

OVIPOSITION BY EXOPHYTIC DRAGONFLIES ON VEHICLES

Odonata that lay exophytically may, at times, oviposit on dry surfaces. In some cases this behaviour is linked with hatching that is delayed until the surface is flooded (P.S. CORBET, 1962, *A biology of dragonflies*, Witherby, London). In others, oviposition appears to be triggered by smooth surfaces (e.g. concrete, vehicles) that might simulate the appearance of water (R. ROWE, 1987, *The dragonflies of New Zealand*, Auckland Univ. Press, Auckland; J.A.L. WATSON & A.F. O'FARRELL, 1991, *The insects of Australia*, 2nd ed. Melbourne Univ. Press, Melbourne).

A recent example in this second category has involved significant damage to new motor vehicles in Darwin, Northern Territory, Australia. At the end of the wet summer in northern Australia large numbers of Odonata emerge from the shallow, warm and productive waters of the floodplains (J.A.L. WATSON, 1980, *Habitat* 8(4): 3-5). Some disperse far from water, including the libellulids *Macrodiplox cora* (Kaup in Brauer), *Pantala flavescens* (Fabr.) and *Trapezostigma loewii* (Kaup in Brauer), and form vagrant flocks, often behaving as 'fliers' rather than 'perchers'. The 'Wet' of 1990-91 was the wettest ever recorded in Darwin and the flocks of dragonflies were, it was reported, unusually abundant. Problems arose when the females laid their eggs on the shiny horizontal surfaces of new vehicles, especially pale ones, at a vehicle-importer's yard in Darwin. The egg masses took the form of

stripes, correlating with the oviposition patterns of *Pantala* and at least some species of *Trapezostigma*, the females of which lay while flying forward in or out of tandem (J.G. NEEDHAM H.B. HEYWOOD, 1929, *A handbook of the dragonflies of North America*, Thomas, Springfield and Baltimore; ROWE, 1987). Unfortunately, no specimens of the adults were obtained, nor could dragonfly eggs removed from the vehicles be identified. Corbet in ROWE (1987), however, reported that *Pantala* sometimes lays on motor cars.

If the eggs were removed before they dried, no damage resulted. If, however, they were 'baked-on' by the hot autumn sun (providing ambient air temperatures of 30-35°C) the paint under them was etched, less in the baked enamel finish of vehicles imported from Japan than in Austr-

lian vehicles with acrylic or enamel finishes only a few weeks old. The etched areas could not be polished out, and the damaged panels had to be re-finished, at considerable expense. The manufacturers subsequently waxed the painted surfaces, which prevented the corrosion but still added to costs.

Similar observations have been made on other aquatic insects, including Ephemeroptera, Plecoptera and chironomid Diptera (DEAR, 1980, *Ent. mon. Mag.* 116: 197; Peter Barnard, pers. comm.; Günther Theischinger, pers. comm.). At least in the cases involving Ephemeroptera and chironomids, the egg masses could do substantial damage to the paintwork.

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