

# ILLUSTRATIONS OF FIVE SEA BIRDS' TONGUES

By CHARLES McCANN

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## ABSTRACT

The anatomy of the tongues of five sea birds, the Blue Petrel (*Halobaena caerulea*), the Grey-backed Storm Petrel (*Garrodia nereis*), the Black-bellied Storm Petrel (*Fregetta tropica*), the White-capped Mollymawk (*Diomedea cauta cauta*), and the Caspian Tern (*Hydroprogne caspia*) is described and illustrated.

The diversity of form and structure of birds' tongues has always fascinated me, partly because of the role the tongue plays in relation to the food of the species, and partly because of the important role some birds play in linking the animal and plant worlds by effecting pollination and seed dispersal. Much work remains to be done in these fields and every little contribution, I feel, is a welcome addition to knowledge of the biology of the species.

The material illustrated here is based on fresh tongues retrieved from the taxidermy department during my period of service (1948-1964) with the Dominion Museum, Wellington.

### Blue Petrel, *Halobaena caerulea* (Fig. 1)

The tongue in *Halobaena* is soft and highly vascular with margin and tip translucent; the central region is dense, lanceolate in shape with acute apex and truncate, irregularly serrate base. Between the base of the tongue and the glottis there are five series of large pits, the widest being the series nearest the glottis with fewer and larger pits; margins at glottis smooth anteriorly but followed by large denticles posteriorly merging with the large denticles of the laryngeal pad; between the groups of large denticles there is a single median series of four large spine; the laryngeal pad is broadly ovoid and is provided with small scattered denticles over the anterior surface above the large denticles. The glottis is confined between the two hyoids. At either corner of the tongue there are three larger pits followed by a group of five somewhat small pits.

The tongue of *Halobaena* is very similar to that of the Broad-billed Prion, *Pachyptila vittata*, but as I have no drawing of that species, I cannot make any further comparison.

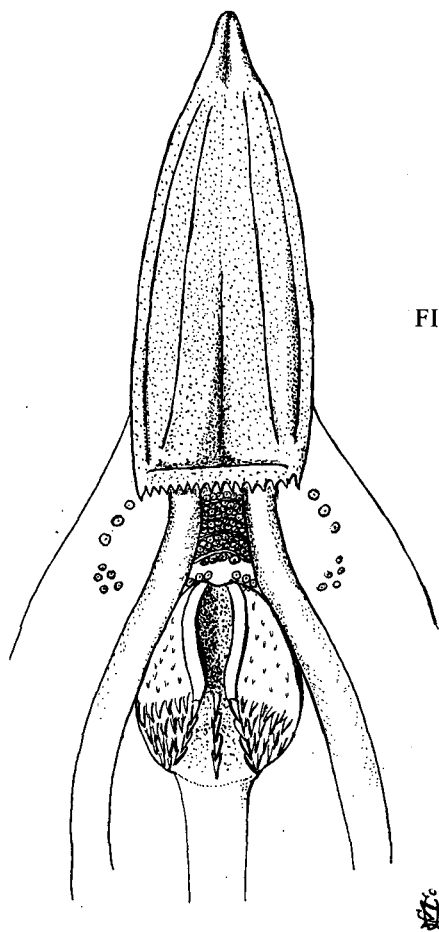


FIGURE 1 — Tongue of the Blue Petrel (*Halobaena caerulea*).

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Grey-backed Storm Petrel, *Garrodia nereis* (Fig. 2)

The tongue of *Garrodia* is somewhat linear-lanceolate with an acute apex and a truncate base; the base is armed with variously sized denticles, the largest being one on either side of the row, which in addition is slightly incurved. The tongue is divided by a shallow longitudinal groove; it is slightly fleshy posteriorly and its surface appears to be clothed in minute papillae.

Some distance behind the tongue is the glottis (with little or no character in itself) surrounded in its anterior third by fleshy, hooked lobes; to the posterior third of the glottis are attached a pair of testiculate fleshy lobes, separated from each other by a wide interval; these lobes appear to be smooth. The hyoids present no marked character. There appear no pits or denticles in the throat.

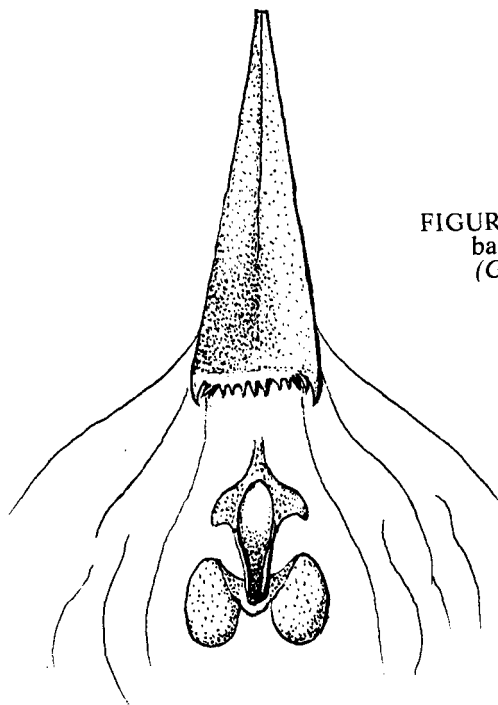


FIGURE 2 — Tongue of Grey-backed Storm Petrel (*Garrodia nereis*).

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Black-bellied Storm Petrel, *Fregetta tropica* (Fig. 3)

The tongue of *Fregetta* is not unlike that of *Garrodia* in some respects but differs much in detail and the pharyngeal pad is markedly removed in contour and structure.

The tongue is lanceolate with an acute tip; the base is truncate with a series of denticles united with one another; each denticle is minutely serrulate; the outermost denticle on either side of the tongue (as in *Garrodia*) is the largest. A shallow groove extends from the

apex to about the middle of the tongue; the base is somewhat fleshy and minutely pappillate anterior to the denticles.

The laryngeal pad is a short distance behind the base of the tongue; it is broadly pyriform in outline with its base divided into three fleshy lobes, the median being markedly shorter than the lateral ones. The glottis is surrounded by a "fleshy collar" and elevated above the surrounding tissue of the laryngeal pad. No denticles nor pits appear on the structures of the throat. The hyoids are not markedly prominent.

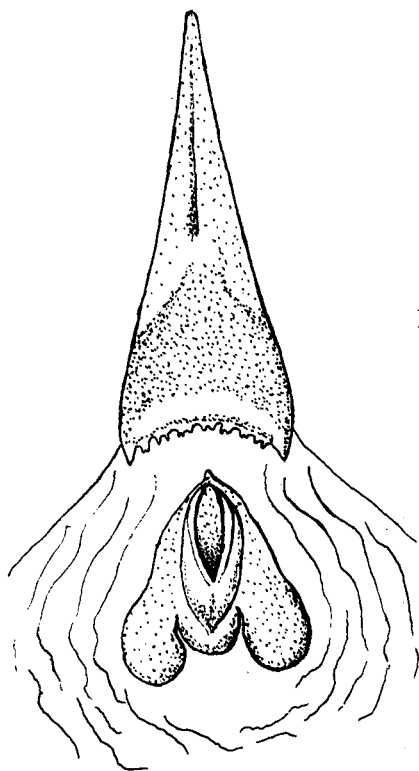


FIGURE 3 — Tongue of Black-bellied Storm Petrel (*Fregetta tropica*).

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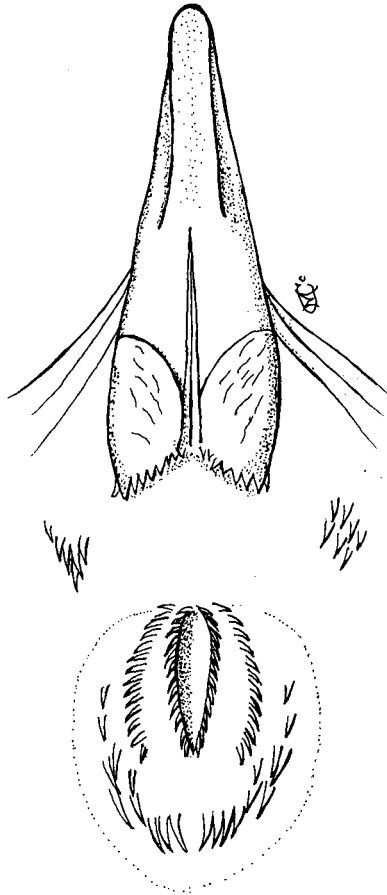


FIGURE 4 — Tongue of White-capped Mollymawk (*Diomedea cauta cauta*).

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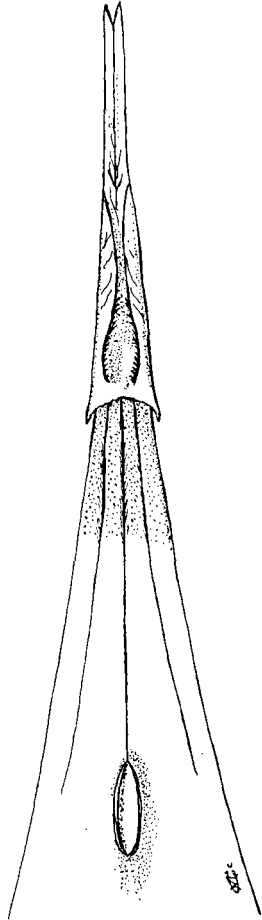


FIGURE 5 — Tongue of Caspian Tern (*Hydroprogne caspia*).

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White-capped Mollymawk, *Diomedea cauta cauta* (Fig. 4)

The tongue of *D. cauta cauta* is large and fleshy with the anterior half forming a trough with the lateral margins; in shape it is lanceolate with an inverted V-shaped, denticulate, posterior margin. The base of the tongue is composed of two large, fleshy pads, above the serrations, divided by a canal which extends to the base of the trough referred to before.

The laryngeal pad is broadly ellipsoidal in shape, the glottis is margined by sharp slightly recurved denticles or "spines"; outside this denticle series another series of denticles follows the same contours as the series on the glottis. On the fleshy portions of the pharyngeal pad there are a series of large spinous denticles, arranged in a descending curve. A short distance to the right and left of the lingual base are groups of large spines (5 - 7).

Caspian Tern, *Hydroprogne caspia* (Fig. 5)

The tongue of *Hydroprogne* is linear with a bifid apex; it is grooved anteriorly but markedly half-tubular posteriorly, the tube being formed by the inflexed margins of the tongue. The tube is wider posteriorly with the inner margins of the widened area minutely serrated. For about one third the distance between the base of the tongue and the anterior point of the larynx the area is dotted with minute taste pits. The larynx is at a distance behind the base of the tongue (about the length of the tongue itself) and is not surrounded by a marked "laryngeal pad," nor denticles.

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Charles McCann,  
8 Kiwi Street,  
Heretaunga,  
Upper Hutt