

New synonymy between *Philopterus antarcticus* and *Saemundssonina nivea* (Phthiraptera: Philopteridae)

ROBERT L. C. PILGRIM
Department of Zoology
University of Canterbury
Private Bag 4800
Christchurch, New Zealand

RICARDO L. PALMA*
Museum of New Zealand Te Papa Tongarewa
P.O. Box 467
Wellington, New Zealand

Abstract A new synonymy is proposed between *Philopterus antarcticus* Wood, 1937 and *Saemundssonina nivea* Timmermann, 1956 (both with type host *Pagodroma nivea* (Forster, 1777)). It is based on the examination and comparison of the type specimens of both nominal species, as well as several additional samples of *Saemundssonina* lice from *Pagodroma nivea* and *Thalassoica antarctica* (Gmelin, 1789). The present status of the senior synonym is *Saemundssonina* (*Saemundssonina*) *antarctica* (Wood, 1937).

Keywords lice; Phthiraptera; Philopteridae; *Saemundssonina*; *Pagodroma*; *Thalassoica*; new synonymy

INTRODUCTION

Philopterus antarcticus was described in Harrison (1937), but this was a posthumous publication completed by Miss L. M. Wood. In her foreword, Wood (1937, p. 5) makes it quite clear that although much of the manuscript was, at the death of Professor Harrison, ready for the final draft, "...The Philopterinae had not been written up, though the

species had been determined. I have worked out the group and given a description of the new species *Philopterus antarcticus*. I found that the plates for the final report were complete and ready for publication, but I have drawn all the text figures". Later in the same paper (p. 21) she wrote "There is an indication on one slide of the name for the new species, which I have therefore, called *Philopterus antarcticus*". Although it seems probable that the indicated name was suggested by Harrison, authorship for the new species is attributed to Wood who evidently wrote the description (pp. 22–24) and prepared text-fig. 1. In the absence of evidence to the contrary, it must be assumed that the other illustration accompanying the description (plate II, fig. 3, male genitalia) was provided by Harrison.

With the erection of the genus *Saemundssonina* by Timmermann (1936), many species of *Philopterus*, including *antarcticus*, became referable to that genus (see Hopkins & Clay 1952); the species in question therefore became *Saemundssonina antarctica* (Wood, 1937), type host: *Pagodroma nivea* (Forster, 1777).

In 1956 Timmermann described *Saemundssonina nivea* from a long series taken off *Pagodroma nivea* collected in Antarctica, the Falkland Islands, South Georgia, and in the Antarctic Ocean. His description is accompanied by a clear line drawing of the male genitalia.

Timmermann (1965) reviewed the species of *Saemundssonina* known from procellariiform hosts. He stated (p. 77) that *S. nivea* had been found not only on the type host (repeatedly) but also on *Thalassoica antarctica* (Gmelin, 1789). In his account of *S. antarctica*, Timmermann (1965, p. 77) expressed doubts as to the adequacy and accuracy of the original description and/or illustrations. He perceptively noticed that [Wood's] text-fig. 1 and [Harrison's] plate II, fig. 3, clearly do not represent the same species. He observed that: (1) disregarding the inaccuracies in the text-fig. 1, the male depicted as *Philopterus antarcticus* could well resemble *S. nivea* described from the same host; and (2) the male genitalia shown in plate II, fig. 3, do not belong to

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*To whom all correspondence should be addressed.

the same species but vividly recall, in the configuration of the individual parts, the corresponding structures of *Saemundssonina lari* (O. Fabricius, 1780). He further pointed out that *S. lari* is a larger species than *S. antarctica*. Timmermann (1965) was clearly unhappy about the status of *S. antarctica* and called for a comparison of type material of the relevant species, but this has not yet been done.

In 1967 Clay and Moreby, reporting on Mallophaga from Antarctica, listed *S. nivea* on both *Thalassoica antarctica* and *Pagodroma nivea*. They also remarked (p. 164) that "*Saemundssonina antarctica* (Wood) (Harrison, 1937), said to have been taken from *Pagodroma nivea*, has the male genitalia (shown in Harrison, 1937, Pl. II, Fig. 3) similar to those of *S. lari*. It seems probable that the specimens were stragglers from one of the Laridae and that *antarctica* is a synonym of *S. lari* (Fabricius)." They were alert to anomalies in Wood's paper, but came to a conclusion different from that of Timmermann, placing greater reliance on Harrison's plate II, fig. 3, than on Wood's text-fig. 1. Thus, Clay & Moreby (1967) offered a radically different solution to the problem: they retained *S. nivea* as a valid species and suggested *S. antarctica* should become a synonym of *S. lari*.

In an attempt to resolve the situation, we borrowed the type specimens of *S. antarctica* and *S. nivea* to examine them simultaneously with a comparison microscope, and to compare them against additional samples of *Saemundssonina* lice from several hosts.

Abbreviations used for institutions and collections are as follows: AMSA, Australian Museum, Sydney, Australia; BMNH, The Natural History Museum, London, England; MONZ, Museum of New Zealand Te Papa Tongarewa, Wellington, New Zealand; RLCP, R. L. C. Pilgrim collection, housed in MONZ.

COMPARISON OF THE TWO NOMINAL SPECIES

The description of *Saemundssonina antarctica* given by Wood (1937) and her text-fig. 1a agree with the holotype male with the following exceptions: the long postero-lateral setae on the prothorax are omitted in the figure, though mentioned in the text (p. 22); the spine-like seta at each postero-lateral angle of the pterothorax (her metathorax) has been omitted from both text and figure; in the holotype the dorsal abdominal chaetotaxy in the 4th visible

segment is asymmetrical with three setae on the left and four on the right; similarly, in the 5th segment there are two setae on the left and three on the right; the 9th segment has six long and three short setae on the left, but five long and three short on the right; the abdomen drawn by Wood is disproportionately narrow (compare her text-fig. 1a with our Fig. 1); the drawing of the male genitalia—included in the same text-figure—is sketchy and lacks detail. The asymmetrical abdominal chaetotaxy present in the holotype of *S. antarctica* is atypical (see Diagnosis below).

The drawing of male genitalia shown on plate II, fig. 3, in Harrison (1937)—labelled as of *Philoaterus antarcticus*—is detailed and can be readily identified as an accurate representation of the genitalia of *Saemundssonina lari*. Thus, we agree with the interpretation given by Timmermann (1965) and Clay & Moreby (1967) regarding that figure.

Therefore, the original description of the male of *S. antarctica* includes illustrations taken from two different specimens, unfortunately belonging to two quite different species. How this error came to be perpetrated will probably never be known with certainty*, but it led Clay & Moreby (1967) to an incorrect interpretation of the identity of *S. antarctica*.

Timmermann's (1956) description of *Saemundssonina nivea* is brief and supplemented by a simple but diagnostic drawing of the male genitalia. In the description of the female he omitted a conspicuous pair of tergal setae present on the 7th visible segment. In the allotype, these setae are crowded together near the mid-line, probably due to the folding of the abdomen during slide preparation. Timmermann (1959) published a different and more accurate drawing of the male genitalia of *S. nivea*, which he used again for his 1965 revision of procellariiform lice.

The holotype male of *S. antarctica* and the holotype male plus a (dissected) paratype male of

*Among the material worked by Harrison and Wood were one male and two female lice from *Larus dominicanus* Lichtenstein, 1823, which they recorded as "*Philoaterus gonothorax* Giebel" (p. 21). We have examined two of those lice (a male and a female held in AMSA) and identified them as *Saemundssonina lari*. We suspect that plate II, fig. 3, was drawn from that male and subsequently mislabelled during the completion of the manuscript.

S. nivea were found to agree in every respect of shape, setation, and of structure of the genitalia. Females of the genus *Saemundssonina* are far less easily separable at species level than are males; nevertheless, the female allotypes of *S. antarctica* and *S. nivea* are indistinguishable as regards shape and setation. In both sexes, there are size differences between the types of the two species but the differences are <10% and, further, all the measurements fall within the ranges found in samples from the two regular hosts known for this louse taxon (see Table 1).

No significant qualitative differences were found among the samples of *Saemundssonina* examined from *Pagodroma nivea* (21 ♂ and 24 ♀) and *Thalassoica antarctica* (47 ♂ and 39 ♀). As shown in Table 1, the mean values for head width and head length are slightly larger in the samples from *Th. antarctica*,

Table 1 Measurements (in millimetres) of *Saemundssonina antarctica* and *S. lari* (means; ranges in parentheses).

	Head width	Head length*	Paramere length
<i>Saemundssonina antarctica</i>			
Holotype ♂	0.46	0.49	0.18
Allotype ♀	0.49	0.51	—
<i>Saemundssonina 'nivea'</i>			
Holotype ♂	0.48	0.51	0.18
Paratype ♂	0.51	0.52	0.20
Allotype ♀	0.53	0.56	—
<i>S. antarctica</i> ex <i>Pagodroma nivea</i>			
16 ♂♂	0.483	0.504	0.194
	(0.45–0.51)	(0.48–0.53)	(0.18–0.21)
20 ♀♀	0.517	0.536	—
	(0.49–0.53)	(0.51–0.56)	
<i>S. antarctica</i> ex <i>Thalassoica antarctica</i>			
39 ♂♂	0.489	0.507	0.190
	(0.44–0.52)	(0.48–0.53)	(0.17–0.20)
32 ♀♀	0.537	0.543	—
	(0.51–0.58)	(0.51–0.57)	
<i>Saemundssonina lari</i> [†]			
40 ♂♂	0.577	0.592	0.288
	(0.53–0.61)	(0.55–0.63)	(0.26–0.32)
40 ♀♀	0.642	0.634	—
	(0.59–0.71)	(0.60–0.70)	

*Maximum, including hyaline margin of clypeus.

[†]*S. lari* is a widespread species found on many gulls (Family Laridae) around the world. As such it shows a wide range of size, but very little other morphological variation. The specimens measured for this table are from four hosts which breed in New Zealand and Australia.

while the mean paramere length is greater in those from *P. nivea*: but we do not consider these quantitative differences to be of taxonomic significance.

We conclude that, as Timmermann (1965) had suspected, *Saemundssonina nivea* must be regarded as a junior synonym of *S. antarctica*.

SYNONYMY

Saemundssonina (Saemundssonina) antarctica (Wood, 1937) (Fig. 1–3)

"*Philoaterus melanocephalus*" Neumann, 1907: 14 (not *Docophorus melanocephalus* Burmeister, 1838) (in part). *Philoaterus antarcticus* Wood, 1937: 22, text-fig. 1 (Type host: *Pagodroma nivea* (Forster, 1777)). **Holotype** ♂ in AMSA, slide K64372.

Saemundssonina antarctica (Wood, 1937): Hopkins & Clay, 1952: 329. Listed only.

Saemundssonina nivea Timmermann, 1956: 190, fig. 5 (Type host: *Pagodroma nivea* (Forster, 1777)). **Holotype** ♂ in BMNH, slide 1950–427. **New synonymy.**

Saemundssonina nivea; Timmermann, 1959: 150, fig. 1. *Saemundssonina nivea*; Timmermann, 1965: 76, fig. 14. *Saemundssonina antarctica*; Timmermann, 1965: 77. "*Saemundssonina lari*" Clay & Moreby, 1967: 164 (not *Pediculus lari* O. Fabricius, 1780).

Saemundssonina nivea; Clay & Moreby, 1967: 165, fig. 154, 159, 175.

Saemundssonina antarctica; Pilgrim & Palma, 1982: 7, 8. Listed only.

Saemundssonina antarctica; Murray, Palma & Pilgrim, 1990: 1369. Listed only.

MATERIAL EXAMINED

Ex *Pagodroma nivea* (Forster, 1777): **Holotype** ♂, allotype ♀ of *Philoaterus antarcticus*, Adélie Land, Antarctica, 10 Dec 1913 (AMSA); 1 ♂, Cumberland Bay, South Georgia, 6 Jul 1925, "Discovery" Exped. 1925–27 (BMNH); 1 ♀, no locality, 15 Nov 1926, "Discovery" Exped. 1925–27 (BMNH); 4 ♂, 4 ♀, 63° 18'S, 22° 30'W, 20 Mar 1947 (BMNH); **holotype** ♂, allotype ♀, paratype ♂ of *Saemundssonina nivea*, Antarctic 490, no date (BMNH); 2 ♂, 7 ♀, Cape Hallett, Antarctica, 9 Nov 1960 (MONZ); 3 ♀, same locality, 29 Nov 1960 (MONZ); 5 ♂, 4 ♀, Factory Cove, Signy I., South Orkney Is., 23 Feb 1967 (BMNH; RLCP); 1 ♂, 1 ♀, Cape Hallett, Antarctica, 25 Nov 1968 (RLCP); 2 ♂, 1 ♀ (in nest), Davis, Antarctica, 31 Jan 1974 (RLCP); 1 ♂, in pack ice off Mawson Territory, Antarctica, Feb 1977 (RLCP);

2 ♂, 1 ♀, Cape Denison, Antarctica, Jan 1982 (MONZ).

Ex *Thalassoica antarctica* (Gmelin, 1789): 1 ♂, 3 ♀, Port Lockroy, Wiencke I., Palmer Archipelago, 1945 (BMNH); 1 ♂, 1 ♀, 63°28'S, 95°45'E, 29 Jan 1947 (BMNH); 4 ♂, 1 ♀, Antarctica, 1947 (BMNH); 2 ♂, 1 ♀, Stanley, Falkland Is, 23 Sep 1959 (BMNH); 5 ♂, 1 ♀, 66°21'S, 69°24'E, 22 Feb 1976 (RLCP); 19 ♂, 17 ♀, Santoft Beach, Manawatu, New Zealand, 2 Sep 1978 (MONZ); 3 ♂, 1 ♀, Tangimoana Beach, Manawatu, New Zealand, 2 Sep 1978 (MONZ); 3 ♂, 7 ♀, Muriwai Beach, Auckland, New Zealand, 10 Sep 1978 (MONZ); 3 ♂, 1 ♀, Piha, Auckland, New Zealand, 25 Sep 1978 (MONZ); 6 ♂, 6 ♀, Dargaville Beach, Northland, New Zealand, Sep 1978 (MONZ).

Stragglers and contaminants

Ex *Fulmarus glacialis* (Smith, 1840): 1 ♂, Petone Beach, Wellington, New Zealand, 18 Oct 1959 (MONZ); 4 ♂, 1 ♀, Moeraki, New Zealand, 7 Oct 1973 (RLCP); 2 ♂, Kaikoura, New Zealand, 17 Sep 1975 (RLCP); 1 ♂, Macquarie I., Australia, 1 Nov 1985 (MONZ).

Note: It could be argued that there have been sufficient samples and specimens of *S. antarctica* found on *Fulmarus glacialis* that this bird species may be regarded as a regular host for *S. antarctica*. However, *F. glacialis* is a regular host to *Saemundssonina bicolor* (Rudow, 1870), readily distinguishable from *S. antarctica* by the male genitalia and the female chaetotaxy. We have examined 89 male–female pairs of *Saemundssonina* from *F. glacialis* (19 samples held in MONZ) and have identified them as *S. bicolor* (see also Clay & Moreby 1967, p. 165). Furthermore, all the *S. antarctica* samples listed above from *F. glacialis* were collected from birds found dead, alongside other species of seabirds (see Crockett & Reed 1976; Veitch 1977). Also, in the MONZ collection, there are two specimens of *S. bicolor* (two samples) collected from dead *Thalassoica antarctica* found beach-wrecked together with *F. glacialis* corpses. We believe that *F. glacialis* is not a regular host for *S. antarctica*.

DIAGNOSIS

A medium-sized species (Fig. 1, 2) belonging to the *occidentalis* group (see Timmermann 1965, p. 75): hyaline border on anterior margin of clypeus only slightly concave; lateral margins of head, in front of

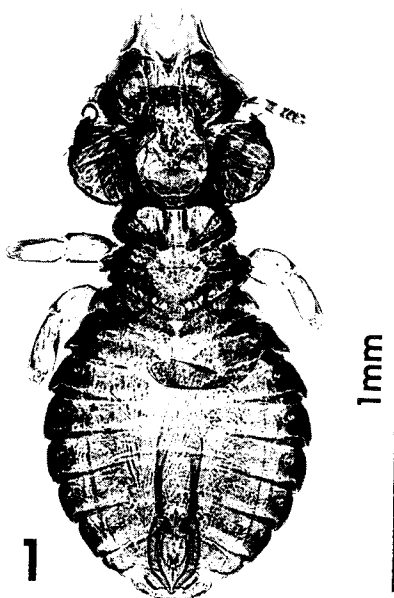


Fig. 1 Holotype male of *Saemundssonina antarctica*.

antennae, weakly concave and slightly converging anteriorly. **Head** as in Fig. 1, 2; slightly longer than wide (see Table 1). **Thorax:** hind margin of pterothorax (pteronotum) with 8 long setae on each side (occasionally 7, 9, or rarely 10) and 1 very short spine-like seta at the lateral angle; mesosternum with 1 pair of setae anteriorly (occasionally 1 seta absent) and 1 pair posteriorly (occasionally a third seta alongside); metasternum with 1 pair of setae. **Abdomen:** hind margins of first 6 visible tergites with 1, 2, 3, 3, 3, 3 pairs of long setae, respectively, in both sexes; 7th visible tergite with 1 pair in the female only; first visible segment with no sternal setae; 2nd to 4th visible segments with 1 pair of sternal setae, 5th with 2 pairs, 6th with 1 pair. All the sternal setae on thorax and abdomen are long, reaching at least as far as the alveolus of the corresponding next posterior seta. **Male genitalia** as in Fig. 3; basal plate with transverse pigmented band near its posterior end; parameres stout, parallel-sided over $\frac{2}{3}$ of their length, then tapering and curved inwards to pointed tips; a minute seta close to each tip; endomeres reaching to about $\frac{2}{3}$ paramere

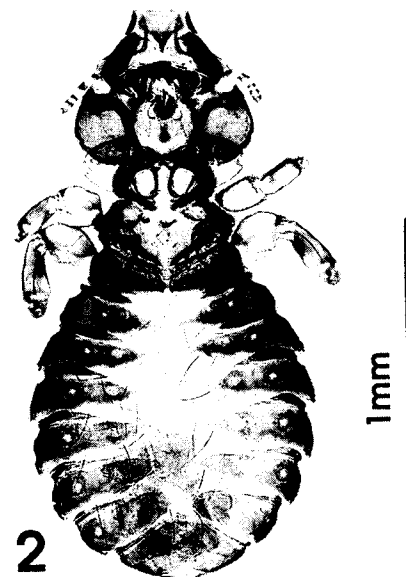


Fig. 2 Female of *Saemundssonina antarctica* ex *Pagodroma nivea*.

length; penis long, slender, extending well beyond endomeres; preputial sac well developed, very warty (see Timmermann 1965, fig. 14).

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Fig. 3 Male genitalia (dissected) of *Saemundssonina antarctica* ex *Thalassoica antarctica*.

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