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INSECTS OF CAMPBELL ISLAND. SIPHONAPTERA[1]

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Abstract: Three species of fleas are reported for the first time from Campbell I. The distribution is shown of the species of the *longicornis*-group of *Parapsyllus* and the forms described as subspecies of *longicornis* are given full species status.

There are no published records of fleas from Campbell I. and apparently no specimens were collected there before 1961. The collecting efforts of Dr. J. L. Gressitt and Messrs. K. P. Rennell, P. R. Wilson and K. A. J. Wise resulted in material of 3 species (1 cosmopolitan rat flea and 2 subantarctic fleas of sea-birds). At present 20 species of fleas are known to occur in the New Zealand subregion.

Family CERATOPHYLLIDAE

Nosopsyllus (Nosopsyllus) fasciatus (Bosc, 1800)

1♂, 11♀♀, Beeman Camp, ex rat caught near fowl run, 30. III. 1962, Rennell; 4♂♂, 3 ♀♀, Beeman, ex rat caught in fowl house, 3, 6 & 9.IV.1962, Rennell; 3♀♀, slope of Mt. Dumas, 50 m, ex *Rattus norvegicus*, 14. XII. 1961, Gressitt; without exact locality: 14♂♂, 17♀♀, ex 6 *Rattus norvegicus*, 4–8. I. 1961, Wilson; 1♂, ±250 m, ex dead albatross, 12. II. 1963, Rennell.

This cosmopolitan flea is primarily associated with the brown rat *Rattus norvegicus* and the black rat *Rattus rattus*. Common throughout the New Zealand subregion.

Family PYGIOPSYLLIDAE

Notiopsylla kerguelensis (Taschenberg, 1880)

1♀, Smoothwater Bay, ex leaf mold of *Dracophyllum*, 16.II.1963, Wise; 2♀♀, S of Courrejolles Peninsula, ±220 m, ex burrow of *Puffinus griseus*, 12. II. 1963, Wise.

A common parasite of gulls and petrels. Widely distributed throughout the subantarctic region, being known from Heard I. (ex giant petrel *Macronectes giganteus*), Kerguelen Is. (ex grey petrel *Adamastor cinereus*, blue petrel *Halobaena caerulea* and Kerguelen diving petrel *Pelecanoides urinatrix exsul*), South Georgia (ex Bank's blue petrel *Prion banksi* and the dominican gull *Larus dominicanus*) and in the New Zealand subregion from the Snares Is.

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(ex sooty shearwater *Puffinus griseus*), Macquarie I. (ex sooty shearwater *Puffinus griseus*, dove prion *Pachyptila desolata* and dominican gull *Larus dominicanus*) and the Auckland Is. (ex white-headed petrel *Pterodroma lessoni* and Kerguelen diving petrel *Pelecanoides urinatrix exsul*).

Family RHOPALOPSYLLIDAE

Parapsyllus longicornis (Enderlein, 1901)

COURREJOLLES PENINSULA: 3♂♂, 2♀♀, ex nest of black-browed mollymawk *Diomedea melanophris impavida*, 29.I.1961, Wilson; 22♂♂, 25♀♀, ex nest of *Diomedea melanophris impavida*, 14.XII.1961, Gressitt; 19♂♂, 33♀♀ ex nest of grey-headed mollymawk *Diomedea chrysostoma*, 14.XII.1961, Gressitt; 2♀♀, ex nest of *Diomedea melanophris impavida*, 13.II.1963, Wise.

Parapsyllus longicornis was described from 5♂♂, 2♀♀ collected in 1899 on St. Paul I. from the rockhopper penguin *Eudyptes chrysocome*. Enderlein's description (Zool. Jb. Syst. **14**: 553, pl. 34, figs. 8, 9, 12) is of little diagnostic value, but fortunately the Rothschild collection of fleas at Tring contains 1♂, 1♀, topotypes collected in 1875. Since the description of the species, no specimens have been recorded which could be determined with any certainty as *P. longicornis* (Enderlein). Meanwhile 4 subspecies of *longicornis* have been described but I have reached the conclusion that *longicornis alginus* Jordan, 1942, is inseparable from *longicornis* Enderlein, 1901 (**New Synonymy**) and that the remaining 3 subspecies might be regarded as full species on structural and geographical considerations. These forms are:

Parapsyllus australiacus Rothschild, 1909, Novit. Zool. **16**: 62.

DISTRIBUTION: Bird I. (type locality; off Perth, Western Australia), Greenly I. and Encounter Bay (South Australia), Lady Julia Percy I. (off coast of Victoria, Australia), Brush Is., Tollgates I., Montague I. and Lion I. (off the coast of New South Wales, Australia), Babel I., Little Green I. and Furneaux I. (in Bass Strait), Huon I. and Bruny I. (off the coast of Tasmania), Tasmania.

HOSTS: Penguins, shearwaters, petrels.

Parapsyllus humboldti Jordan, 1942, Eos, Madr. **18**: 18, figs. 2C, 6, 9C.

DISTRIBUTION: Zapallar (type locality; N of Valparaiso, Chile), Ichabo I., Possession I. and Sinclair's I. (off coast of SW Africa), Jutten I. and Dassen I. (off W. coast of S. Africa).

HOSTS: Penguins.

Parapsyllus dacunhai de Meillon, 1952, Rep. Austr. Nat. Antarct. Exped. (B) **1**: 2, figs. 1–4.

DISTRIBUTION: Nightingale I. (Tristan da Cunha).

HOSTS: Shearwater; thrush (accidental occurrence ?).

P. longicornis is known from Kidney I. (off East Falkland I.; type locality of *P. l. alginus*) and East Falkland I., St. Paul I. and in the New Zealand subregion from Campbell I., North I., Goat I. and South I.

HOSTS: Penguins, albatrosses, cormorants and mollymawks.

The following 2 species also belong to the *longicornis*-group.

Parapsyllu staylori Jordan, 1942, Eos, Madr. **18**: 22, figs. 3A, 10.

DISTRIBUTION: Rottnest I. and Carnac I. (Western Australia), Lady Julia Percy I. (Victoria, Australia), Tollgates I. (New South Wales, Australia), Little Green I., Fisher I., Flinders I. and Babel I. (in the Bass Strait).

HOSTS: Shearwaters, petrels.

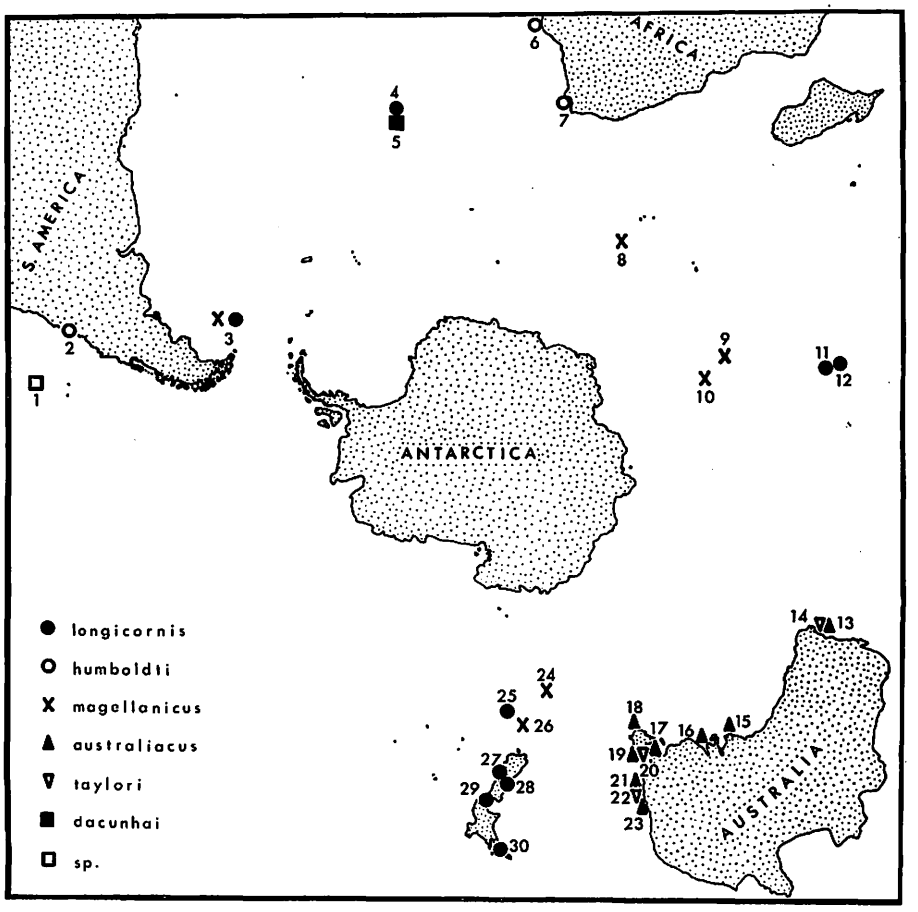

Fig. 1. Map showing the distribution of species of the *longicornis*-group of *Parapsyllus* (del. A. M. Wright). 1, San Ambrosio I.; 2, Zapallar, Chile; 3, Falkland Is.; 4, Tristan da Cunha; 5, Nightingale I.; 6, Ichabo I., Possession I. and Sinclair's I.; 7, Jutten I. and Dassen I.; 8, Marion I.; 9, Kerguelen I.; 10, Heard I.; 11, St. Paul I.; 12, Amsterdam I.; 13, Bird I.; 14, Rottnest I. and Carnac I.; 15, Greenly I.; 16, Encounter Bay; 17, Lady Julia Percy I.; 18, Bruny I. and Huon I.; 19, Flinders I. and Babel I.; 20, Little Green I.; 21, Montague I. and Brush I.; 22, Tollgates I.; 23, Lion I.; 24, Macquarie I.; 25, Campbell I., 26, Auckland Is.; 27, Lake Forsyth, Tokoroa Bay and Lyttelton Harbor; 28, Perpendicular Point; 29, Somes I., Days Bay, Lyall Bay and Petona; 30, Mahurangi Heads.

Parapsyllus magellanicus Jordan, 1938, Novit Zool. **41**: 135, figs. 80–82.

(*Parapsyllus magellanicus heardi* de Meillon, 1952, Rep. Austr. Nat. Antarct. Exped. (B) **1**: 4, figs. 5, 6, appears to be inseparable from *P. magellanicus* Jordan).

DISTRIBUTION: Kidney I. (East Falkland Is.), New Island (West Falkland Is.), Heard I., Kerguelen I., Marion I., Macquarie I. and Enderby I. (Auckland Is.).

HOSTS: Petrels, cormorants, skuas, penguins.

An undescribed species is found on San Ambrosio I. (Pacific Ocean, 1150 km NW of Valparaiso).

The very distinct *cardinis*-group of species of *Parapsyllus* is confined to the New Zealand subregion; as no representatives of this group are known from Campbell Island and as 3 of the 4 species known to me have not yet been described, this group is not dealt with here.

The distribution of the species of the *longicornis*-group is shown in fig. 1. As will be seen, *P. longicornis* and *P. magellanicus* are widely distributed in the subantarctic area (the pygiopsyllid flea of petrels, *Notiopsylla kerguelensis*, has a similar wide distribution). *P. humboldti* occurs on or near the coast of SW South America and SW Africa, *P. dacunhai* is only known from Nightingale I. (Tristan da Cunha) and an undescribed species from San Ambrosio I., while *P. australiacus* and *P. taylori* are found along the southern coastline of Australia and around Tasmania.

Jordan (1942) has pointed out that *Parapsyllus* is of S. American origin (all other members of Rhopalopsyllidae occur in the Neotropical region). It is relevant to note that around the southern tip of S. America populations of 4 of the 7 species of the *longicornis*-group are found; it is possible that *P. dacunhai* may eventually also be discovered in that area. Only *P. australiacus* and *P. taylori* are purely Australian in distribution.

As far as we know, most of the small islands in the subantarctic region are occupied by only one representative of the *longicornis*-group; *taylori* and *australiacus* have been found together on Tollgates I., Lady Julia Percy I., Babel I. and Little Green I., and *magellanicus* and *longicornis* together on Kidney I. (Falklands).

As Dunnet (1964) has suggested, the true and original hosts of the species of *Parapsyllus* are very likely flying sea-birds, not penguins as previously assumed. There are now many more records of species of the *longicornis*-group from petrels, cormorants, shearwaters, mollymawks and skuas than from penguins, although these Parapsylli can be numerous in the nests of penguins which, moreover, were more intensively searched for fleas in the past than the nests of flying sea-birds. A comparison can be made with the Palearctic species *Ceratophyllus gallinae*, which is primarily associated with small Passerine birds; however, the hen is such a suitable secondary host that this flea has become known as the European "hen-flea." *C. gallinae*, like the various species of *Parapsyllus*, is very promiscuous in the choice of hosts and also exhibits fairly considerable individual variation.

There seems to be little doubt that specimens of *Parapsyllus* are regularly carried by flying sea-birds from one island to another, but the number of fleas on one bird will presumably always be small. If one or a few specimens of a certain species of *Parapsyllus* arrive in that manner on a certain island it may well find that all ecological niches there are filled by another species. Moreover, the numbers of the immigrants may be far too low for the establishment of a new population. Where 2 species are found on one island

there seems to be an ecological separation between the two, *e. g. P. taylori* lives in the burrows of shearwaters and *P. australiacus* usually occurs in the exposed nests of penguins (although it is occasionally found in nests of shearwaters; straggling is facilitated on the small islands by the density of the nests of the various birds).

Continued collecting may eventually shed more light on the distribution and true status of the species of the *longicornis*-group of *Parapsyllus.*

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