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Jadwiga ZŁOTORZYCKA and Maria MODRZEJEWSKA

Department of General Parasitology,
Microbiological Institute,
University of Wrocław
Przybyszewskiego 63/77
51 – 148 Wrocław, POLAND

Contribution to the knowledge of lice (Mallophaga) from the Antarctic

ABSTRACT: In material collected from birds (Aves, Procellariiformes) in the South Georgia region by Polish Antarctic Marine Research Expedition in 1976 the following mallophagan species were found: *Docophoroides brevis* (Duf.), *Naubates fuliginosus* (Tasch.), *Pseudonirmus gurlti* (Tasch.) and *Trabeculus hexacon* (Wat.). These are the first records from this region.

K e y w o r d s: Antarctic, South Georgia, Procellariiformes, Mallophaga.

Introduction

In the Antarctic region Mallophaga from the representatives of following bird orders: Pelecaniformes, Charadriiformes, Sphenisciformes and Procellariiformes has been recorded (Clay 1957, 1964, 1967, Clay and Moreby 1967). From the faunistic point of view the lice from Procellariiformes were examined most thoroughly (Clay and Moreby 1967). These materials were collected mainly from various islands in the environs of Antarctic Continent. Before elaboration these materials were sent to museums, mainly British Museum (Natural History). Unfortunately, the authors gave rearly the exact localities of collected lice. Our material comes from the first hand and contains proper faunistic documentation*. We have received our collection preserved in alcohol. Before determination the lice were mounted in slides in Canada balsam by conventional method. Materials were determined according to Clay and Moreby (1967) and Timmermann (1959, 1961a,b, 1965).

All specimens were measured under 128 × magnification.

* We would like to express our grateful thanks to prof. K. Jażdżewski for mallophagan material collected during Ist Polish Antarctic Marine Research Expedition in 1976.

Results and discussion

Docophoroides brevis (Dufour, 1835)
syn. *Philopterus brevis* Dufour, 1835

Examined host: *Diomedea exulans* L., South Georgia, Cumberland Bay. Material: 4 ♀♀, 3 nymphs, 9.03.76; 2 ♂♂, 2 ♀♀, 6 nymphs, 29.03.76; 2 ♂♂, 3 ♀♀, 1 nymph from other specimen with the same collecting date; 3 ♂♂, 5 ♀♀, 1 nymph from other specimen, the same data. All material leg. K. Jażdżewski.

Measurements are given in Tab. 1.

Table 1

Measurements (in mm) of *Docophoroides brevis*

Measurements	males n = 12	females n = 9	nymphs II stage n = 1	nymphs III stage n = 10
Length of head	1.08–1.24 (1.25–1.35)*	1.21–1.30 (1.30)	0.68	0.87–0.94
Width of head	1.33–1.52 (1.50–1.60)	1.33–1.53 (1.65)	0.87	1.07–1.16
Length of prothorax	0.37–0.50	0.40–0.53	0.25	0.34–0.40
Width of prothorax	0.87–0.93	0.81–0.96	0.59	0.77–0.84
Length of pterothorax	0.71–0.84	0.71–0.87	0.40	0.51–0.59
Width of pterothorax	1.21–1.36	1.15–1.36	0.81	1.05–1.18
Length of abdomen	1.49–2.23	1.58–2.05	0.87	1.05–1.46
Width of abdomen	1.49–1.70	1.49–1.83	0.99	1.27–1.49
Total body length	3.56–4.28 (4.50–4.75)	3.63–4.16 (4.70–5.00)	2.08	2.51–3.10

In brackets acc. to Timmermann (1959)

Diomedea exulans is a typical host for *D. brevis* however, according to Timmermann (1965) also other species of *Diomedea*, among other *D. melanophris* Temminck, *D. chlororhynchos* Gmelin, *D. cauta salvini* Gould as well as probably other albatrosses and other representatives of Procellariiformes (for example *Procellaria aequinoctialis* L.) belong to the circle of hosts. However, considering the rule that lice show a rather close specificity with regard to hosts, one can assume that *D. brevis* occurs in different subspecies. It was hitherto known (Clay and Moreby 1967) from typical host from South Shetland Islands; there is lack of data on the findings from the South Georgia region.

Naubates fuliginosus (Taschenberg, 1882)
syn. *Lipeurus fuliginosus* Taschenberg, 1882

Examined host: *Diomedea exulans* L.
Material: 2 ♂♂, 3 ♀♀, 1 nymph, 20.03.76.
Measurements in Tab. 2.

Table 2

Measurements (in mm) of *Naubates fuliginosus, Trabeculus hexacon* and *Pseudonirmus gurlti*

Measurements	*N. fuliginosus*		*T. hexacon*		*P. gurlti*
	males n = 2	females n = 3	males n = 2	females n = 1	males n = 1
Length of head	0.90 (0.90–0.91)*	0.94–0.96 (0.93–1.04)	0.50–0.52 (0.58)	0.54 (0.58–0.60)	0.57 (0.59–0.61)
Width of head	0.54 (0.59)	0.55–0.60 (0.61–0.64)	0.52–0.54 (0.57–0.58)	0.56 (0.58–0.60)	0.40 (0.42–0.43)
Length of prothorax	0.26–0.28	0.31–0.34	0.12–0.20	0.15	0.27
Width of prothorax	0.38–0.39	0.42–0.45	0.34–0.37	0.36	0.27
Length of pterothorax	0.45	0.43–0.50	0.22–0.23	0.29	0.28
Width of pterothorax	0.46–0.49	0.49–0.51	0.42–0.44	0.46	0.34
Length of abdomen	1.86–1.98	2.08–2.36	0.61–0.75	0.85	1.18
Width of abdomen	0.57–0.64	0.56–0.61	0.50–0.65	0.66	0.39
Total body length	3.29–3.44 (3.58–3.78)	3.72–3.94 (4.08–4.25)	1.36–1.52 (1.77–1.84)	1.67 (1.99–2.01)	2.05 (2.20–2.29)

* In brackets acc. to Timmermann (1959)

Diomedea exulans, according to Clay and Moreby (1967) is a typical host. However, according to Hopkins and Clay (1952) the original description concerned the lice from *D. exulans* and *D. chlororhynchos* Gmelin. Timmermann (1961a) gives also 10 further hosts: *Phoebetria palpebrata, P. fusca, Macronectes giganteus, Procellaria aequinoctialis* L., *Adamstor cinereus, Puffinus leucomelas, P. gravis, Pterodroma mollis, P. incerta* and *P. brevirostris*. This author supposes that, in fact, the circle of hosts for *N. fuliginosus* is narrower because probably some of information concern the lice that straggle only on other hosts. Only Clay and Moreby (1967) on the basis of the collection in British Museum give precise data concerning the locality of *N. fuliginosus* from *Procellaria aequinoctialis* found at 62°04'S, 87°24'E. *N. fuliginosus* was never recorded from the South Georgia region.

Pseudonirmus gurlti (Taschenberg, 1882)

syn. *Lipeurus gurlti* Taschenberg, 1882

Examined host: *Daption capense* L.

Material: 1 ♂, South Georgia, at the southern end of the island, 29.03.76, leg. K. Jażdżewski.

Measurements are given in Tab. 2.

Daption capense L. is a typical and only host for *P. gurlti*. Timmermann (1961a) agrees with Harrison (1937) that *P. gurlti* is close to *P. antarcticus* Harr., 1937 from *Thalassoica antarctica*. Precise data on the occurrence of *P. gurlti* are to be found in Clay and Moreby (1967). According to these authors the species was hitherto noted at South Shetland Islands and Palmer Archipelago, therefore it is a new species for the South Georgia region.

Trabeculus hexacon (Waterston, 1914)
syn. *Giebelia hexacon* Waterston, 1914
Examined host: *Procellaria aequinoctialis* L.
Material: 2 ♂♂ and 1 ♀ South Georgia at the southern end of the island, 29.03.76. leg. K. Jażdżewski.
Measurements are given in Tab. 2.

Procellaria aequinoctialis is a typical host for *T. hexacon*. Clay (1964) reported males and females of that species from *Puffinus griseus* from Campbell Island. However, she mentioned that measurements of collected lice differed from those of *T. hexacon* from *P. aequinoctialis*. Timmermann (1965), along with a typical host for *T. hexacon*, listed *Adamastor cinereus, Puffinus creatopus, P. gravis, P. griseus, P. tenuirostris, P. pacificus* as well as *Pterodroma leucoptera*. This author has noted that the size of parasites of populations coming from various host species is connected to certain degree with body size of host bird. For instance, the size of *T. hexacon* from *Pterodroma leucoptera* reached 2/3 of body size of these parasites coming from *Procellaria aequinoctialis*. Timmermann (1951) reasonably concluded that such distribution of body size is consistent with Harrison's rule.

Considerable differences in body size of various populations of *Trabeculus hexacon* inhabiting different hosts seems to prove that we have to do with a collective species.

Differences between the results concerning metric characters of all presently examined mallophagan species and the respective literature data on these characters are worthy of notice. Some differences in the results obtained by various authors can be connected with dissimilar preparations of the objects and not equal accuracy of the measurements. However, it seems more real, that populations of the lice species geographically separated together with the host differ sometimes significantly in their metric characters. Parasite populations belonging to common species that are allohospitally distributed on various subspecies of host species, duress to the space isolation, are subject to gradual divergence into the species *in statu nascendi*. One can suppose, that greater body size of lice from the South Georgia region compared with metric characters of the same species, coming from different regions of the Southern Hemisphere, indicate allopatric and perhaps allohospital tendencies in the evolution.

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Streszczenie

Na podstawie materiałów pozyskanych w czasie działania Polskiej Antarktycznej Morskiej Ekspedycji w 1976 roku stwierdzono po raz pierwszy dla rejonu wyspy South Georgia cztery gatunki wszołów (Mallophaga) z ptaków należących do burzykowatych (Aves, Procellariiformes). Są to: *Docophoroides brevis* (Duf.) i *Naubates fuliginosus* (Tasch.) z *Diomedea exulans* L., *Pseudonirmus gurlti* (Tasch.) z *Daption capense* L. oraz *Trabeculus hexacon* (Wat.) z *Procellaria aequinoctialis* L.