ISSN 0013-8738, Entomological Review, 2007, Vol. 87, No. 7, pp. 920–922. © Pleiades Publishing, Inc., 2007.
Original Russian Text © S.V. Vasilenko, 2007, published in Zoologicheskii Zhurnal, 2007, Vol. 86, No. 8, pp. 1019–1022.

SHORT COMMUNICATIONS

A New Species of the Genus *Xanthorhoe* (Lepidoptera, Geometridae, Larentiinae) from the Urals and Western Siberia

S. V. Vasilenko

Siberian Zoological Museum, Institute of Animal Systematics and Ecology, Siberian Division, Russian Academy of Sciences, Novosibirsk, 630091 Russia
e-mail: svasilenko@online.nsk.su

Received December 5, 2005

Abstract—A new geometrid-moth species, *Xanthorhoe pseudoannotinata*, is described. It is similar to *X. annotinata* in the coloration and wing pattern, but differs in structure of the costa of the valva, presence of 9 or 10 spines at the base of the aedeagal vesica of the male, large oval and trapezoid-like ostium, and short conic ductus bursae of the female. The holotype is deposited at the Siberian Zoological Museum, Institute of Animal Systematics and Ecology (Novosibirsk, Russia), the paratypes, at the same museum and in the Finnish Museum of Natural History (Helsinki, Finland).

DOI: 10.1134/S0013873807070147

The genus *Xanthorhoe* Hb. includes a plenty of species similar in the wing pattern, but differing in the structure of genitalia of both sexes. The numerous representatives of the genus can be met nearly everywhere.

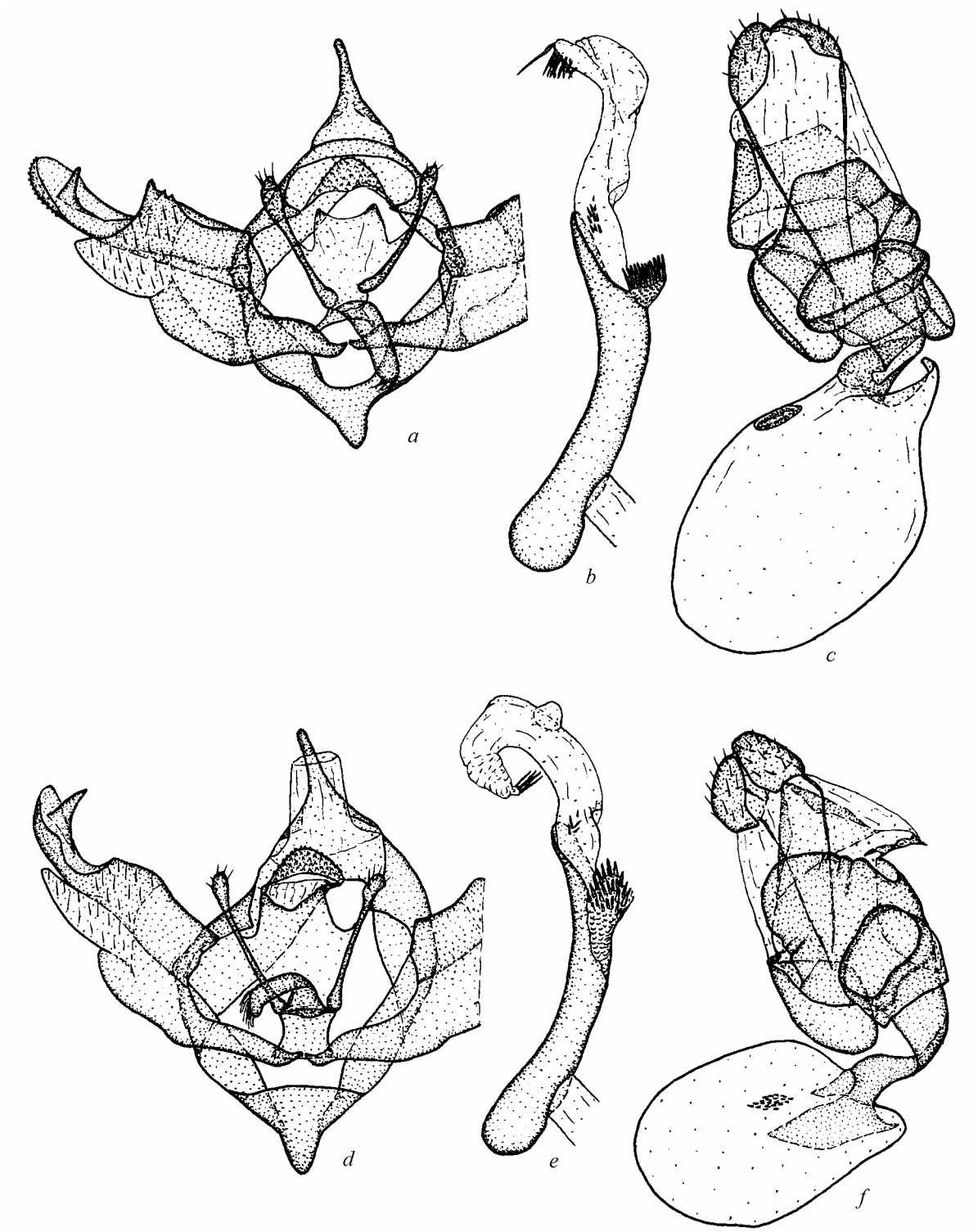
The *X. incursata* (Hübner [1813] group is one of the taxonomically difficult in the genus. The members of the group occur in the subpolar territories of the Holarctic Region and, less frequently, in the alpine zone of Europe and Siberia. Determination of these species is complicated by their very similar wing pattern and similar structure of genitalia. A row of publications (D'yakonov, 1931; Vasilenko, 1995; Choi, 2003; and others) adequately reveals the species composition of the group. The group includes six species from the Palaearctic Region, *X. incursata*, *X. annotinata* (Zetterstedt, 1839), *X. sajanaria* (Prout, 1914), *X. derzhavini* (Djakonov, 1931) and *X. uralensis* Choi, 2003, and also *X. ramaria* Swett et Cassino, 1920 from North America. However, some taxonomical problems remain unresolved for the species *X. annotinata*, and an attempt of their solution is made in the present study.

The types of the taxon described in the study are deposited in the collections of the Siberian Zoological Museum (SZMN) and in the Finnish Museum of Natural History, Helsinki (FMNH). For the total view of this species, see the sites of SZMN: *http://szmn.eco.nsc.ru/index.htm* and *http://szmn.sbras.ru/Russian.htm*.

Xanthorhoe pseudoannotinata Vasilenko, sp. n.

Material. Holotype: ♂, Tyumen Prov., Oktyabrskii Vill., left bank of Ob River, 21.VI.1965 (Yu.P. Korshunov) [SZMN]. Paratypes: 6 ♂, 3 ♀, same locality, 21, 23, 26.VI.1965 (Yu.P. Korshunov) [SZMN, FMNH]; 4 ♀, Southern Urals, Chelyabinsk Prov., Mt. Iremel, 900–1300 m, 25–26.VI.1996 (K. Nupponen, J.-P. Kaitila et al.) [FMNH, SZMN]; 1 ♀, Urals, (48) (Sandman) [FMNH].

Description. Frons slightly convex, grayish beige, with light admixture of brownish scales. Labial palpi short, obtused, slightly widened in middle part, their length 1.5 times eye diameter in male and 1.2 times eye diameter, in female. Antennae pectinate in male, filiform in female. Head, thorax, and abdomen with grayish beige scales and admixture of brownish ones. Background of wings grayish to beige-gray, with light admixture of gray scales. Wing pattern consisting of curved, not contrasting, dark gray lines serrate on veins. Fore wing with basal, median, postmedian, and marginal veins; median, postmedian, and, less frequently, also marginal bands breaking up into 2 or 3 fine parallel lines. In worn specimens, pattern incon-



Male genitalia of genus *Xanthorhoe* Hb.: (*a–c*) *X. pseudoannotinata* sp. n., (*d–f*) *X. annotinata* [(*a, d*) genital armament of male;, (*b, e*) aedeagus; (*c, f*) bursa copulatrix of female].

spicuous. Pattern of hind wing consisting of postmedian and marginal bands,
each formed by 2 or 3 fine parallel lines. Submarginal line fine, blackish, interrupted on veins. Discal spots not contrasting, dark gray, drop-shaped. Wing underside beige-gray, with pattern similar to that on upper side, but with all lines diffuse, not contrasting, distinct only under anterior margin of wing. Discal spots on both pairs of wings puncture-shaped, distinct. Fringe grayish beige, dark gray on veins. Length of costal

margin of fore wing 11.5–13.5 mm in males, 11.5–12 mm in females.

Male genitalia (figure, *a*). Saccus short, oval-triangular, with elongate apex. Tegumen well-developed. Sacculus large, heavily sclerotized. Valvula small, conical. Costa tubular, with elongate spoonlike process covered with small spines on outer surface, bearing large triangular tooth at apex. Before process, outer margin of costa also with one large triangular tooth and two small teeth. Uncus short, conical, weakly curved. Juxta large, situated between bases of valvae and consisting of lamellar base and digitate dorsal process with apex covered with long hairs. Anterior margin of lamellar base of juxta with large triangular emargination; posterior part of base large, rectangular. Posterior margin of juxta with oval emargination, lateral margins bearing long fine papillae (labidae) with clavate apices. Manica (anellus) with small dense spines. Aedeagus slender, long (figure, *b*). Vesica with 9 or 10 small spines at base; spines varying in size, well attached to surface, and arranged into 3 rows. In addition, 9 large needle-shaped cornuti present.

Female genitalia. Bursa saccular, simple (figure, *c*). Signa consisting of small spines in 1 or 2 rows. Ductus firmly chitinized, flattened dorsoventrally, sharply bent in middle part. Length of ductus slightly exceeding half length of corpus bursae. Antrum large, oval-trapezoid. Antevaginal plate large, with anterior part in form of narrow rectangular band bordering antrum ventrally. Lateral lobes of plate large, oval. Postvaginal plate large, rectangular, with posterior part rounded and angularly curved. Middle part of postvaginal plate strongly curved and forming transverse fold. Anterior apophyses short (length 0.32 mm), jointed with short teniform processes of postvaginal plate. Posterior apophyses long, length 1.05 mm.

Distribution. The Urals, Western Siberia.

Taxonomic notes. In general appearance, the new species is very similar to *X. annotinata* occurring in Scandinavia, Baltics, in the north of the European part of Russia, and in the Polar Urals (Viidalepp, 1996). For this reason, *X. pseudoannotinata* was determined as *X. annotinata* in one of my papers (Vasilenko, 1990). However, these species exhibit clear differences in structure of the male and female genitalia. For example, the male of the new species possesses a larger costa of the valva, which bears three small teeth on the dorsal surface, against one tooth in *X. annotinata* (figure, *d*). In addition, the outer side of the spoonlike process of costa is covered with small spines in *X. pseudoannotinata* and is smooth in *X. annotinata*. Clear differences have also been found in structure of the aedeagus (cf. figure, *b* and *e*): shape of the vesica, number of cornuti and spines at its base. *X. annotinata* possesses four cornuti and five spines forming two rows, and *X. pseudoannotinata*, nine large cornuti and nine or ten spines forming three rows. The female genitalia of these species differ in the following characters. In the new species, the ductus bursae is short, about half as long as the corpus bursae, and its middle part is sharply bent. In *X. annotinata*, the ductus is spirally twirled, and its length is subequal to the size of the corpus bursae (cf. figure, *c* and *f*). The antrum also differs: oval-trapezoid in *X. pseudoannotinata* and rectangular in *X. annotinata*. Signae in the female of the new species are small, formed by sparse spines arranged into one or two rows. Those in *X. annotinata* consist of large spines forming a drop-shaped area.

It should be noted in conclusion that caterpillars of *X. annotinata* develop on the bilberry (*Vaccinium myrtillus* L.), and, therefore, the immature stages of the new species probably also develop on plants of this genus.

ACKNOWLEDGMENTS

The author is grateful to P. Sihvonen (Helsinki, Finland), S.-W. Choi (Kwangju, S. Korea), and other entomologists for the material supplied and for their help in work on the study. The author expresses special gratitude to R.Yu. Dudko for his valuable advice and for making preparates of aedeagi with vesicae.

REFERENCES

1. Choi S.-W., "A New Species of *Xanthorhoe* Hübner (Lepidoptera: Geometridae: Larentiinae) from Polar Urals, Russia," J. Kansas Entomol. Soc. **76** (2), 125–130 (2003).
2. D'yakonov, A.M., Fauna of Geometrid Moths (Lepidoptera, Geometridae) of Kamchatka: II. Ezhegod. Zool. Muz. Akad. Nauk USSR **32** (3), 385–410 (1931).
3. Vasilenko, S.V., "New Records of Geometrid Moths of the genus *Xanthorhoe* Hb. (Lepidoptera, Geometridae) in Western Siberia," Vestnik Zool. **24** (1), 84 (1990).
4. Vasilenko, S.V., "A Review of Geometrid Moths of the *Xanthorhoe sajanaria* Group (Lepidoptera, Geometridae)," Entomol. Obozr. **74** (3), 662–668 (1995).
5. Viidalepp, J., Checklist of the Geometridae (Lepidoptera) of Form U.S.S.R. (Apollo Books, Stenstrup, 1996).