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## GEOGRAPHICAL VARIATION IN *DIOMEDEA CHLORORHYNCHOS* (AVES : DIOMEDEIDAE)

by

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Geographical variation is not currently admitted in the Yellow-nosed Albatross *Diomedea chlororhynchos* Gmelin, *Syst. Nat.*, vol. i, 1789, p. 568: Cape of Good Hope, primarily on the authority of Murphy (1936) who said that the grey head of birds breeding on Gough Island and the Tristan Group also occurred in other populations since it was a feature of fresh plumage as opposed to the white head of birds in worn plumage. Falla (1937) supported this view and added that age classes were involved as well in that grey on the head indicated a bird in breeding condition in fresh plumage. Mathews (1934) said that the proximal end of the yellow stripe on the culmen was rounded in young adults but became more pointed with increasing age. Thus the tentative findings of Lowe and Kinneer (1930) were set aside.

### CHARACTERS OF POPULATIONS

We do not find that the grey head is purely a function of fresh plumage and the white head of worn plumage. The breeding birds of Prince Edward Island, St Paul Island and New Amsterdam Island have very pale grey to white heads with a grey wash confined to the cheeks. This soon wears or abrades to white. It is only for a short period that the pale grey on the cheeks can be seen at close range on a bird in flight. Between March and August adult white-headed birds appear very white and have no trace of grey on the cheeks or the back of the neck: white extends from the frons to the back. We rely not only on J.C.S.'s and A.B.'s observations on Prince Edward Island but also on the comments and photographs of Segonzac (1972).

The breeding birds of Gough Island and the Tristan group in fresh plumage have an extensive white frons but the head is otherwise grey

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as is the back of the neck. The grey is darker than that confined to the cheeks of Indian Ocean birds. The tone of grey in Atlantic Ocean birds lightens with wear and exposure but never becomes truly white. The grey is a field character between March and August judging by the number seen in this plumage off the western coast of the Cape Province of South Africa. In the past, observers in the South Atlantic have had difficulty in separating well coloured *D. chlororhynchos* from Greyheaded Albatrosses *D. chrysostris* Forster as indeed did XIX century taxonomists. At sea, adult *D. chlororhynchos* may be distinguished from adult *D. chrysostris* by its narrower black leading edge and much greater extent of white on the underwing. Atlantic Ocean birds show a somewhat larger area of black in front of and below the eye which creates a triangular black eye patch hardly noticeable in Indian Ocean birds. In addition to specimens of both populations examined by R.K.B. in the South African Museum, Cape Town, and the Transvaal Museum, Pretoria, and field observations on Gough Island by J.C.S. and A.B., we rely on the photographs in Rowan (1951) though many of the birds therein are in worn plumage and on the comments of Shaughnessy and Fairall (1976) and Voisin (1979). There is no taxonomically significant difference in measurements between these two populations (Segonzac 1972, Table 1) or in the plumages of the immature birds which all have white heads. Nonetheless, the populations are not mensurally identical (Table 1), particularly in mass, with the Prince Edward Island birds being the heaviest.

The shape of the yellow stripe on the culmen also varies geographically. In the Indian Ocean Islands birds the proximal (skull) end of the yellow stripe is pointed (Plate 1 — upper) whereas in the Atlantic Ocean Islands birds it is rounded (Plate 1 — lower). The head of unknown locality illustrated by Salvadori (1914) is clearly of an Atlantic Ocean bird.

#### NOMENCLATURE

We consider these populations taxonomically separable. In order to effect this nomenclaturally the *Type* of the species must be determined to race. The *Type* itself was in the British Museum (Nat.Hist.) but disappeared in the last century (Godman 1910). Gmelin (1789) based his name on the Yellow-nosed Albatross of Latham, *Gen. Synop. Birds*, vol. iii, 1785, p. 309 and pl. 94: Cape of Good Hope. In this area both races occur as non-breeding visitors with the grey headed birds being somewhat commoner than the white headed ones. Thus on geographical grounds either race might have provided the *Type*. However, Latham (1785) states in his description that, inter alia, "the head is grey" and the plate shows a grey headed bird of an excessively

dark hue. There is thus no doubt that the *Type* was a grey headed bird, a non-breeding visitor from Gough Island or the Tristan group and that these are the breeding grounds of the nominate race.

What to call the white headed race? There are a number of synonyms in the literature and these we now examine. The first is *Diomedea olivaceorhyncha* Gould, *Ann. Mag. Nat. Hist.*, vol. xiii, 1844, p. 361: China seas? The type has an olivegreen bill measuring c. 86 mm ( $3\frac{3}{8}$  ins). This is far too small for the bill of *D. chlororhynchos* (Table 1): Murphy's (1936) lowest figure is 105 mm. In addition the colour is wrong: it should be predominantly black. We regard Gould's name as indeterminate and reject its placing in the synonymy of *chlororhynchos* by Salvin (1896). *Diomedea olivaceirostris* Bonaparte, *Consp. Gen. Avium*, vol. ii, 1857, p. 185, is nothing more than the latinization of the Greco-Latin mixture of Gould and is an objective junior synonym of it. The next name listed by Salvin (1896) is *Diomedea profuga* Gray, *Handlist Birds*, vol. iii, 1871, p. 109. An examination of Gray (1871) shows that this name is a publication of an MS name of Solander in the synonymy of *D. chlororhynchos* and it is not an available name since the conditions of Article 11 (*d*), as amended, of the *Code* do not apply. The same may be said of *Diomedea presaga*, an MS name of Brandt published on the same page (p. 109) but not alluded to by Salvin (1896).

Of the more recently published names there is *Thalassogeron eximius* Verrill, *Trans. Connecticut Acad. Arts Sci.*, vol. ix, 1895, p. 440: Gough Island, which is clearly a subjective junior synonym of *D. c. chlororhynchos* Gmelin, 1789. Brooke and Sinclair (1978) erred in resurrecting *T. eximius* for the grey headed birds through assuming without enquiry that the *Type* of the species was a white headed bird. *Thalassogeron carteri* Rothschild, *Bull. Brit. Orn. Club*, vol. xiv, 1903, p. 6: Point Cloates, north-western Australia, is described as white headed but with a purely black bill. It is based on an immature specimen (AMNH 527048 — Greenway 1973) which is probably of the white headed race, the commoner race known to visit Australia and New Zealand. However, C. J. R. Robertson advises us (*in litt.*) that "the bird collected from Chatham Island is the Tristan *et al.* variety". Thus an immature bird lacking the subspecific characters only patent in adults must be regarded as subspecifically indeterminate. *Diomedea bassi* Mathews, *Novit. Zool.*, vol. xviii, 1912, p. 206: south-east Australian seas, is based on an adult bird, but the chief point that Mathews (1912) makes about it is to explain why it is not *D. chrysostoma* Forster. The *Type* is in the American Museum of Natural History in New York (AMNH 527047 — Greenway 1973) and Mr John Farrand (*in litt.*) advises that "The plumage of the head is



## PLATE I

*Diomedea chlororhynchos* GmelinUpper figure: *D. c. bassi* on Prince Edward Island, showing the pointed end of the culmicorn stripe.Lower figure: *D. c. chlororhynchos* on Gough Island, showing the rounded proximal end of the culmicorn stripe.

Photos: J. C. Sinclair

somewhat worn, and is wholly white except for a vague grayish eyebrow running forward from above the eye and over the lores". Thus it is clearly an example of the white headed Indian Ocean Islands race as would be expected on grounds of geographical distribution. It makes a satisfactory *Type* of its race as Lowe and Kinnear (1930) pointed out when suggesting that *bassi* might be taken into use. The white headed race of Prince Edward, St Paul and New Amsterdam Islands should therefore be referred to as *Diomedea chlororhynchos bassi* Mathews.

*Diomedea melanoptera* Miranda-Ribeiro, *Bol.Mus.Nacn. Rio de Janeiro*, vol. iv, pt. iv, 1928, p. 45: no locality, but restricted (ineptly?) to Tristan da Cunha by Mathews, *Bull.Brit. Orn. Club*, vol. lxxviii, 1948, p. 162, is the latest subjective synonym of the nominate race.

#### AFRICAN DISTRIBUTION

For the African distribution of *D. chlororhynchos* White (1965) gives "Common off south-west Cape Province, more sparsely to Natal and south Angola, rarely to about Congo mouth". We have been unable to find authority for its occurrence as far north as the mouth of the River Congo or even much north of Mossamedes at 15°10'S. in Angola: Lambert (1971) gives 14°50'S. as his most northerly record. It is, however, common in season off the coast of southern Angola up to 15°S and off the whole coast of Namibia (Hagen 1952, Lambert 1971, Garcia Rodriguez 1972, Summerhayes *et al.* 1974, Morant 1977). Both Traylor (1963) and Brooke (1978) overlooked the ringing recoveries from Angola reported by Hagen (1952) and thus grossly underestimated the status of *D. chlororhynchos* in the coastal waters of southern Angola. Traylor (1963) refers Seabra's (1906) record of *D. immutabilis* Rothschild from Porto Alexandre in extreme southern Angola to *D. chlororhynchos* with some reservation. We have examined Seabra's (1906) description which despite its unsatisfactory features proves that the specimen collected there by Newton was a small immature Blackbrowed Albatross *D. melanophris* Temminck. We draw attention to the dark grey bill with a black unguis, the faded grey lores and the hind neck extensively tinted with light grey, all of which are characteristic of immature *D. melanophris* and are not found together in *D. chlororhynchos*. *D. chlororhynchos* is also common off the southern and eastern coasts of the Cape Province and Natal (Liversidge 1959, Clancey 1971, Brooke and Sinclair 1978). It reaches Delagoa Bay in southern Mozambique (Clancey 1971) and up to c. 25°S. (Sinclair 1979) but it has not been reported from Madagascar (Milon *et al.* 1973).

Hagen (1952) showed that elements of the nominate race dispersed eastwards to the coasts of southern Angola and Namibia based on the then known ringing recoveries. Morant's (1977) more recent study confirms this and gives the first recovery from the west coast of South Africa — Saldanha Bay at 33°S. The nominate race has not yet been noted on the southern or eastern coasts of South Africa and it probably does not enter the Indian Ocean to any great extent. *D. c. bassi* is the only race known on the eastern and southern coasts of Africa where it is common and it also occurs on the western coast in smaller numbers than the nominate race. How far north it occurs on the west coast remains to be determined. It is not to be assumed without evidence that it occurs as far north as the nominate race.

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TABLE 1

Mass data in g and linear data in mm for *Diomedea chlororhynchos*

	Range	Mean	Standard deviation	Sample size	Source
<b>A. D.c.chlororhynchos</b>					
Mass	1780-2840	2199	227,9	26	A.B. Gough Is. Nov. 1979
	2110-2250	2199	6,0	7	Garcia Rodriguez 1972
	1650-2500	1950	324,7	5	Hagen 1952
	1814	—	—	1	Murphy 1936
Wing length	483-520	501	10,9	27	A.B.
	465-498	486	10,4	7	Garcia Rodriguez 1972
	456-498	479	—	3	Hagen 1952
Tail length	178-214	195	8,4	27	A.B.
	178-198	192	7,6	7	Garcia Rodriguez 1972
	186-199	193	—	3	Hagen 1952
Tarsus length	80-86	82,4	2,5	27	A.B.
	74-84	79,9	4,1	7	Garcia Rodriguez 1972
	76,1; 80,7	—	—	2	Hagen 1952
Culmen length	107,6-121,8	114,6	3,9	27	A.B.
	107-125	115,6	6,4	7	Garcia Rodriguez 1972
	109,3; 111,4	—	—	2	Hagen 1952
Greatest depth of culmen	23,3-28,0	25,4	1,1	27	A.B.
	24,0; 24,6	—	—	2	Hagen 1952
Least depth of culmen	20,3-25,5	22,9	1,4	26	A.B.
	20,0; 21,1	—	—	2	Hagen 1952

Table 1 — *continued*

	<i>Range</i>	<i>Mean</i>	<i>Standard deviation</i>	<i>Sample size</i>	<i>Source</i>
<b>B. <i>D.c.bassi</i></b>					
Mass	2490-2930	2640	130,0	15	A.B. Prince Edward Is. Sept. 1979
	1750-2600	2060	—	33	Segonzac 1972
Wing length	465-499	488	9,7	14	A.B.
	454-505	482	—	33	Segonzac 1972
	453-498	470	—	8	Serventy <i>et al.</i> 1971
Tail length	185-210	197	7,0	15	A.B.
	172-199	188	—	8	Serventy <i>et al.</i> 1971
Tarsus length	78,7-86,6	82,1	2,5	15	A.B.
	79-86	82,7	—	33	Segonzac 1972
	74-83	78	—	8	Serventy <i>et al.</i> 1971
Culmen length	111,2-124,2	118,7	4,5	15	A.B.
	106-124	116	—	33	Segonzac 1972
	109-121	114	—	8	Serventy <i>et al.</i> 1971
Greatest depth of culmen	23,6-27,5	25,8	1,1	15	A.B.
Least depth of culmen	21,0-23,7	22,2	1,1	14	A.B.



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