

of the mortality remains a matter of speculation. However this die-off does provide an excellent opportunity to study the problem.

Activity of three *Austrosimulium* species in South Westland (Diptera: Simuliidae)

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The attraction and biting activity of the simuliids *Austrosimulium unguatum* Tonnoir, *A. dumbletoni* Crosby, and *A. australense* (Schiner) towards moulting Fiordland crested penguins (*Eudyptes pachyrhynchus* Gray) was studied for a 6 day period in February 1977 at Jackson Bay, South Westland. It was part of a study of the role of simuliids in transmitting the haemosporidian *Leucocytozoon tawaki* to penguins.

Overcast conditions attracted more simuliids to penguins than clear conditions, and cold or hot air temperatures attracted fewer simuliids than mild temperatures. Both *A. unguatum* and *A. dumbletoni* had peaks of attraction and biting in the morning and evening, whereas *A. australense* only had a morning peak.

The percent composition of the simuliid species attracted to the penguins averaged 82% *A. unguatum*, 13% *A. dumbletoni*, and 5% *A. australense*. However, certain penguins attracted a markedly larger or smaller percentage of *A. dumbletoni* or *A. australense* than others. The percentage of simuliids which bloodfed depended upon the individual penguin they were attracted to, and this percentage did not vary greatly between each of the simuliid species attracted to a particular individual.

Ducklings, humans, and penguin smell are equally attractive to *A. unguatum*, indicating that it is not host specific. However, almost no *A. dumbletoni* were collected by these alternative baits indicating that it is host specific to the Fiordland crested penguin.

An attempt at controlling schistosome dermatitis in Lake Wanaka through the application of a molluscicide

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Schistosome dermatitis has been a problem in Lake Wanaka since the beginning of this century and various attempts have been made to reduce the problem in summer by adding copper sulphate to water near the edge of the lake. This method of control has been environmentally unacceptable and generally unsuccessful. Between 1976

and 1985 an in-depth study of the organism causing the problem, *Cercaria longicauda*, and its host the freshwater gastropod, *Lymnaea tomentosa*, had shown their distribution was restricted to small areas in Roys Bay and Glendhu Bay. The Guardians of Lake Wanaka requested that a field trial be undertaken in these areas using the molluscicide Frescon (N-tritylmorpholine) during the summer of 1985–86 in an attempt to reduce the snail population.

Samples of molluscs from 0.25 m quadrats were taken at sites in Dublin, Roys, and Glendhu Bays before spraying commenced. Spraying was undertaken using a submerged boom which delivered the Frescon to the lake bottom on three separate occasions in December 1985, and January and February 1986. After each spraying samples from 0.25 m quadrats were collected and surviving snails counted. Results showed that the Frescon had very little effect on the snail population in the areas treated. Reasons for this lack of success will be discussed.

Onchocerciasis ("river-blindness") in Africa

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One of the odder omissions in medical parasitology, was the failure to recognise the link between the already much-researched disease of onchocerciasis, and blindness, until after World War II.

By the earlier 1970s, the World Health Organisation had decided to undertake an Onchocerciasis Research Programme (WHO/OCP) in just one small area of the afflicted region (the latter involving 20 to 30 million afflicted people). About 1 million onchocerciasis sufferers within the Volta River Basin (7000,000 km²) were studied.

Because of what was then known of the life cycle of *O. volvulus*, WHO/OCP was planned to last for 20 years starting in 1974 (adult worms are understood to survive for almost that long in their tangled masses in the lymphatics of infected people, giving rise to microfilariae at the same time). The microfilariae, moving about in huge numbers subdermally, cause intense itching from the earliest stages of an established infection. Eventually, enough traverse the eye so as to destroy all but the lens. Long before that, however, enormous lumps of intertwined adult nematodes are palpable through the stretched skin of the limbs, torso, and head.

Because of the lack of a readily-available drug (recently, ivermectin has offered hope in this connection), WHO/OCP was planned to attack the simuliid vectors in their riverine larval habitats, by means of the environmentally-acceptable organophosphate, temephos (Abate®). This contribution takes up the story from there, through the onset of pesticide resistance to the first large-scale use of a biocide against a vector.