

AN EXAMINATION OF THE EVIDENCE CONCERNING THE IDENTITY OF
DROSOPHILA TRISTIS FALLÉN (DIPT., DROSOPHILIDAE)

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Reprinted from 'The Entomologist's Monthly Magazine', Vol. xciv
Date of publication: November 3rd, 1958.

Collin (1911:230, and in Cain *et al.*, 1952) has given some reasons why the specimen in Fallén's collection at Stockholm and labelled in the latter's handwriting '*D. tristis* ♀' should not be accepted as the type of *Drosophila tristis* Fln. He believes that the original specimen has been misplaced or destroyed, or is at present in Zetterstedt's collection at Lund. However, further conflicting evidence that this specimen (Fln 33 of my notes) may be the original one that Fallén (1823:7) described as *Drosophila tristis* should be more fully discussed to prevent any future disagreement.

The specimen (Fln 33) is actually a male of the Diastatid species generally known as *Campichaeta* (= *Thryptocheta*) *punctum* (described by Meigen in 1830 as *Diastata punctum*), as first pointed out by Czerny (1909:279, 282), and since confirmed by the present writer from an examination of the genitalia. It is pinned through the thorax by an old-type pin of Fallén's period. Fallén's specimen (33) will be discussed here as *C. punctum* (Mg.) only to distinguish it from the well known *Drosophila tristis* Fln. of authors, a species of the *obscura*-group of *Drosophila* (Drosophilidae).

It will be obvious that if it is proved conclusively that Fln 33 is the original specimen upon which Fallén based his description of *D. tristis*, then by the Law of Homonymy the name *tristis* cannot now be used for a species of *Drosophila*.

Fallén included *D. tristis* in his family Geomyzides, which had only two genera, *Geomyza*, with six species, and *Drosophila*, with 12 species. To-day the six species of *Geomyza* are regrouped to 4 genera (*Geomyza*, *Mycet-aulus*, *Diastata*, *Trichoscelis*) in 4 distinct families (Opomyzidae, Piophilidae, Diastatidae, Trichoscelidae respectively); and 11 of the 12 *Drosophila* species (*D. tristis* excluded) now represent 6 genera, *viz.* 4 in the Drosophilidae (*Protostegana*, *Phortica*, *Drosophila*, *Scaptomyza*), 1, the species *fuscula* in Diastatidae (*Diastata*), and 1, *glabra*, in Camillidae (*Camilla*). In other words Fallén included within his two genera species not closely related systematically.

The original description of *Drosophila tristis* is:

'*D. tristis* thorace substestaceo, abdomine nigricante, pedibus pallidis, alarum costa postice late infuscata.

'*Fem.* In uliginosis Esperöd semel capta, mense Augusto.—A *D. obscura* vix differre videtur, nisis nigredine alarum costali postica conspicua.

'*Mas.*'

Translation: *D. tristis*. Thorax substestaceous. Abdomen black. Legs pale. Costa of wings posteriorly broadly infuscate. ♀. Once caught in marshy places. Esperöd, August.—Scarcely seems to be different from *D. obscura*, but is sufficiently conspicuous by the posterior costal blackening of the wings. ♂. [No details.]

The first point to consider is whether specimen Fln 33 agrees with this description. The thorax now is greyish with brownish stripes. It is not certain whether 'substestaceo' would have been a correct description. (The reddish-brown *Dros. fenestrarum* was described by Fallén as 'Corpus totum pallide testaceum', and the dark blackish *D. obscura* as 'Thorax opacotestaceus, obscurus.') The abdomen is now yellowish on segs. 1 and 2 and uniformly brown on segs. 3-5, but could be faded, as is usual in these old specimens. Zetterstedt (1847), who redescribed Fallén's specimen (see later), gives the colour of *tristis* variously as brownish ('brunnescens'), brown-testaceous ('brunneo-testacea') and dark testaceous ('obscura testacea'), with head and abdomen darker. The colour of the legs and the

blackening of the wings (now faded) do, however, agree with the specimen. On the whole, however, the description is not a good fit.

It has been argued (Cain *et al.*, 1952:196) that Fallén would not have described a specimen of the species now known as *Campichaeta punctum* as 'scarcely different' from *Drosophila obscura* considering the very slight resemblance it has to *obscura*. However, in my opinion it would have been perfectly feasible in Fallén's day to place *C. punctum* in *Drosophila* and next to *obscura*, to which species it does have a resemblance (just as he included other Diastatidae in his Geomyzides, viz. '*Drosophila fuscula* and '*Geomyza nebulosa*'), as no Diastatid genus was separately distinguished until 1830 by Meigen (p. 94). Furthermore, *C. punctum* has a decided resemblance to the male of *Dros. tristis*, where the wing shading and the four dark lines on the thorax are similar.

It is further maintained that a species with pubescent arista as has *C. punctum* would never have been placed by Fallén in *Drosophila*, whose arista he described as pectinate or plumose, but this cannot be taken seriously. Fallén described the arista of the other genus in his family Geomyzides, i.e. *Geomyza*, as pectinate or plumose, and the family description covering *Geomyza* and *Drosophila* is even more definite, viz. (translated) '... arista plumose with separated rays or pectinate (and not bare or pubescent as in the various families described above)'. Also in his key to families in Vol. II, Geomyzides is described as having 'Seta antennarum pectinata'. Yet his species No. 3, *Geomyza* (now *Mycetaulus bipunctata*) has bare arista and his species No. 5, *Geomyza* (now *Trichoscelis marginella*) has almost bare arista, and are so described in spite of his previous statements. Therefore it would not have been inconsistent for Fallén to have included a specimen of *C. punctum*, with pubescent arista, in his *Drosophila*. (Fallén's two specimens of '*Drosophila fuscula* (Fln 34, Fln 35 of my notes), which are respectively males of *Diastata fuscula* (Fln.) and *D. costata* Mg. (det. J. E. Collin), do have pectinate arista as described).

The species *C. punctum* differs from *Dros. tristis* by having a very long 3rd antennal joint, particularly in the male, and is accepted as having a pubescent arista, which characters would certainly have been noticed by Fallén, who described the antennae and arista under each of the 17 other species quite accurately. (An apparently incorrect description of the arista of *Geomyza obscurella* is discussed by Loew (1865:19), Czerny (1903:124), and Collin (1943:250)). Unfortunately *tristis* is the only species of his Geomyzides whose antennae are not mentioned by Fallén. One has to infer that they should be the same as in *obscura*—'Antennæ breves nigræ: articulo ultimo subtruncato; seta longe pectinata'.

The specimen (Fln 33) is now antennaless and as such would fit Fallén's description. One must assume, however, that it was complete when described. Unfortunately there is no definite subsequent description of its antennae or arista, Collin (*in litt.*, October 24th, 1956) having no note of this in spite of the particular mention of 'this specimen' in Cain *et al.* (1952:196). Czerny (1909:279) who also saw Fallén's specimen does not refer to the antennae. Also Meigen (1830:98) and Becker (1902:304) do not mention the arista of Meigen's specimens of *Diastata punctum* or that of the synonym *D. basalis*. (Meigen does however describe the antennal joints of *punctum*, for which reason the species was easily recognised and the name *punctum* instead of *basalis* has become generally used for the species).

Zetterstedt (1847:2555) redescribed *D. tristis*, and wrote (translation) —'The identical specimen that Fallén has described I have now before my eyes and have compared it with ours [plural], well agreeing. . . . Antennae smaller [Antennæ minores], dark. Arista distinctly plumose.' He previously gives a reference to this specimen, 'Fall. Geomyz. 7. 7. ♀. typica', but *typica* in this case should be interpreted as certainly *D. tristis*, as opposed

to the doubtfulness of the species given the same name by Meigen and Macquart, which Zetterstedt refers to with a question mark.

Two points arise from the above. First, it can be implied that the Fallén specimen was then (1847) in Zetterstedt's collection ('before his eyes'). Fallén's collection of Diptera was given by Zetterstedt in 1832 to the Riksmuseum, Stockholm, but Zetterstedt is known to have transferred some specimens to his own collection and some of his specimens to Fallén's (Ander, 1952). The implication that Zetterstedt did so on this occasion may, however, be unsound; 'before my eyes' need not mean actual possession.

Secondly, the antennae are described as 'smaller', implying a comparison between Fallén and Zetterstedt specimens. If Zetterstedt were referring thus to his own specimens, it means that Fallén's had the larger antennae, which *C. punctum* does have. But if he were referring to the antenna of another Fallén specimen, this would fit a male specimen of *tristis* (Ztt 92 of my notes) now in Zetterstedt's collection, of which both 3rd joints of the antennae are unnaturally shrunken. The latter only can be accepted, otherwise the arista could not have been described by Zetterstedt as 'distinctly plumose', unless this was a more general description to cover his own specimens. Also Ztt 92 bears a label, in Zetterstedt's hand, 'D. tristis. ♀. Exp. Mus. Fall.' (not 'e Mus. Fall' as given in Cain *et al.* (1952)). This is the only data label on this specimen.

This raises another question. As already stated Fallén's original label is on the specimen (Fln 33) of *C. punctum*, and it is the only label on the specimen. If Zetterstedt retained Fallén's specimen of *D. tristis* in his own collection (No. 92 above) one would expect him to retain the label as well, instead of substituting his own and, presumably, transferring Fallén's label to another specimen. It is possible that he retained both labels on the one pin and the transference of the label to another specimen was perpetrated (later) by someone else.

An alternative suggestion is that Fln 33 is an extraneous specimen sent for naming to Fallén, who after appending his identification label failed to return the specimen.

An examination of Fallén's label, '*D. tristis* ♀', when received by me showed 3 holes, one being that made by the present (*C. punctum*) pin, of diam. 2.5 units (1 unit = 0.107 mm.), and the two others made by a larger pin (4.0 units). This showed that the label had at one time been on a larger pin. Of the only two specimens of *D. tristis* now (? and ever) in Zetterstedt's collection, the pin of Ztt 91 (labelled '*D. tristis* ♂. Esper. Scan.') is the same diameter as that of Fln 33, but the pin of Ztt 92 makes a hole of the same diameter as the two large holes in Fallén's label. Therefore, this label could well have been on Ztt 92 pin at some time. This supports Collin's view that Ztt 92 is Fallén's original specimen of *Dros. tristis*. The Zetterstedt labels on Nos. 91 and 92 each have two similar holes made by their respective pins.

Both Zetterstedt specimens (91, 92) also bear a small blue square on the pin, meaning they were from Kiviks Esperöd in Mellby Socken, Scania, but they do not help to decide whether the specimens were caught by Fallén or by Zetterstedt.

(*D. spurca* Zett., a senior synonym of *D. tristis* of Zetterstedt, is not represented in Zetterstedt's collection. The specimen (Ztt. 67) labelled 'Dr. spurca? ♂ (sic) Finl. Sahlb.' is the Sapromyzid, *Cnemacantha muscaria* (Fln.) (det. Collin)).

The non-retention of Fallén's label, if by Zetterstedt, may mean that more than one specimen of *tristis* was present in the former's collection. Only one, a female, is mentioned by Fallén (1823), but another could have been added to his collection before he died in 1830. However, this and other

questions associated with the presence of two specimens is too conjectural to warrant further discussion.

If Zetterstedt removed Fallén's specimen of *D. tristis* to his own collection and replaced it by another (Fln 33, *punctum*) the exchange would presumably be done by Zetterstedt before 1847, probably c. 1832 when he passed the Fallén collection to Fries at Stockholm, because by 1847 he distinguished *C. punctum* well enough to give a description from 3 specimens (Vol. 6:2538, as *Diastata punctum* Mg.), which specimens I have seen from his Dipt. Scand. collection, and a few pages later (p. 2555) gave a description of *Dros. tristis*.

But, up to 1847 Zetterstedt knew *Diast. punctum* only from Denmark (the 3 specimens above) and does not mention it from Sweden. Therefore, the species was rare at that time, and Zetterstedt later (1849:3360) records only 2 more specimens (1 ♀ from Scania, Sweden, and 1 ♀ from Germany), both of which are still in his Dipt. Scand. and Dipt. Exotica collections respectively. Thus all 5 specimens of *Camp.* (= *Diast.*) *punctum* mentioned by Zetterstedt are accounted for. (Three later (temp. Zett.) specimens of *C. punctum* from Scania are mentioned by Basden and Collin, in press). Because of this and because of its rarity at the time it is safe to assume that Zetterstedt would not have added, and did not add, the specimen of *punctum* (Fln 33) to Fallén's collection.

This does not mean, however, that Zetterstedt would not confuse *C. punctum* and *D. tristis*. There is proof that he failed to recognise the former species in 1860 (xiv:6423), when he reported two specimens from Lund, Scania, incorrectly as *Geomyza griseola* Ztt. (Basden and Collin in press).

It should be pointed out that Zetterstedt's records (1847:2555) indicate that *D. tristis* was equally as rare as *C. punctum*, for he noted the former as 'valde rara', and he reported no further specimens in later volumes.

It will be recalled that *D. tristis* was described from Esperöd, Scania. Since *C. punctum* is proved also to have occurred in that province at about the same time then it is not so unlikely that the specimen (Fln 33) could be the original specimen described as *D. tristis*.

Fallén collected his specimen of *D. tristis* in marshy places ('in uliginosis') at Esperöd, and Zetterstedt his specimens on oak sap-exudate at the same place two years later. The former would be a suitable habitat to collect *C. basalis*, but also not an impossible one for *D. tristis*. It may be significant that both Zetterstedt specimens (91, 92) were obviously immature when pinned (91 with soft thorax, 92 with shrunken antennae) suggesting they were recently emerged from a nearby breeding site (? from the oak sap) and not caught free, as, one may assume, was Fallén's specimen.

Fallén recorded and labelled his specimen as a female, and Zetterstedt labelled his two specimens as male and female, whereas all 3 specimens (Fln 33, Ztt 91, 92) are males. It is found, however, that these old authors were not consistently correct in their sexing of specimens and the point cannot be considered important.

If Fln 33 is not the original specimen of *D. tristis* and not an outside specimen sent to Fallén to be named (as already suggested), it must be a stray specimen added by a third person, who usurped Fallén's original label, probably from the specimen Ztt 92. If the specimen of *C. punctum* was so added in the genuine belief that it was a *Drosophila*, then it would not be surprising if Fallén had erred likewise, which possibility has already been discussed.

To summarise: There are inconclusive arguments for both sides, that the specimen (Fln 33) now in Fallén's collection is the original of *Drosophila tristis* Fln., and that it is *not*. In my view the matter should stand as follows:

Although it is not unlikely that Fallén would have included a specimen of a species later described by Meigen as *Diastata punctum* in his genus *Drosophila*, it should be accepted for all time that the *Drosophila tristis* described by Fallén is the same species as re-described by Zetterstedt, that the original specimen has not been lost or destroyed, and that Ztt 92 in Zetterstedt's collection is Fallén's original type specimen. Therefore I have labelled it, 'Dros. tristis FlN LECTOTYPE. Selected 1956 by E. B. Basden (v. Cain *et al.* 1952)'.

It is unlikely that Zetterstedt himself put the specimen of *C. punctum*, FlN 33, in the Fallén collection. To this specimen I have added a label, 'Campichaeta punctum (=basalis) (Mg.) det. E. B. Basden 1957. not Dros. tristis type'. The specimen has since become more damaged, but the genitalia preparation is sound.

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My judgment upon the specific identity of *Drosophila tristis* FlN. of Meigen (1830:86) will have to wait until Meigen's specimen in Paris has been examined. Czerny (1909:279, 282) found that *Drosophila tristis* of Meigen and Zetterstedt was a good species of *Drosophila* and called it *D. tristis* Meigen, but considered it identical with *D. obscura* FlN. However, the name *Drosophila tristis* Meigen, as also used by Séguy (1934: 389) and Pomini (1940:153) has no status.

At the same time Czerny recognised Fallén's specimen (the present FlN 33) of *D. tristis* as 'mit *Thryptochaeta (Diastata) punctum* Meig. identisch', and then proceeded to use the name *Thryptochaeta tristis* (FlN) for this species. In this he was followed by Strobl (1910:213) and Séguy (1934: 368). According to the decision of the present paper the species is *Campichaeta (=Thryptochaeta) punctum* (Mg.).

ACKNOWLEDGEMENTS

I owe much to Dr. R. Malaise (Stockholm) for the loan of Fallén's specimen; to Prof. C. H. Lindroth and Dr. P. Ardö (Lund) for various Zetterstedt specimens; and to Mr. J. E. Collin for continued help and advice. For the careful translation of Latin passages I wish to thank Mrs. Stella Elsdale, Mr. R. H. Gethin, Rev. Prof. L. W. Grensted, and Mr. B. H. Richardson.

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March 19th, 1958.