

New synonymies in the lice (Insecta: Phthiraptera) infesting albatrosses and petrels (Procellariiformes)

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ABSTRACT

Among the lice parasitic on albatrosses and petrels, four new synonymies are proposed. They are: *Austromenopon bulleri* Price & Clay, 1972 = *Austromenopon navigans* (Kellogg, 1896); *Docophoroides irroratae* Timmermann, 1962 = *Docophoroides ferrisi* Harrison, 1937; *Saemundssonina creatopae* Carriker, 1964 = *Saemundssonina bicolor* (Rudow, 1870); *Puffinoecus nadleri* Mey, 1989 = *Saemundssonina puellula* Timmermann, 1965.

Keywords: lice; Phthiraptera; albatrosses; petrels; Procellariiformes; new synonymies.

INTRODUCTION

Albatrosses and petrels are parasitised by a large number of louse species currently grouped in 16 genera (see Clay & Moreby, 1967; Pilgrim & Palma, 1982). Palma & Pilgrim (1983, 1984, 1988) revised some of those genera and other revisions are in preparation. However, because of the large amount of work involved, some generic revisions are still a long way from completion. Therefore I consider it useful to publish now four new synonymies among species belonging to these latter genera.

Some of the type specimens of the species discussed in this paper were not examined because either they cannot be located or I consider it unnecessary. More detailed reasons are given under each species where relevant.

The nomenclature of the hosts follows that given by Jouanin & Mougín (1979). Abbreviations used for institutions are as follows:

- BMNH — The Natural History Museum, London, England.
- CMNZ — Canterbury Museum, Christchurch, New Zealand.
- MNSC — Museo Nacional de Historia Natural, Santiago, Chile.
- MONZ — Museum of New Zealand Te Papa Tongarewa, Wellington, New Zealand.
- NMRG — Naturhistorischen Museum Rudolstadt, Thüringen, Germany.
- NZAC — New Zealand Arthropod Collection, Landcare Research N.Z. Ltd, Auckland, New Zealand.

SYNONYMIES

Austromenopon navigans (Kellogg, 1896)

Menopon navigans Kellogg, 1896: 156, pl. 14, figs 4, 5 (Type host: *Diomedea albatrus* Pallas, 1769). Types probably lost.

Austromenopon navigans (Kellogg, 1896); Price & Clay, 1972: 490, figs 13-15, 17.

Austromenopon bulleri Price & Clay, 1972: 491, fig. 16 (Type host: *Diomedea bulleri* Rothschild, 1893). Holotype ♀ in CMNZ. **New synonymy.**

Austromenopon bulleri; Horning, Palma & Pilgrim, 1980: 4, 9. Listed only.

Austromenopon bulleri; Pilgrim & Palma, 1982: 6. Listed only.

Austromenopon bulleri; Murray, Palma & Pilgrim, 1990: 1368. Listed only.

Austromenopon bulleri was described from only two specimens, the female holotype and male paratype. Price & Clay (1972) regarded *A. bulleri* as "very close to *A. navigans*", and placed these two louse species as the only members of the *navigans*-group, with a number of shared characters which clearly distinguish it from the remaining five species groups they recognised within the *Austromenopon* Bedford, 1939 parasitic on procellariiform birds.

For their revision, Price & Clay (1972) examined five specimens of *A. navigans* (two males and three females from two *Diomedea* species).

I have examined 15 samples of *A. navigans* (68 males and 76 females held in MONZ) from three species of *Diomedea* including those listed by Price & Clay (1972), and three samples from *Diomedea bulleri* (4 males and 20 females held in MONZ). I have also compared them against the type specimens of *A. bulleri*. My study has shown that the diagnostic features of *A. bulleri* fall within the range of variation found in *A. navigans* for those features.

Specimens of *A. navigans* show a high degree of morphological variability among populations from different hosts, among samples from each host, and even between individuals within one sample. For each of the diagnostic features given by Price & Clay (1972) for *A. bulleri* (see Table 1), there is at least one specimen from the other *Diomedea* hosts which shows such feature(s). Conversely, most of the specimens from *Diomedea bulleri* (excluding the types) have the diagnostic features of *A. navigans* given by those authors (see Table 1), but a few show the characters of *A. bulleri* in different combinations.

Table 1: Diagnostic features which distinguish *Austromenopon navigans* from *A. bulleri* according to Price & Clay (1972)

	<i>Austromenopon navigans</i>	<i>Austromenopon bulleri</i>
Female last tergite	Completely divided into 2 plates (one large anterior and one small posterior)	Mostly divided, with a narrow median fusion between the 2 plates
Chaetotaxy of female subgenital plate	29-32 setae (including 3-4 on margin of posterior indentation)	27 setae (including one on margin of posterior indentation)
Chaetotaxy of male last tergite	One very long and one medium seta on each lateroposterior angle	One very long seta (i.e. no medium seta) on each lateroposterior angle

My conclusion is that the type specimens of *A. bulleri* lie at one end of a wide range of morphological variation which, combined with the very small number of specimens examined by Price & Clay (1972) misled them to believe that they had a distinct, undescribed species. I have no hesitation in placing *A. bulleri* as a junior synonym of *A. navigans*.

Docophoroides ferrisi Harrison, 1937

Docophoroides ferrisi Harrison, 1937: 44, fig. 7 (Type host: *Diomedea nigripes* Audubon, 1839).

Holotype ♀, not examined, see below.

Docophoroides irroratae Timmermann, 1962: 435 (Type host: *Diomedea irrorata* Salvin, 1883).

In error, see below). Holotype ♂ in BMNH, slide 8180, Meinertzhagen coll. **New**

Synonymy.

Docophoroides irroratae; Timmermann, 1965: 87.

Docophoroides irroratae; Linsley & Usinger, 1966: 130. Listed only.

Docophoroides irroratus [sic!] Timmermann, 1962; Linsley, 1977: 9. Listed only.

Docophoroides irroratae; Palma & Pilgrim, 1984: 163. Listed only.

While researching the Phthiraptera of the Galápagos Islands, I examined two samples (in MONZ) of *Docophoroides* lice collected from five live waved albatrosses (*Diomedea irrorata* Salvin, 1883) at their breeding site on Española Island, Galápagos Is, in 1983 and in 1992. They comprise 17 males, 13 females and 36 nymphs which I identified as *D. levequei* Timmermann, 1963. My inability to find any specimen of *D. irroratae*, together with Timmermann's (1962) uncertainty about the status of this louse species, prompted me to borrow the types from the BMNH to investigate their taxonomic status.

The type series of *D. irroratae* comprises the male holotype and female allotype. Timmermann's (1962) description is brief, has no figures, and it is no more than an

ambiguous comparison of his new species against three previously known species. Firstly, Timmermann qualified *D. irroratae* as similar to *D. ferrisi* but larger, then he stated that the fifth (visible) female sternite is a transverse band as in *D. brevis* (Dufour, 1835), and thirdly he was doubtful about the status of his new species, considering it to be perhaps only a subspecies of *D. pacificus* (Kellogg, 1914). Finally, he left the definitive status of *D. irroratae* to be determined upon the examination of a larger sample to distinguish it from its closest relative, *D. ferrisi*.

I have examined and measured the types of *D. irroratae*, and I compared them against 38 males and 27 females *D. ferrisi* from *Diomedea nigripes* (four different samples from Midway Atoll, Hawaiian Islands; held in MONZ, identified by R.D. Price, R.A. Ward, R.L.C. Pilgrim and myself). The type series of *D. ferrisi* comprises two females and one nymph. Because *Docophoroides* males show more reliable diagnostic characters than females, there is no advantage in examining the types of *D. ferrisi* for this synonymy. While I agree with the measurements of the *D. irroratae* types given by Timmermann (1962), I disagree with his statement that *D. irroratae* is larger than *D. ferrisi*. The dimensions of the *D. irroratae* types fall within the range of *D. ferrisi* (see Table 2) with the exception of the female head width which is greater in the allotype of *D. irroratae*. This specimen is very pale and expanded laterally, probably due to its teneral condition. Its total length is, however, well below the mean of *D. ferrisi*. The holotype of *D. irroratae* is a large specimen, with its dimensions falling close to or on the top of the range of *D. ferrisi*, but it is not larger than *D. ferrisi*.

In his 1965 revision of procellariiform lice, Timmermann (p. 87) gave a very brief diagnosis but did not add any new information to his original description of *D. irroratae*. However, he gave measurements from seven specimens, presumably from *Diomedea irrorata*, without any additional data. Dimensions of the males fall within the range of *D. ferrisi* given in Table 2, but in the females the lowest figures of his ranges are far too small for *D. ferrisi*, thus contradicting his own statement that *D. irroratae* is larger than *D. ferrisi*.

Table 2: Measurements (in mm) of *Docophoroides ferrisi* and *D. irroratae*. (* = measurements taken from Timmermann (1962: 435))

	Head Width	Head Length	Total Length	Paramere Length
<i>D. ferrisi</i> (10 ♂♂)	1.27 (1.22-1.36)	1.10 (1.08-1.15)	4.24 (3.94-4.55)	0.49 (0.47-0.53)
<i>D. irroratae</i> * (holotype ♂)	1.36	1.13	4.37	0.53
<i>D. ferrisi</i> (10 ♀♀)	1.26 (1.21-1.33)	1.19 (1.13-1.25)	4.17 (3.91-4.47)	
<i>D. irroratae</i> * (allotype ♀)	1.38	1.25	3.93	

Timmermann (1962, 1965) made particular reference to the male genitalia of *D. irroratae* being larger than in *D. ferrisi*. The holotype of *D. irroratae* has large genitalia—albeit within the range of *D. ferrisi*—but the taxonomic value of size as a single diagnostic character is extremely low in the Phthiraptera and does not justify the naming of new taxa.

The types of *D. irroratae* are morphologically identical to *D. ferrisi*. Not only do I regard them as belonging to *D. ferrisi* but also I believe they were originally parasites of a *Diomedea nigripes* host (regular host of *D. ferrisi*) and subsequently transferred to a specimen of *Diomedea irrorata* by human agency. The data attached to the types of *D. irroratae* are: "MEINERTZHAGEN/ *Diomedea/ irrorata* (skin)/ Galapagos/ 8180". In the BMNH collection there are two females of *Harrisoniella copei* Timmermann, 1969 with the same data as the types of *D. irroratae*, but the only regular host known for *H. copei* is *Diomedea nigripes* (see Palma & Pilgrim, 1984: 158). It is highly probable that the types of *D. irroratae* were accidentally transferred from a specimen of *Diomedea nigripes* to one of *Diomedea irrorata* by human agency during the same event which led to the transferral of the two *H. copei*

females mentioned above and listed by Palma & Pilgrim (1984: 160) as contaminants.

Saemundssonina (Saemundssonina) bicolor Rudow, 1870

Docophorus bicolor Rudow, 1870: 459 (Type host: *Fulmarus glacialis* (Smith, 1840)). Types probably lost.

Saemundssonina bicolor (Rudow, 1870); Hopkins & Clay, 1952: 329. Listed only. *Saemundssonina bicolor*; Carriker, 1964: 13, figs 9-10. Description of the female only. *Saemundssonina creatopae* Carriker, 1964: 14, figs 11-13 (Type host: *Puffinus creatopus* Coues, 1864. In error, see below). Holotype ♀ in MNSC, slide 1271 (= slide 00957, U.C.V. in Carriker) not available for study. **New synonymy.** *Docophorus bicolor*; Timmermann, 1965: 75. Regarded as a *nomen dubium*. *Saemundssonina bicolor*; Clay & Moreby, 1967: 164, figs 161, 178. Resurrected as an identifiable species.

Saemundssonina creatopae; Emerson, 1972: 156. Listed only. *Saemundssonina creatopae*; Camousseight, 1980: 34. Type material listed.

Saemundssonina creatopae was described from two adult specimens, the female holotype and male allotype. Carriker's (1964) description does not include any diagnostic character which will allow *S. creatopae* to be distinguished from other species in the genus and in particular *S. bicolor*, the species chosen by Carriker to compare against his new one. However his figures, especially those of the female head and of the male genitalia, are diagnostic. My comparison of Carriker's (1964) figures against 89 male and 89 female lice (19 samples from *Fulmarus glacialis* held in MONZ) identified as *S. bicolor* by T. Clay, R.L.C. Pilgrim and myself, show that the male genitalia and the female head of *S. creatopae* agree with those of *S. bicolor*, notwithstanding the sketchy style of Carriker's figures.

The differences between the females of *S. creatopae* and *S. bicolor* mentioned by Carriker (1964: 14) and supported by his figures, are artifacts, possibly resulting from specimen preparation and slide-mounting. His statement that "... the mandibles are of decidedly different shape . . .", a feature also shown in his figures, is due to his comparing a left mandible (fig. 11) with a right (fig. 9)!

In the same paper, immediately above his description of *S. creatopae*, Carriker (1964: 14) described the female of *S. bicolor* from two specimens collected from *Fulmarus glacialis* (as *Procellaria glacialis*) by the same person and from the same locality as those given for the type material of *S. creatopae*. Carriker (p.13) regretted the absence of a male in the *S. bicolor* sample because he acknowledged that "... the genitalia is a very important morphological character in this genus". Perhaps, if he had had access to a male *Saemundssonina* from *F. glacialis*, he might well have realised that his new species from *Puffinus creatopus* was conspecific with *S. bicolor*. The fact that the two hosts involved belong to different genera may have given him added confidence to justify the erection of a new species.

I have been able to find only two further references to *S. creatopae* (see synonymy above) and neither refers to additional specimens. On the other hand, I have identified seven male and five female lice (one sample held in MONZ) from *Puffinus creatopus*, as *Saemundssonina (Puffinoecus) puellula* Timmermann, 1965 (type host: *Puffinus pacificus* (Gmelin, 1789)). The association between *P. creatopus* and *S. puellula* represents a new host-lice record. Although only one sample is available, I regard that association as a natural one, while I strongly believe that the finding of *S. bicolor* on *P. creatopus* (reported by Carriker as *S. creatopae*) is the result of contamination from *F. glacialis* by human agency. This belief is based on the fact that among the material published by Carriker (1964) there are lice from *F. glacialis* (*S. bicolor*, discussed above), and also on the evidence presented by Palma & Pilgrim (1984: 150, 157) showing that there were instances of cross contamination of other lice between *F. glacialis* and other hosts from which lice were reported by Carriker (1964).

Saemundssonina (Puffinoecus) puellula Timmermann, 1965

Saemundssonina puellula Timmermann, 1965: 82 (Type host: *Puffinus pacificus* (Gmelin, 1789)).

Holotype ♂ in BMNH, not examined, see below.

Saemundssonina puellula; Watt, 1971: 238, 243. Record from type host in the Kermadec Islands. *Puffinocercus nadleri* Mey, 1989: 54, figs 1-3 (Type host: *Puffinus gravis* (O'Reilly, 1818)). Holotype ♂ in NMRG, slide 3219.e, not examined, see below. **New synonymy.**

Since its diagnosis as a genus, *Puffinocercus* Eichler, 1949 has been variously referred to as: a genus (Eichler, 1949; Mey, 1989); a subgenus of *Saemundssonina* Timmermann, 1936 (Timmermann, 1972); a species group within *Saemundssonina* (Timmermann, 1965); and a synonym of *Saemundssonina* (Hopkins & Clay, 1952). I agree with Timmermann (1972) in regarding *Puffinocercus* as a subgenus of *Saemundssonina*.

There are 10 nominal species currently recognised as belonging to *Puffinocercus* (see Mey, 1989), but several are poorly known because their original descriptions are inadequate and their type specimens have not yet been re-examined and properly redescribed. Therefore I believe that the systematic status of all *Puffinocercus* species needs to be revised before any new species is described.

Mey (1989) described *Saemundssonina* (*Puffinocercus*) *nadleri* thoroughly, including good quality figures. The description was based on a large number of specimens of both sexes. However, he did not realise that his 'new' species had already been described and named, albeit from another host.

Regrettably, Timmermann's (1965) description of *S. (P.) puellula* is not adequate, by itself, to recognise that species. Although he described the male genitalia in the text, he did not include an accurate illustration of the features. Thus, in order to identify *S. (P.) puellula* correctly it is necessary to refer to the holotype or to an authenticated male from the type host.

For this synonymy I have examined 15 male and female pairs of *Saemundssonina* from *Puffinus gravis* (two samples held in MONZ) which I identified as *S. (P.) puellula* against one male and one female of that species from its type host (held in NZAC) identified by Dr T. Clay against the type series of *S. (P.) puellula* (see Watt, 1971: 229, 238).

I could find no significant morphological differences among the specimens mentioned above and Mey's (1989) description of *S. (P.) nadleri*, especially his fig. 2 of the male genitalia, notwithstanding his comment (p. 55) that the shape of the parameres of *S. (P.) nadleri* is distinctly different from five species in the subgenus, including *S. (P.) puellula*. I agree with Mey's comment in respect of the remaining four species, but not regarding *S. (P.) puellula*.

In this instance, I consider it unnecessary to examine the types of *S. (P.) nadleri* or *S. (P.) puellula* because:

1. I have an authenticated pair of *S. (P.) puellula*.
2. I have a good series of *Saemundssonina* from the type host of *S. (P.) nadleri*.
3. Specimens in 1. and 2. above are conspecific.
4. Mey's (1989) description and figures are detailed, and agree in all diagnostic characters with the material I have examined.

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