Notulae Entomologicae LIV: 121—124, 1974

Drosophila eskoi sp. n., a new species of the Drosophila obscura group (Diptera, Drosophilidae)

Seppo Lakovaara and Pekka Lankinen

Abstract

LAKOVAARA, S. & LANKINEN, P.: Drosophila eskoi sp. n., a new species of the Drosophila obscura group (Diptera, Drosophilidae). — Notulae Entomol. 54:121—124. 1974.

Description of *D. (Sophophora) eskoi* from northern Scandinavia. The species is closely related *D. bifasciata* Pomini and *D. ambigua* Pomini.

Authors' addresses: Prof. Seppo Lakovaara and Mr. Pekka Lankinen, Department of Genetics, University of Oulu, SF-90100 Oulu 10.

In June 1972 Mr. Risto Alatalo sent us a sample of *Drosophila* from Ylitornio, northwestern Finland. In it we found some flies which closely resembled *Drosophila bifasciata* Pomini and *D. ambigua* Pomini (POMINI 1940, BURLA 1951, BASDEN & HARNDEN 1956). Study of their morphological characters and enzyme electrophoresis showed them to belong to an unknown species of the *Drosophila obscura* group. Since then more than 50 individuals of this species have been captured in several localities in northern Scandinavia. The new species is difficult to distinguish from *D. bifasciata* and *D. ambigua* on the basis of its morphology, although fairly reliably differentiating characters exist, especially in the external genitalia of both sexes. On the other hand, it is easily distinguished from the two species by enzyme electrophoresis (see. e.g. LAKOVAARA & al. 1972). Genetically it is rather distantly related to these two species. Information on the genetic distance between the new species and other members of the *D. obsura* group will be published elsewhere.

In giving the new species the name *eskoi*, we wish to honour our respected teacher, the famous Finnish geneticist Professor Esko Suomalainen, and to acknowledge our indebtedness for his constant support and help.

The description of *Drosophila (Sophophora) eskoi* sp. n. is as follows:

♂ — Body length about 2.6 mm and wing length about 2.9 mm. In *D. bifasciata* the corresponding dimensions are 2.4 mm and 2.7 mm, and in *D. ambigua* 2.2 mm and 2.5 mm. Body colouring and chaetae dark grey or black as in *D. bifasciata*, the body colouring of *D. ambigua* being more brownish. Mesonotum with three light longitudinal stripes as in *D. bifasciata*. The mesonotum of *D. ambigua* differs in having two dark stripes on a brownish field instead of three light stripes on a dark field. Acrostichal hairs in eight rows as in *D. bifasciata* and *D. ambigua*. Aristae of antennae with three dorsal and two ventral branches in addition to the terminal fork, as well as about eight smaller branches. Branching of aristae in the two other species the same. No significant differences apparent in the orientation or dimensions of the oral bristles

of the three species either. The width of the jowls is about the same and the costal index almost exactly the same (2.9) in all three species. The fairly strong costal fringe extends in *D. eskoi* 1/3 to 1/2 of the distance between the 2nd and 3rd longitudinal wing veins. The corresponding values in *D. bifasciata* and *D. ambigua* are 1/3 and 1/2, respectively. There are two sex combs on the fore legs of *D. eskoi,* as in all the species of the *D. obscura* group. The number of pegs varies from 8 to 10 in the proximal sex comb of *D. eskoi* and from 7 to 9 in the distal one. In *D. bifasciata* the corresponding numbers are 7—10 and 6—9, and in *D. ambigua* 8—9 and 9. The morphology of the other legs of *D. eskoi* is about the same as in *D. bifasciata* and *D. ambigua.* The male genitalia of the three species are compared in the Figure. The clearest difference between them lies in the general appearance of the surstyli. In addition, the comb of the surstylus in *D. bifasciata* is slightly longer than in the other two species. In *D. bifasciata* the number of teeth in the combs varies from 8 to 10, whereas in *D. eskoi* and *D. ambigua* it is 7 or 8. The difference in the shape of the tip of the penis (central processus of penial elements) between these three species is very clear-cut.

♀ — Body length about 3.0 mm and wing length 3.1 mm. In *D. bifasciata* the corresponding dimensions are 2.6 mm and 2.7 mm and in *D. ambigua* 2.7 mm and 3.1 mm. Body colouring and chateae as in male. Abdominal tergites black as in European *D. bifasciata,* i.e. without yellow lateral spots. The shape of the ovipositor and the position of the bristles on it are reliable diagnostic characters of the species, and the general appearance of the ovipositor resembles that of *D. obscura* more than that of *D. bifasciata* or *D. ambigua* (Figure). The other characters are about the same in all three species. E.g. the costal index of the wing is about 3.1 in all of them.

We have not yet succeeded in rearing this species in the laboratory, so that nothing is known about the morphology of the eggs, larvae or pupae. The chromosome number and the structure of polytene chromosomes of the new species are also unknown.

Holotype, ♂, Finland *Ob:* Oulu Pikisaari, 1973-06-18 (P. Lankinen). Specimen in vial (type No. 14269) in the collection of the Zoological Museum of Helsinki. Paratypes, ♂♂ and ♀♀, from Sweden *LuLpm:* Jokkmokk, Messaure, 1973 (J. Viramo).

As mentioned above, numerous specimens of this species have been identified by the morphological characters and also by enzyme electrophoresis. The localities so far recorded for *D. eskoi* are as follows:

Finland: *Ob:* Ylitornio, 7 ♂♂ 1972 (R. Alatalo); Oulu Hietasaari, 1 ♂ 1972 (J. Lumme); Kemi Rytikari, 1 ♀ 2 ♂♂ 1973 (J. Lumme); Oulu Pikisaari, 1 ♂ 1973 (P. Lankinen); — *Ok:* Paltamo, 1 ♂ 1972 (A. Oikarinen); — *Lkem:* Pelkosenniemi Pyhäjärvi, 1 ♀ 1972 (A. Saura); Muonio Kätkäsuvanto 2 ♀♀ 1 ♂ 1973 (J. Lumme); — *Ks:* Kuusamo Oulanka, 1 ♀ 1972 (S. Lakovaara); 2 ♂♂ 1973 (P. Lankinen).

Sweden: *LuLpm:* Stora Sjöfallet, Gällivare, 4 ♀♀ 12 ♂♂ 1972 (A. Saura); Jokkmokk Messaure, 3 ♀♀ 9 ♂♂ 1973 (J. Viramo); Jokkmokk Kvikkjokk 3 ♂♂ 1973 (A. Saura); Jokkmokk, 5 ♂♂ 1973 (A. Saura).

Norway: *AK:* Setskog, Mortegropa, 1 ♀ 1 ♂ 1973 (P. Lankinen).

Both *D. eskoi* and *D. bifasciata* have been collected with the same traps consisting of malt bait (LAKOVAARA & al. 1969) in northern Scandinavia. This and some other observations show that *D. eskoi* apparently lives sympatrically with *D. bifasciata* in the north. *D. am-*

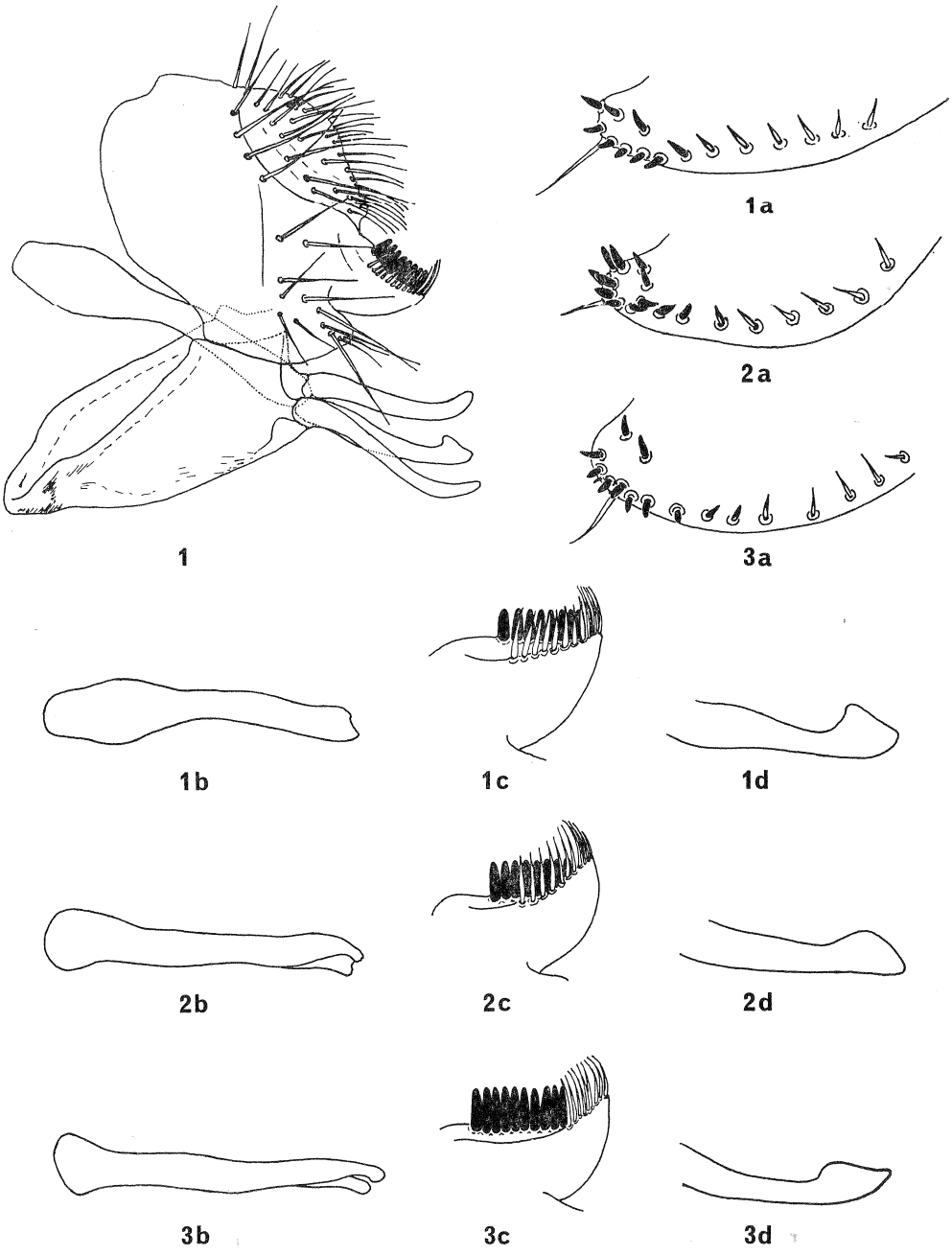

FIGURE. 1, male genitalia of *D. eskoi,* side view. Numbers 1 refer to *D. eskoi,* numbers 2 to *D. ambigua* and numbers 3 to *D. bifasciata.* The letter a shows ovipositor, b apodeme of penis, c surstylus and d tip of penis.

bigua has a more southern distribution area and seems to be more dependent on human settlement than *D. eskoi* and *D. bifasciata*. In northern Europe it has so far been met only in the Helsinki area, in the southern part of Finland, in the vicinity of Copenhagen, Denmark, and in Edinburgh, Scotland. *D. eskoi* and *D. ambigua* thus appear to be allopatric species.

References

BASDEN, E. B. & HARNDEN, D. G. 1956: Drosophilidae (Diptera) within the Arctic Circle II. The Edinburgh University expedition to sub-arctic Norway, 1953. — Trans. R. Entomol. Soc. London 108: 147—162.

BURLA, H. 1951: Systematik, Verbreitung und Oekologie der Drosophila-Arten der Schweiz. — Rev. Suisse Zool. 58:23—175.

LAKOVAARA, S., HACKMAN, W. & VEPSÄLÄINEN, K. 1969: A malt bait in trapping Drosophilids. — Drosophila Inform. Serv. 44:123.

LAKOVAARA, S., SAURA, A. & FÅLK, C. 1972: Genetic distance and evolutionary relationships in the Drosophila obscura group. — Evolution 26:177—184.

POMINI, F. P. 1940: Contributi alla conoscenza delle Drosophila (Diptera Acalyptera) Europee. I. Descrizione di alcune riferibili al gruppo obscura. — Boll. Inst. Entomol. R. Univ. Bologna 12:145—164.