

THE SKUAS OF THE NORTH AMERICAN PACIFIC COAST

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ABSTRACT.—The characters of the six commonly recognized forms of skuas, belonging to the three species *Catharacta skua*, *C. chilensis*, and *C. maccormicki* are outlined briefly. Particular attention is given to the South Polar Skua, its color phases, juvenal plumage, annual cycle, and identification. The occurrence of this species along the Pacific coast of North America as an uncommon but regular fall visitor to both California and Washington is documented; no valid evidence suggests that any other form has occurred. Thus *C. (skua) chilensis*, *C. s. lonnbergi*, and *C. s. antarctica* should be removed from the North American list and *C. maccormicki* added. The South Polar Skua is a regular transequatorial migrant in the Pacific; the movement perhaps includes mostly immatures. Some evidence suggests that this migration takes the shape of a clockwise loop in the North Pacific. Regular occurrence of the species in other seas of the Northern Hemisphere has not yet been well documented, but records exist for both the North Indian and North Atlantic oceans.—*Institut royal des Sciences naturelles de Belgique, 31 rue Vautier, 1040 Bruxelles, Belgium.* Accepted 15 July 1975.

SKUAS (*Catharacta* spp.) have long been known to visit the Pacific coast of North America. As *Catharacta skua* does not breed in the North Pacific, these birds are believed migrants from the Southern Hemisphere. Their precise identity has remained unclear, partly because of the confused state of the taxonomy of the southern skuas. This paper attempts to analyze the North Pacific situation in a more global perspective and on as firm a basis as the present knowledge of southern forms permits.

Six forms of skuas are currently recognized (Murphy 1936, Vaurie 1965); *skua* in the North Atlantic, *lonnbergi* on subantarctic islands, *hamiltoni* at Gough and Tristan da Cunha in the South Atlantic, *antarctica* in the Falkland Islands and on the coast of Argentina, *chilensis* in southern South America, and *maccormicki* on the Antarctic continent. Most recent authors, particularly in the northern hemisphere, have followed Lowe and Kinnear (1930) and Hamilton (1934) in treating all skuas as one species, but four or five species are sometimes recognized (e.g. Oliver 1955, Eklund 1961, Fullager in Slater 1971). A frequent arrangement treats *maccormicki* as a monotypic species and all other forms as races of *C. skua* (Falla 1937, Alexander 1955, Wynne-Edwards in Bannermann 1963, Spellerberg 1971, Watson et al. 1971, Stonehouse 1972). The forms *maccormicki* and *lonnbergi* breed sympatrically in the South Shetland Islands—Antarctic Peninsula region. This fact, recorded long ago by Gain (1914), has only recently been fully recognized (Watson et al. 1971). *C. chilensis* and *C. skua antarctica* coexist, with limited hybridization, on the coast of Argentina (Devillers, in prep.). Morphologically *maccormicki* is highly distinct, as is *chilensis*, though perhaps to a lesser degree. I prefer to treat them as species.

Descriptions as well as measurements of all the forms can be found in Murphy (1936). Because he emphasizes extremes of individual variation rather than average appearance, Murphy's discussion is not well suited for identification of the northern hemisphere migrants. I propose below for each form a brief characterization that should help allocate at least typical individuals. The descriptions are based on the extensive collections of the American Museum of Natural History (AMNH), also used by Murphy, of the British Museum (BM), and of the Muséum National d'histoire Naturelle (MNHN) in Paris. I have examined additional specimens in the

Dominion Museum, Wellington (DM); the War Memorial Museum, Auckland (WMM); the Canterbury Museum, Christchurch (CM); the National Museum, Melbourne (NM); the Australian Museum, Sydney (AM); the Universitetets Zoologiske Museum, Copenhagen (UZM); the San Diego Natural History Museum (SDNHM); the California Academy of Sciences (CAS); and the Institut Royal des Sciences Naturelles de Belgique (IRSNB). The number of specimens of each form examined is given in parentheses.

BROWN SKUA, *C. skua lonnbergi* (208)

A large form with a heavy, powerful, blunt-looking bill. Adults are fairly uniformly colored, head and underparts medium brown, back and wings a little darker than the underparts, but not contrasting sharply. The uniformity of the upper parts is relieved by a varying amount of light streaks and light or rufous blotches extending onto the scapulars, which often have fairly large whitish blotches. The underwing coverts are dark brown. Some individuals are lighter brown below and correspondingly so above, so that the characteristic lack of contrast remains; these light birds have very large blotches on the larger scapulars. Sometimes they show some narrow yellow or golden streaks on the nape and on the sides of the head.

Juvenals are a uniform, fairly warm chocolate brown all over, with very few blotches on the scapulars, and sometimes a suffusion of reddish brown on the underparts.

FALKLAND SKUA, *C. s. antarctica* (71)

A small form with the bill short but very high and powerful, stubby, bulbous at the nail. The underparts of adults are of the same tone as those of *lonnbergi* but the chin and throat are generally streaked with fine shaft streaks (as in *skua*, or—obscurely—in *chilensis*). Some birds have lighter underparts as do some *lonnbergi*, and the upper breast is occasionally mottled with yellowish or whitish (“bleached straw”). The upper parts are similar to those of *lonnbergi* but generally with more fine yellow streaking at the nape and, on average, a little more rufous spotting. The head usually, but not always, appears more capped than in *lonnbergi*. Contrast between underparts and upper parts is not strong. The underwing coverts are dark brown, occasionally with a small amount of reddish tinge.

Of six juvenals in BM, one is uniformly dark brown with no trace of cinnamon, others vary in coloration of the underparts from a slightly reddish brown to a pronounced cinnamon and have the back feathers, scapulars, and wing coverts varyingly marked with U-shaped cinnamon bars. In all specimens the chin is brown; the underwing coverts and upper tail coverts may show an admixture of red. Intermediate stages are not elucidated, but uniformly dark blackish-brown specimens with no or few light blotches on the upper parts probably represent immatures.

TRISTAN SKUA, *C. s. hamiltoni* (14)

A form similar to *lonnbergi* in adult plumage characteristics but a little smaller (Hagen 1952, Swales 1965). One juvenal in BM is very similar to young *antarctica*, having the upper parts sprinkled with U-shaped cinnamon marks and the underparts strongly reddish brown. This corresponds to Hagen’s (1952) characterization of immatures.

GREAT SKUA, *C. s. skua* (146)

A somewhat smaller form than *lonnbergi* with a smaller, slenderer, more elongated bill. More rufous in general coloration, it also differs strikingly in the adult plumage by the very heavy pale and rufous striping (shaft streaks) on head, cheeks, throat, neck, nape, and upper mantle. The belly varies from a slightly warmer brown than *lonnbergi* to a reddish color in some individuals. On the back, scapulars, and wing coverts are varying amounts of rufous flames, spots, and stripes. Some weakly marked individuals resemble some *antarctica* closely in coloration and pattern. The underwing coverts are dark brown as in *lonnbergi* with a small admixture of reddish in the redder individuals.

Juvenals (9 examined) are very similar to young *antarctica*, having reddish underparts, U-shaped cinnamon marks on the upper parts (including rump), and a brown head.

CHILEAN SKUA, *C. chilensis* (62)

A small form with a rather small bill, slenderer than that of *lonnbergi*. Most adults are strongly characterized by very reddish underparts contrasting with blackish upper parts. The contrast is particularly striking about the head, where a uniform blackish cap meets fairly uniform cinnamon chin and lower cheeks. There are fine yellow or white streaks on the nape and the sides of the neck and rufous spots on the mantle. The throat is usually lightly streaked and the breast often variegated with brown and straw yellow, barely visible against the red background. The underwing coverts are bright cinnamon, a condition found in no other form. An occasional individual has the red dulled and reduced, but the capped appearance is retained. Murphy (1936) tentatively referred to a presumed dark phase of *chilensis* four blackish specimens, taken in Chile and Peru (33°S to 13°S), during the nonbreeding season (July, October, March). I have examined these birds (AMNH 44458, 44459, 44469, 132565); they appear to be dark *maccormicki* as also suggested by Falla (memo in AMNH). No blackish *chilensis* has ever been collected or seen (i.e. pers. obs.) on or near the breeding grounds of the species, and it seems safe to assume that no such plumage exists.

Juvenals (3: BM, IRSNB; field obs.) resemble the brightest juvenile *antarctica*, differing mostly in even brighter cinnamon underparts (usually brighter than in adults), including the chin and throat, capped appearance caused by a brownish or blackish crown, more red in the underwing coverts and on the rump.

SOUTH POLAR SKUA, *C. maccormicki* (231)

A small form with a slender and delicate bill tapering to a long, nonbulbous nail. The plumage of this skua is highly variable. Light, intermediate, and dark phases have been described (Spellerberg 1970), individuals ranging from almost white-bodied to entirely blackish.

Light phase (159).—The head, neck, nape, base of the neck, and the underparts form one light area, strongly contrasting with blackish, practically unmarked, somewhat velvety wings and scapulars. This contrast is extremely characteristic of *maccormicki*, and never approached by any other skua. The light area varies from light pinkish-brown to almost white, either uniform or coarsely variegated. A few birds are darker, medium pinkish-brown. Almost always there is a particularly light

area on the nape, often continued onto the breast as a collar. This extensive uniform nape area should not be confused with the light streaks or drop-shaped marks of other forms and seems unique to this species. Generally a collar or mane of closely knit, narrow golden needles giving a silky, glossy sheen, is superimposed on the light area. This feature, formed by the tips of the feather shafts and their immediate vicinity is similar in texture to the yellow nape patch of jaegers (*Stercorarius spp.*) and is also shown, but less conspicuously, by other forms of skua. The rest of the upper parts, back, scapulars, rump, wings, including underwing coverts and tail, are uniform blackish brown with only occasionally very scattered, small light blotches. I have combined Spellerberg's "light" and "intermediate" phases, as I could find no clear break in the series of light-naped individuals examined.

Dark phase (54).—The back, wings, and tail are blackish and unmarked, of the same color as those in light phase birds. The head, neck, and underparts are dark brown to blackish, with no uniform pale area on the nape. A contrast between underparts and upper parts usually remains apparent. The silky, golden lanceolated marks of the nape and sides of neck are usually well developed.

Juvenals (18) from light phase populations (13: DM, BM, MNHN) have the head, nape, and underparts pale to medium gray, with no golden needles on the nape. Back, scapulars, wings, and tail are dark slate, similar to those of the adult but colder and grayer, and with light gray edgings to the tips of the feathers. Juvenals from dark phase populations (5: MNHN, BM) do not seem to differ appreciably. Juvenals have bluish feet (Gain 1914, Oliver 1955) and a light, dark-tipped bill. These parts are black in adults.

The subsequent plumage changes are not well known. The youngest birds to return to the colonies in Antarctica are 2-year-old nonbreeders (Eklund 1961). By successive captures Spellerberg (1970) showed that immatures 2–4 years old grow in all linear measurements in successive years. Light phase birds might also become progressively lighter with age (Friedmann 1945, Isenmann, pers. comm.) although this was not noted by Reid (Kuroda 1962) or Spellerberg (1971) who found immatures more than 2 years old indistinguishable from adults in general plumage characteristics.

Annual cycle.—Complete molt takes place during the nonbreeding season, the northern summer. Kuroda (1962) describes various states of body molt in Japanese light phase specimens taken between May and July. The primaries are also being replaced in all his birds. Molt is almost finished in a California specimen, referred to later, taken in early August. Adélie Land breeders (MNHN) are relatively fresh in December after the partial spring molt, and very worn by March. Wear eliminates much of the golden mane, and some bleaching takes place, particularly of the upper parts. No spectacular lightening through the breeding season is evident, as some of the lightest birds are found among the early captures. This is in agreement with Spellerberg's (1970) findings but not with Gain's (1914) claim, repeated by Murphy (1936), that birds are dark early in the season, bleach to very light during the middle of the austral summer and become dark again towards fall, after supposedly molting in the Antarctic. Gain's impression can certainly be explained by his voyage through regions occupied by various color phases. The molt cycle of dark birds is not clear. Kuroda (1962) thought it was advanced with respect to that of light birds, but the single individual on which he based his assumption might have been immature.

Distribution of the phases.—The distribution of the dark phase of the South Polar Skua is not uniform within the species' range. Such cases of "geographically oriented

polymorphism" (Mayr and Short 1970) are not rare among avian species but they have often created considerable taxonomic confusion. In 1909, Gain collected the dark phase of the South Polar Skua, learned to distinguish it from the Brown Skua, discovered the sympatry of the two forms, and the specific status of *maccormicki*. If his lucid understanding of the situation was obscured by subsequent workers it is partly because he himself failed to realize that he was confronted with a case of polymorphism. The Charcot expedition winter base was on Petermann Island, where dark birds must have occurred alone, or almost alone, and where Gain presumably saw them in spring and in fall. During the two summers spent in the Antarctic, he moved quickly southward, entering regions occupied by light birds. He naturally interpreted the geographical variation he was seeing as a seasonal variation and attributed the lightness of the summer birds to bleaching. The very dark Petermann specimens were not actually seen by later workers, which prevented the recognition of the blackish morph. Murphy (1936) for instance had only light birds at his disposal and thus easily accepted Gain's explanation. Some dark *maccormicki* in the British Museum (examined) are included as *lonnbergi* in the measurements tables of Lowe and Kinnear (1930) and Hamilton (1934) (BM 1924-5-8-4, 5-8-7, 5-8-9, 5-8-10, 1923-9-10-2). Only recently did Kuroda (1962), Falla (1964), and Spellerberg (1970) draw attention to the existence of the dark morph.

With the information now at hand it is possible to outline the distribution of the morphs. Dark birds predominate in the northern part of the Antarctic Peninsula. The collections of the BM and the MNHN contain melanistic specimens only for Argentine Island (BM: 14), Petermann Island (MNHN: 7) and Cape Tuxen (MNHN: 1) while a BM series from Wiencke Island contains 20 dark adults or subadults for 7 light ones.

In the region around 70° along the coast of the peninsula, Eklund (*in* Friedmann 1945) reported both morphs (East Base). Apparently no colonies are known from the base of the peninsula westward to the shores of the Ross Sea. On the west shore of that sea both forms are present in the Ross Island skuaries, but the dark morph represents only 13–15% of the population (Spellerberg 1970). Farther along the coast, the populations are entirely light except for occasional individuals. Reid (*in* Kuroda 1962) found one dark individual out of 500 and one out of 300 in two skuaries of the Cape Adare-Cape Hallett area (one dark specimen from Adare in DM). For Adélie Land there is one dark individual among the series of light specimens in MNHN (no. 1966-23-97). Farther west precise information is scarce, although the population is quite evidently light at Eklund's (1961) Wilkes station (110°E). Of 18 birds (IRSNB) collected by the Belgian Antarctic expeditions of 1957–61 at or near Roi Beaudouin station (24°20'E) during the austral summer, 16 are light, one rather dark, one very dark. Breeding was established by Van Autenboer (*in* Loy 1962) in the Sør Rondane Mountains, 200 km inland from the station. Closing the circle westward, several colonies are known in mountain ranges between the Sør Rondane and the base of the Antarctic Peninsula (Løvenskiöld 1960, Konovalov 1962, Brook and Beck 1972). In antarctic seas away from colonies, most records are of light birds, but individuals collected by the Belgica around 70°S, 83°W in November and December 1898 include a dark bird (IRSNB).

The proved area of sympatry with the Brown Skua, *lonnbergi*, lies entirely, or almost entirely, within the range of the dark populations of *maccormicki*. Both species breed or have bred in the South Shetland Islands (Gain 1914, Watson et al. 1971, BM) and on islands of the Arthur Harbor (south coast of Anvers Island) region

TABLE 1
MEASUREMENTS AND PROPORTIONS OF SKUAS IN BM COLLECTION¹

Species		<i>lonnbergi</i>	<i>hamiltoni</i>	<i>antarctica</i>	<i>maccormicki</i>	<i>chilensis</i>	<i>skua</i>
Number		40-41	9-10	35-36	80	16-18	32-34
Wing	Min	389	376	355	373	372	376
	Max	442	398	397	412	415	425
	Av	415	389	379	394	393	402
Culmen	Min	47.5	49.6	41.2	42.6	43.6	45.4
	Max	56.0	54.5	49.5	49.6	49.0	50.8
	Av	51.7	51.5	45.6	46.6	47.3	47.9
Tarsus	Min	71.5	67.5	61.5	58.5	64.0	61.4
	Max	85.0	75.0	72.9	70.0	71.0	73.9
	Av	77.0	72.2	68.6	63.8	68.6	68.5
W/T	Min	4.91	5.11	5.24	5.61	5.38	5.35
	Max	5.97	5.70	5.97	6.69	5.96	6.43
	Av	5.39	5.38	5.52	6.17	5.69	5.86
B/T	Min	0.60	0.66	0.62	0.66	0.63	0.64
	Max	0.74	0.80	0.73	0.80	0.72	0.75
	Av	0.67	0.70	0.66	0.73	0.69	0.70
BL/BH	Min	2.27	2.76	2.30	2.38	2.34	2.52
	Max	2.93	3.36	2.73	3.10	3.04	3.00
	Av	2.53	2.97	2.49	2.75	2.72	2.74

¹ Wing: arc, with tape; culmen: from feathers; W/T: wing/tarsus ratio; B/T: culmen/tarsus ratio; BL/BH: ratio of culmen length to height of bill at posterior end of nostril.

(Watson et al. 1971, Watson in litt., BM). The Brown Skua breeds probably also at the Balleny Islands (Kinsky 1970, 2 specimens in DM) where the *maccormicki* population is light (2 specimens, DM). Elsewhere in the Antarctic, *lonnbergi* is a regular visitor in very small numbers, reported from Adélie Land (Isenmann pers. comm., Le Morvan et al. 1967, Prévost and Mougin 1970), Ross Island (Schlatter and Sladen 1971), and Cape Adare (DM).

IDENTIFICATION OF SOUTH POLAR SKUA

At sea.—The identification of skuas at sea is always delicate, as is that of jaegers, and should not be attempted unless the birds are seen in good light, at close range, and for a long time. Given these conditions, light South Polar Skuas are practically unmistakable. The lightest birds are unlike any other skua, displaying a sharp contrast between light head and underparts and blackish upper parts. Chilean Skuas are set apart by their cinnamon underparts, blackish upper parts, and a strongly capped appearance. Adults of the subantarctic group (*lonnbergi*, *antarctica*, *hamiltoni*) can be characterized collectively by their dark brown plumage with a generous sprinkling of whitish blotches on the upper parts. Typical adult Great Skuas are conspicuously striped about the head and mantle. Identification of uniformly blackish birds is extremely difficult and will be discussed elsewhere. In any case, small dark skuas are identical in plumage and very similar in size to some Pomarine jaegers (*Stercorarius pomarinus*) so that extralimital records of skuas must be treated with great skepticism in places where the jaeger is common.

In the hand.—South Polar Skuas can be separated from all Chilean and Great Skuas by plumage characters alone. In comparing *maccormicki* to *lonnbergi* (and *hamiltoni*) the difference in size and bulk of bill and particularly of tarsi is generally obvious at first inspection. For instance, I found that a mixed BM series from the Antarctic Peninsula could be sorted out correctly, without reference to actual mea-

surements, by using a combination of criteria based on plumage and apparent size of soft parts. Tarsus length is practically diagnostic for separating *maccormicki* from *lonnbergi*, a tarsus over 70 mm characterizing the latter, less than 70 mm the former (e.g. Table 1). There is also little overlap in tarsus and culmen lengths between *hamiltoni* and *maccormicki*. Difficult specimens of *maccormicki* and *antarctica* are best separated by a combined use of wing/tarsus (W/T) and bill/tarsus (B/T) ratios as suggested by Kuroda (1962). Thus, in the BM series (Table 1) the condition "W/T > 5.97 or B/T > 0.72" separates 81% of the *maccormicki* from 100% of the *antarctica* (and 100% of the *chilensis*), while the condition "W/T > 5.80 or B/T > 0.70" separates 97.5% of the *maccormicki* from 92% of the *antarctica*.

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Grinnell and Miller (1944) listed only 4 specimens and 1 sight record of skuas in California, whereas Jewett et al. (1953) knew of 9 specimens taken on 6 trips off Washington. In recent years, with the advent of many offshore trips by qualified observers, it has become evident that skuas occur regularly in autumn in small numbers along the coast. A cursory survey of Audubon Field Notes shows that between 1953 and 1973, skuas were reliably reported in northern California, Washington, or British Columbia every fall except in 1955, 1958, and 1962.

Off Washington and British Columbia skuas are regularly present early in the season, with several recent July—even very late June—and August records, in agreement with the former specimen data (30 June–31 August). The latest record seems to be 24 September (T. Wahl in litt.). The highest number recorded in one day is 12 on 8 August 1969 northwest of Cape Flattery, Washington, near a Russian fishing fleet (Crowell and Nehls 1970).

In California most records come from Monterey Bay. From one to a dozen birds are usually reported each fall, with a record 19 individuals sighted in the Monterey area on 7 October 1961 (Cutler and Pugh 1962). Most well-documented recent autumn records fall between early September and late October with extremes on 27 August and 17 November, and an isolated 19 July sighting, although two of the older specimen records were on 4 and 7 August.

The only reliable fall record of skuas for southern California appears to be that of 7 birds in 10 days, far offshore in late October 1971 (Jehl 1973). Other, more coastal records (e.g. Small 1959) were never fully substantiated and have not been confirmed by recent research. Confusion with dark Pomarine Jaegers seems likely.

Although occurrence along the Pacific coast has been mostly limited to the autumn, 4 recent (1971, 1972, and 1973) well-documented spring records (7 May–1 June) exist, 1 in extreme northern California and 3 in southern California (McCaskie 1971, 1973, DeSante and Le Valley 1972).

SIGHT RECORDS OF SOUTH POLAR SKUAS

Most skuas seen are either too distant for specific identification or not critically observed, but some records for both California and Washington can be referred without doubt to the South Polar Skua.

A light phase bird seen at close range in Monterey Bay on 25 September 1971 by several observers, including the author, and photographed (slide in SDNHM), was described as follows: Entire head and nape pale golden brown or chamois color, practically uniform, but with the nape paler, a very pale whitish golden. Back and

TABLE 2
SKUA SPECIMENS FROM THE PACIFIC COAST OF NORTH AMERICA

Museum	Date	Locality	Alleged identity	References
California				
AMNH ¹	before 1853	"Monterey"	<i>chilensis</i>	Grinnell and Miller 1944
CAS ¹	7 Aug. 1907	Monterey	<i>chilensis</i>	Grinnell and Miller 1944
MVZ ¹	4 Aug. 1910	Monterey	<i>chilensis</i>	Grinnell and Miller 1944
MVZ ¹	21 Sep. 1910	Monterey	<i>chilensis</i>	Grinnell and Miller 1944
MVZ ¹	3 Oct. 1954	Farallones	—	Cogswell and Pray 1955
Washington				
?	28 Jun. 1917	Grays Harbor	—	Jewett et al. 1953
UCLA ¹	30 Jun. 1917	Jefferson Cy.	<i>lonnbergi</i>	Jewett et al. 1953
WSM ²	30 Jun. 1917	Clallam Cy.	<i>lonnbergi</i>	Alcorn 1942
?	12 Jul. 1935	Grays Harbor	<i>antarctica</i>	Alcorn 1942
WSM ²	31 Aug. 1936	Grays Harbor	<i>antarctica</i>	Alcorn 1942
WSM ²	31 Aug. 1936	Grays Harbor	<i>antarctica</i>	Alcorn 1942
WSM ²	31 Aug. 1936	Grays Harbor	<i>lonnbergi</i>	Alcorn 1942
WSM ²	16 Aug. 1937	Grays Harbor	<i>lonnbergi</i>	Alcorn 1942
?	17 Jul. 1939	Grayland	<i>antarctica</i>	Alcorn 1942
UPS ¹	20 Aug. 1945	Cape Elizabeth	<i>lonnbergi</i>	Alcorn 1946
British Columbia				
BCPM ¹	27 Jul. 1948	Goose Island Bank	<i>lonnbergi</i>	—
AM ¹	26 Jun. 1938	Cape Calvert	<i>chilensis</i>	—

¹ Examined for this study, found to be *maccormicki*.

² Color slides examined for this study, identified as *maccormicki*.

wings very dark brown. Foreneck, throat, breast, and underparts light vinaceous brown with no warm tinge. Tail dark brown. In flight a fairly large white patch at the base of the remiges. Bill blue gray, rather dark, with a black tip.

Three other birds seen on the same day, but at a much greater distance were darker. One had a light nape and was clearly *maccormicki*, the two others appeared wholly dark and were thought to be dark phase *maccormicki*. Other *maccormicki*, seen later off southern California, are described by Jehl (1973) and McCaskie (1973).

For Washington state, T. R. Wahl kindly sent me a series of slides of three birds, photographed on 11 September 1971, 23 July, and 24 September 1972. Only the first can be positively identified from the pictures and it is clearly a light-phased South Polar Skua.

SPECIMEN RECORDS

California.—I know of five California specimens (Table 2), one of them (3 October 1954) a skeleton. Thanks to the cooperation of L. C. Binford, I was able to borrow the CAS specimen (No. 109204, male) and compare it directly to AMNH specimens. With fairly light underparts, a pale uniform nape area, and contrasting, unmarked blackish back and scapulars, it matches light phase *maccormicki* well (Fig. 1) and is not approached by any specimen of *antarctica* or any other form. The bill shape is also that of *maccormicki*. Culmen (48.7 mm) and tarsus (64 mm) measurements are well within the range of *maccormicki*. The wing measures only 362 mm, but the two first primaries are growing, the third primary constituting the wing tip. Together with the sight records mentioned above, this record establishes the presence of the South Polar Skua in California and in North America.

California records had hitherto been referred to the Chilean Skua (Grinnell and Miller 1944, A.O.U. 1957). This treatment rested chiefly on the identification of two Monterey specimens (4 August and 10 September 1910), both in the MVZ (No. 17758

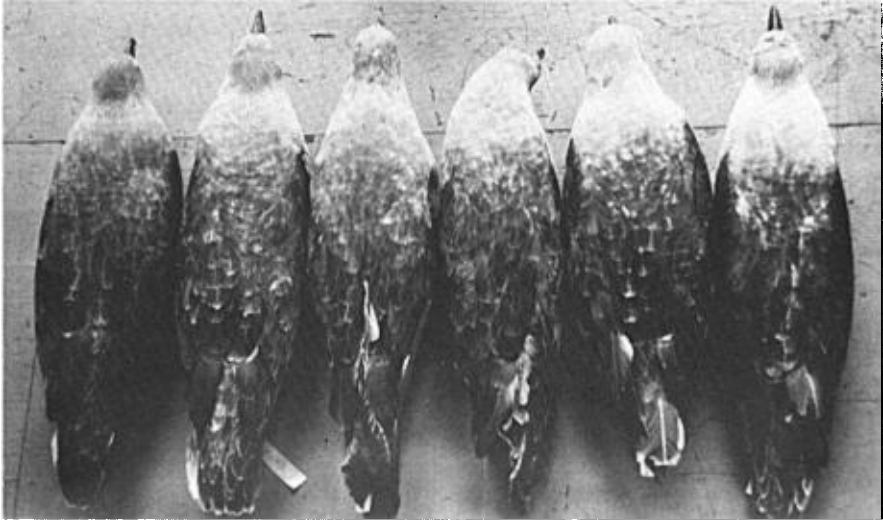


Fig. 1. Specimens of *C. maccormicki* in light phase (AMNH). The third specimen from the left is the bird taken in Monterey, California, on 7 August 1907 (CAS 109204).

male, No. 17759 female). As indicated by Bent (1921) and Dawson (1923), the two specimens are very dark (proportions, from Dawson's measurements: W/T 6.16, 6.43; B/T 0.75, 0.79). They were examined at my request by Jean A. Terschuren and found to be dark *maccormicki*. They have been called *chilensis* because Bent (1921) and Murphy, by direct comparison with AMNH specimens, had found them to "agree exactly with certain peculiarly characterized South American birds which are not like the usual *chilensis*" (Grinnell and Miller 1944). But as mentioned above, I consider the comparison material itself as dark phase *maccormicki*. Bent (1921) noted the similarity of the California birds with a specimen from Japan, where only *maccormicki* is known. The MVZ skeleton was measured by J. R. Jehl, Jr. and, on the basis of proportions (long wing, short tarsus, slender bill), tentatively referred by him to *maccormicki*. The remaining California specimen, AMNH No. 46093, is probably foxed. It is difficult to identify, but there is no reason to think it is not a dark *maccormicki* (wing chord 373, bill 53, tarsus 62, W/T ≥ 6.02 , B/T 0.85). Its origin should be considered doubtful as old specimens were often labeled according to port of entry. Thus at present no specimen record of *C. chilensis* for California exists.

Washington.—Nine Washington specimens have been split between the Brown and Falkland Skuas (Table 2), but none was compared to series of skuas. The tarsi of the eight specimens reported by Alcorn (1942, 1946) range between 58.5 and 65.0 mm (average 61.8 mm). Such short tarsi should in fact eliminate *lonnbergi* from consideration, leaving only *antarctica* and *maccormicki*. Moreover, the proportion of the specimens calculated from Alcorn's data fit *maccormicki* only (W/T 5.63–6.56, B/T 0.73–0.84).

Dr. Alcorn and Mrs. D'Arms very kindly sent me fine series of slides of six of the Washington specimens (four mounts and two skins) preserved in the University of Puget Sound Museum (UPS) and the Burke Memorial Washington State Museum of the University of Washington (WSM). Four were recorded as *lonnbergi* and two as *antarctica* (Alcorn 1942, 1946). Three of the "*lonnbergi*" (30 June 1917, 31 August

1936, 16 August 1937) appear to be very typical light phase South Polar Skuas with uniform blackish upper parts contrasting strongly with the light head and underparts and prominent nape patches. The remaining "*lonnbergi*" (UPS) and one "*antarctica*" (WSM No. 43) are a little darker, particularly the latter, but still display very well the contrast between upper and underparts and the light nape. The second "*antarctica*" (WSM No. 49) is the least typical, being quite unmarked, but it seems to represent a dark phase *maccormicki*, not extremely dark and presumably somewhat foxed like the other Washington mounts. In all six the bill shape is compatible with *maccormicki*.

I have no hesitation to identify as *maccormicki* the six skuas of which I have seen color slides. A seventh specimen, in UCLA, was kindly checked for me by J. R. Jehl, Jr. and found to be "intermediate" *maccormicki* (wing 389 mm, culmen 46.1 mm, tarsus 65.0 mm, W/T 5.98, B/T 0.71). Alcorn's (1942) description of the 12 July 1935 "*antarctica*" fits *maccormicki* perfectly. His allocation of the 17 July 1939 specimen to *antarctica* was by inference; he did not examine it himself but quoted Hudson's and Balmer's comparison of it to two other birds now known to be *maccormicki*. There is thus no reason to believe that any of the Washington specimens represent *lonnbergi* or *antarctica*.

British Columbia.—The Brown Skua, *C. s. lonnbergi*, is the only form recorded for the Pacific coast of Canada (Godfrey 1966). Apparently (Godfrey in litt.) the basis for its inclusion in the British Columbia list was Alcorn's (1942) identification of the Washington birds, and few actual British Columbia specimens exist. I have been able to examine a supposed *lonnbergi* from the British Columbia Provincial Museum (BCPM No. 9798, Goose Island Bank, 27 July 1948) and to compare it with reference material in IRSNB. The plumage is typical of a fairly dark, light phase South Polar Skua. The measurements (wing 388 mm, culmen 49.5 mm, tarsus 63.2 mm, W/T 6.14, B/T 0.78) are consistent with this species and not with *lonnbergi* or *antarctica*, while the slender tapering bill also precludes *antarctica*. The bird is in heavy molt on the nape, back and scapulars. I found a second British Columbia specimen in the AM, Sidney (No. 0.37704). Collected 50 miles west-southwest of Cape Culvert on 26 June 1938 by A. Tubb and labeled *chilensis*, it was acquired together with 3 *Oceanodroma furcata* and 1 *Hesperiphona vespertina*, an association that confirms its origin. It is a typical light phase *maccormicki*.

AGE

Most of the skuas that visit the North Pacific are apparently immatures. Kuroda (1962) mentions the lack of golden hackles on fresh plumaged light birds from Japan and suggests that this feature in antarctic birds might correspond to worn plumage. That is not the case, for the freshest antarctic birds generally have the best developed manes. The absence of the golden marks is probably a character of immature birds, as suggested by Falla et al. (1966). The CAS, BCPM, and AM specimens also lack the golden feathers, and judging from the slides, so do the Washington specimens. Adult South Polar Skuas have a black bill while juveniles have a light bill with a dark tip. The blue-gray, black-tipped bill of the bird seen in Monterey 25 September 1971 would thus indicate immaturity, probably end of first winter. Finally, the measurements of the North American specimens are small for the species; 12 specimens average 61.7 mm for the tarsus and 47.3 mm for the culmen, while 8 of them with full-grown primaries average 378.4 mm for the wing. In gulls (*Larus* sp.) and jaegers, immatures tend to have smaller linear measurements, particularly of the

wing, than adults. Dawson (1923) also suggested immaturity to explain the small size of the Berkeley skuas. Some individuals show growing primaries (CAS, WSM 16 August 1937 and 30 June 1917) or secondaries (WSM "*antarctica*" 31 August 1936) and, although immature, must be more than 1 year old.

MIGRATIONS OF THE SOUTHERN SKUAS

It is now clear that the South Polar Skua undertakes a regular migration into the North Pacific, appearing in some numbers off Japan and North America. Movement may involve mostly first-year birds or, at any rate, immatures. The dates of occurrence suggest a clockwise loop in the North Pacific. Japanese records are concentrated between 1 May and late July, with most apparently in June and July (Kuroda et al. 1958, Kuroda 1962). The birds are well represented off British Columbia and Washington from July and August onward, while they do not visit northern California in any numbers before September and October. They have been seen off southern California in late October. New Zealand, due south of Japan, has only four records in January, March, and April (Oliver 1955, Falla et al. 1966). Still, it is not certain that the birds that frequent the eastern Pacific crossed over from Japan. At an intermediate longitude near the Hawaiian Islands, skuas that were most probably South Polar (two phases noted) have been reported both in May–June and September–October (King 1970).

In other oceans the evidence for Northern Hemisphere occurrence of the South Polar Skua is not yet conclusive. Morzer Bruyns and Voous (1965) published a series of sightings of unidentified skuas in the northern Indian Ocean, the Red Sea, and the eastern Mediterranean, all between March and November. A dark South Polar Skua banded on the Antarctic Peninsula was taken 7 August 1964 on the west coast of India (Ali and Ripley 1969, with measurements). Six skuas appear to have been collected in Ceylon (Ali and Ripley 1969). One is clearly *maccormicki* in light phase (Wait 1925). The other five are referred by Ali and Ripley (1969) to *antarctica*: the description of one of them in Legge (1880) is inconclusive although closest to light *maccormicki*; those of two more in Wait (1925) fit dark *maccormicki*, and the last two were referred to the unlikely *antarctica* on the basis of small size and dark color, characters that do not eliminate *maccormicki*. All Ceylon specimens may prove to be South Polar Skuas. In the North Atlantic occurrence of southern skuas is more difficult to detect owing to the presence of *C. skua skua*. A Greenland specimen in UZM (No. 41.727) previously reported (Bertelsen 1921: 174), and identified as *C. skua skua* is a light phase *C. maccormicki* (wing 385, culmen 46.4, tarsus 62, W/T 6.20, B/T 0.75). Taken at Disko Bay in mid-July 1902, in circumstances that preclude any error of locality, it is in the course of replacing its primaries. No other specimens could be found in the extensive North Atlantic collections of London and Copenhagen.

The question arises whether the Chilean Skua and the southern races of the Great Skua are transequatorial migrants at all. At present I know of one apparently unsailable record: a *lonnbergi* specimen taken in Kerala, India in September 1933 and measured by Watson (wing 397, tarsus 76, Ali and Ripley 1969); a recent banding record from Guadeloupe in the West Indies is attributed to *lonnbergi* (Hudson 1968), but as the individual in question was banded at Deception Island in the South Shetlands, where *maccormicki* also occurs, the record seems open to doubt. Murphy (*in* Holmes 1958: 108) identified as *chilensis* two "brightly cinnamon skuas" seen 15

November 1956 off the Gulf of Tehuantepec, Pacific coast of Mexico, but they could also have been North Atlantic *skua* that might have strayed across the isthmus; Wetmore (1965) tentatively referred to *chilensis* the majority of Panama (sight) records, but only because it appeared to him as the most likely to occur. In general, the status of southern *C. skua* and *C. chilensis* may be that of scarcer transequatorial migrants than *C. macormicki*, and perhaps limited to lower latitudes.

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