



OBSERVATIONS AT A BREEDING COLONY OF *LARUS (BELCHERI) ATLANTICUS*

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INTRODUCTION

The presence of «Band-tailed» or «Belcher's» Gulls on the Atlantic coast of Argentina had long been reported (Daguerre, 1933), though it was often denied (e.g. Murphy, 1936). Olrog (1958a) clarified the situation and described the birds as a new race, *atlanticus*, of the Pacific coast *Larus belcheri*. Later, he reported (Olrog, 1967) the discovery of a small colony near Bahía San Blas, Buenos Aires Province, in November 1963; in the same region, Daguerre had seen the species in 1932, and identified old gull nests as those of this bird. Olrog found 12 nests with eggs, and no young. No other information on the breeding of *atlanticus* has been available, except for an ambiguous and undocumented reference to its nesting near Mar del Plata (Magno, 1971).

With Jean A. Terschuren and Edward Shaw, I visited Bahía San Blas in the spring of 1975. We spent a total of five days in the area, 3 to 7 November, of which 18 hours could be devoted to watching colonies of *atlanticus* on islands of Bahía Anegada. Very few birds were seen away from the nesting islands. Our attention was mostly directed to the agonistic and parental behaviour, and to the colour pattern of the chick.

In reporting the breeding of *atlanticus* at Bahía San Blas, Olrog (1967) precised some of the differences between *atlanticus* and *belcheri* and noted, with Eisenmann, that «for gulls the differences ... are such ... as one might expect between allied but distinct species» (see also Eisenmann, in Meyer de Schauensee, 1966, p. 103). I concur, and feel that specific rank will best express the great distinctness of *Larus atlanticus*. I shall further justify this choice in the discussion of the morphological characters (Fig. 1) of the species. For a vernacular name, none seems more appropriate than «Olrog's Gull».

METHODS

Two islands with gull colonies were visited, on 5 November from 9:00 to 20:00 and on 6 November from 7:30 to 14:30 respectively. Disturbance is always a serious risk in studying colonial birds, and can be considerable with some gulls (Burger, 1974; Gillett *et al.*, 1975;

Fig. 1. Olrog's Gull, *Larus atlanticus*, Bahía San Blas, Argentina,
5 November 1975.

←

Robert and Ralph, 1975). The short time available did not allow the placement of a hide, but we found that a slow progression, begun at about 200 m, eventually permitted close approach without exaggerated interference. We crawled for short periods, stopping at the first signs of alarm, and pausing for long periods to permit a return to normal. Great agitation was noted in the colony, some adults flew up and mobbed us, and some movement and relocation of chicks within the colony was unavoidable, but there was never any mass panic or desertion, and no chick wandered out of the colony. In general, Olrog's Gull proved bold, brooding relatively calmly with an observer at five metres, in contrast to the flighty Dominican Gulls, *Larus dominicanus*, nearby. However, we did not stay for a long period at the closest approach, and refrained from entering the colony to examine nests or handle chicks for fear of chasing them out of the colony and within reach of predatory Dominican Gulls. The only chick examined in the hand was one that was tended by adults at a distance from the colony, and which could thus be captured without disturbance.

Observations were made with 10 × 40 binoculars, and photographs secured with the aid of a 400 mm lens. Sounds were recorded with a Nagra SN tape recorder (tapes in Institut royal des Sciences naturelles de Belgique, IRSNB). Vocalizations are represented in an approximate way by the letters of the international phonetic alphabet (italicized).

BREEDING SITES

Bahía Anegada is a large, shallow embayment, about 80 km by 20 km, formed at the mouth of the Río Colorado, at about 40° S. It is an intricate maze of tidal channels and mud flats, sand bars, low, flat, sandy islands with areas of low rushes, sedges, *Suaeda* and *Salicornia*. Even at low tide, there are some large expanses of open water, which can be rough under certain wind conditions. The waters are rich in fish, and the mudbanks are known for their large numbers of crabs. The village of Bahía San Blas is built on a large island near the southern shore of the bay. The landscape around the settlement is a low grass steppe, locally dotted with small bushes.

We were told locally that several small islets have gull colonies, and we visited two of these, both in the southern part of the bay. One of them, a very flat islet, is probably the same that was visited by Olrog (1967). Six hundred pairs of Dominican Gulls and three pairs of Gull-billed Terns, *Gelochelidon nilotica*, bred in the central carpet of *Salicornia*. A group of 70 Olrog's Gulls was located immediately adjacent to the Dominican Gulls, among the last isolated clumps of *Salicornia*, on the edge of a large sandflat. Five additional pairs bred elsewhere at the periphery of the Dominican Gull colony. The high tide line was 100 m distant from the main *atlanticus* group, but less than a metre below it. On the side of the island occupied by Olrog's Gulls, an extensive rush marsh, inundated even at low tide, prolonged the islet.



Fig. 2. Part of a dense colony of Olrog's Gulls, *Larus atlanticus*. Among them two Royal Terns, *Sterna maxima*, and two Cayenne Terns, *Sterna eurygnatha*. Dominican Gulls, *Larus dominicanus*, in background.

The second island was larger, and comprised, besides a fairly narrow beach, a raised, vegetated area of low, fixed sand dunes and a vast, completely bare sandflat. Again, rush marshes existed along part of the shore. A large colony of Dominican Gulls, estimated at 1000-1200 pairs, nested in the sand dunes and among the debris of the upper beach, while two groups of Olrog's Gulls, of 70 and 160 individuals, respectively, were nesting on the sandflat, 50 m from each other and about 60 m and 20 m, respectively, from the nearest Dominican Gulls. Three pairs of Cayenne Terns, *Sterna eurygnatha*, and one, or perhaps two, pairs of Royal Terns, *Sterna maxima*, were associated with the larger Olrog's Gull group. This islet may be the one visited by Daguerre (1933); his description of the old nests he found suggest that they belonged indeed to this species.

The nests we saw were elevated platforms of twigs, grass stems, pieces of *Salicornia*, or, sometimes, scrapes abundantly lined with the same materials. The colonies were much more closely packed (Fig. 2) than those of the Dominican Gulls, and were conspicuous even at a great distance by their extreme density. Some nest platforms were actually touching each other. Such a high concentration is not typical of gull colonies in general, but has been reported by Beer (1966) for Black-billed, *Larus bulleri*, and Red-billed, *L. novaehollandiae scopulinus*, gulls, and I have observed it in Scoresby's Gull, *Larus scoresbii*.

As noted by Olrog (1967), gull colonies near Bahía San Blas are regularly egged, which makes breeding schedules somewhat erratic. In the Dominican Gull colonies, we found eggs, pipped eggs, hatching chicks, nest-bound chicks and very ambulatory downy young. The Olrog's Gull colonies had probably been spared this year, as they seemed to have young of reasonably homogeneous age, while at a comparable time in 1963 Olrog found only eggs which he presumed to be replacement clutches. The oldest chicks we saw were just starting to grow scapular feathers. Only in the larger group of the second islet were there a few eggs on the periphery.

We saw no predation. Besides Dominican Gulls, Cinereous Harriers, *Circus cinereus*, and Chimangos, *Milvago chimango*, are common in the area and represent a potential threat, though we never saw them in the immediate vicinity of colonies.

Table 1. Measurements and proportions of five *L. atlanticus* from Bahía San Blas (IRSNB). They are compared to those of five *L. belcheri* (British Museum) and five *L. dominicanus* (IRSNB : South America and New Zealand). Wing : arc (tape over wing); Bill : culmen, from feathers; W/T : wing/tarsus ratio; B/T : bill/tarsus ratio; W^3/M , B^3/M , T^3/M : comparison of linear dimensions to bulk (cubes of average linear dimensions in cm divided by approximate average weight in g).

		<i>belcheri</i>	<i>atlanticus</i>			<i>dominicanus</i>		
			males	females	all	males	females	all
Number		5*	2	3	5	2	3	5
Wing (mm)	min	355	437	416	—	422	402	—
	max	394	440	428	—	424	412	—
	av	372	439	420	428	423	408	414
Bill (mm)	min	46.2	53.7	49.3	—	49.9	46.3	—
	max	49.5	58.6	51.8	—	51.7	48.0	—
	av	47.9	56.2	50.3	52.6	50.8	47.0	48.5
Tarsus (mm)	min	60.7	63.3	58.2	—	63.5	58.7	—
	max	63.0	64.3	60.7	—	65.5	64.7	—
	av	61.9	63.8	59.3	61.1	64.5	62.0	63.0
W/T	min	5.67	6.79	6.86	—	6.47	6.37	—
	max	6.25	6.95	7.25	—	6.65	6.98	—
	av	6.02	6.87	7.09	7.00	6.56	6.59	6.58
B/T	min	0.74	0.85	0.84	—	0.76	0.74	—
	max	0.82	0.91	0.86	—	0.81	0.80	—
	av	0.77	0.88	0.85	0.86	0.79	0.76	0.77
Weight (g)	min	—	900	750	—	—	—	—
	max	—	960	790	—	—	—	—
	av	670†	930	763	830	1065°	—	—
W^3/M		76.8	—	—	94.4	71.0	—	—
B^3/M		0.16	—	—	0.18	0.12	—	—
T^3/M		0.35	—	—	0.27	0.25	—	—

* : sex uncertain; † : one male, one female (Murphy, 1936); ° : one bird.

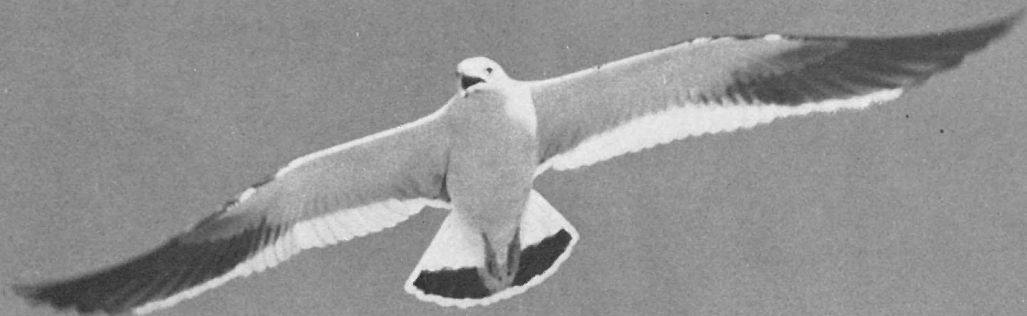


Fig. 3. Olrog's Gull in flight. Note black-banded tail and broad white area of secondaries.

ADULTS

Larus atlanticus is a large gull, of similar size to that of *L. dominicanus*. *L. atlanticus* appears slightly smaller and shorter-legged on the ground, slightly larger, longer-winged in flight. Indeed, Table 1 shows *dominicanus* heavier and with a longer tarsus, but a shorter bill and wing. *L. atlanticus* is thus much larger than the Pacific coast *Larus belcheri* (Olrog, 1967; Table 1), from which it also differs in proportions, having much longer wing and shorter tarsus in relation to bulk and bill length (Table 1). The back, the scapulars, and the upper surface of the wings are jet black, the rest of the body plumage, the head, neck and underwing coverts pure white (Fig. 1 and 3). The outer primaries are black, with no white mirrors. The inner primaries are narrowly tipped with white and the secondaries broadly, forming a bulging, crescent-shaped area on the rear edge of the wing (Fig. 3). The tail is white, crossed by a subterminal black bar that does not extend to the outer web of the outer rectrix (Fig. 3). As indicated by Olrog, Belcher's Gull differs sharply in having a grey wash on the nape, grey underwing coverts, a brownish black mantle, and a much broader area of black on the tail. The tail band is differently shaped.

Both species have a dark, blackish brown iris, yellow legs and feet, and a yellow bill with a red and black tip. In Olrog's Gull, however, the bill is much more powerful with a much more pronounced gonydeal angle, the tip is extensively black, and the red is deep and dark (Fig. 1). Belcher's Gull has the black generally more reduced, as well as differently located, and the red lighter and clearer, altogether resulting in a rather different pattern (pers. obs.). The eye-ring is bright red in *atlanticus*,



Fig. 4. Olrog's Gulls fighting in colony.

yellow in *belcheri*. Eye-ring color is perhaps an important character in species discrimination among gulls (e.g. Smith, 1966). The gape of *atlanticus* is orange-red, the cutting edges yellow, the flanges bright red and the inside of the tips of both mandibles coloured with red and black, so that the open bill offers a striking pattern.

Larus belcheri and *L. atlanticus*, though obviously related, differ strongly in size, proportions, breeding plumage, bill shape and coloration, eye-ring color and (Escalante, 1966; Olrog, 1967) in winter and immature plumage. Within *Larus*, no two forms as distinct as these are presently considered conspecific. On the contrary, several sympatric species differ by far less and so do several generally accepted allopatric species. To regard *belcheri* and *atlanticus* as conspecific would not be consistent with habitual treatment of the rest of the genus and would thus suggest much less divergence than has actually taken place.

ADULT BEHAVIOUR

Perhaps because of the very close proximity of the nests within the crowded colonies, interactions were extremely frequent between Olrog's Gulls, much more so than among the Dominican Gulls. The colonies were very lively, and frequently in turmoil, and many direct attacks, with birds grabbing each other, were seen. The state of excitement was, of course, aggravated by our approach, mostly because of relocation of non-brooding individuals; but even after the colony had become accustomed to our presence, the rate of interaction remained high.

Olog's Gulls are, in general, quite aggressive. A few individuals were always among the first gulls to greet the boat, at a fair distance from their colony, giving loud alarm. They repeatedly swooped at approaching observers in much the same way as skuas, *Stercorarius sp.*, while Dominican Gulls simply flew overhead. They settled immediately, as soon as the observer would stop, and sat much more tightly than Dominican Gulls. In addition to direct attacks, «pulling» fights (Fig. 4) and escapes, we noted a certain number of ritualized behaviours similar to those of other gulls. These are briefly discussed below. The terminology of postures and vocalizations is that of Tinbergen (1953, 1959), with a few additional terms taken from Moynihan (1962). All these terms are capitalized. The short time available and the lack of marked birds did not permit quantification nor any adequate study of causality, so that our analysis is almost exclusively descriptive. In the terms of Howell's chess analogy (in Howell, Araya and Millie, 1974), we watched the game long enough to discern the physical form of some of the pieces but not to understand their possible moves, and even less their use by the players.

UPRIGHT

The Upright is a frequent display of Olog's Gull, and does not differ in form from that of other gulls. Both «Aggressive» Uprights, with bill pointed down, and, more rarely, «Anxiety» Uprights were noted. An extreme «Aggressive» posture was often recorded, chest inflated, head and bill pointed down, almost touching the breast. This posture was assumed by birds running toward an adversary, and also sometimes by two individuals walking side by side. In the Uprights with bill pointed down, the carpal joints were often held out, the nape feathers ruffled, and the posture seemed, as in other gulls, to be mostly aggressive.

LONG CALL

Long Calls were very frequent in the colonies of Olog's Gulls that we watched, much more so than among the nearby Dominican Gulls, although these were at a comparable stage in the breeding cycle. Their use seemed to fit well the advertisement role suggested by Howell *et al.* (1974) for the Grey Gull, *L. modestus*. These calls were given by standing or by brooding birds, often when closely approached by a wandering adult. They appeared contagious. They were particularly often delivered, sometimes repeated at short intervals in long series, by pairs (?) standing over or near chicks off nests. Often, three birds, or two apparent pairs, would indulge in series of Long Calls. Contrary to Moynihan with *belcheri*, we did not see any bird deliver a Long Call or any other vocalization on landing. The form of the Long Call, with its accompanying postures (Fig. 5), is very constant. A bird suddenly throws its head downward and backward, bill almost between the legs, touching the ground (Fig. 6) and, in that Head-down posture, utters two or three muffled, long, drawn-out, slow notes. Then, the neck and head are jerked into an Oblique at about 45° (Fig. 7), and a

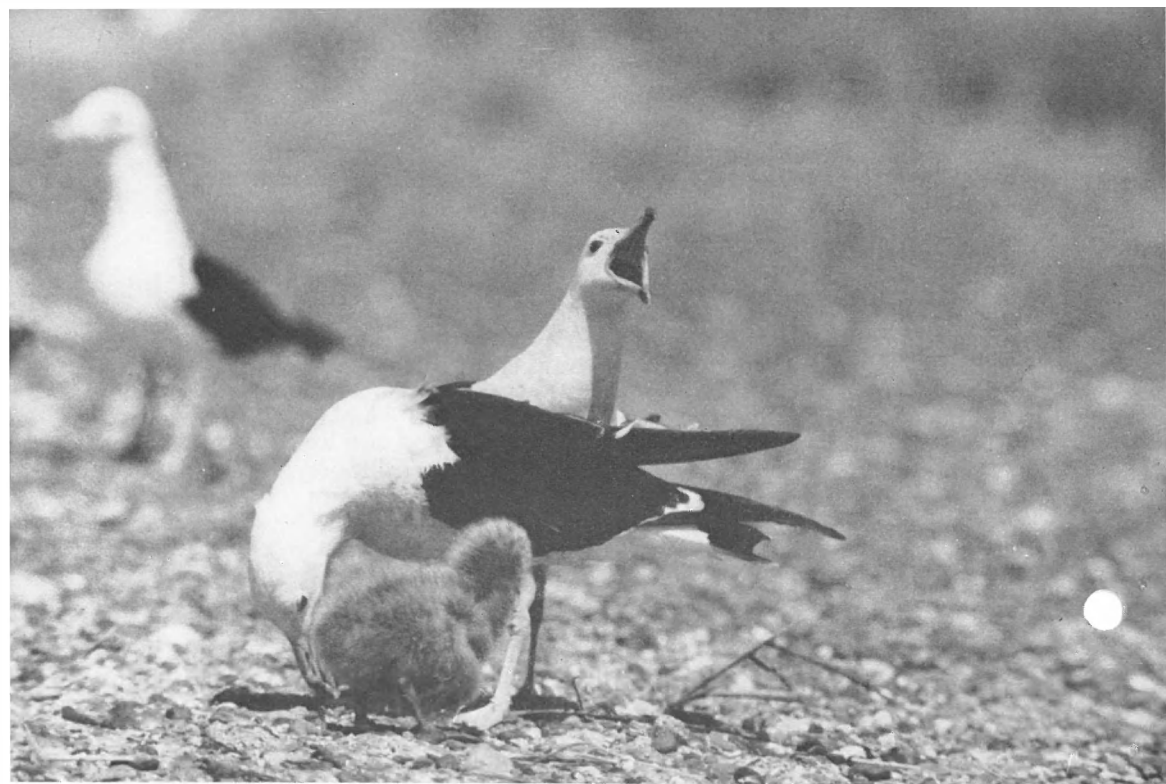


Fig. 5. Two Olrog's Gulls Long-Calling. The bird in the foreground is in the first, Head-down phase, the other in the second, Oblique, phase.

series of rather faster and more run-together notes is delivered. These notes are progressively slowed down and the neck is lowered, generally slightly, but sometimes to nearly horizontal. The carpal joints are usually, but not always, held quite far out during the whole display. At the end, the neck is contracted and slowly relaxed to its normal position, but a few mumbled *gek-gek* notes are sometimes produced, as an «afterthought». The general tone is soft, melodious, plaintive and nasal.

We never heard any introductory notes before the head was thrown down (which does not mean they do not occur). On the contrary, there was very often a short silence between assumption of the Head-down posture and the first note. Otherwise, the Long Call performance seems very similar or identical to that described by Moynihan (1962) for *L. belcheri*. Except for the lack of an introductory Oblique, the phases of the display are similar in static appearance to those of the Herring Gull (*L. argentatus*) as diagrammed by Tinbergen (1959:13). The accompanying vocalizations, however, are very different, and the movements are much more jerky, less supple, than in Dominican Gulls, the species of the Herring Gull group that was available for comparison.

CHOKING

Breast-lowered postures (Snow and Snow, 1968), in which birds stand with bill pointed down, breast somewhat lowered and the rear

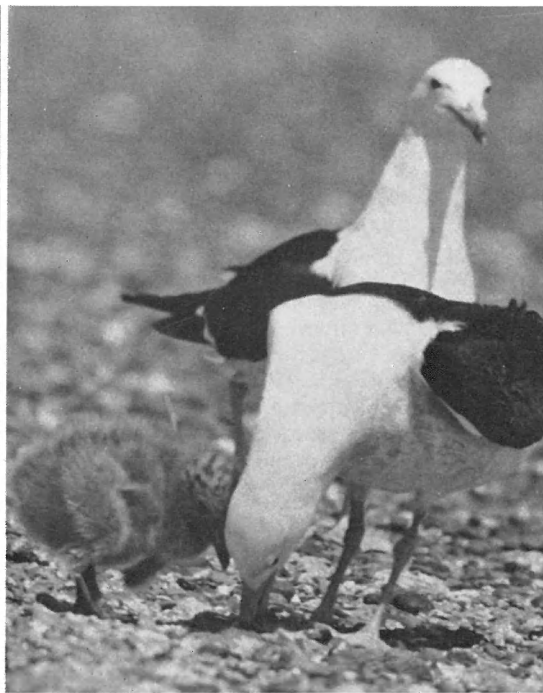
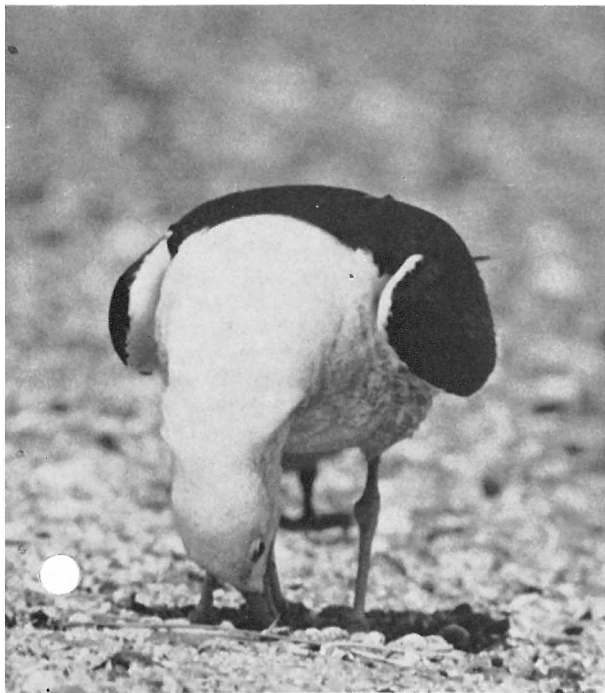
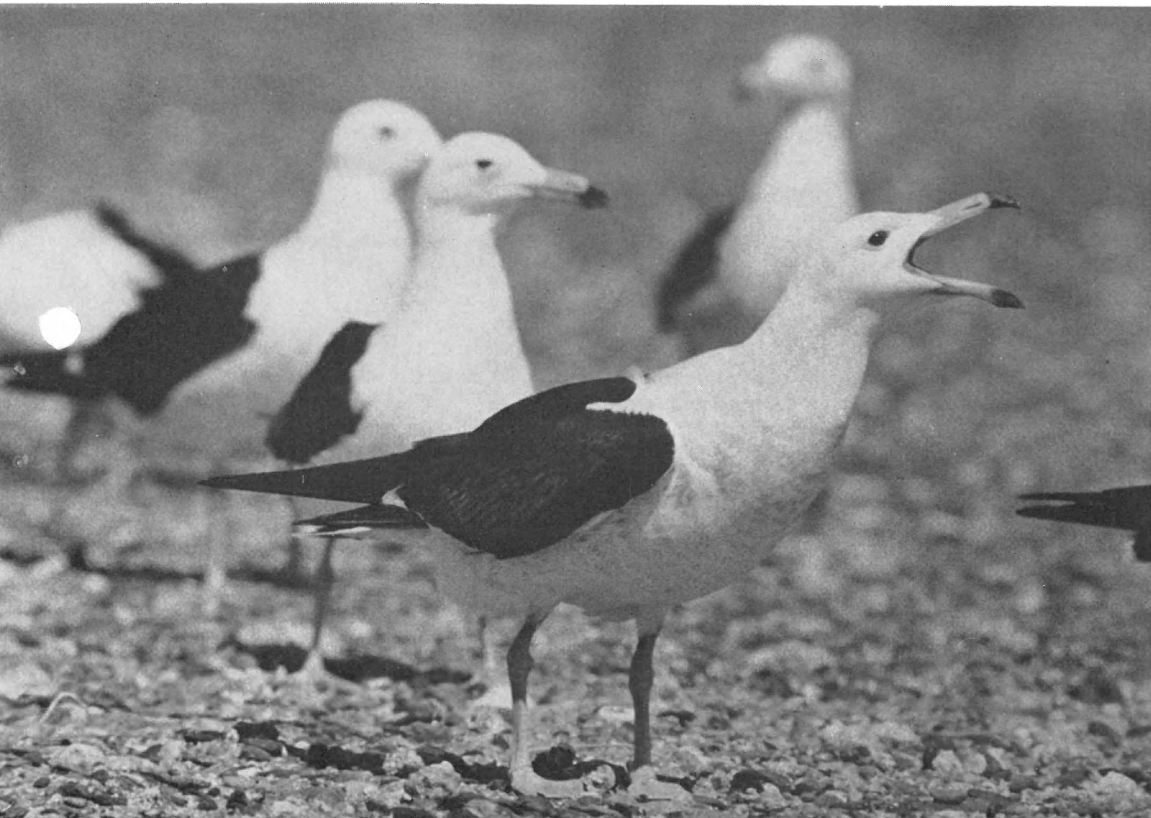


Fig. 6. The Head-down phase of the Long Call. Note bill touching ground and wings held away from body.

Fig. 7. Oblique phase of the Long Call.



slightly elevated, were seen, though seldom. Such positions resembled the Choking display of other gulls but were never accompanied by head motions, nor by any vocalization. In this they were similar to a position described for the Swallow-tailed Gull, *L. furcatus*, by Snow and Snow (1968) or corresponded to simple «bending down over the nest site» (Tinbergen, 1959). Moynihan found Choking a «common and conspicuous display of *L. belcheri*», but noted it was silent and not always accompanied by head motion; he felt that the homology of this display with the Choking of other gulls was questionable. Olrog's Gulls seemed to us to Long-call in situations where Black-headed Gulls, *Larus ridibundus*, would Choke.

OTHER RITUALIZED DISPLAYS

Gaping

Direct attacks were very frequent. An attacker would lunge forward with wings partially or totally open. The bill would almost always be widely open, the posture being sufficiently exaggerated and held long enough to be considered as ritualized. In any case this Gaping reveals the striking pattern of the cutting edges of the mandibles, bright red at the tip and at the commissures, bright yellow in between.

Bill-down postures, Foot-watching

Like most gulls, Olrog's Gulls «inspect their feet» although comparatively rarely. We did not directly observe Pecking at the Ground or Grass-pulling, but twice we saw a bird fly from the colony to the water, with a piece of nesting material in its bill, land, and shake the piece in the water.

Head-flagging, Facing-away, Squinting

The first two postures were recorded rarely, and were inconspicuous; Squinting was common.

Wing-drooping

Several times adults standing between us and the colony adopted a posture with the wings held drooped as if injured and walked back and forth in this position. This resembles a rudimentary distraction display.

ALARM

Like most gulls, birds approached by an observer adopted a somewhat upright position (i.e. Fig. 1) corresponding to what Moynihan (1962) calls unritualized alarm (i.e. p. 47), but also labels Anxiety Upright

(p. 138, for *Larus scoresbii*). They were often silent, but they also uttered two types of calls. One, a soft, rapid *gek*, *gek-gek*, *gek-gek-gek* (1, 2, or 3 syllables), is probably like the Alarm Call recorded for *L. belcheri* by Moynihan; it resembles a call of masked gulls (e.g. *L. novaehollandiae*). The second type is a Long Call Note or a very similar vocalization. It is uttered incessantly by birds of an agitated colony and is the main element in the chorus produced by such a group. This behaviour is similar to that of *L. canus*, of the masked gulls and of many other species.

A more characteristic posture with vocalization is often adopted by an apparently perturbed individual. The bird stands in a curved oblique position with neck held obliquely and curved slightly forward. It repeatedly jerks the head slightly forward and downward as if to regurgitate, opening the bill and producing a soft *kjuk* that resembles a Long Call note but is shorter, softer and less nasal. The gullet is curiously depressed and prominent, probably because the tongue bone is lowered. A bird often repeats this performance at rather long intervals over a prolonged period. Between calls, the gull stays in the curved oblique position. This behaviour is somewhat reminiscent of the head-tosses performed by disturbed Scoresby's Gulls.

VOCALIZATIONS IN FLIGHT

Two types of vocalizations were used by flying birds. One was the *kek*, *kek-kek*, *kek-kek-kek* also uttered on the ground, and which is probably the «Alarm Call», corresponding to the *ha-ha-ha* of the Herring Gull group. The second type, was a characteristic, loud, emphatic, piercing, high-pitched *wuuu!* by which flying Olrog's Gulls could be immediately located among the wheeling mass of Dominican Gulls. It was always uttered by birds first inspecting the approaching boat, and repeatedly by birds flying over an intruder near the colony. It seems to correspond to strong alarm. A particularly emphatic and prolonged form of this call is delivered by birds swooping at an intruder. These swoops are very vigorous, much more so than any action by Dominican Gulls. Generally the bird dives from a respectable height, approaches its target closely, screaming at the nadir, then soars up and away on set wings. Occasionally, the approach is made in low, horizontal flight, instead. These piercing calls are probably what Moynihan (1962) considered Long Call notes in *belcheri* and thought homologous to the Plaintive Charge Call of large gulls.

FEEDING BEHAVIOUR

Away from the colony, adults patrolled slowly along the shores of the bay. Near the breeding island, we observed many birds swimming in marshy areas, among reeds, apparently pecking in the water. They frequently hovered over the water, with the body at 45°, then let themselves fall into the water. We did not see any prey being caught,



Fig. 8. Downy chick of *Larus atlanticus*, above. Below, downy *L. dominicanus* for comparison.



but the only remains found around nests were those of crabs. Daguerre (1933) and Escalante (1966) have recorded the crab feeding habits of *atlanticus*, and the latter has described how the crabs are caught in shallow water by action similar to the ones we witnessed.

CHICKS

The chicks are superficially similar to those of *L. dominicanus* (Fig. 8). We examined and photographed chicks of comparable age of both species, including very small ones, but no newly hatched *atlanticus*, which is unfortunate, as back patterns, in particular, may fade quickly with age. The overall color of *atlanticus* is dark lead grey, darker and bluer than the silvery grey or buffy grey of *dominicanus*. The lower breast and belly are whitish, contrasting with, and clearly demarcated from, the rest of the down coat. Both species have essentially uniform, unspotted upperparts even as very young chicks; *dominicanus* always has a dark shoulder patch, lacking in *atlanticus*; the latter shows a faint suggestion of a banded pattern on the back, which might have been stronger if newly hatched chicks had been examined. The head is concolorous with the back in *atlanticus*, lighter in *dominicanus*, and in both species it is spotted. In *dominicanus* the spots are few, widely spaced, rather large, black and very sharp. In *atlanticus* they are numerous, evenly and closely distributed, small, dark grey, and rather diffuse. Both species have one large, diamond-shaped spot just above the ridge of the upper mandible. The rest of the crown is finely spotted in *atlanticus*. The spots extend to the sides of the head and down to the sides of the chin, but the area on the side of the upper mandible is largely unspotted. Downy *dominicanus*, on the contrary, usually have two large dark spots on this area, one long line on the auriculars, and two or three dark spots at the side of the chin. The bill of *atlanticus* is black with a pink or reddish pink tip, that of *dominicanus* black with an ivory or buff tip.

The description of the chick given by Magno (1971), although supposedly relevant to Argentina, clearly does not pertain to *atlanticus*, but to *belcheri*, as it is repeated from Murphy's (1936) account of the Pacific bird. I examined a very young *belcheri* chick in the British Museum. It is very pale, almost white, and also differs from *atlanticus* in the much sparser, though very sharp and black, spotting of the head. This specimen was the basis for Dwight's (1925) description, apparently borrowed by Murphy (1936). Both authors insist on the paleness of the chicks of *belcheri*. Murphy had seen them in the field.

PARENT-CHICK BEHAVIOUR

The behaviour of the chicks, and that of the parents tending them, is conditioned by the virtually bare surfaces on which they live, with no hiding places except the nests, and no shade except that provided by the parents. Shade is probably important (Fig. 9) as the latitude is

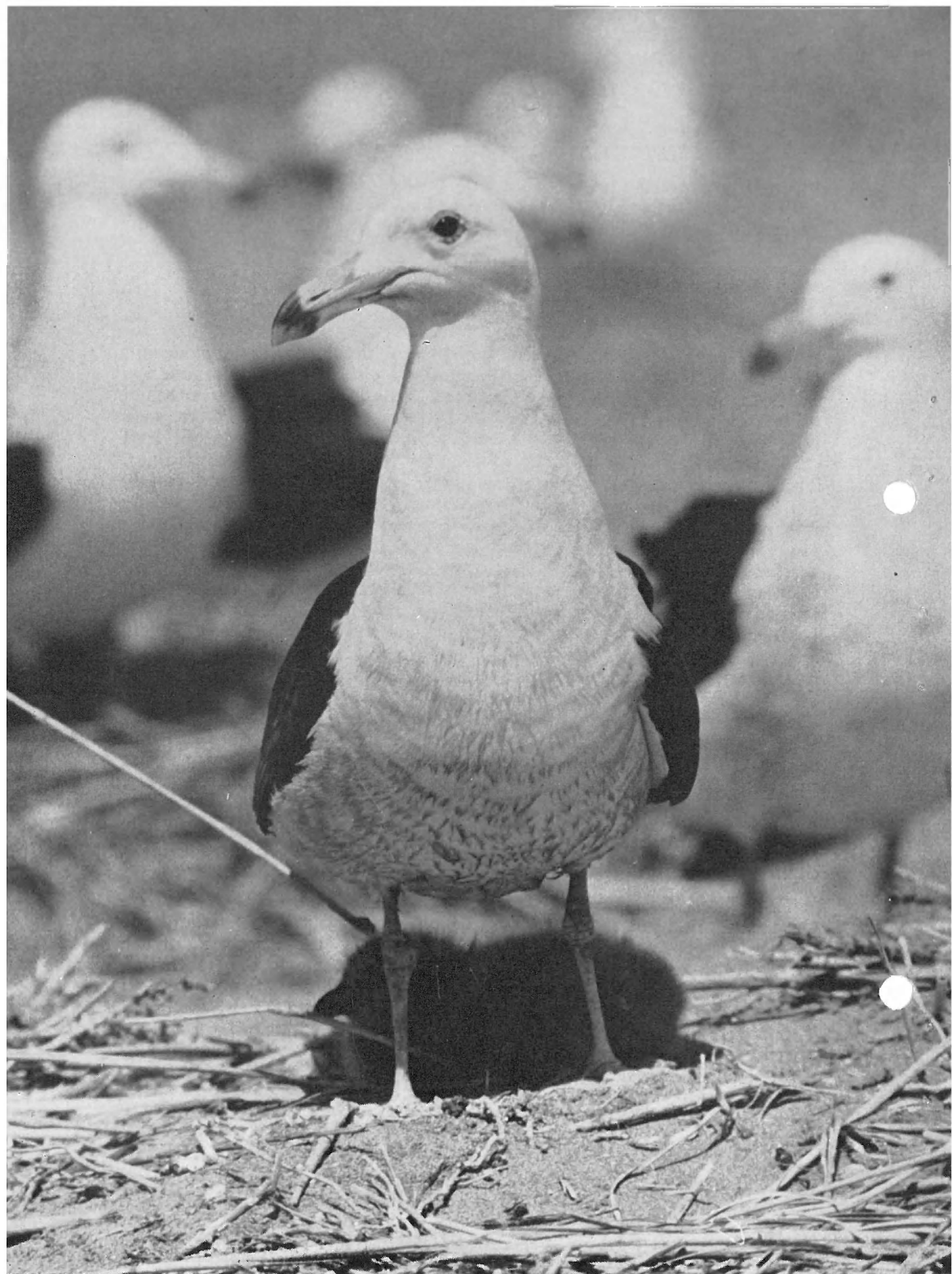


Fig. 9. Olrog's Gull shading chick.

fairly low, the summer weather normally fair and the substrate highly reflecting. Thus the chick-tending habits of Olrog's Gull are probably more meaningfully compared with those of a species like the Grey Gull (Howell *et al.*, 1974) which also breeds on barren ground, than with those of the neighbouring Dominican Gulls. The latter breed in fairly dense vegetation, and chicks have the same reaction to disturbance as those of Herring Gulls (Tinbergen, 1953); they leave the nest and run into hiding places; some scatter. The adults leave the colony when an intruder approaches, and circle overhead. In undisturbed colonies chicks seem to wander around.

Downy Olrog's Gulls are much more attached to the nest. In undisturbed colonies, chicks were mostly in the nests, brooded by adults; a very few were standing between nests, shaded by adults. During our slow approach, adults left the nests and chicks relocated despite the usually rapid return of many adults. Chicks never stayed long in untended nests, but would leave them and often join nearby attended nests. The result was a herding of chicks (Fig. 10); we counted four chicks and an egg in one nest, five chicks in another, six chicks in a third. Chicks scrambled head first underneath adults which would then cover them with wings partly open (Fig. 11). Brooding adults often opposed the arrival of new chicks by threat postures and pecking, while these responded by assuming bill-hiding postures. Eventually, however, the chick would succeed in making the move. We saw adults peck at chicks quite vigorously, but never saw any attempt at predation or serious attack. The only violent attack of a chick was directed at a young Dominican Gull which had strayed from the neighbouring colony and which was viciously pecked, grabbed by the neck, pulled and tossed. In the apparent lack of predation towards their chicks and the acceptance of strange chicks in the nest, Olrog's Gull resembles the Grey Gull, or Franklin's Gull, *L. pipixcan* (Burger, 1974). The details of behaviour involved in the efforts of adults to keep chicks out of nests, in the reactions of the chicks and their final acceptance, are like those recorded for *L. modestus* (Howell *et al.*, 1974).

In contrast to *modestus*, *atlanticus* cares for chicks out of the nest. Howell *et al.* (1974) found that Grey Gull chicks even a few inches from a nest scrape would not be shaded; on the contrary, we saw numerous instances of Olrog's Gulls shading chicks of any age or protecting them quite far from nests (Fig. 12). Such birds were often Long Calling repeatedly, which may have corresponded to the establishment of a territory around the chick. Chicks often responded by a Bill-down posture (Fig. 6), or if farther away, by approach (Fig. 13). The only other ritualized posture recorded for a chick out of the nest resembled very much the «Aggressive» Upright of the adults (bill down, carpal out, nape ruffled; Fig. 13). We drove away from the colony a fairly large chick, with scapulars growing, which had strayed from the nest area, and was attended by two adults. We followed it for about 200 m; all the while the two adults walked with it, launching into short aerial circuits, then relanding near it. One of them charged us repeatedly



Fig. 10. Herd of chicks. Note Long-Calling adult.

at low altitude. Several larids are known to accompany or lead chicks on excursions away from the nest, generally after the onset of adult-chick recognition (Burger, 1974; Emlen and Miller, 1969; Evans, 1970).

Having no marked chicks of known age, we could not determine whether or not strange chicks accepted in nests were younger than those cared for out of the nest, but it did not seem to be the case. Acceptance of strange chicks in nests is characteristic of *L. modestus* (Howell *et al.*, 1974) and *L. pipixcan* (Burger, 1974), species which do not care for small chicks off the nest. In *L. atlanticus* the two behaviours occur.

CONSERVATION OF THE SPECIES

Olrog's Gull has been observed along the Atlantic coast of South America from the Uruguayan side of the Río de la Plata to Puerto Deseado (Olrog, 1958a, 1967; Escalante, 1966), or along 2 000 km of coast. If the nesting habitat occupied in Bahía Anegada is typical, other possible breeding sites exist in the General Lavalle area of the Río de la Plata estuary, 750 km northeast of Bahía San Blas, and in the large Bahía Blanca, 200 km to the north of Bahía San Blas. In the first area, however, records of adults are mostly in winter and during migration periods (Olrog, 1967), though Magno (1971) has referred in vague terms to nests found; in the second area, adults have been found in late December

Fig. 11. (Right) Relocation and acceptance of chicks. Top : chicks move towards adult on nest; pecking by adult and submissive posture of chick. Middle : chicks dive under adult at center (same bird as above). Bottom : adult broods chicks; note proximity of nests. →

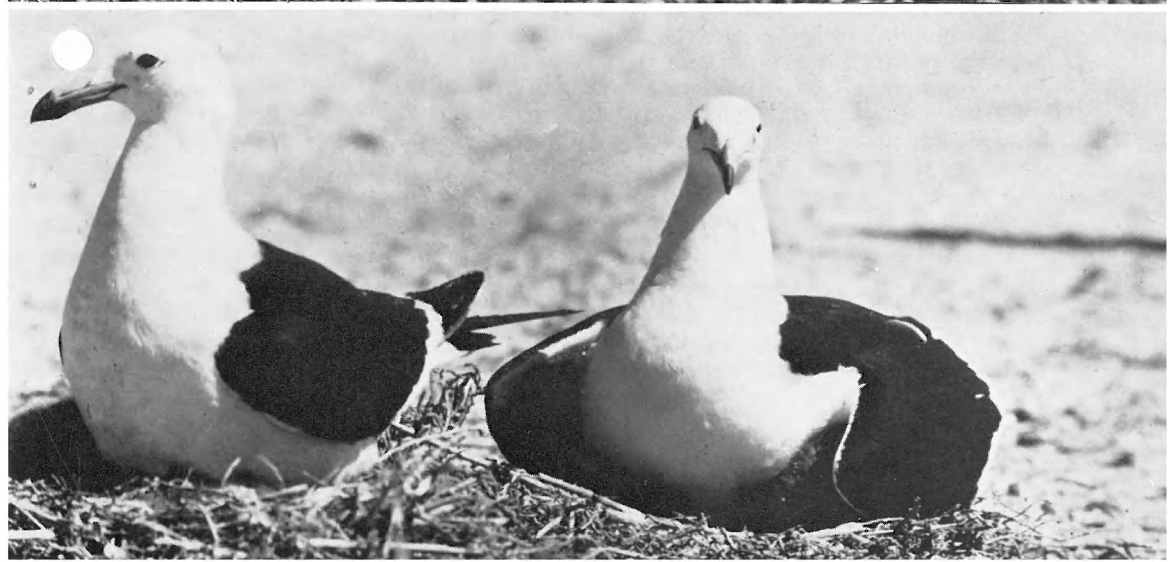




Fig. 12. Olrog's Gulls tending chick away from colony.

(Olrog, 1958b; 1967). In Bahía Anegada itself, according to local information, at least three gull colonies exist in addition to the ones we visited, one of them much larger, the others smaller. Three hundred kilometres west of Bahía San Blas, there may be favorable sites at Puerto San Antonio, which we could not investigate; beyond, we visited gull colonies and feeding areas, in November and December 1975, in Golfo San José, on Peninsula Valdés, at Punta Tombo, in Bahía Camarones, near Comodoro Rivadavia, Puerto Deseado, Río Gallegos and Río Grande, and could never locate a single Olrog's Gull.

It is our impression that the total population of *L. atlanticus* is very small, and could be quickly endangered by a development of tourism, ornithological or other, in the area, by an increase in fishing traffic, eggging, petroleum exploitation or any other activities with a potential for disturbance, by inconsiderate collecting or vandalism. Conservation measures should be taken in favour of the species, and should be prepared by an adequate study, beginning, of course, by a complete census of its breeding colonies.

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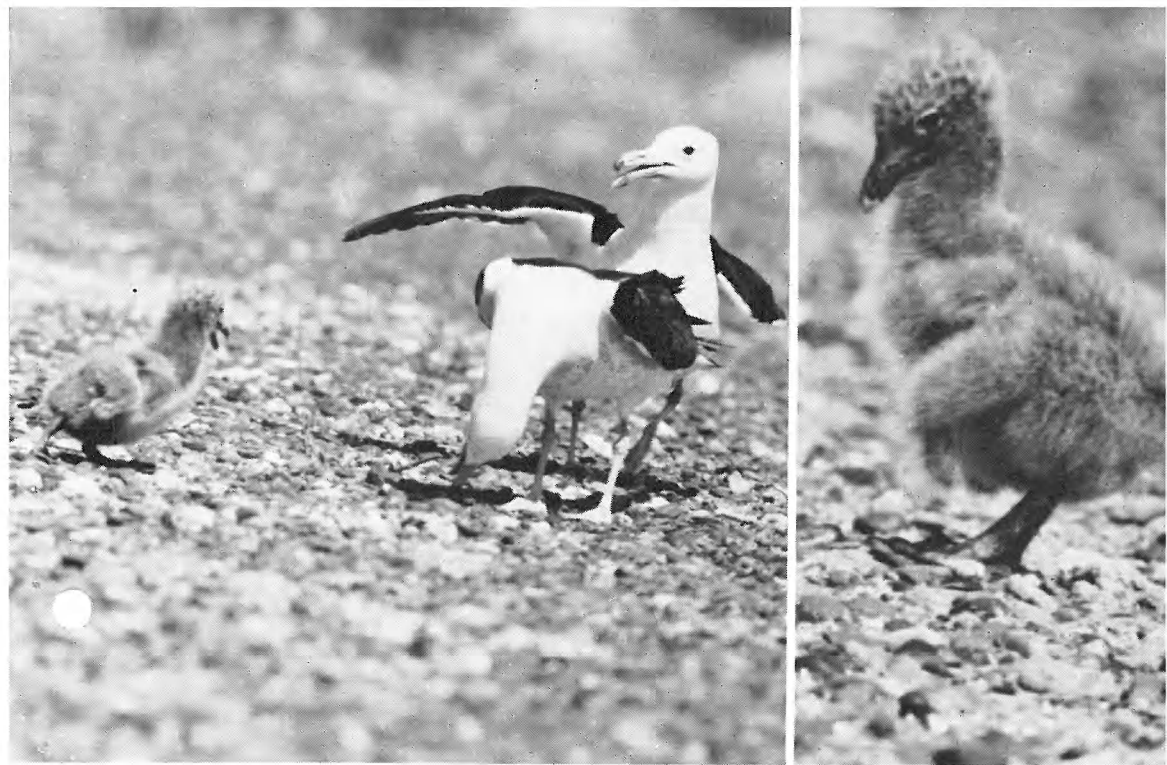


Fig. 13. Left : Chick approaching Long-Calling adult. Right : Chick in «Aggressive» Upright.

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SUMMARY

Olog's Gull, *Larus atlanticus*, is an endemic gull of the Argentinian Atlantic coast. It was described as a race of the Pacific *Larus belcheri*, but appears morphologically too distinct for this arrangement to be warranted. The only known breeding sites are in Bahía Anegada, 40° S, visited in November 1975, with the intention of describing the chicks and observing the adult hostile and parental behaviour.

The colonies are located on flat, fairly barren islands and are extremely crowded. A total of 400 adults were present. The chicks are very dark and quite different from those of *L. belcheri*. The adult displays and vocalizations, in particular the Long Call, are similar to those of other large gulls, differing in detail. Chicks are shaded and tended by adults out of the nest but are also accepted and brooded in nests other than their own.

Larus atlanticus is a localized species, with perhaps a very low population. Its survival could easily be jeopardized by any development.

LITERATURE CITED

- BEER, C.G. 1966. Adaptations to nesting habitat in the reproductive behaviour of the Black-billed Gull, *Larus bulleri*. *Ibis* 108 : 394-410.
- BURGER, J. 1974. Breeding adaptations of Franklin's Gull (*Larus pipixcan*) to a marsh habitat. *Anim. Behav.* 22 : 521-567.
- DAGUERRE, J.B. 1933. Dos aves nuevas para la fauna argentina. *Hornero* 5 : 213-214.
- DWIGHT, J. 1925. The gulls (*Laridae*) of the world; their plumages, moults, variations, relationships and distribution. *Am. Mus. Nat. Hist. Bull.* 52 : 63-402.
- EMLEN, J.T. and D.E. MILLER. 1969. Pace-setting mechanisms of the nesting cycle in the Ring-billed Gull. *Behaviour* 33 : 237-261.
- ESCALANTE, R. 1966. Notes on the Uruguayan population of *Larus belcheri*. *Condor* 68 : 507-510.
- EVANS, R.M. 1970. Parental recognition and the «mew call» in Black-billed Gulls (*Larus bulleri*). *Auk* 87 : 503-513.
- GILLET, W.H., J.L. HAYWARD, Jr., and J.F. STOUT. 1975. Effects of human activity on egg and chick mortality in a Glaucous-winged Gull colony. *Condor* 77 : 492-495.
- HOWELL, T.R., B. ARAYA, and W.R. MILLIE. 1974. Breeding biology of the Gray Gull, *Larus modestus*. *Univ. of California Publ in Zoology* 104 : 1-57.
- MAGNO, S. 1971. Familia Laridae. *Hornero* 11 : 65-84.
- MEYER DE SCHAUENSEE, R. 1966. The species of birds of South America and their distribution. Philadelphia, Academy of Natural Sciences.
- MOYNIHAN, M. 1962. Hostile and sexual behavior patterns of South American and Pacific Laridae. *Behaviour, Supplement* 8 : 1-365. Leiden, E.J. BRILL.
- MURPHY, R.C. 1936. Oceanic birds of South America. New York, American Museum of Natural History and Macmillan.
- OLROG, C.C. 1958a. Notas ornitológicas sobre la colección del Instituto Miguel Lillo, Tucumán. III. *Acta Zoológica Lilloana* 15 : 5-18.
- OLROG, C.C. 1958b. Observaciones sobre la avifauna antártica y de alta mar, desde el Río de la Plata hasta los 60° de latitud sur. *Acta Zoológica Lilloana* 15 : 19-33.
- OLROG, C.C. 1967. Breeding of the Band-tailed Gull (*Larus belcheri*) on the Atlantic coast of Argentina. *Condor* 69 : 42-48.
- ROBERT, H.C. and C.J. RALPH. 1975. Effects of human disturbance on the breeding success of gulls. *Condor* 77 : 495-499.
- SMITH, N.G. 1966. Evolution of some arctic gulls (*Larus*): an experimental study of isolating mechanisms. *AOU Monographs* 4 : 1-99.
- SNOW, B.K. and D.W. SNOW. 1968. Behaviour of the Swallow-tailed Gull of the Galapagos. *Condor* 70 : 252-264.
- TINBERGEN, N. 1953. *The Herring Gull's world*. London, Collins.
- TINBERGEN, N. 1959. Comparative studies of the behaviour of gulls (*Laridae*): a progress report. *Behaviour* 15 : 1-70.

SAMENVATTING

De Ologsmeeuw, *Larus atlanticus*, is een endemische meeuwensoort van de atlantische kust van Argentinië. Deze soort werd een twintigtal jaren geleden ontdekt en beschreven als een ondersoort van de Simeonsmeeuw, *Larus belcheri*, die kenmerkend is voor de Humboldtstroom. Deze twee vormen verschillen echter zodanig in grootte, in de proporties, in de tekening van het gevederte, alsmede in de kleur van de oogring, dat het volstrekt noodzakelijk is, ze als verschillende soorten te beschouwen.

Het enig gekend broedgebied, gelegen in de Baai van Anegada (40°Z), werd door ons bezocht in het begin van november 1975. Kolonies werden gevonden op kleine,

naakte en platte eilandjes, met een schrale zeekraal begroeiing. Er werden aldaar 400 adulte exemplaren geteld; deze waren verdeeld in drie zeer dichte concentraties, in de nabijheid van grote kolonies Dominicanermeeuwen, *Larus dominicanus*. Dergelijke dichte concentraties zijn ongewoon bij meeuwen. In het merendeel der nesten bevonden zich kuikens. Deze, die nog niet gekend waren, worden nauwkeurig beschreven; ze schijnen erg te verschillen van de kuikens van *L. belcheri*.

Verskillende bestanddelen van het geritualiseerd gedrag van de adulte vogels werden geobserveerd: in het bijzonder de *Long Call* Parade, die uit twee fasen bestaat die gelijkaardig zijn aan deze van de Zilvermeeuw, maar de uitgebrachte geluiden zijn zeer verschillend. Het ouderlijk gedrag is eigenaardig. De adulte Ologsmeeuwen beschutten en beschermen pulli buiten de nesten; bij andere meeuwensoorten bestaan deze gedragspatronen slechts tegenover de eigen jongen. Daar tegenover staat dat vreemde kuikens in het nest aanvaard worden en onder de adulte vogels een schuilplaats vinden, volgens een gedragspatroon dat gelijkaardig is aan dit beschreven voor de Grijsze Meeuw, *Larus modestus*, een soort die haar eigen jongen niet schijnt te herkennen en alle pulli, buiten het nest, volledig negeert.

Het verspreidingsgebied van de Ologsmeeuw is zeer gelokaliseerd en haar levensomstandigheden zijn zeer kwetsbaar. De overlevingskansen van deze soort kunnen gemakkelijk bedreigd worden door petroleum ontginning, toeristische druk, e.d. Beschermingsmaatregelen schijnen dan ook noodzakelijk te zijn.

RESUME

Le Goéland d'Olrog, *Larus atlanticus*, est un laridé endémique de la côté atlantique argentine. Découvert il y a une vingtaine d'années, il a été décrit comme sous-espèce du Goéland siméon, *Larus belcheri*, caractéristique du courant de Humboldt. Les deux formes diffèrent toutefois tellement, par la taille, les proportions, le plumage, la couleur du cercle oculaire, qu'il semble indispensable de les considérer comme deux espèces distinctes.

La seule zone de nidification connue, la baie Anegada, à 40° S, a été visitée au début de novembre 1975. Des colonies ont été trouvées sur des îlots plats et dénudés, à maigre végétation de salicornes. Quatre cents adultes ont été recensés, en trois concentrations extrêmement denses, au voisinage de grandes colonies de Goélands dominicains, *Larus dominicanus*. De telles densités ne sont pas habituelles chez les goélands. La plupart des nids contenaient des poussins. Ceux-ci, qui n'étaient pas connus, sont décrits en détail; ils semblent différer fortement de ceux de *L. belcheri*.

Différents éléments du comportement ritualisé des adultes ont été observés, en particulier, la Parade de Proclamation, formée de deux phases similaires à celles de la parade du Goéland argenté, mais accompagnée de vocalisations très différentes. Le comportement parental est curieux. Les adultes abritent et défendent des poussins hors des nids, un comportement qui, chez d'autres laridés, s'accompagne d'une reconnaissance par les parents de leurs propres jeunes. Par contre, des poussins étrangers sont acceptés et couvés dans les nids, suivant un processus très semblable à celui qui a été décrit pour le Goéland gris, *Larus modestus*, une espèce qui ne semble pas identifier ses jeunes et ignore tout poussin hors d'un nid.

Le Goéland d'Olrog est très localisé et sa situation semble fragile. La survie de l'espèce pourrait facilement être compromise par une exploitation touristique, pétrolière ou autre de la région. Des mesures de protection semblent nécessaires.

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