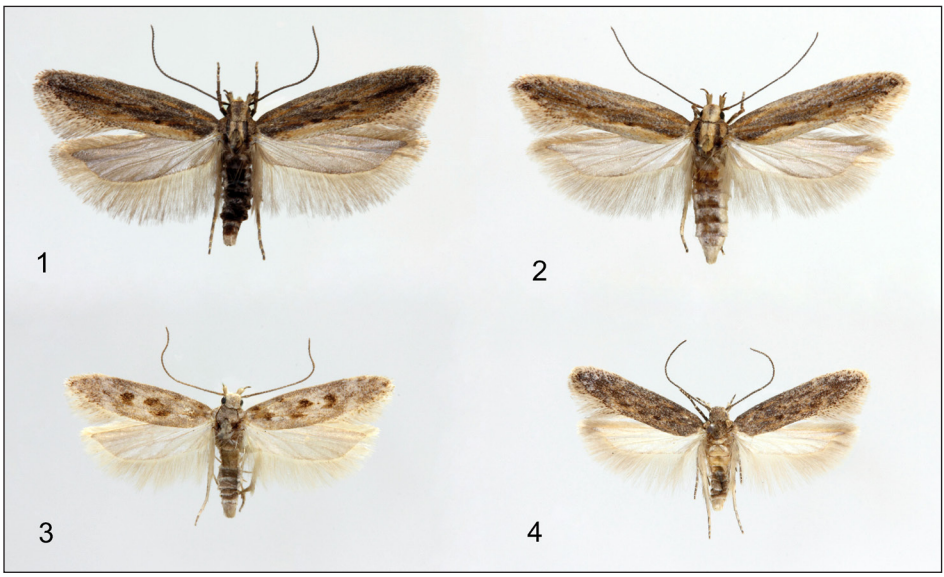
Scrobipalpa nitentella (Fuchs, 1902) (Fig. 4)

Material examined:

CD04 Janikowo: 3 ex, e.l. 29 IV-5 V 2002, J. Buszko leg., larvae 17 X 2001 on *Salicornia europaea* L.

CD14 Inowrocław-Mątwy: e.l. 2 exx, 26, 28 IV 1995, J. Buszko leg., larvae 10 IX 1994 on *Salicornia europaea* L.; 1 ex, 2 VII 1995, T. Rynarzewski leg.; 17 exx, e.l. 24 IV 2002, J. Buszko leg., larvae 21 IX 2001 on *Atriplex prostrata* Boucher ex DC.

CD56 Ciechocinek: 9 exx, e.l. 14 IV-3 V 1989, J. Buszko leg., larvae 9 IX 1988, *Atriplex prostrata* Boucher ex DC.



Figs. 1–4. Imago: 1, 2 – *Scrobipalpa stangei* (E. Her.), 3 – *S. salicorniae* (E. Her.), 4 – *S. nitentella* (Fuchs) (photo J. Buszko).

Ryc. 1–4. Imago: 1, 2 – *Scrobipalpa stangei* (E. Her.), 3 – *S. salicorniae* (E. Her.), 4 – *S. nitentella* (Fuchs) (fot. J. Buszko).



Fig. 5. Inowrocław-Mątwy – a salt marsh with domination of *Salicornia europaea* L. and *Aster tripolium* L., autumn aspect (photo T. Rynarzewski).

Ryc. 5. Inowroclaw-Mątwy – solnisko z dominacją *Salicornia europaea* L. i *Aster tripolium* L., aspekt jesienny (fot. T. Rynarzewski).

The species was recorded only from three sites in the Inowrocław Plain and Toruń Basin. General distribution is almost Palaearctic (Elsner *et al.* 2000, Huemer & Karsholt 2010). Adults appear in one generation a year and are on wings in June and July. Larvae were found feeding on fruits of *Salicornia europaea* and halophylous species of *Atriplex* L. in September and first half of October. Occasionally they can make mines in leaves of *Atriplex* L. (Schütze 1931). Full grown larvae descend to the ground and pupate in plant debris. In some seasons larvae are extremely abundant.

FAUNISTIC COMMENTS

The investigated saline habitats are of relatively recent origin. The soda plant in Inowrocław-Mątwy is the oldest in Poland. It was created in 1879 and the closely situated soda plant in Janikowo is much younger, it was opened in 1957. There is an open question as concerns the colonization of newly created habitats by halophytes in such short time. The same refers to moth species strictly dependent of their host plants. The presence of insect species is apparently determined by the distribution and abundance of their host plants as well as the distance to the nearest stable populations. Among the discussed host plants the most limited occurrence is stated for *Salicornia europaea* L. There are only few localities present in Poland. They are concentrated in Inowrocław Plain, a few are known at the Baltic coast (Zając & Zając 2001). *Scrobipalpa salicorniae* (E. Her.) has been recorded only in Inowrocław-Mątwy and in fact since 1974. Its steady presence is supported by large patches of its host plant (Fig. 5). *S. stangei* (E. Her.) is also known from Inowrocław-Mątwy only. Its host plant – *Triglochin maritimum* L. – is much more common and many stands are known from Baltic coast and from marshy habitats in western Poland. It is probable that this species may occur also in other sites but so far has not been detected. More common is *S. nitentella* (Fuchs), which was recorded in three surveyed localities. Widening its host plant range and adaptation to feed on *Atriplex* L. apparently facilitates its distribution. Colonization by halophilic *Scrobipapa* Janse of salt marshes situated far away, sometimes hundreds of kilometers, from the other known localities indicates the extremely efficient dispersal abilities of the discussed species.

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Streszczenie

Halofilne gatunki z rodzaju *Scrobipalpa* Janse, 1951 (Lepidoptera: Gelechiidae) w Polsce

Solniska na Kujawach są pochodzenia antropogenicznego, a ich obecność związana jest z zakładami przemysłowymi produkcji sody. W miejscach wycieku solanki utworzyły się bardzo specyficzne siedliska, na których rozwinęły się zbiorowiska halofitów należących do zespołu *Puccinellio distantis-Salicornietum brachystachyae*. W trakcie eksploracji solnisk kujawskich znaleziono trzy gatunki związane troficznie z halofitami. Z nich, *Scrobipalpa salicorniae* (E. Her.) obecny był tylko w Inowrocławiu-Mątwach. Trwanie populacji obserwowanej od 1974 roku zapewnia obecność dużych płatów solirodu zielnego (*Salicornia europaea* L.), który występuje na kilku zaledwie stanowiskach w Polsce. Również tylko w Inowrocławiu-Mątwach notowany był *S. stangei* (E. Her.). Gatunek ten żyje na świbce morskiej (*Triglochin maritimum* L.). Roślina ta jest o wiele częściej spotykana niż soliród i to w siedliskach o bardzo niskim zasoleniu. Może to wskazywać na możliwość występowania gatunku także na innych stanowiskach. Szerzej rozsiedlony jest *S. nitentella* (Fuchs), który został znaleziony także w pobliskim Janikowie oraz w Ciechocinku. Gąsienice tego gatunku żyją nie tylko na solirodzie, ale także na łobodzie oszczepowatej (*Atriplex prostata* Boucher ex DC.). Jest to roślina o dużym zasięgu w Polsce. Szersza baza pokarmowa z pewnością wpływa także na większy zasięg gatunku. Obecność gatunków halofilnych na izolowanych stanowiskach, położonych w odległości setek kilometrów od innych miejsc występowania wskazuje na ich bardzo duże możliwości dyspersyjne.

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