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Territorial behaviour of two *Merodon* species (Diptera: Syrphidae)

door

W. E. G. HURKMANS

ABSTRACT. — Territorial behaviour was observed in males of *Merodon clavipes* (Fabricius, 1781) and *M. pruni* (Rossi, 1790). *M. clavipes* appeared to be more aggressive and dominated *M. pruni*. Both species favoured open habitats with scattered tall herbaceous plants and small shrubs. There seemed to be competition between the two species for possession of territories. The females did not show territorial activity. Both sexes of both species showed reduced activity during high-temperature conditions.

In May and June 1984 several localities in Greece were visited to obtain *Merodon* material. At some of these localities *M. clavipes* and *M. pruni* were present in large numbers. Both species were abundant on sunny hillsides with open vegetations consisting of grasses, several Labiatae and Scrophulariaceae, *Phlomis fruticosa* L., *Ferula communis* L. and *Smyrnum perfoliatum* L. Liliaceous plants, generally acknowledged as host plants of *Merodon* spp. larvae (e.g. Sack, 1935; Van Der Goot, 1981), were represented by *Asphodelus albus* Miller, and several smaller species of this family.

During the observation period, the winds generally tended to be rather strong, often Beaufort 3-4, and were especially noticeable at the exposed hillside localities. Apparently this did not bother the flies much, contrary to what was found for some other insects, e.g. butterflies, which alighted among the vegetation during windy periods. Temperatures ranged between 15 °C early in the morning and 32 °C in the afternoon. Both species started flying rather early at an estimated temperature of 18 °C. The flies showed an optimum in activity around 11.00 hours and a second optimum around 17.00 hours. During the mid-day period activity was reduced, probably due to high temperatures.

The males of *M. clavipes* and *M. pruni* show territorial behaviour. This was observed only in places exposed to sunshine. *M. clavipes* was seen flying in shaded valleys, but was not seen to defend territories there. These territories were based upon the topmost umbels of tall specimens of *Ferula communis*, *Smyrniium perfoliatum*, and other yellow-flowering Umbelliferae. The males spent most of their time watching the surroundings from their lookout-posts. If an intruding *Merodon* male or equal-sized object closed in, the occupant of the territory took action.

In *M. clavipes* the occupying male flew off and grappled the intruder. If this was another *M. clavipes* male, both flies usually fell to the ground and struggled for a few seconds. Usually after 10-30 seconds the lookout-post was occupied again. If the intruder was a *M. pruni* male, contact was dissolved in the air. Sometimes the *M. pruni* male was chased. Other intruders of roughly equal size were also attacked by grappling, e.g. horseflies, bees and beetles. These were sometimes chased. Intrusions were frequent.

In *M. pruni* the occupying male chased away the opponent and avoided contact. They did not attack horseflies, bees or other equal-sized objects. Several successful intrusions of *M. clavipes* upon territories of *M. pruni* were observed. Intrusions were frequent.

The females spent their time flying very fast at 10-60 cm above ground level, among the vegetation. They did not show territorial behaviour. Mating was not observed in any of the species.

Territorial behaviour is well known in other species of *Merodon*, e.g. *M. equestris* (Fabricius, 1794). In this species the males defended up to three territoria, and preferred territoria with optimum sunshine exposure. Sheltering during high-temperature periods was observed. Under crowded conditions the males became more aggressive and attacked non-conspecific objects. The males patrolled the boundary of their territories (Fitzpatrick & Wellington, 1983).

Several features observed in the behaviour of *M. clavipes* and *M. pruni* seem to agree with those observed in *M. equestris*, e.g. the reduced activity during high-temperature conditions, the preference of the males for territories exposed to much sunshine and the aggressive way of defending the territory against intruders. Since no marking techniques were employed in this study it is not possible to say whether *M. clavipes* or *M. pruni* males defended several territories or one only.

Since intrusions were frequent and *M. clavipes* attacked non-conspecific objects, conditions in the field possibly are crowded with respect to *M. clavipes* and not with respect to *M. pruni*. This may account for the highly aggressive behaviour shown by the *M. clavipes* males.

Localities visited, with dates and altitudes above Sea Level: Delphi, Province of Phokis, Greece, 19-22.V.1984, 600-900 m; Georgioupolis, Province of Chania, Greece, 24-27.V.1984, 200 m; Psychro, Province of Lasithi, Greece, 29-31.V.1984, 925-1250 m; Siteia, Province of Lasithi, Greece, 4-6.VI.1984, 20 m.

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