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SOME PROTOZOAN AND ACARINE PARASITES FROM NEW ZEALAND ODONATA (NOTE)

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ABSTRACT

Parasitism of New Zealand Odonata by a cephaline gregarine (possibly *Schistocephalus* sp.) and mites including *Eylais waikawae* and *Arrenurus rotoensis* is recorded.

Parasites recorded from Odonata larvae and adults include Nematoda, Ceratopogonidae (Munchberg 1935), Gregarinia, unidentified Protozoa, Trematoda and Hydracarina (Munchberg 1935, Grieve 1937). Ectoparasitic mites have received more attention than the other types of parasites, possibly because they are more easily noticed and collected. Munchberg (1935) listed all records believed to refer to parasitic mites on Odonata beginning with Linné's (1745) sighting of "small, red grains" on the thorax of damselsflies in Sweden. Sparing (1959) reviewed the taxonomy of the Hydracarina and discussed their larval development with particular reference to the parasitic phase. Stechman (1978) described the life cycles of five *Arrenurus* species under laboratory conditions and determined the host range of the mites. Odonata larvae and adults served as hosts for two of the *Arrenurus* species studied.

Although parasitism of Odonata is apparently common, no reports exist of parasites collected from New Zealand representatives of the Order. While working on the cytology of Odonata at Lake Sarah (43°03'S, 171°47'E) (Jensen 1978) I noticed that some of the specimens collected were parasitised. A cephaline gregarine, possibly in the genus *Schistocephalus* (F.R. Allison, pers. comm.) was found in the intestine of adults of the species *Xanthocnemis zealandica* (McLachlan), *Austrolestes colensonis* (White), *Procordulia grayi* (Selys) and *P. smithii* (White). No incidence of infection was noted before February 1978. The number of specimens infected and the severity of the infection increased from early February until, by the end of the month, almost all the adults captured were parasitised. The two zygopterans

were apparently more heavily infected than the *Procordulia* spp.; several hundred gregarines were present in one individual of *A. colensonis*. The gregarines were usually confined to the mid-gut but in a few heavily infected individuals, parasites were found in the fore- and hind-gut also. The unpreserved parasites reached a maximum size of approximately 1.5 mm by 0.5 mm. Cysts were rarely seen.

Parasitic mites belonging to the species *Eylais waikawae* Stout and *Arrenurus rotoensis* Stout were found attached to the ventral surface of the thorax and abdomen of *X. zealandica* and *A. colensonis* adults. *A. rotoensis* was also present on some individuals of these two damselflies collected at Isaac's Pond (43°28'S, 172°32'E) during January 1978. The intensity of infection of the combined mite species ranged from one to 15 mites on either species of damselfly.

Mr W.J. Winstanley found parasitic mites (unidentified) on many adults of *X. zealandica* collected at Gollans Valley (41°19'S, 174°53'E) and Lake Pounui (41°21'S, 175°07'E) between 24 and 31 January 1979. Severely infected individuals had mites attached to the thorax and abdomen both ventrally and dorsally. Larvae of *X. zealandica* collected from Puke Puke Lagoon (41°21'S, 175°16'E) have occasionally been found with parasitic mites attached (W.J. Winstanley, pers. comm.). One adult *Diplacodes bipunctata* (Brauer) collected at Lake Waikaremoana (38°45'S, 177°09'E) on 8 February 1979 and sent to me by Mr Winstanley had two immature mites (unidentified) attached to the thorax ventrally.

These fragmentary observations show that protozoan and acarine parasites occur in New Zealand Odonata. Further work may reveal other groups of parasites such as for example Nematoda and other species of Acarina. More information is also needed to assess the implications of parasitism on Odonata populations and to determine the relationship between parasite and odonate life cycles.

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LITERATURE CITED

GRIEVE, E.G. 1937. Studies on the biology of the damselfly *Ischnura verticalis* Say, with notes on certain parasites. *Entomologica Americana 17:* 121-153.

JENSEN, A.L. 1978, Cytological studies on some New Zealand Odonata (dragonflies). Unpublished B.Sc. Hon. project, Department of Zoology, University of Canterbury, Christchurch. 60 pp.

MUNCHBERG, P. 1935 Zur Kenntnis der Odonaten parasiten mit ganz besonderer Berucksichtigung der Okologie der in Europa an Libellen schmarotzenden Wassermilbenlarven. *Archiv fur Hydrobiologie 29:* 1-120.

SPARING, I. 1959. Die Larven der Hydrachnellae, ihr parasitische Entwicklung und ihre Systematik. *Parasitogische Schriftenreihe 10:* 1-168.

STECHMAN, D.H. 1978. Eiablage, Parasitismus und Postparasitische Entwicklung von Arrenurus - Arten (Hydrachnellae, Acari). *Zeitschrift fur Parasitenkunde 57*: 169-188.