A bizarre characteristic of Whitefaced Stormpetrels *Pelagodroma marina* breeding at the Chatham Islands (44°S, 176°W) is the presence of anklets on many adult birds. These anklets are white to translucent and gelatinous when fresh, but become straw-coloured, elastic and very tough as they dry out (Figs. 1,2). Though normally present separately on one or both legs, in which state they seem of no concern to the birds, sometimes the anklets become joined by a tough ligament. This has fatal consequences, since the stormpetrels easily become entangled in any twiggy vegetation in the forest, scrub or bracken where they nest, and are unable to free themselves (pers. obs.). Tens of thousands may die in rare years when the anklet problem is at its worst (D.V. Merton pers. comm.).

Anklets were especially abundant in 1970 on petrels at South East Island in the Chatham Islands when D.V. Merton (pers. comm.) collected specimens from the multitudes of corpses. After he had experienced problems finding someone who could identify the entangling material, he sent specimens to the British Museum of Natural History. There, Claughher (1976), after surmounting the problem of reconstituting the material, identified it as desiccated entangled larvae of the marine digenean trematode *Syncoelium filiferum*. He counted 300 larvae in the anklets from one bird.

This trematode is a gill parasite on some epipelagic fish (Rohde et al. 1980). The 60 mm long, elastic, adhesive filaments that are appendages of the larval trematodes apparently enable them to attach themselves to the final host's gills. Some become attached instead to petrels' legs and subsequently die by desiccation.

Attachment to petrels' legs comes about because the petrels feed on the euphausiid *Nematoscelis megalops* (Imber 1981). This is the intermediate host of the trematode, from which the trematode was first described (Claughher 1976). These type specimens were obtained during the "Challenger" expedition in 1876 close to Tristan da Cunha (Claughher 1976). *N. megalops* is a diel vertical migrant, living at about 400 m by day and coming to the surface at night (Marshall 1954), whereas the final hosts are surface-living fish. Claughher (1976) suggested that the trematodes release themselves from the euphausiids as the latter descend at dawn, then float up to the surface (thereby avoiding entanglement with the euphausiids) where they sometimes encounter resting stormpetrels. It seems more likely that the trematodes break free in surface waters and become entangled with stormpetrels' legs while the birds are feeding on the euphausiids. Possibly the different degrees of the problem from year to year on stormpetrels at the Chatham Islands are due to
Whitefaced Stormpetrel *Pelagodroma marina* with trematode anklets, Rabbit Island, Chatham Islands, November 1980. Photographed by T.G. Lovegrove.

Close-up of trematode anklets on the same bird as in Fig. 1. Photographed by T.G. Lovegrove.
annual fluctuations in infestation of *N. megalops* by the
trematode, or to annual variations in the proportion of the
petrels' diet formed by this particular euphausiid.

*N. megalops* was found to be the most abundant euphausiid west of
the Chatham Islands (Robertson *et al.* 1978). It occurs
circumpolarly in the Southern Hemisphere near the Subtropical

Clancey (1981) observed that several specimens of Whitefaced
Stormpetrels collected at Gough Island (40°S, 10°W) carried
"dried algal anklets". Since the trematode was first reported
nearby (Clougher 1976), its occurrence on these stormpetrels at
Gough Island is to be expected. When visiting Gough Island in
1979 I examined only one Whitefaced Stormpetrel. It carried no
anklets.

Since 1975 I have handled many petrels at the Chatham Islands,
including hundreds of Whitefaced Stormpetrels, Greybacked
Stormpetrels *Garrodia nereis*, Broadbilled Prions *Pachyptila
tuttara*, Fairy Prions *P. turtur*, Sooty Shearwaters *Puffinus
griseus* and lesser numbers of Common Divingpetrels *Pelecanoides
urinatrix*, Fulmar Prions *Pachyptila crassirostris*, Little
Shearwaters *Puffinus assimilis*, Blackwinged Petrels *Pterodroma
nigripennis*, Chatham Island Petrels *P. axillaris* and Magenta
Petrels *P. magentae*. Among these I have seen trematode anklets
only on Whitefaced Stormpetrels and Fairy Prions, both of which
feed predominantly on euphausiids at the surface (Imber 1981).
One of two Leach's Stormpetrels *Oceanodroma leucorhoa* caught at
the Chatham Islands in 1980 (Imber & Lovegrove 1982) also
carried minute anklets. Linton (1978) recorded *N. megalops* in
the diet of Leach's Stormpetrels off eastern Canada. Thus there
seems to be a strong link between feeding on these euphausiids
by surface-seizing and entanglement of trematodes round the
legs.

Although New Zealand Fairy Prions *Pachyptila t. tuttur* feed
mainly on the euphausiid *Nystiphanes australis* (Harper 1976,
Imber 1981), *Nematoscelis megalops*, which is a slightly larger
species, may be important in the diet of these prions at the
Chatham Islands.

Whitefaced Stormpetrels are likely to collect the trematodes and
develop intertarsal ligaments because of their feeding method.
They hover at the surface using both feet together to touch down
briefly, then bound forward (pers. obs.). This frequent contact
of both feet with the sea, in which the tarsi are kept closer
together than the length of the filaments of trematodes becoming
attached to each tarsus, presumably results in the formation of
anklets and connecting ligaments. Fairy Prions feed with a
running motion of the feet on the sea surface: I have not seen
them with a trematode ligament connecting their tarsi.
Whitefaced Stormpetrels at the Chatham Islands are the only
petrels known to suffer mortality caused by these trematodes.

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REFERENCES


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