

THE EUROPEAN *TEMNOSTOMA* SPECIES (DIP.: SYRPHIDAE)M.C.D. SPEIGHT¹ & J.-P. SARTHOU²¹*Research Branch, National Parks & Wildlife Service, 51 St Stephens Green, Dublin 2, Ireland.*²*INP-ENSAT, 145 avenue de Muret, F-31076 Toulouse, France.*

FOUR SPECIES OF *Temnostoma* Lepeletier & Serville are at present known from Europe. The least well-known of these is *T. meridionale* Krivosheina and Mamaev, described from the Caucasus. Until recently, *T. meridionale* has been known only from south-east Europe, but we have encountered the species in France and, while this note was in preparation, Doczkal's (1996) paper appeared, recording the species from Sweden, Germany and the Czech Republic. Keys to the adults of the four European species are provided in French by Bradescu (1991) and in Dutch by van der Goot (1981). Krivosheina and Mamayev (1962) provide a key distinguishing last instar larvae of these species. With the thought that an English-language account of European *Temnostoma* species might be useful, the present note summarises available information on the European *Temnostoma* species, provides a key for their determination, details the French *T. meridionale* records and includes figures of the male terminalia of *T. meridionale*. *T. meridionale* is remarkably similar to *T. vespiforme* in general appearance, size, adult habits and habitat.

Species accounts***Temnostoma apiforme* (Fabricius), 1794**

Preferred environment: forest; humid deciduous forest, from northern *Betula* forest to the upper levels of *Fagus/Picea* forest and down to the alluvial hardwood forest of major rivers. *Adult habitat:* clearings, track-sides, meadows adjacent to forest; although a forest insect, can be found flying close to the ground and visits the flowers of low-growing plants. *Flowers visited:* white umbellifers, *Geum*, *Matricaria inodora*, *Potentilla*, *Ranunculus*, *Rubus idaeus*, *Trientalis*. *Flight period:* June/end July, and on into August at higher altitudes/more northerly latitudes. *Larva:* wood-boring, in solid wood within part-rotted stumps and logs; described and figured by Heqvist (1957), based on larvae collected from a rotten *Betula* stump. Krivosheina and Mamayev (1962) also figure and describe the larva of this species, from material collected from stumps of *Tilia*. These latter authors provide a key distinguishing *T. apiforme* larvae from those of the other European *Temnostoma* species. *Range:* Lapland south to northern France (Ardennes, Vosges); from eastern Belgium through northern and central Europe into European parts of Russia and on through Siberia to the Pacific coast and Japan; also known from southern Europe in the former Yugoslavia. Although this species has a wide geographic range, it has a relictual distribution pattern over much of its European range and is probably

now under threat at European level. *Determination*: Bradescu (1991), van der Goot (1981). The adult insect is illustrated in colour by Torp (1994). The male and female terminalia are figured by Barkalov (1991). This species has a strong general resemblance to *T. meridionale* and *T. vespiforme*.

***Temnostoma bombylans* (Fabricius), 1805**

Preferred environment: *Fagus* forest with over-mature trees, up to its upper altitudinal limits and old alluvial hardwood forest. *Adult habitat*: clearings and track-sides etc.; flies one to two metres from ground; settles on low-growing vegetation. *Flowers visited*: *Cornus*, *Hypericum*, *Ranunculus*, *Rubus*, *Sambucus nigra*, *Viburnum opulus*. *Flight period*: May/June and July at higher altitudes. *Larva*: wood-boring, in solid wood within part-rotted stumps and logs; described and figured by Krivosheina and Mamayev (1962), from larvae collected from stumps and logs of *Acer*, *Fagus*, *Quercus* and *Tilia*; also reared from well-rotted *Fagus* stumps by Derksen (1941), who indicates metamorphosis takes two years and the larvae inhabit stumps of trees felled seven to eight years previously. The larvae described and figured, with puparium, by Heiss (1938) and Metcalf (1933) as those of *T. bombylans* were probably those of *T. balyras* (Walker). *T. bombylans* is not known to occur in North America. Krivosheina and Mamayev (1962) provide a key distinguishing *T. bombylans* larvae from those of the other European *Temnostoma* species. *Range*: Finland and Sweden south to the Pyrenees and North Africa; the former Yugoslavia; eastwards from northern France through northern and central Europe into Asiatic parts of Russia as far as the Pacific coast and Japan; Korea. In Europe, probably the most frequently met with *Temnostoma* species, but nonetheless very local. *Determination*: Bradescu (1991), van der Goot (1981). The male terminalia are figured by Hippa (1978) and Barkalov (1991), who also figures the female terminalia. The adult insect is illustrated in colour by Kormann (1988), Torp (1984, 1994) and van der Goot (1986).

***Temnostoma meridionale* Krivosheina & Mamayev, 1962**

Preferred environment: *Fagus* and thermophilous *Quercus* (*Q. pubescens*) forest containing over-mature and fallen trees. *Adult habitat*: sunlit forest, where the species flies between the trees, the males hovering at three metres or higher; settles on low-growing vegetation. *Flowers visited*: no information. *Flight period*: beginning May/beginning July. *Larva*: wood-boring, in solid wood within part-rotted stumps and logs; described and figured by Krivosheina and Mamayev (1962), from larvae collected from a *Fagus* log. These authors also provide a key distinguishing *T. meridionale* larvae from those of the other European *Temnostoma* species. *Range*: Sweden, Finland, Germany, central and south-west France (including the Pyrenees), the Czech Republic, Romania and the Caucasus. *Determination*:

Bradescu (1991), van der Goot (1981), Doczkal, (1996). The male terminalia are figured by Barkalov (1991), Doczkal (1996) and the present article (Figs. 1d, 1e). Barkalov also figures the female terminalia. Hipa (1978) erroneously figures the male terminalia of this species under the name *T. vespiforme*. Krivosheina & Mamayev (1962) had no access to the Linnaean material of *T. vespiforme* and were unaware that their new species occurred in Scandinavia. Whether their concept of *T. vespiforme* corresponds with that of Linnaeus is therefore unknown. Re-examination of the Linnaean type of *T. vespiforme* is necessary to establish which species should carry that name.

Details of known French records as follows: Dordogne: Razat d'Eymet, 21.v.1996, male, col. & det. C.W. Plant, in coll. CWP; Haute-Garonne: Candele, 14.v - 4.vi.1995, females, col. & det. JPS, in coll. JPS; Pyrénées-Atlantiques: Forêt d'Iraty, 12.vii.1981, males, 800m., col. & det. MCDS, in coll. MCDS and Mus. Nat. d'Hist. Nat., Paris; Bosdarros, 2.vii.1995, female, col. & det. JPS, in coll. JPS.

***Temnostoma vespiforme* (L.), 1758**

Preferred environment: deciduous forest containing over-mature and fallen trees, especially riverine alluvial gallery forest. *Adult habitat:* open forest, especially near brooks and rivers; males hover at three metres and higher; both sexes frequently visit flowers (often visiting pasturage and meadows for the purpose) and settle on shrub foliage etc.; in flight an exact mimic of *Vespula*; when settled this insect carries its black fore tarsi as though they were antennae, resembling exactly black *Vespula* antennae and vibrates them as *Vespula* does its antennae. *Flowers visited:* umbellifers; *Clematis*, *Cornus*, *Crataegus*, *Lonicera xylosteum*, *Papaver nudicaule*, *Ranunculus*, *Rubus idaeus*, *Senecio*, *Sorbus*. *Flight period:* May/June and on into July/August at higher altitudes/more northerly latitudes. *Larva:* wood-boring, in solid wood within part-rotted stumps and logs; described and figured by Stammer (1933) and Krivosheina and Mamayev (1962); illustrated in colour by Rotheray (1994); distinctions from the larva of *T. apiforme* (Fab.) are detailed in Heqvist (1957). Krivosheina and Mamayev (1962) provide a key distinguishing *T. vespiforme* larvae from those of the other European *Temnostoma* species. This species has been bred from *Acer*, *Alnus*, *Betula*, *Fagus*, *Quercus* and *Tilia*. *Range:* from central Sweden south to northern Spain; from northern France (Brittany) eastwards through most of Europe and on through asiatic parts of Russia to the Pacific coast and Japan; also in the Nearctic from Alaska south to New Mexico and east to Quebec. Now rather localised over much of its European range. *Determination:* Bradescu (1991), van der Goot (1981). The male terminalia of a Finnish specimen of *T. meridionale* are erroneously figured under the name *T. vespiforme* by Hipa (1978). The male terminalia of *T. vespiforme* are figured by Barkalov (1991), Doczkal (1996) and the present article (Figs

1F, 1G). Barkalov also figures the female terminalia. The adult insect is illustrated in colour by Kormann (1988), Torp (1984, 1994) and van der Goot (1986). *T. meridionale* Krivosheina & Mamaev is extremely similar to

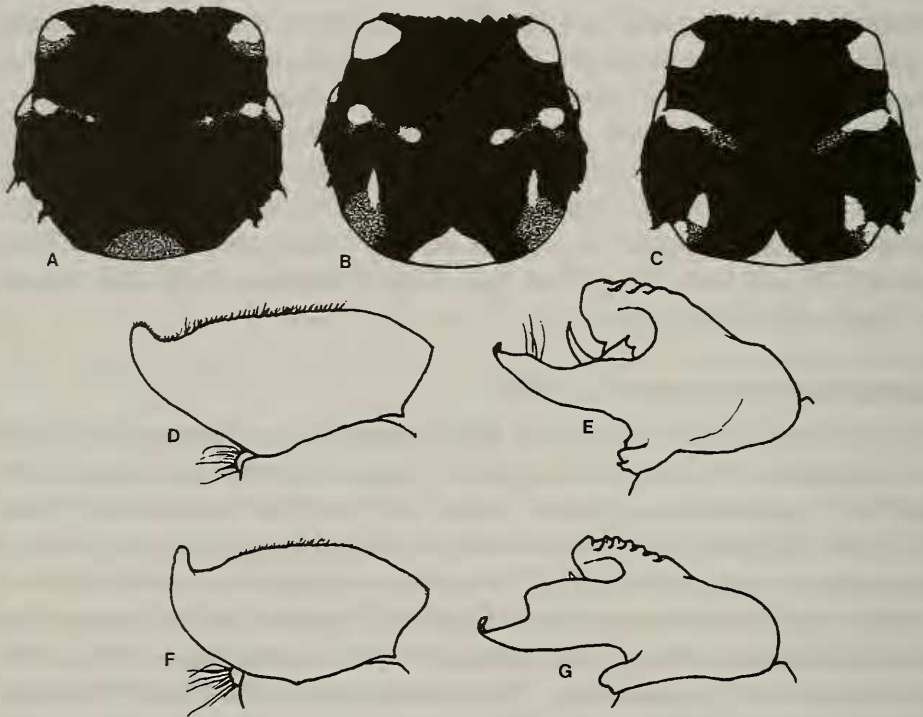


Fig. 1: *Temnostoma* species.

A - C = mesoscutum and scutellum, dorsal view; D, F = surstylus, lateral view; E, G = hypandrium, lateral view; A = *T. apiforme*; B, D, E = *T. meridionale*; C, F, G = *T. vespiforme*.

T. vespiforme. The two species are almost indistinguishable in the field and occur in the same habitats. Care is needed to ensure correct identification of these two species, given that *T. meridionale* is now known to occupy much the same European range as *T. vespiforme*. *T. meridionale* was not taken into account in the review of Linnaean types of Syrphidae conducted by Thompson *et al* (1982). Since it is now known that *T. meridionale* occurs over such a wide range in Europe, it cannot be assumed that *vespiforme* of Linnaeus is the species assumed to bear this name by Krivosheina & Mamayev, who did not examine the Linnaean type. However, until and unless the identity of the Linnaean type is checked it is reasonable to assume current interpretations of *T. vespiforme* are correct.

Key to the identification of European *Temnostoma* species

1. Abdomen predominantly black and yellow, tergites 2-4 each with a transverse yellow band confined to the anterior half of the tergite; at its apex, abdominal tergite 2 *less than* two times as wide as its median length *bombylans* (Fab.)
 - abdomen predominantly black, tergites 2-4 each with yellow markings within both the anterior and posterior halves of the tergite; at its apex, abdominal tergite 2 *more than* two times as wide as its median length . 2
2. Posterior half of the mesoscutum black, except for a median patch of silver-grey dusting along the posterior margin, immediately anterior to the scutellum (Fig. 1A) *apiforme* (Fab.)
 - posterior half of the mesoscutum with at least one pair of distinct yellow marks, which may, or may not, reach the post-alar calli 3
3. Post-alar calli partly yellow; transverse suture of the mesoscutum marked by a short, transverse, yellow stripe at each side, which continues a similar distance toward the mid-line as silver-grey dusting (Fig. 1C). Male terminalia as in Figs. 1F, 1G *vespiforme* (L.)
 - post-alar calli without yellow markings, though with more or less extensive silver-grey dusting; transverse suture marked on each side by a pair of rounded, yellow patches, which are narrowly connected by a transverse stripe of silver-grey dusting (Fig. 1B). Male terminalia Figs. 1D, 1E *meridionale* Krivosheina & Mamayev

Acknowledgements

We are grateful to Colin Plant for information on the Dordogne specimen of *T. meridionale*.

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***Ptilophora plumigera* D.&S. (Lep.: Notodontidae) in the London area**

In *Ent. Rec.* **108**: 72 Ian Furguson records the capture of a male of this species at Shoreham, Kent on 11.xi.1995 confirming the continued presence of the species in the London area and invalidating the suggestion by Colin Plant (*Larger Moths of the London Area*, 1993) that *P. plumigera* may now be extinct in the area. However, both Plant and Furguson, in stating that the last previous record for the species was in 1955, were evidently unaware of the specimen observed by Paul Sokoloff in this locality on 7.xi.1973, reported in Chalmers-Hunt's supplement to his *Butterflies and Moths of Kent* in *Ent. Rec.* **92**. To this I must add that the species was not uncommon there in 1966; five specimens came to a single m.v. light on 8 November located in tetrad TQ56F, the tetrad to the south of that where the moth has frequently been observed in the past.

Although part of this habitat has changed by the spread of scrub on the open downland, the decline in insects has been phenomenal. I believe the cause, and the continuing threat to *P. plumigera* and other species remains with the destruction of surrounding downland, the abandonment of pasture and fodder crops such as clovers, vetches, lucerne and sainfoin which abounded in the neighbourhood fifty years ago in favour of subsidised arable farming, especially of cereals and rape with attendant toxic chemical spraying.— B.K. WEST, 36 Briar Road, Dartford, Kent DA5 2HN.