

## SEASONAL MOVEMENTS OF BLACK-FRONTED TERNS

By CHRIS LALAS

The Black-fronted Tern (*Chlidonias albostrigatus*) breeds along the shingle riverbeds of the South Island of New Zealand east of the Southern Alps (Stead 1932; Oliver 1955). In common with the several wader species which inhabit inland waters of the South Island, the Black-fronted Tern moves locally within New Zealand. Most terns disperse to coastal regions, including some to the North Island, after the completion of breeding (Wodzicki 1946; Sladden 1953; Oliver 1955).

I studied Black-fronted Terns between December 1974 and February 1976 along the Waitaki River system and around Otago Harbour. Numbers of terns given in this paper are from a monthly census taken during this period. Martin Heine, a Mount Cook National Park ranger, assisted with tern counts in the Tasman Valley. The distribution of the Black-fronted Tern, together with the position of my study areas, is shown in Figure 1.

Black-fronted Terns returned to the upper reaches of the Waitaki River system from their wintering grounds during August. Numbers along the 8 km of the Ahuriri River between the bridge for State Highway 8 and the mouth at Lake Benmore (study site C) reached an annual peak of 200-300 in late September, remained constant through October and November (the incubation period), and then declined to 50-65 during late December and January. Most terns had left the area by late March. Equivalent numbers along the 12 km of the Ohau River between the bridge for State Highway 8 and the mouth at Lake Benmore (study site B) were 100-150 and 35-40 respectively.

Seasonal fluctuations in tern numbers in the upper reaches of the Tasman Valley (study site A) differed from those on the Ahuriri and Ohau Rivers. Terns first appeared there in late August or early September but numbers increased only gradually (15-20 in mid-September, 20-25 during October and November, 25-35 from December to February) and reached an annual peak of 35-50 during March. Numbers then decreased relatively rapidly and no terns remained by late May. Numbers in the Tasman Valley therefore increased during the months (December-March) that they decreased along the Ahuriri and Ohau Rivers. Although this influx was not large, it indicated that not all terns which leave the lower altitude rivers immediately migrate to coastal regions.

Numbers in the Ahuriri-Ohau region varied between six and 15 during April to July. Therefore only a small number of Black-

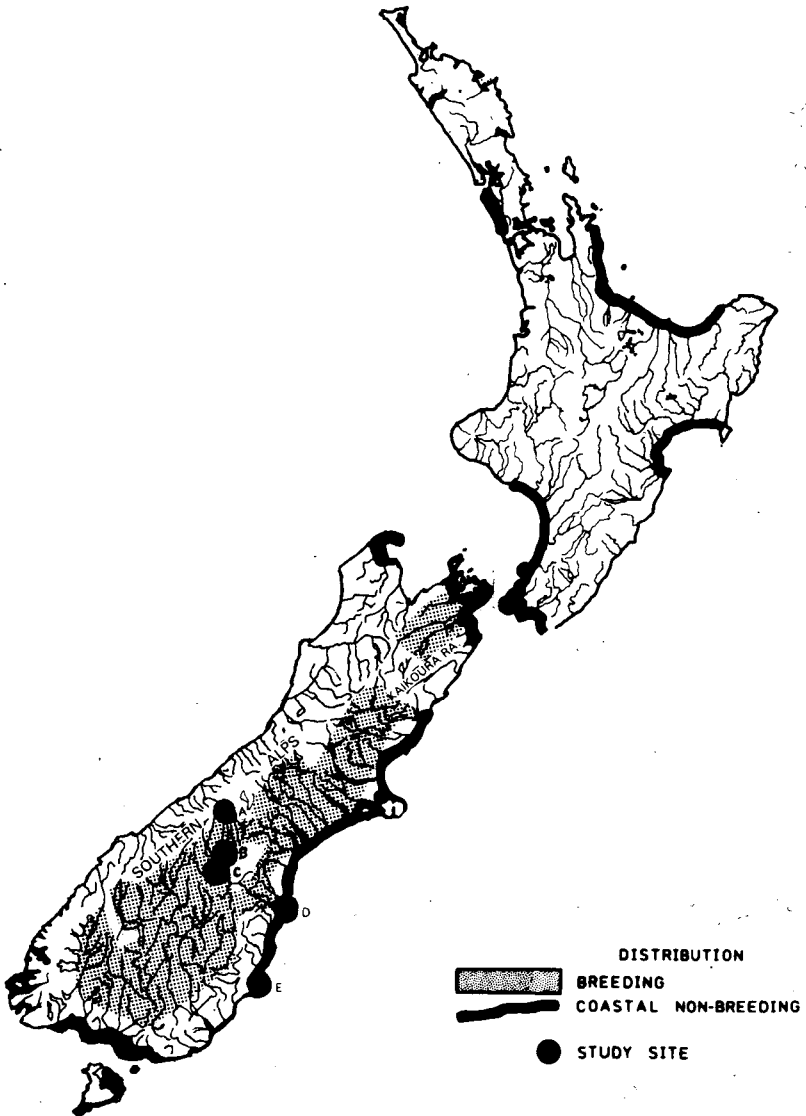


FIGURE 1 — Study sites and Black-fronted Tern distribution (taken from OSNZ records and Oliver 1955). Study sites: A: Tasman Valley, B: Ohau River, C: Ahuriri River, D: Waitaki River mouth, E: Otago Harbour.

fronted Terns, possibly five percent of the spring population, overwintered along these rivers. Movement of terns to and from Central Otago, a region further south than the Waitaki River, occurs during the same months as outlined above for the Ahuriri and Ohau Rivers but no over-wintering has been recorded (Child 1970).

Black-fronted Terns are present in coastal regions, particularly river mouths, estuaries and harbours, from January until the end of July, with occasional sightings in December but few in August (OSNZ Recording Scheme). The only recorded sightings away from the New Zealand mainland are from Chatham Island and The Snares (Oliver 1955). Records of tern numbers at coastal sites show relatively great fluctuations over brief periods. However, most records are of numbers seen resting and these numbers vary with time of day, weather conditions and tide. Between 50 and 70 Black-fronted Terns over-winter in the Otago Harbour region (study site E) where they roost on the Aramoana tidal flats at the harbour mouth. Larger numbers, up to almost 200, have been recorded there occasionally, especially soon after the birds first arrive (January) or during winter (May-July) (Hamel & Barr 1974).

The movement from coastal regions to the rivers is more synchronized throughout the tern population than the reverse movement after breeding. They leave the coast during August but the timing of their return to the coast is more staggered and extends primarily from December to March but may continue into April and possibly May. Sibson (1948) suggested that some Black-fronted Terns may spend their first summer north of the breeding grounds but this suggestion was based on one record of a juvenile seen near Auckland in November. First-summer terns, distinguishable from both adults and juveniles by plumage differences, are common in the Waitaki River system at this time, so that it seems unlikely that a sizeable fraction of this age group spends the summer in the North Island.

The Black-fronted Tern is at present classified as a subspecies of the Whiskered Tern, with other subspecies widely distributed throughout Eurasia, Africa and Australia. The relegation of the New Zealand tern from species to subspecies status was made after recommendations by Sibson (1948) but recently this alteration has been seriously questioned by Mees (1977). It is therefore appropriate to compare seasonal movements of the Black-fronted Tern with those of Whiskered Terns.

Whiskered Terns are migratory and generally show a movement into the tropics after breeding is completed. Notable examples are the subspecies in Europe, *C. h. hybrida*, which migrates to equatorial Africa and the Australian subspecies *C. h. fluviatilis*, which breeds in south-eastern Australia then moves north, sometimes into Indonesia (Mees 1977). In contrast, Black-fronted Terns tend to scatter towards coastal regions and a small percentage of the population remains within the breeding range. The northern limit of over-wintering is Kaipara

Harbour, north of Auckland, but many travel east and south to the coast of the South Island. Some travel as far south as Paterson Inlet, Stewart Island.

Within their breeding distributions Whiskered and Black-fronted Terns have a similar diet, mainly aquatic insects and small fish, but their habitats differ. Whiskered Terns build floating nests in swampy localities and feed mainly over shallow lakes and slow-flowing rivers. In contrast, Black-fronted Terns nest in shingle on bare riverbeds and feed mainly over fast-flowing rivers.

Whiskered Terns over-winter generally around inland waters similar to those of their breeding quarters and their diet is essentially unchanged. Although Voous (1960) reported that the diet of *C. h. hybrida* in Africa consists mainly of terrestrial insects (locusts), this observation has been questioned by Bannerman (1962). Whiskered Terns rarely feed on marine prey except during migration. An exception has been reported from Indonesia where large numbers gather along the muddy coast of north-western Java (Mees 1977).

Most Black-fronted Terns over-winter along the coast where their diet consists mainly of planktonic crustacea (Lalas, in prep.). They forage not only over sheltered waters, such as harbours and estuaries, but also at sea. They are seen regularly up to 6 km off the Otago coast, often in association with White-fronted Terns (*Sterna striata*), a habit presumably typical of the whole winter range. Black-fronted Terns, therefore, differ from Whiskered Terns in their selection of wintering quarters.

#### LITERATURE CITED

- BANNERMAN, D. A. 1962. The birds of the British Isles. Vol. 11. London: Oliver & Boyd.  
 CHILD, P. 1970. Seasonal migrations of some Central Otago riverbed birds. Univ. Otago Diploma in Wildlife Management thesis (unpubl.).  
 HAMEL, G.; BARR, G. 1974. Coastal ecology and land use at Aramoana. Ecology Action (Otago).  
 MEES, G. F. 1977. The subspecies of *Chlidonias hybridus* (Pallas), their breeding distribution and migrations (Aves, Laridae, Sterninae). Zool. Verh., Leiden 157: 1-64.  
 OLIVER, W. R. B. 1955. New Zealand birds. 2nd ed. Wellington: A. H. & A. W. Reed.  
 SIBSON, R. B. 1948. Black-fronted Terns in the North. Notornis 3: 10-12.  
 SLADDEN, B. 1953. Black-fronted Tern in Bay of Plenty. Notornis 5: 118-120.  
 STEAD, E. F. 1932. The life histories of New Zealand birds. London: Search Publ. Co.  
 VOOUS, K. H. 1960. Atlas of European birds. London: Nelsen.  
 WODZICKI, K. A. 1946. The Waikanae Estuary. Emu 46: 3-43.

CHRIS LALAS, Zoology Department, University of Otago, Dunedin.



## SHORT NOTE

### GREAT SKUA MOBBED BY GREY-FACED PETREL

At 1200 hours on 16 July 1978 at 26°04'S 176°32'E a very dark Great Skua (*Stercorarius skua*) was seen flying northward and being mobbed by six Grey-faced Petrels (*Pterodroma macroptera*). The skua did not attempt to return the attacks but appeared to be flying quickly to get away from the petrels. The mobbing was seen for about five minutes, when five of the petrels left. The remaining one continued the attack, still without provoking a response, until both birds had passed out of sight.

JOHN JENKINS, 14 Lochiel Road, Remuera, Auckland.