TABLE 3. Mean water ratios (water as a percentage of fat-free weight) for 11 migrant species.

Species	Sub-group	Season	n	$\bar{x}$ ratio	C.I.[a]	V[b]
Yellow-billed Cuckoo	A	fall	28	67.14	0.83	2.34
	B	fall	26	67.19	1.55	4.26
Catbird	A	fall	45	69.25	0.59	2.14
	B	fall	49	69.47	0.54	2.05
Chestnut-sided Warbler	A	fall	31	67.89	0.50	1.62
	B	fall	37	67.98	0.54	1.66
Myrtle Warbler	A	fall	64	68.53	0.56	2.44
	B	fall	64	68.93	0.56	2.46
Parula Warbler	A	spring	77	69.15	0.45	2.18
	B	spring	77	68.26	0.29	1.43
Veery	A	fall	62	69.67	0.72	3.03
	B	fall	58	68.84	0.67	2.74
Gray-cheeked Thrush	A	spring	40	68.05	0.46	1.53
	B	spring	40	68.05	0.32	1.07
Swainson's Thrush	A	fall	55	68.82	0.48	1.96
	B	fall	55	69.41	0.43	1.75
	A	spring	67	67.00	0.43	1.91
	B	spring	72	69.27	0.37	1.74
Summer Tanager	A	fall	15	68.04	0.97	1.86
	B	fall	16	67.92	1.31	2.67
	A	spring	15	69.52	0.47	0.91
	B	spring	15	68.29	0.62	1.16
White-throated Sparrow	A	fall	47	67.87	0.54	2.05
	B	fall	43	67.83	0.51	1.87
Indigo Bunting	A	fall	56	68.94	0.43	1.73
	B	fall	57	68.89	0.45	1.82

[a] 99% confidence interval of the mean.
[b] coefficient of variation.

geneous. No consistent effect due to sex, season, family or general body size was found to explain these differences. We suggest, however, that in practice a water ratio of 68.7 ± 0.11 per cent could be used for other species of adult migrant birds within the range of body size covered in this study.

This work was supported by a grant from the National Institutes of Health (HE 08294-MET) to the University of Georgia, under the direction of E. P. Odum.

Accepted for publication 14 August 1968.

A BREEDING RECORD FOR THE GRAY-HOODED GULL, *LARUS CIRROCEPHALUS*, ON THE PERUVIAN COAST

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So far as we are aware, there are no published records of the breeding of the Gray-hooded Gull (*Larus cirrocephalus*) west of the Andes. De Schauensee (1966), in summarizing the known distribution of the South American population, indicated that the species breeds in the southern half of the continent both on the Atlantic coast and in the interior east of the Andes. In the west, he said only that it occurs occasionally, perhaps regularly, on the coast of Perú and even Ecuador. In the course of studies on Peruvian sea birds during the past few years we have had occasion to visit a number of coastal localities previously little studied by ornithologists. On 10 May 1967 Tovar found a small colony of *L. cirrocephalus* breeding in a saline coastal lagoon, locally called Laguna Chica (fig. 1), in the desert (14° 11′ S, 76° 17′ W). The locality is about 1 km SW of Laguna Grande, at the north end of the Bahía de Independencia, Departamento de Ica, Perú.

On 11 May the colony was examined more closely, and was found to consist of two nests containing three eggs each, one nest containing two eggs (from which a single egg was collected), and one nest empty but occupied by a pair of birds. The nests were on tiny islets (about 50 cm in diameter) and were constructed of feathers of Chilean Flamingos (*Phoenicopterus chilensis*), which are commonly present in the lagoon. At the time of the discovery of the colony the water around the nests was about

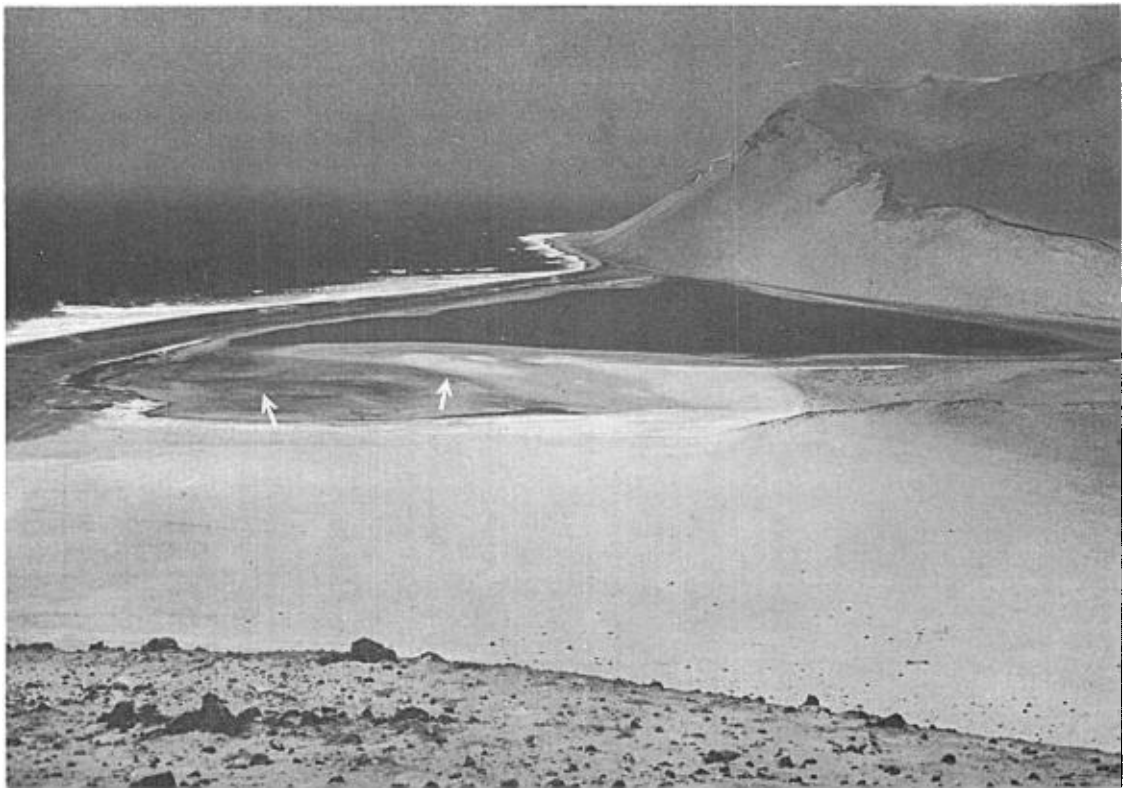

FIGURE 1. Laguna Chica, nesting site of *Larus cirrocephalus* on the desert coast of Perú. The markers indicate the approximate positions of the nests on islets (left) and on the sandbank (right). The darker part of the lagoon (behind) is deeper water.

9 cm deep, but subsequently the level rose to about 18 cm. The depth of the lagoon is probably controlled by filtration through the narrow bar separating it from the sea, and varies seasonally. The rise in the water level resulted in the destruction of two nests, while the eggs in the other failed to hatch, presumably as a result of getting wet, even though the birds added more material and raised the eggs appreciably. After the destruction of the two nests, three more were built on a sandbank about 100 m from the original site, but these also were affected by the continuing rise in the water level and none of the eggs hatched.

On 10 July we collected the addled eggs from the two remaining nests on the islets. At the same time we added rocks to one of these islets to protect the nest from the waves, and moved the other nest to an islet that we constructed about 2 m from the original site. We also built three more islets nearby. On 18 July a bird was again siting on the nest that we had protected, and on a later visit we found that it had a clutch of three eggs, one of which was "pipped" on 7 August. On 14 August this nest contained one apparently addled egg and one chick (fig. 2), the latter probably too small to have been from the first egg hatched (the corpse of a small chick was found underneath the nest much later). On 12 September the nest was empty, but on 28 September it contained two new eggs; by 21 November it was again empty. Meanwhile, the empty nest that we moved on 10 July contained a single egg on 14 August, but was empty by 12 September. A new nest was built on one of our artificial islets sometime after 14 August; it contained one egg on 12 September and two on 28 September. By 21 November it was empty. Although we have no proof that any chicks were reared at Laguna Chica, circumstantial evidence that successful breeding occurred in this region is provided by an observation of six juveniles with about 30 adults at Laguna Grande on 9 December.

We have given our records in some detail since they show that the breeding season of *L. cirrocephalus* in Perú can be remarkably prolonged, even in a single tiny colony. The laying season at Laguna Chica in 1967 lasted four and one-half months, although we suspect that only about 20 adults were involved. Such persistence in breeding attempts may have been an important factor in the colonization by the species of the west coast of South America. Since it lacks the special adaptations of the Gray Gull (*Larus modestus*), which nests in remote places some distance inland (Johnson 1967) and has cryptic plumage, successful breeding of *L. cirrocephalus* on the desert coast is doubtless dependent on the presence of small islets or other places inaccessible to terrestrial predators, especially the local "foxes" or "zorros" (*Dusicyon sechurae*). We observed zorros close to Laguna Chica, and on 7 August found fresh blood in two of the nests on the sandbank (one of which still contained eggs), suggesting that the zorros had been able to reach them. Protected nest sites are not common on the Peruvian coast (except on the guano islands some distance offshore), so that the distribution of these sites is likely to limit the breeding distribution of *L. cirrocephalus*.

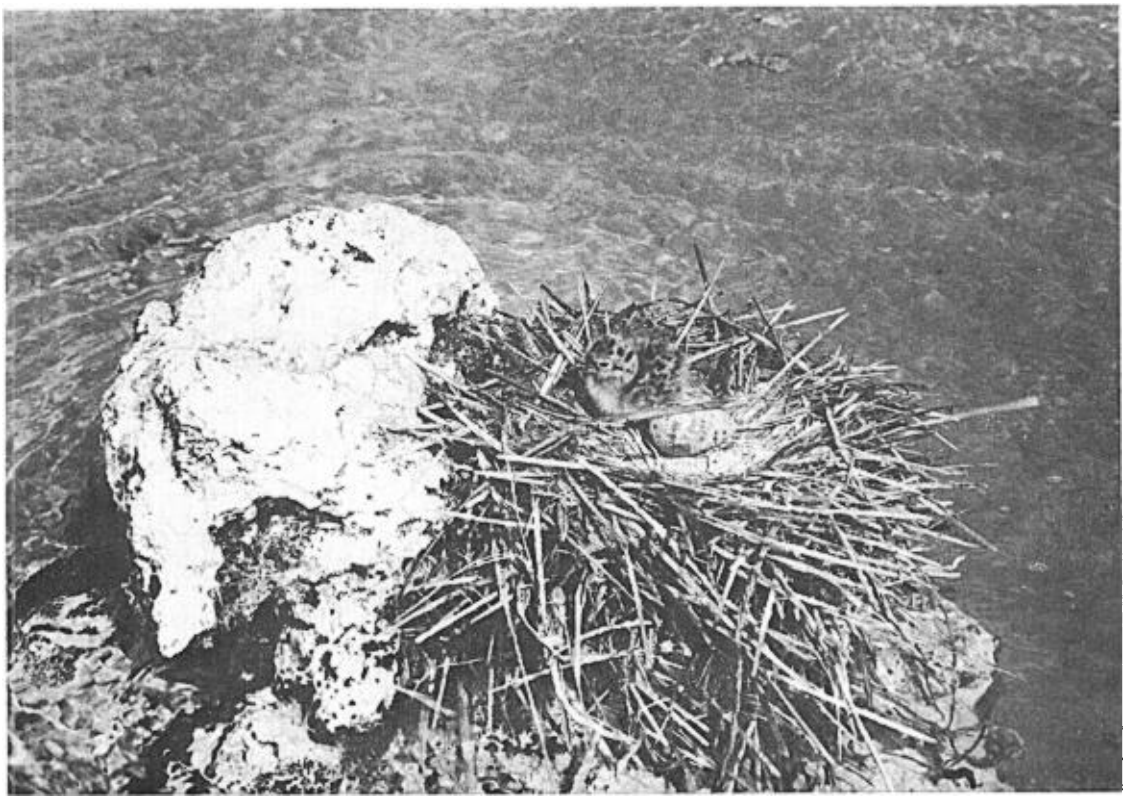

FIGURE 2. Nest of *Larus cirrocephalus*, Laguna Chica, 14 August 1967.

In this connection it is of interest that the gulls breeding in Laguna Chica do not feed there but fly to Laguna Grande, which does not provide safe nesting sites but is more suitable for feeding. Laguna Chica apparently contains no fish, and *L. cirrocephalus* evidently eat fish extensively; adults were seen fishing in Laguna Grande, and several mullet (*Mugil* sp.) 3–7 cm long were found in one of the nests at the end of the season. Writing of the South African population, Miller (1951) said, "This gull is a competent fisher, especially when the sardine shoals are moving along the coast, but it is also a scavenger . . . ." Miller mentioned that the birds generally nest colonially, either on an island or in marshland, with the nests "often so close together that it is difficult to walk between them." However, McLachlan (1955) described a dispersed colony, more comparable to ours, in which the birds were using old coots' nests in bushes standing in a foot or two of water.

During the past two years we have recorded the presence of *L. cirrocephalus* at Paracas, just south of Pisco, at all times of year. We also have many records from other localities on the central coast of Perú; in July and August 1967 we noticed adults in breeding plumage at Pisco, Tambo de Mora, and Huacho, as well as in a marshy area just north of Cañete where we suspect that breeding attempts occurred.

It is clear that *L. cirrocephalus* has become common in Perú and Ecuador only during the last 50 years. Frank M. Chapman and his associates, working in Ecuador between 1912 and 1925, apparently did not encounter the species (Chapman 1926), and neither did R. C. Murphy and R. H. Beck in the course of their field work in Perú and Ecuador (1913, 1919–1920, and 1924–25) prior to the publication of Murphy's classic book (1936). However, between August and October 1938 Quäbicker (1939) saw *L. cirrocephalus* in the Gulf of Guayaquil and at a series of places on the Peruvian coast south to Pisco. Although Quäbicker did not obtain proof of breeding, most of the adults were in breeding plumage and there were also some juveniles.

Two birds collected by J. Ortiz de la Puente near Huacho in September 1951 are now in the Museo de Historia Natural "Javier Prado" in Lima, and so is an adult in breeding plumage collected by E.-D. von Wedemeyer near Mejía (17° S) on 27 March 1965. Koepcke (1964) said that the species was not common in the Departamento de Lima, but she informs us that in July 1958 she observed considerable numbers in breeding plumage at Virrilá, south of Sechura (5° S), and suspected that they might breed in that area. Recent observations show that the species is now abundant on the coast of southern Ecuador throughout the year (Marchant 1958; Lévêque 1964; Mills 1967), although breeding sites have not yet been discovered.

While this paper was in press Hughes (1968) published his records of *L. cirrocephalus* on the coasts of Ecuador and Perú. In addition to documenting the common occurrence of the species on the northern seaboard of Perú, at least in the period March–May, Hughes reports that it occurs regularly around Mollendo in southern Perú (17° S). It is commonest there between July and September, but there are observations for all months from May through November. No indications of breeding were found, and the fact that birds in breeding plumage

were seen there mainly from August onwards is not easy to interpret in light of the March specimen from Mejía mentioned above and our record of breeding starting in May at 14° S. However, it may well be that breeding occurs in coastal lagoons in southern Perú or even in northern Chile. Further investigation will doubtless show that *L. cirrocephalus* is now an established resident over a considerable range on the Pacific coast of South America, and it is possible that the species is still advancing northward and southward.

These observations were made during the course of ecological work on Peruvian sea birds supported by NSF Grant GB 3983.

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Accepted for publication 10 June 1968.

WINTER OBSERVATIONS OF THE SHORT-TAILED ALBATROSS IN THE WESTERN PACIFIC OCEAN

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Three species of albatrosses are resident in the North Pacific Ocean. Two of these are relatively common and widespread, while the third species, the Short-tailed Albatross (*Diomedea albatrus*), is an endangered species with a population of possibly fewer than 100 birds. There have been few published records of this species during the past 25 years according to the A.O.U. Handbook of North American Birds (Vol. 1, 1962) and the Red Data Book (Vol. 2, Aves. Int. Union Conserv. Nat. Morges, Switzerland, 1966). I am aware, through personal communications, of only a handful of unpublished sightings during this same period.

While serving on active duty in the United States Navy I was fortunate enough to observe *D. albatrus* on several occasions in the waters of the East China Sea, approximately 200–300 nautical mi. S of Tokyo, Japan. On the morning of 4 December 1959 two adults glided across the wake of the ship about 100 yards astern over rough seas at 33° 15′ N, 140° 12′ E. On 17 February 1961 a bird in immature plumage was seen sitting on a calm sea at 30° 02′ N, 140° 09′ E. The following year on 30 March 1962 one adult and a bird in immature plumage were seen gliding over rough seas at 33° 35′ N, 145° 48′ E. The last sighting was made on 4 February 1966 at 35° 18′ N, 145° 02′ E. On this occasion I observed an adult being momentarily harassed by three skuas (*Catharacta* sp.) over calm seas. Within a minute the latter broke off their harassment and headed north while the albatross alternately glided and flapped away to the east.

In all cases the identification was positive although the observations rarely lasted more than 90 sec. Having frequently observed the other two species of North Pacific *Diomedea*, I identified the adult plumage of the Short-tailed Albatross by the buffy wash on the white head and nape, its white back, pure white underwing surfaces and the pale pinkish bill. Birds in immature plumage were uniformly dark throughout but, unlike the similar Black-footed Albatross (*D. nigripes*), they lacked any white areas around the tail or face except for their light-colored bill. The relatively heavier body and larger bill of *D. albatrus* are also helpful field marks once the observer is familiar with the other two species.

Except for the last observation, Black-footed Albatrosses were seen simultaneously during each of the observations of the Short-tailed Albatross. The Laysan Albatross (*D. immutabilis*) was seen simultaneously with *D. albatrus* only once, that during the first of these observations, although single individuals were seen on other occasions in these waters at this season. Only during the first observation were all three species seen simultaneously, offering a rare comparison of field marks. Short-tailed Albatrosses were never seen to follow in the wake of ships as did *D. immutabilis* and, particularly, *D. nigripes*. It also was never seen to mingle with either of the other two species of albatross.

It is significant that all observations were made during the winter months and within 300 miles of their breeding grounds, Torishima Island in the Bonin Island group. According to the A.O.U. Handbook (1962) breeding activity begins in September and October. Consequently, I was somewhat surprised at the absence of the species during my brief one-day stay at this island early in September.

I wish to thank S. M. Russell for his review of the manuscript and G. Sanger, a member of the Pacific Ocean Biological Survey Program of the Smithsonian Institution, for his assistance on the recent literature and sightings of this species. The assistance of the editor is very gratefully acknowledged.

Accepted for publication 9 September 1968.