IDENTIFICATION OF SOFT-PLUMAGED PETREL WINGS FOUND ON MACQUARIE ISLAND

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The purpose of this note is to draw attention to the characters by which two rather similar petrels can be distinguished from limited material. Headless and much-decomposed carcases are often the only remains recovered for identification.

The determination of Soft-plumaged Petrel (*Pterodroma mollis*) from Macquarie Island, reported in Jones (1980) and Bourne (1983), was based on such material now in the Australian National Wildlife Collection (ANWC). They consist of a pair of fully feathered wings (No. 19558) and pectoral bones (No. BS2145), collected 14 January 1976 on a beach, and a fully feathered right wing with some pectoral bones (No. 19559), collected 18 January 1976 on a featherbed bog.

Since then we have found similar remains from Macquarie Island in the National Museum of New Zealand (NMNZ). Provisionally identified as Kerguelen Petrel (*P. brevirostris*), they consist of a fully feathered left wing (No. 22880) and a right wing with some pectoral bones (No. 22888). These last specimens were collected by N.P. Brothers on 27 January 1979 at Saddle Point. The 1979 material was of a single bird (Brothers 1984) and, like the 1976 material, quite possibly the remains of predation by the Southern Great Skua (Stercorarius skua lonnbergi).

All five wings are similar in length (Table 1). The sizes and shapes of the bones and the colour patterns and shapes of the feathers are all similar. Thus the remains appear to be from a medium-sized petrel with dark upper and lower wing surfaces.

The exposed bones with the wings show the following features. The coracoids lack a prominent anterior projection (Figure 1) at the dorsal end. This condition is typical of prions and fulmarine petrels, but not of puffinine petrels. On the sternum the anterior protrusion of the carinal apex (Figure 2) is much less than in medium-sized *Puffinus* and similar to that of medium-sized *Pterodroma*. The furculae (Figure 3) are relatively narrow and U-shaped,

Side	Length
left	251
right	254
right	251
left	252
right	253
	Side left right left right

TABLE 1 — Length (mm) of wings of Soft-plumaged Petrel (Pterodroma mollis) found on Macquarie Island

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FIGURE 1 — Left coracoids, anterior view, of (left) Soft-plumaged Petrel (*Pterodroma mollis*), ANWC BS3108, and (right) Fluttering Shearwater (*Puffinus gavia*), ANWC BS843



FIGURE 2 — Sternae, left view, of (left) Soft-plumaged Petrel (Pterodroma mollis). ANWC BS3108, and (right) Fluttering Shearwater (Puffinus gavia), ANWC BS843



FIGURE 3 — Furculae, anterior view of (left) Soft-plumaged Petrel (Pterodroma mollis), ANWC BS3108, and (right) Fluttering Shearwater (Puffinus gavia), ANWC BS843



FIGURE 4 — Left humeri, dorsal view of proximal end of (left) Soft-plumaged Petrel (*Pterodroma mollis*), ANWC BS3108, and (right) Fluttering Shearwater (*Puffinus gavia*), ANWC BS843

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as in *Pterodroma* and *Halobaena*, and not broad and V-shaped as in other fulmarine petrels, prions and puffinine petrels. The humeri have a prominent tubercle (Figure 4) at the tip of the deltoid crest, as in *Pterodroma* and most other kinds of petrel but not in *Puffinus*.

The bones indicate *Pterodroma*, but we did not have for comparison any bones of *Bulweria* or of *Pseudobulweria*, which some regard as a genus distinct from *Pterodroma*. The wing feathers failed to match those of a skin of *Bulweria fallax* BM. 1965.30.1 from the British Museum (Natural History), in shape and colour. The wings are much longer than those of *Pterodroma* (*Pseudobulweria*) macgillivrae as reported for the only measured adult by Watling & Lewanavanua (1985). Size, dark wings and bone shapes eliminate all petrels except *Pterodroma mollis* and the Kerguelen Petrel (*P. brevirostris*). The wing measurements (Table 1) fall within the ranges of these two species as reported by Swales (1965). To verify that our reference material of the two species was correctly identified, we used the cranial differences associated with the eyes, those of *P. mollis* being much smaller than those of *P. brevirostris*, as clearly described and explained by Harper (1973:200) and illustrated for *P.* (*Lugensa*) brevirostris by Imber (1985; Figure 2e).

In both species, the upperwings are uniformly dark grey and, on the underwing, the lesser and median coverts are darker than the greater coverts and remiges. As indicated in Cox (1976) and Sinclair (1978), the underwing surface patterns (Figure 5) differ as follows. The marginal coverts along the leading edge of the wing are faintly scalloped by white edges to the coverts



FIGURE 5 — Underwing surface patterns of (top) Soft-plumaged Petrel (Pterodroma mollis), and (bottom) Kerguelen Petrel (Pterodroma brevirostris), based on figures in Sinclair (1978) and on spread wings in the Australian National Wildlife Collection

only at the proximal end in P. mollis, whereas in P. brevirostris they are much paler because they are all more boldly scalloped by white edges. The lesser and median coverts have faint narrow white edges in P. mollis and broad prominent white edges in P. brevirostris. The primaries and greater primary coverts are darker in P. mollis than in P. brevirostris, and in P. brevirostris this difference is enhanced by a silvery white sheen. About two-fifths of the feather width on the leading edges of the outer two primaries is darker than the trailing three-fifths of the primaries in P. mollis and is lighter in P. brevirostris. The shafts of the outer two primaries are almost black in P. mollis and are pale grey in P. brevirostris. In all the above characters the wings found at Macquarie Island conform to those of P. mollis and differ from those of P. brevirostris.

Bourne (1981, 1983) suggested that a cranium found by K. Keith in 1956 on Macquarie Island and identified by Falla as of a Mottled Petrel (P. inexpectata) might in fact be P. mollis and therefore would indicate, together with the above-mentioned wings, the possibility of a small breeding colony of P. mollis on Macquarie Island. Brothers (1984) drew this same conclusion and reported the capture of a live bird 26 October 1982. However, there is no conclusive evidence of breeding by Soft-plumaged Petrels on Macquarie Island and it was not included among the breeding species on the island by Rounsevell & Brothers (1984). In February 1969 Soft-plumaged Petrels were discovered in breeding condition on Antipodes Island (Warham & Bell 1979).

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