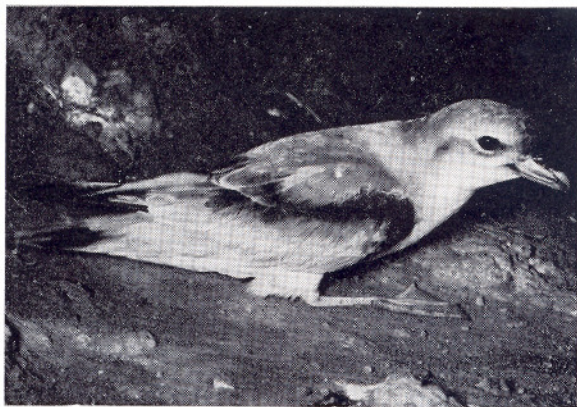
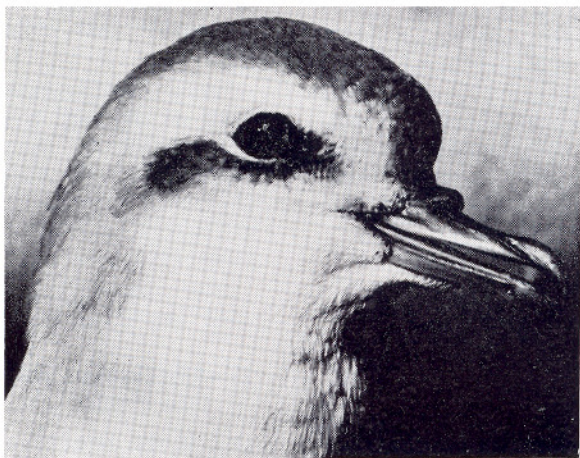


PRIONS



• *Fairy Prion*

Photo: F. C. Kinsky



• *Thin-billed Prion*

Photo: P. C. Harper

Prions *Pachyptila* spp.

There are six recognised species of prion, but only the Fairy Prion *Pachyptila turtur* is known to breed within Australian continental waters (Slater 1970). However, three other species have breeding ranges within the nearby New Zealand region, while all species probably occur regularly in coastal waters of Australia below latitude 30° S. Fleming (1941) has discussed the breeding distribution and relationship of prions.

Measurements

The measurements of live or freshly dead prions can differ wholly from those of dried specimens (Falla, 1940; Tickell, 1962; Kinsky and Harper, 1968). These shrinkage differences are particularly important in the determination of bill width, which may be between 7% and 14% greater in fresh compared with dried specimens.

All measurements quoted here are from dried specimens but, where relevant and possible, comparable figures from live birds are given in brackets.

Measurements are taken as described under 'Topography' (p. 5) with bill width being taken at the base of the beak, and bill depth (the vertical height of the bill properly closed) at a point immediately in front of the nostrils. Where diagnosis depends on tail or wing length, measurements must be interpreted with care. If there are growing feathers, the tail or the wing may be shorter than normal.

Ageing and Sexing

There are no plumage or measurement characters for ageing or sexing the live prion. Petrels in breeding condition can be sexed using the technique of cloacal examination (Serventy, 1956). Fledged birds still present on the breeding grounds or those recently departed may retain tell-tale remnants of nestling down. After the breeding season the young birds show fresh plumage whereas older birds are frequently in moult.

L. E. Richdale (1965) gave several bill and body measurements from large samples of live breeding adults of the two prions of extreme body size, the smallest Fairy Prion and the largest Broad-billed Prion *P. vittata*. He com-

pared some of these measurements with those taken from the respective fully fledged chicks of each species. In both cases there were differences between the old and young birds in the mean values obtained, but a large overlap in the ranges of some measurements. The two most divergent examples are given in diagram, Figure 1.

Identification

The six species of prions can be readily divided into two groups in two ways. There are those with broad dark terminal bands across the tail, rather than narrow ones, and there are those with wide bills rather than narrow or slender bills.

Since identification depends so much on the form of the bill, not only its size, but also an appreciation of its shape, many of the subtle characteristics of each species can be recognised only with experience. It is difficult to establish absolute criteria for identification based on simple observable features amenable to measurement.

The following sequence of examination will most conveniently lead to identification:

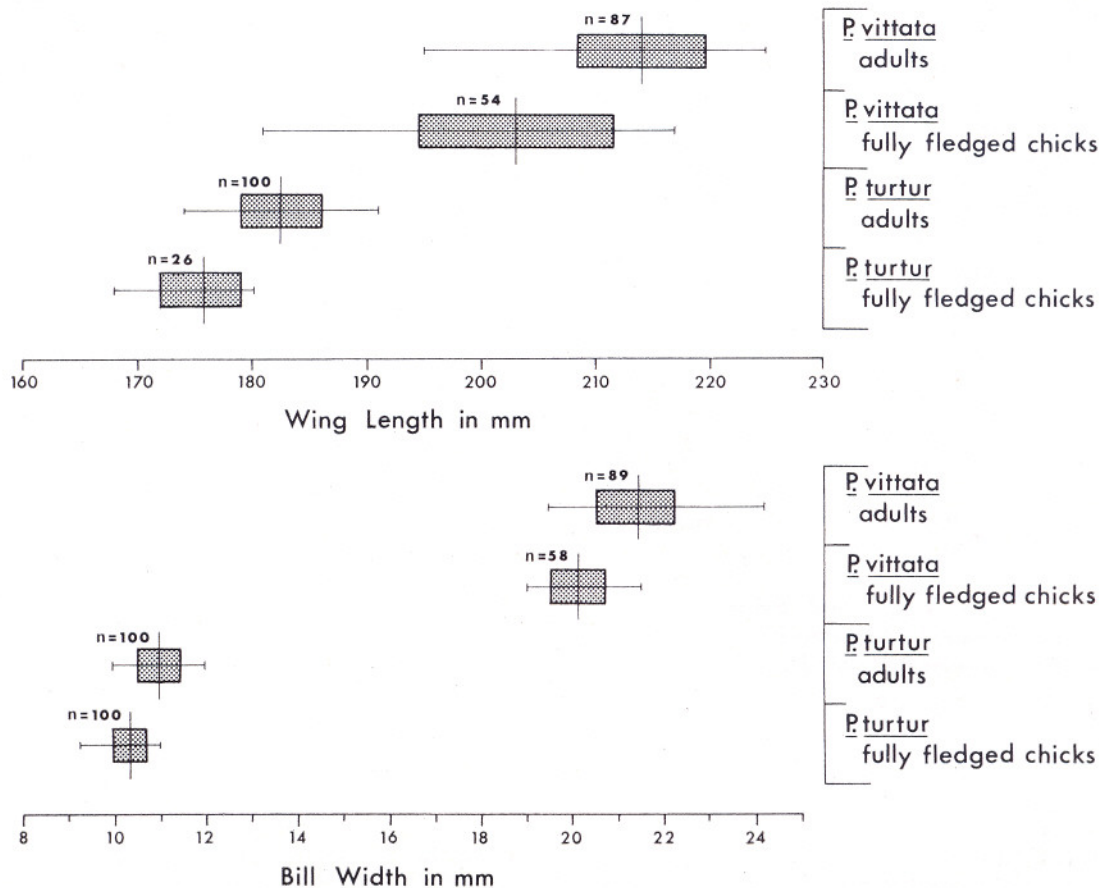
1—Check tail colour for terminal band width. (see Figure 2).

(a) If the band is narrow (obviously less than a third of tail length) then the species is one of the following:

Broad-billed Prion *P. vittata*
Medium-billed Prion *P. salvini*
Dove Prion *P. desolata*
Thin-billed Prion *P. belcheri*

(b) If the band is wide (approximately half the tail length) the species is either

Fulmar Prion *P. crassirostris* or
Fairy Prion *P. turtur*



● Figure 1. A diagram illustrating the difference in measurements between fully fledged chicks and adults in two species of prion. The range of variation in wing lengths and bill widths (length of horizontal line), the mean values (vertical line) and standard deviation either side of the mean (boxed region) are shown from samples of live birds measured by Richdale (from Richdale, 1965).

2—Check the bill for size and shape.

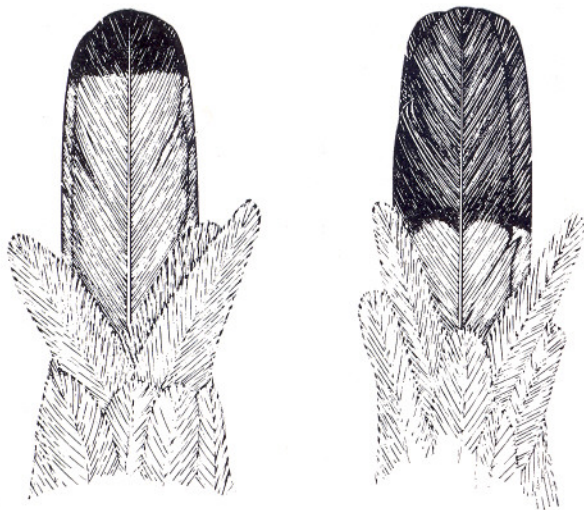
(see Figure 3).

(a) If the bill is large, heavy or wide and slightly or very obviously bowed along the edges when viewed from above, usually showing 'teeth' in the side view when closed the bird is either

Broad-billed Prion
 Medium-billed Prion
 Dove Prion

(b) If the bill is narrow, not obviously bowed along the edges when viewed from above or, alternatively, is small and perhaps chunky and robust with only a small space along the upper part of the beak between the nostrils and the curve of the nail or dertrum, the species is either

Thin-billed Prion
 Fulmar Prion
 Fairy Prion



• Figure 2. Examples of wide and narrow tail bands in prions.

The Large-billed Prions

The Broad-billed, Medium-billed and Dove Prions have narrow tail bands.

Check the wing length:

1—If wing length greater than 200 mm, almost certainly the bird is a

BROAD-BILLED PRION (see Figure 3) confirm if

- (a) Bill length greater than 32 mm (33 mm)
- (b) Bill width greater than 17 mm (19 mm)
- (c) 'Teeth' clearly visible in the closed bill most of its length. Viewed from above the edges of the beak are distinctly bowed.

2—If wing length less than 200 mm either Medium-billed or Dove Prion, unless an unusually short-winged Broad-billed Prion. **MEDIUM-BILLED PRION** (see Figure 3)

Confirm if

- (a) Bill length 27-32 mm.
- (b) Bill width 13.5-17.0 mm.
- (c) 'Teeth' clearly visible at base of closed bill. Viewed from above the edges of the beak are noticeably bowed.

(d) Note the shape of the bill profile compared with Broad-billed Prion.

DOVE PRION (see Figure 3)

Confirm if

- (a) Bill length 24-30 mm (up to 31 mm).
- (b) Bill width 12-16 mm (up to 16.5 mm).
- (c) 'Teeth' not clearly visible in closed bill except close to base in some specimens. Sides

of the beak when viewed from above are not very distinctly bowed.

(d) Bill length less than 2.3 times the width, but see also notes under Thin-billed Prion.

Slender or Small-billed Prions

1—Tail band narrow

THIN-BILLED PRION (see Figure 3)

Confirm if

- (a) Bill length 23-27 mm.
- (b) Bill width 9-12 mm.
- (c) Bill length more than 2.3 times the width, to distinguish from Dove Prion. If doubtful, and some are less than this ratio, then the bill margins viewed from above are slightly concave in this species, but in the Dove Prion are definitely not so.

2—Tail band broad

FULMAR PRION or **FAIRY PRION** (see Figure 3)

These species can only be distinguished by the more massive appearance of the Fulmar Prion bill which is chunky and has the margins slightly swollen compared with the Fairy Prion.

Check the depth of the bill:

- (a) If greater than 7.5 mm then almost certainly **FULMAR PRION**.
- (b) If less than 7.5 mm then almost certainly **FAIRY PRION**.

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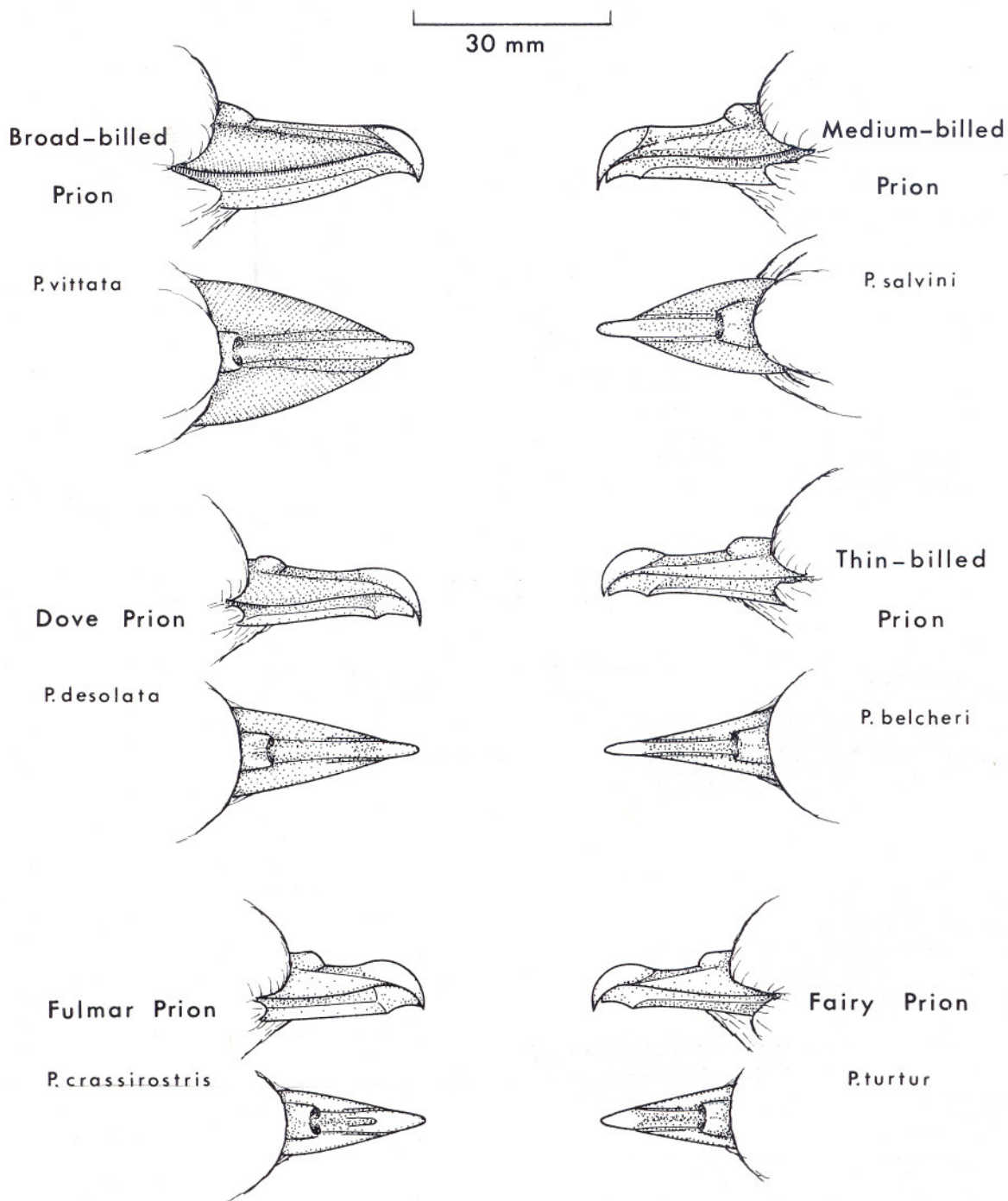
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Specimens

The specimens illustrated in Figure 3 were

- P. vittata*—Aust. Museum—037198
- P. salvini*—Aust. Museum—033939
- P. desolata*—CSIRO—12507
- P. belcheri*—CSIRO—Data Sheet No. ML 478
- P. crassirostris*—CSIRO—Data Sheet No. McK 133
- P. turtur*—CSIRO—Data Sheet No. 1.037

Drawings by L. S. Hall



• Figure 3. Scale drawings of the bills of prions shown in side and dorsal views.

NOTES ON THE RACES OF PRIONS

P. J. FULLAGAR

All prions are similar in general appearances, and identification of species depends very much on the proportions of certain body measurements (see "Bird in the Hand"). Racial diagnosis is therefore difficult and must also rely on features of measurement. The result is that separation of races in the prions often cannot be supported on present evidence.

In most cases it is impossible to distinguish between individuals from populations breeding at widely separated colonies within the geographical range of a species. For example, good series of body measurements given by Richdale (1965) and Swales (1965) are useful for comparison in the case of the Broad-billed Prion, *Pachyptila vittata*. The measurements they give show that birds of this species breeding on islands off the south of New Zealand do not differ sufficiently from those on Gough Island in the South Atlantic for separation on the characters examined.

There are no reliable methods at present for recognition of racial differences within the following species:

Broad-billed Prion *P. vittata*
Medium-billed Prion *P. salvini*
Thin-billed Prion *P. belcheri*
Fulmar Prion *P. crassirostris*
Fairy Prion *P. turtur*

Fulmar Prions from the Chatham Islands may have larger measurements than others. A wing of more than 190 mm and bill width of more than 12 mm could be diagnostic of this race, *P. c. pyramidalis*. Remaining Fulmar Prions, *P. c. crassirostris*, should have wings less than 190 mm and bill widths under 11.5 mm (Fleming, 1939).

In the case of the Fairy Prion, further work may be expected to yield useful characters distinguishing the populations from different breeding localities.

This leaves the Dove Prion, *P. desolata*, of which there are three recognisable races (see Tickell, 1962). Their characters may be summarised as follows:

P.d.desolata—Narrowest billed form; wing and tail normal length. When bill width less than 13.5 mm and tail more than 85 mm—probably this race from Kerguelen.

P.d.banksi—Wide bill; normal wing and tail. When bill width more than 13.5 mm and tail more than 85 mm—probably this race from Antarctic waters south of Convergence; South Orkney, South Georgia, Heard and Cape Denison.

P.d.alter—Wide bill; short tail and in some (Auckland Island) short wings. When bill width more than 13.5 mm and tail less than 85 mm—probably this race from Macquarie and Auckland Islands. The Auckland Island birds have wings usually less than 185 mm.

Since matching examples taken from each of these populations are available (e.g. Falla, 1937) caution must be given that the definitive racial determination of an individual is probably unreliable.

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P. J. Fullagar,
5 D'Arcy Place,
Chifley, A.C.T.