

## Revision of the *Xestia speciosa* and *X. alpicola* complexes in Europe (Lepidoptera, Noctuidae)

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*Xestia (Anomogyna) viridescens* (Turati, 1919) stat. n. from the southern Alps is a species distinct from *X. speciosa* (Hübner, 1813). The southern Fennoscandian subspecies of *X. (A.) speciosa* is ssp. *baltica* (Valle, 1940) stat. rev., and that of *X. (A.) alpicola* (Zetterstedt, 1839) is ssp. *iveni* (Hübner, 1870) stat. rev.

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The taxonomy of subgenus *Anomogyna* of the genus *Xestia* (Noctuidae) shall soon be treated in two publications: (1) the third part of Noctuidae Europaeae, illustrating the genital structures of the species treated in the two first parts (see Fibiger 1993), and (2) in a revision of the Holarctic species of the subgenus *Anomogyna* by K. Mikkola, J. D. Lafontaine, M. Ahola and V. S. Kononenko (Mikkola et al. in prep.). In order to avoid inconsistencies in these two works, we decided to combine our taxonomic results on European taxa.

The new technique of everting and extending the inner genitalia by injection gives a better taxonomic resolution than previously used methods (Lafontaine & Mikkola 1987). As wing

coloration is highly adaptive, and may vary even locally, we pay less attention to colour and wing markings. If the lock-and-key organs of the inner genitalia (cf. Lafontaine & Mikkola 1987, Mikkola 1992) show constant differences between two taxa and if corresponding differences can be found in both sexes, the taxa should be considered different species.

Differences in the structure of genitalia can also occur at the subspecific level. In these cases, differences between two taxa are usually found in one sex only; they have nothing to do with isolating lock-and-key characters (e.g. wider valves), or they are too small to act as such (e.g. slightly thicker vesica), or are variable showing intergradation. Such differences may give clues to the distributional history of the subspecies. For example, two populations may have been geographically isolated for an extended period during which the genital structures have diverged.

<sup>1</sup> This article has bypassed previously submitted articles to make the nomenclatorial data available for the third part of M. Fibiger's work on European Noctuidae.

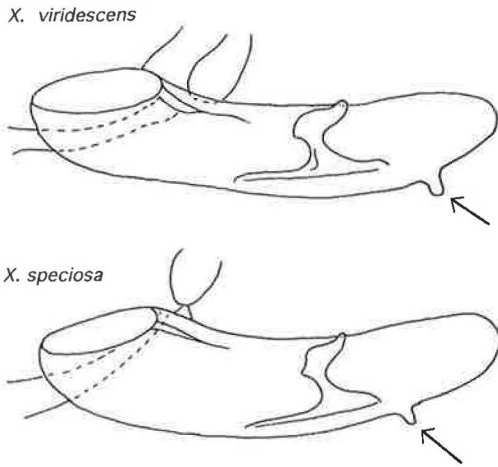


Fig. 1. Right valva of *Xestia viridescens* (Switzerland, Valais) and *X. speciosa speciosa* (Austria, Höllengebirge). Diagnostic characters indicated by arrows.

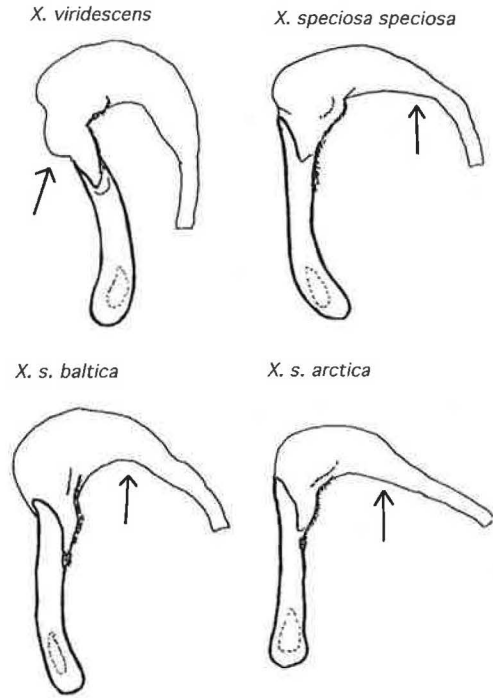


Fig. 2. Male vesicas of *Xestia viridescens* (Switzerland, Andermatt), *X. speciosa speciosa* (Germany, Bayern), *X. speciosa baltica* (S Finland, Nauvo), and *X. speciosa arctica* (N Finland, Rovaniemi). Diagnostic characters indicated by arrows.

When becoming sympatric again, they form mixed reproductive populations, i.e. an intergradation zone between the main distribution areas.

Below we report the results of taxonomic studies of *Xestia speciosa* and *X. alpicola* from Europe. All original descriptions and most type materials have been examined.

#### *Xestia viridescens* (Turati, 1919) stat. n.

Type locality: Valdieri, Alpes Maritimes (Italy).

**Diagnosis.** Compared with *X. speciosa*, the forewing colour of the moth is of a paler grey and may have a slight greenish tint, and the markings show less contrast. However, a few specimens of *X. speciosa* seen from the southern Alps look similar. The males can be determined by brushing: the pollex is situated half way between the harpe and the apex of the valva while it is one-third the way up in *X. speciosa*. The everted male vesica and the female bursa show several differences.

**Description.** Outer appearance as in palest specimens of *X. speciosa* or paler (no exact distinctive characters have been found). — Male

genitalia (Figs. 1 and 2). Valva with pollex half way when counted from outer margin of basal arch of harpe to apex of valva. Vesica with two bulges, basal and subbasal ventrolaterally on left (basal bulge slightly sclerotized; this is not present in *X. speciosa*), and seemingly thicker and more anteriorly curved than in *X. speciosa*. — Female genitalia (Fig. 3). Anterior margin of ductus bursae, where joining corpus bursae, extending much further anteriorly on left than on right side, and with deep cleft medially. Large membranous pouch ventrally at cleft. Bursa roundish, appendix bursae curving to dorsal side of ductus bursae (in *X. speciosa*, ventral pouch smaller, appendix bursae projecting posteriorly, and bursa larger and more longitudinal).

**Distribution.** Occurs in the southern Alps, in Italy and France and in southwestern- and

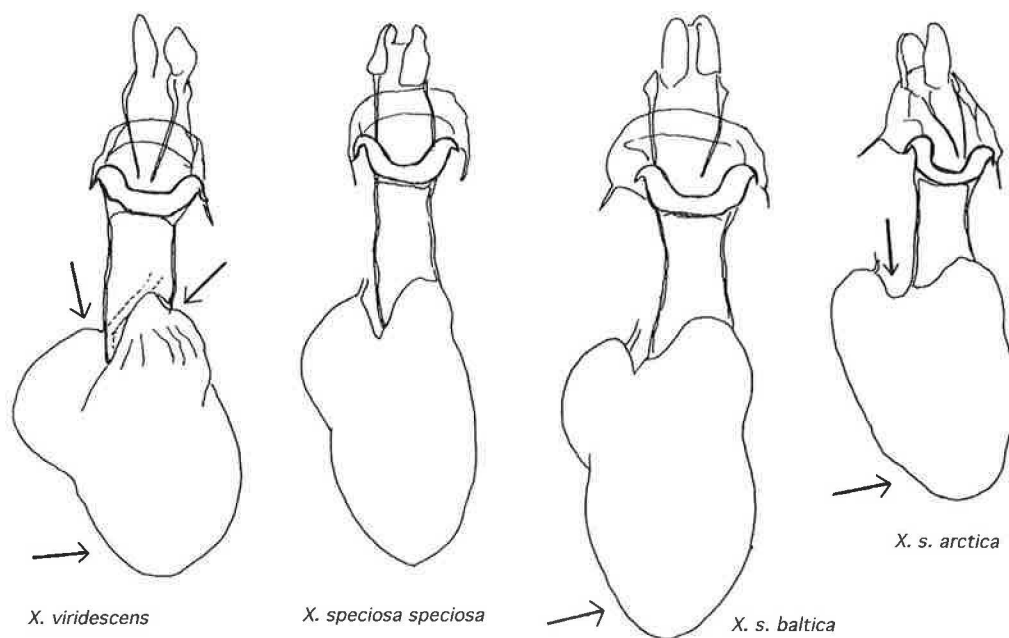


Fig. 3. Bursae copulatricae of *X. viridescens* (Switzerland, Valais), *X. speciosa speciosa* (Austria, Tyrol), *X. speciosa baltica* (S Finland, Porvoo), *X. speciosa arctica* (NE Finland, Kuusamo). Diagnostic characters indicated by arrows.

southernmost Switzerland. It is sympatric with *X. speciosa* at least in southernmost Switzerland.

**Remarks.** This taxon was recently synonymized with ssp. *speciosa* by Hacker (1990) but maintained as a subspecies by Fibiger (1993). Because of the constant differences in the internal lock-and-key mechanisms we consider *X. viridescens* a species distinct from *X. speciosa*. Occasional hybridization between the two taxa is not impossible, but we think that the gene pools remain separate.

#### *Xestia speciosa baltica* (Valle, 1940) stat. rev.

Type locality: Southern Finland.

**Diagnosis.** The outer appearance is similar to that of *X. speciosa speciosa* from Central Europe but the markings are less contrasting, and the sexes seem to show clearer sexual bimorphism. The genitalia show minute differences both to ssp. *speciosa* and to ssp. *arctica* (Zetterstedt, 1839).

**Description.** Forewing ground colour variable but mostly darker brownish-grey in male and pale grey in female. Markings fully developed but with weak contrast (blackish outlines mostly seen in ssp. *speciosa* are lacking). — Male genitalia (Fig. 2). As in other subspecies but vesica tending to be basally wide and to taper evenly towards ductus ejaculatorius (in ssp. *speciosa* and *arctica* vesica first with nearly parallel walls, then suddenly tapering, seen as slight "Roman nose" of distal outline, cf. Fig. 2). — Female genitalia (Fig. 3). Bursa copulatrix as in ssp. *speciosa* but bursa particularly large, appendix bursae close to ductus bursae as in ssp. *speciosa* (in ssp. *arctica* bursa smaller, appendix further away from ductus bursae, Fig. 3).

**Distribution.** Southern parts of Fennoscandia, the Baltic countries and Denmark (migration from the north). In central parts of Finland the taxon forms intermediates with ssp. *arctica*.

**Remarks.** The name *baltica* was synonymized with ssp. *arctica* by Fibiger (1993).

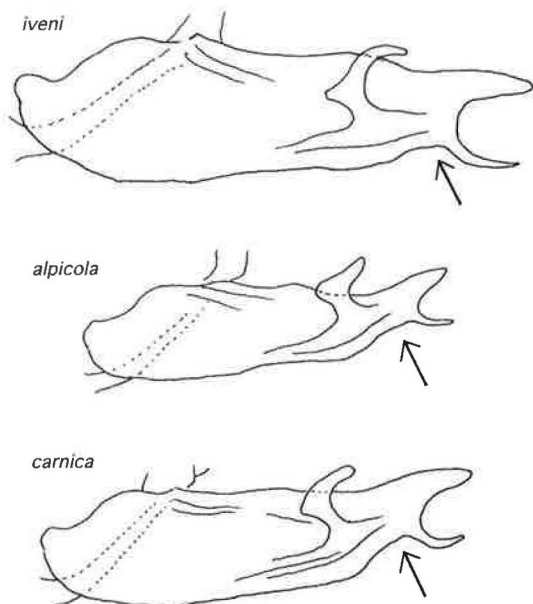


Fig. 4. Right valva of *X. alpicola*: ssp. *iveni* (S Finland, Sipoo), ssp. *alpicola* (N Finland, Kittilä), and ssp. *carnica* (Hering, 1846) (Austria, Tyrol). Diagnostic characters indicated by arrows.

#### *Xestia alpicola iveni* (Hübler, 1870) stat. rev.

Type locality: Not stated ("My garden") (St. Petersburg Area as indicated in the original description).

**Diagnosis.** Forewing more elegantly bicolored than in other subspecies, with ground colour bluish-grey and reniform spot deeply reddish-brown. The subspecies is much larger than that in Lapland (ssp. *alpicola*) and the size ratio of the sexes is reversed (Mikkola & Jalas 1977). There is an average difference in the shape of male valva when compared with other subspecies.

**Description.** Female larger than male. Forewing evenly pale bluish-grey, central parts of

reniform spot reddish (in ssp. *arctica* male larger, forewing suffused brownish grey, reniform spot only weakly reddish-brown). — Genitalia. Male valva variable in shape but tending to be distally, at "neck" of cucullus, wider than in other subspecies (Fig. 4). Otherwise genitalia similar to other subspecies.

**Distribution.** Lowland parts of southern and central Fennoscandia, the Baltic countries and Denmark (sporadically). In the central parts of Finland there is an intergradation zone with ssp. *alpicola*.

**Remarks.** The name *hyperborea* Zetterstedt, 1839, formerly used for the northern subspecies, was correctly synonymized with *alpicola* Zetterstedt, 1839 by Fibiger (1993). However, he did not recognize two subspecies in Fennoscandia. The type locality of ssp. *iveni*, the St. Petersburg Area, comes from biographical data of Hübler and Iven, both entomologists of the 19th century (see Derksen & Scheiding-Göllner 1965).

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