

AVOIDANCE BEHAVIOUR IN ODO-NATA

H.B. WHITE (1979, *Notul. odonatol.* 1: 75-76) recorded *Zoniagrion exclamationis* (Sel.) moving behind stems to avoid observation by a presumed predator during climatic conditions suboptimal for flight. I have seen similar behaviour in *Xanthocnemis zealandica* (McL.) and *Ischnura aurora* (Br.) in New Zealand on many occasions and, during May 1980, I witnessed the same response in *Ischnura elegans* (Vander L.), *Pyrrosoma nymphula* (Sulz.) and *Coenagrion puella* (L.) in England and Wales, and in *I. elegans* and *Erythromma najas* (Hans.) in the Netherlands. R.J. TILLYARD (1917, *The biology of dragonflies*, Cambridge Univ. Press, p. 323) mentioned that zygopterans are as likely to hide from an enemy as to flee and C.O. HAMMOND (1977, *The dragonflies of Great Britain and Ireland*, Curwen Press, London, p. 13) comments briefly on orientation behind stems in United Kingdom damselflies. This type of behaviour may be more widespread in the Insecta: I have seen the hemipteran *Nezara viridula* (L.) behave similarly; and some salticid spiders follow the same pattern. In *X. zealandica* and *I. aurora*, avoidance behaviour of this type occurs not only in mature specimens during inclement weather but also

in teneralis which have not attained flight capability.

Another anti-predator contrivance used by insects is to drop and feign death (thanatosis) (M. EDMUNDS, 1974, *Defence in animals*, Longman, Harlow, p. 172). Attempts on 31 May 1980 to net *I. elegans* and *E. najas* at rest during rainy conditions elicited first the hiding response and then, when the pursuit was continued, the specimens would fall from their support. These damselflies continued to move the legs and abdomen after they had fallen which would deny the behaviour as thanatosis.

WHITE (1979, cf. above) also mentioned recovering the petalurid *Tanypteryx hageni* (Sel.) from a spider's web. In an analogous situation, *Uropetala c. carovei* (White) has been found prone to entanglement in mist nets set for birds in the forest about Crawley Creek, Orongorongo Valley, near Wellington (P.D. Gaze, unpubl.). Larger Anisoptera are usually able to break free from webs except when immature (P.S. CORBET, 1962, *A biology of dragonflies* Witherby, London, p. 138) and thus the development of an avoidance response is not so critical in such species. It may be that *U. c. carovei* may not be able to perceive webs (or mist nets) in the deep shade about its Crawley Creek breeding site (W.J.

WINSTANLEY & R.J. ROWE, 1980, *N.Z.Jl Zool.* 7: 127-134). It is of interest that *Antipodochlora braueri* (Sel.) which also breeds in Crawley Creek (W.J. WINSTANLEY, 1979, *Odonatologica* 8: 205-214) and has a similar flight season to *U. c. carovei* has not been taken also in the mist nets.

Aeshnid dragonflies were the only insects which noticeably avoided capture by the sticky traps used by T.L. HARRIS & W.P. McCAFFERTY (1977, *Great Lakes Entomol.* 10: 233-239) but dragonflies in this genus may succumb to spiders. I found clear chelicerae punctures on the anterior dorsal segments of the abdomen in a mature *Aeshna brevistyla* Ramb. collected from the web of *Cambridgea* sp. on 4 January 1980 in Trounson Kauri Park, North Auckland by J.R. Grehan.

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W.J. Winstanley, Zoology Department, Victoria University of Wellington, Private Bag, Wellington, New Zealand.