

MEASUREMENTS IN MILLIMETERS (AVERAGE, MINIMUM
AND MAXIMUM) OF SERIES OF *PSALTRIPARUS*

	Wing	Tail	Culmen	Tarsus
<i>Psaltriparus minimus minimus</i>	46.8	52.05	7	15.8
10 males from Los Angeles Co., California	(46-48)	(50-54)		(15-16)
<i>Psaltriparus minimus californicus</i>	47.2	52.01	7.1	15.8
10 males from the Sacramento Valley, California	(46.5-49)	(50-54)	(7-7.5)	(15-16.5)
<i>Psaltriparus minimus californicus</i>	49.5	53.7	7.4	15.8
9 adults from the Warner Mts., California	(48-50.5)	(51-58.5)	(7.2-8)	(15-16.5)
<i>Psaltriparus minimus californicus</i>	47.8	52.3	7.1	16.3
5 adults from the Sierra Nevada, California	(47-48.2)	(51.5-54.5)	(7-7.2)	(16-16.5)
<i>Psaltriparus plumbeus</i>	51	55.3	6.1	16.3
8 adults from Inyo County, California	(50-52)	(52-59.5)	(6-6.5)	(16-16.5)
<i>Psaltriparus plumbeus</i>	50.4	55.05	6.1	15.6
10 males from the Huachuca Mts., Arizona	(49-51)	(53-57.5)	(6-6.5)	(15-16)
<i>Psaltriparus plumbeus</i>	51.3	55.5	6.1	16.1
5 adults from Humboldt County, Nevada	(50.5-52.5)	(53.5-60)	(6-6.5)	(16-16.5)

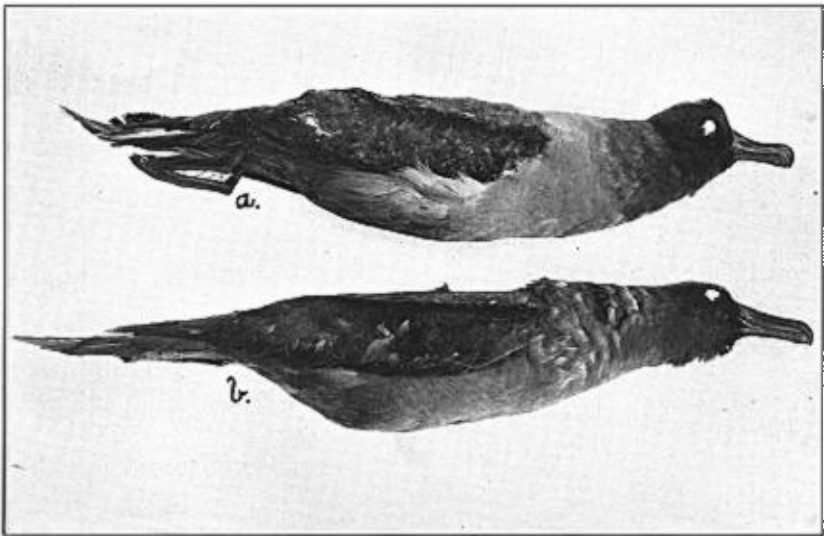
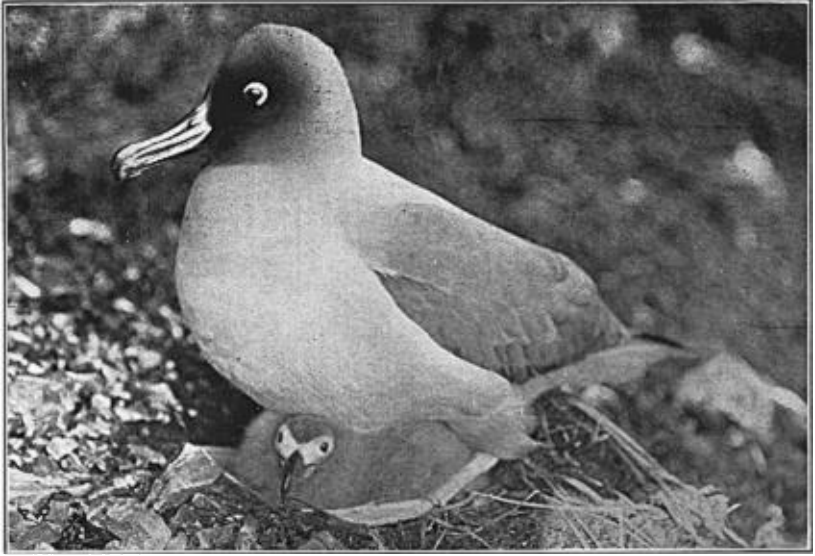
A REVIEW OF THE GENUS PHÆBETRIA.

BY JOHN TREADWELL NICHOLS AND ROBERT CUSHMAN MURPHY.

Plate XLI.

THE possession by the American Museum of Natural History and the Brooklyn Museum of a series of skins of *Phæbetria palpebrata antarctica* from South Georgia Island in the Subantarctic Atlantic, and of two specimens of *Phæbetria fusca* from the temperate South Atlantic, has led us to assemble additional material for purposes of comparison. Our study brings us to the conclusion that the east Pacific, or American west coast, Sooty Albatross, which is the *Diomedea fusca* of Audubon and the *P. palpebrata* of the latest A. O. U. Check-List, (1910), belongs to an undescribed race of *palpebrata*. A review of the genus in the light of the material examined may aid future workers.

The characteristics which differentiate the two well-marked species *palpebrata* and *fusca* can be comprehensively stated in the form of a key:—



1. ADULT MALE AND NESTLING, SOUTH GEORGIA SOOTY ALBATROSS,
Phaebtria palpebrata antarctica.
2. (a). *P. p. auduboni*. (b). *P. fusca fusca*.

- A. Culmen concave in profile; sulcus of mandible narrow, and blue or purplish in life (dark in dried skins); feathers of back and lower parts decidedly paler than remainder of plumage. *P. palpebrata*.
- AA. Culmen nearly straight in profile; sulcus of mandible wide, and straw-color, yellow, or orange in life (and also in skins); feathers of back and lower parts dark like remainder of plumage. *P. fusca*.

Mr. Gregory Mathews in his 'Birds of Australia,' Vol. II, 1912, p. 294, has published diagnostic drawings of the bills of the two species.

P. palpebrata is the species having the more southerly breeding range, but its normal wandering range overlaps that of *P. fusca* in the southern temperate zone. Mr. Murphy has seen both together in the South Atlantic Ocean, and has found the specific differences striking in life. Curiously enough, the "common" Sooty Albatross (*P. fusca*), which is the '*P. fuliginosa*' of most authors, now seems to be a far rarer bird in collections than are representatives of *palpebrata*.

In naming three geographical races of the two species of *Phœbetria*, Mr. Mathews (*loc. cit.*) has failed to present adequate descriptions and measurements. Recently, however, Mr. Mathews has personally examined our own material, and has informed us that he studied a large series of toptotypical specimens of *Phœbetria palpebrata* (Forster) before becoming sponsor for the subspecies *huttoni* and *antarctica*. We are therefore provisionally recognizing the following four races of *palpebrata* and two races of *fusca*, with the hope that some investigator who has series of Pacific and Indian Ocean birds at his disposal may soon make use of our measurements in fixing the status of the Old World forms.

***Phœbetria palpebrata palpebrata* (Forster).**

Diomedea palpebrata, Forster, Mém. prés. Acad. Roy. Sci. (Paris), Vol. X, p. 571, 1785.

TYPE LOCALITY, lat. 64° S., long. 38° E.

RANGE, Kerguelen Island (breeding), also presumably the Prince Edward Islands, the Crozets, McDonald and Heard Islands, in the Indian Ocean.

Although the Kerguelen bird is the typical race of *palpebrata* it seems to be the intermediate between the two subspecies next considered, viz. *antarctica* of Weddell Sea and *huttoni* of the New Zealand region.

We have seen but one specimen, a breeding female from Kerguelen.

MEASUREMENTS IN MM.

	Bill	Tip of bill to nostril	Tarsus	Middle toe and claw	Wing	Tail
U. S. N. Mus. # 68953 ♀ Kerguelen I.	103	72	78	118	502	275

***Phœbetria palpebrata huttoni* Mathews.**

Phœbetria palpebrata huttoni, Mathews, Birds of Australia, Vol. II, p. 297, 1912.

TYPE LOCALITY, New Zealand seas.

RANGE, Subantarctic islands of New Zealand (breeding), Australian and New Zealand seas (Mathews).

Two specimens in the collection of the Museum of Comparative Zoölogy, Cambridge, Mass., have been compared with a large series of *antarctica* from South Georgia. In coloration the two subspecies bear close resemblances, but the New Zealand birds are perhaps slightly darker and notably smaller in all their dimensions.

Culmen moderately concave in profile, angular (*i. e.* with a well marked ridge) at its base. Groove of lower mandible narrow (cf. fig. Mathews, *l. c.*, p. 294). Head dark grayish-brown, darkest in loreal region. Back and under surface ashy, rump darker than back.

MEASUREMENTS.

	Bill	Tip of bill to nostril	Tarsus	Middle toe and claw	Wing	Tail
Mus. Comp. Zool. # 39880 ♂ New Zealand	95 mm.	65	76	112	502	221
Mus. Comp. Zool. # 39881 ♀ New Zealand	101	69	79	119	486	245

***Phaebetria palpebrata antarctica* Mathews.**

Phaebetria palpebrata antarctica, Mathews, Birds of Australia, Vol. II, p. 302, 1912.

TYPE LOCALITY, South Georgia (breeding).

RANGE, Weddell Sea and South Atlantic Ocean, north at least to 33° South (Murphy).

In this subspecies the bill is shaped much like that of the New Zealand and Kerguelen races, but it is larger and heavier, and the culmen is less acutely ridged at its base. The following description based upon breeding specimens of *antarctica* contains, of course, many characteristics common to its congeners:— Bill black, mandibular sulcus pearl blue; legs and feet pale flesh color with a vinaceous and buff wash over the scales; iris olive brown; skin of mentum blue under the feathers. Head dusky grayish-brown, nearly black on lores; a white ring, broken in front and on the anterior half of the lower lid, encircling eye; back and under surface ashy gray, blending with the dark shade of head, and lightest in center of back; rump and scapularies dark gray; wings dark brownish-gray, changing to grayish-black on primaries; tail grayish-black; shafts of quills white or whitish.

A nestling 336 mm. in length is covered with long light gray down except on the head, where a cap of short, dark gray down is separated from the nearly bare throat by a mask-like area of hairy, light gray down.

The nineteen specimens of this race, which we have had the pleasure of examining, were, with one exception, taken at South Georgia by Mr. Murphy or Mr. J. G. Correia.

MEASUREMENTS.

	Bill	Tip of bill to nostril	Tarsus	Middle toe and claw	Wing	Tail
J. G. C. #45, ♂ Cumberland Bay	116 mm.	75	83	125	506	267
R. C. M. #1745, ♂ Bay of Isles	115	75	84	122	519	263
J. G. C. #61, ♂ Cumberland Bay	116	80	86	131	552	274
J. G. C. #16, ♂ Cumberland Bay	117	76	81	121	519	284
R. C. M. #1507, ♂ Cumberland Bay	111	80	83	128	522	264
J. G. C. #43, ♂ Cumberland Bay	110	76	80	126	541	294
R. C. M. #1506, ♂ Cumberland Bay	110	76	81	122	518	279
J. G. C. #7, ♂ Cumberland Bay	110	78	83	122	523	275
J. G. C. #42, ♂ Cumberland Bay	109	77	85	128	521	270
R. C. M. #1528, ♂ Cumberland Bay	108	78	84	128	523	260
R. C. M. #1508, ♂ Cumberland Bay	103	75	82	120	503	249
J. G. C. #8, ♀ Cumberland Bay	117	76	81	125	506	265
J. G. C. #41, ♀ Cumberland Bay	114	73	82	125	525	276
J. G. C. #46, ♀ Cumberland Bay	114	73	84	122	521	274
R. C. M. #1527, ♀ Cumberland Bay	109	74	80	122	494	236
J. G. C. #39, ♀ Cumberland Bay	102	72	78	120	490	249
J. G. C. #40, ♀ Cumberland Bay	98	70	80	116	500	270
R. C. M. #1417, ♀ Lat. 50° S., Long. 35° W.,	116	75	80	122	526	251
R. C. M. #1744, ♂ fledgling in down, (tot. length 336 mm.)	51	33	40	48		

Below are averaged measurements of six males which were actually collected on their nests at South Georgia. The figures establish a standard of size for adult males of the subspecies *antarctica*.

	Bill	Tip of bill to nostril	Tarsus	Middle toe and claw	Wing	Tail
Average of 6 breeding males	113	78	83	125	525	272

***Phæbetria palpebrata auduboni* subsp. nov.**

Diomedea fusca, Audubon, Orn. Biogr., V., p. 116, 1839.

TYPE LOCALITY, mouth of the Columbia River, Oregon.

RANGE, west coast of America, north casually to Oregon; breeding range unknown.

This is the most distinctive of the races of *Phæbetria palpebrata*. The specimen which of necessity becomes the type is No. 2718 of the United States National Museum collection, the type of Audubon's *Diomedea fusca* (not of Hilsenberg). This specimen is in a very bad state of preservation, with the head broken off, and the feathers soiled with grease in addition to having undergone the characteristic dimming of improperly prepared, aged specimens. From the color of its plumage it might be assigned to the *fusca* (Hilsenberg) group, where, indeed, Mathews (*l. c.*) and others have included it. The bill, however, shows that it not only belongs to the species *palpebrata* but to a race of that species which is farthest removed from *Phæbetria fusca*. The name which Audubon used being preoccupied by *fusca* of Hilsenberg, we have proposed the name *Phæbetria palpebrata auduboni*.

Since the type is of such limited value for purposes of comparison, it is fortunate that we have found another specimen in the Museum of Comparative Zoölogy, No. 3903 collection of E. A. and O. Bangs. The latter bird agrees with the type in its dimensions and approximately in the shape of the bill, and also presents what was doubtless the original coloration of the type.

Subspecific distinctions: bill more slenderly built and more strongly hooked than in other races of *palpebrata*; culmen more decidedly concave or 'saddle-shaped,' the ridge at the base high and acute. Head fuscous-black, darkest between eye and bill; back and underparts dark gray, rump still darker; wings and tail brownish-black.

The Bangs specimen is reasonably fresh, so that its plumage is comparable with our own material. The bird is much darker than any specimens of *antarctica* or *huttoni*, though nearer in coloration to these than to *fusca*. Possibly *auduboni* has a more northerly breeding area than the other members of *palpebrata*, in which case its darker plumage would conform with a recognized color principle among sea birds of the southern hemisphere.

MEASUREMENTS.

	Bill	Tip of bill to nostril	Tarsus	Middle toe and claw	Wing	Tail
Type of " <i>D. fusca</i> " Aud. U. S. Nat. Mus. #2718 (no sex) Ore- gon Coll. of E. A. & O. Bangs #3903 (no sex) "Between Cape Horn & San Francisco."	108 mm.	76	84	124	495 much worn	251
	105	75	81	120	502	248

***Phœbetria fusca fusca* (Hilsenberg).**

Diomedea fusca, Hilsenberg, Froriep's Notizen, Vol. III, No. 5 (49), p. 74, 1822.

TYPE LOCALITY, Mozambique Channel.

RANGE, South Atlantic and western Indian Oceans, Tristan de Cunha and Gough Islands (breeding), Prince Edward Islands (?) and the Crozets (?).

This species is the *P. fuliginosa* of authors and is differentiated from the *palpebrata* group by the characters given in our key, p. 527. In life its most conspicuous mark is the absence of a gray mantle. Our only specimens are two collected by Mr. Murphy on March 26, 1913, lat. 39° S., long. 31° W., Atlantic Ocean.

Plumage in general sooty black, slightly paler and grayer below, brownish on crown and middle of back. Bill deep and straight (see Mathews' Fig.), less strongly hooked than that of *palpebrata*; ridge at base of culmen slight; broad mandibular sulcus yellow; iris olive; white crescent bordering eye, and whitish quill shafts, as in other members of the genus.

MEASUREMENTS.

	Bill	Tip of bill to nostril	Tarsus	Middle toe and claw	Wing	Tail
R. C. M. #1952, ♂	112 mm.	80	82	123	481	265
R. C. M. #1953, ♀	110	76	83	120	497	237

***Phaebetria fusca campbelli* Mathews.**

Phaebetria fusca campbelli, Mathews, Birds of Australia, Vol. II., p. 304, 1912.

TYPE LOCALITY, "Australian seas."

RANGE, Australian seas (Mathews); breeding range unknown.

On its present basis this subspecies is hardly worthy of recognition for Mr. Mathews states simply that it is smaller in all its dimensions than the western, typical race. Comparing our measurements of *fusca fusca* with those given by Mathews for *fusca campbelli*, we find notable differences only in the length of the tarsus. We have seen no specimens from the reputed range of this subspecies.

CONCLUSIONS.

Summarizing our conclusions on the genus *Phæbetria*, upon the not wholly sufficient basis of the material studied, we find in the first place two well differentiated species, *palpebrata* and *fusca*, of more southerly and more northerly distribution respectively, but of coincident range in an intermediate zone. The last generalization may not hold true in the eastern Pacific, where the only known representative, *Phæbetria palpebrata auduboni*, may have become part of the fauna of the northern hemisphere in accordance with the general tendency of the Diomedeidæ to range northward in that ocean.

The species *palpebrata* is in turn divided into two main sections, one of which includes only *auduboni* with a range west of America and Weddell Sea, the other comprising the three pale subspecies *antarctica*, *palpebrata*, and *huttoni*, ranging from west to east, respectively, across the Atlantic and Indian Oceans, to the waters south of Australia, and forming in the same order a decreasing sequence in size. These three subspecies have a range in latitude extending from the verge of the true Antarctic at least to the middle of the southern temperate zone. It seems possible that the ranges of *huttoni* and *auduboni* may be separated by the vast stretch of the southern Pacific, where the little known Dougherty Island in latitude 59° S., alone offers even an unlikely possibility as a breeding ground.

The species *fusca* is represented by the typical race which inhabits the temperate southern Atlantic and Indian Oceans, over an area having its longitudinal center in the neighborhood of the Cape of Good Hope; and by a geographically separated race, *campbelli*, not yet properly known to science, with a range in the Australian seas.

EXPLANATION OF PLATE.

Fig. 1. *Phæbetria palpebrata antarctica* Mathews, adult ♂ and downy nestling, Bay of Isles, South Georgia, Jan 20, 1913. Photo by R. C. Murphy.

Fig. 2. a, *Phæbetria palpebrata auduboni* Nichols and Murphy, No. 3903 Coll. of E. A. and O. Bangs, sex undetermined, Eastern Pacific Ocean. b, *Phæbetria fusca fusca* Hilsenberg, No. 1952 ♂, R. C. Murphy, South Atlantic Ocean.