

SOUTHERNMOST OCCURRENCE OF WHITE-CAPPED NODDY (*Anous minutus*)

By K. E. WESTERSKOV

ABSTRACT

A White-capped Noddy (*Anous minutus* Boie, 1844) was seen in the afternoon of 3 April 1977 at the Taieri River Mouth, Otago. This is the 8th published record from New Zealand and the southernmost for the country (and the world). Correlation of timing with preceding weather patterns indicates that the bird came from Norfolk Island (and not the Kermadecs) and that it was wind-carried either during typhoon "Norman" which during 15-24 March swept southwards past Norfolk Island to western North Island or was caught in a strong southerly airstream passing Norfolk Island on 29 March and was carried south before an advancing cold front, making land-fall in Fiordland or coastal Southland.

OTAGO OBSERVATION

On Sunday 3 April 1977 I was fishing at the Taieri River Mouth, Otago. It was a warm, calm and sunny day. I was c. 200 m from the river mouth on the northern side, and while sitting on my knees in the sand near the water's edge, baiting hooks with my back to the sea, I suddenly heard a loud harsh crackling bird call — "kriii-yaah" — in the air just behind me.

The momentary flash of thought registered the call of the Common Tern (*Sterna hirundo*), a memory from the Denmark of my youth; this thought struck me as I quickly turned round and just behind me (some 6 m distance and 4.5 m above the beach near the water's edge) saw a slow-flying black tern with a silvery white cap, shining in the sun. I immediately recognized it as an adult White-capped Noddy with which species I had become well familiar during a visit to New Guinea (where in Port Moresby harbour I photographed this species and the closely related Common Noddy (*A. stolidus*) in August 1970 cf. Fig. 1); as well, I had seen it along the northern Queensland coast, near Cairns.

The noddy flew with measured wing-beat of the rather broad and short (for a tern) black wings in a straight line along the water's edge, closely pursued by 4 Red-billed Gulls (*Larus novaehollandiae scopulinus*); the gulls did not attack the noddy but followed it closely — as out of curiosity — till out of sight.

The plumage of the noddy was uniform black, wings and tail also black, both upper- and undersides, and the bill black and thin, of length as head. I noticed the spread-out, slightly forked tail. Most



FIGURE 1 — White-capped Noddy photographed in Port Morseby harbour 25 August 1970. Note the comparatively short and broad wings and the slightly forked tail.

Photo: K. E. Westerskov

spectacular was the bright white cap from bill to nape. The bird's flight pattern was slightly different from the much longer (and narrower) winged White-fronted Tern (*Sterna striata*), common in the area: the noddy moved its shorter wings in a shorter arc, more rhythmical and laboured than the longer winged species.

The observation was made at 1615 hours and the noddy was not seen again that day. The following afternoon I returned to the river mouth with camera and telephoto-lens in the hope of again seeing the bird and photographing it; but in spite of a careful scrutiny of all bays and all terns and gulls seen, there was no sight of the noddy. I re-visited the area on 8, 16, 17 and 23 April but did not see the noddy again. White-fronted Terns were always present, a flock of 50-150 rested with Red-billed Gulls and Black-backed Gulls (*Larus dominicanus*) on the spit on the southern side of the outlet. On 4 April there were 64 White-fronted Terns, 75 Red-billed Gulls and 2 Black-backed Gulls as well as 5 Pied Stilts (*Himantopus himantopus*) resting in a group on the southern spit.

ORIGIN AND LIKELY ROUTE

The two nearest breeding stations to New Zealand of the White-capped Noddy are: Norfolk Island and the 6 km to the south lying Philip Island (Hull 1909: 659), a distance of 720 km to Cape Maria van Diemen: and Kermadec Islands where it breeds on the two Meyer Islets to the north-east of Raoul Island (Soper 1968: 71),

an equal distance of 1050 km to East Cape and Cape Brett, Bay of Islands. Further (northern) breeding grounds are so far removed that it is a reasonable assumption that the bird came from Norfolk or Kermadec.

Noddies are sedentary (Serventy *et al.* 1971: 236) and spend their lives on or near their breeding/roosting islands: "Abundant usually only within 50 miles of breeding or roosting islands" (King 1967: 82).

Occurrence far outside their breeding range is, therefore, exclusively a result of accidental catching up of noddies in cyclones and other forceful air-movements, probably of birds feeding at sea away from the islands. The few appearances in New Zealand are also most likely caused by exceptional weather; thus the White-capped Noddy observed resting with a flock of White-fronted Terns at Ocean Beach, Whangarei Heads, on the morning of 13 February 1965 was "probably sheltering from the effects of the Fijian hurricane, and . . . rather exhausted" (Robb & Robb 1965), and another noddy picked up dead in March 1975 was "blown into Houhora harbour during Hurricane Alison" (Edgar 1975: 331).

Presuming the noddy observed at Taieri River Mouth was a fairly recent arrival, weather patterns over the preceding month might indicate both (1) place of origin, whether Norfolk or Kermadec, and (2) possible course and time of aerial transportation to New Zealand waters.

A review of the 5 weeks preceding 3 April showed that there were two periods when weather developments were such that the bird could have been weather-carried to New Zealand. In either case it was quite clearly air movement from the region of Norfolk Island, and it is possible, provided the timing is accepted, to state that the origin of the bird was Norfolk, which furthermore is so much closer, and not the Kermadecs.

The first likely period of the noddy's journey is somewhere during the period 15-24 March (cf. Fig. 2). A tropical depression developed in the New Hebrides and was first recorded on 15 March; it rapidly grew in intensity, became known as typhoon "Norman" and moved in a southerly direction towards Northland. This tropical cyclone passed directly east of Norfolk Island in the early hours of 21 March, and any noddies fishing in the sea east of the island could easily have been caught into this clock-wise revolving, rapidly southward moving tropical depression and wind-carried reaching western Northland in less than a day.

In favour of this alternative are: (1) the shortest possible distance: (2) the direct Norfolk Island-Northland air movement carrying the bird. The cyclone spiralled southwards (its centre progressing some 300 km per day), total distance some 2400 km in 8 days before it petered out. The wind velocity associated with such typhoons

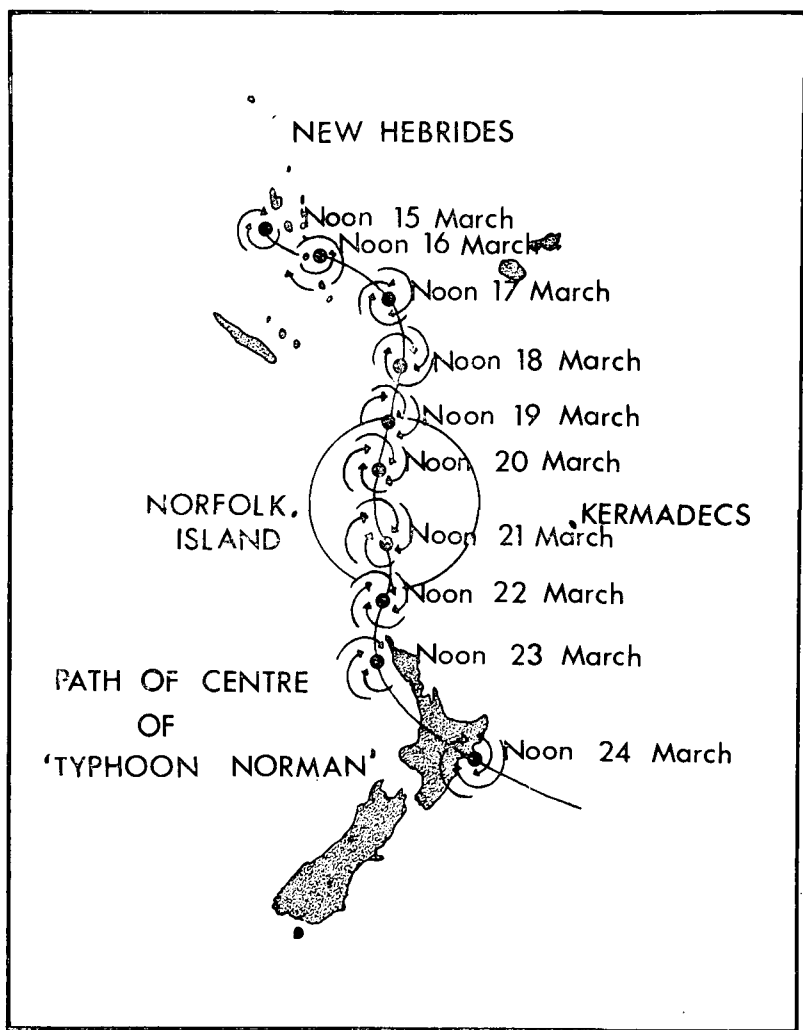


FIGURE 2 — Path of 'Typhoon Norman' from the New Hebrides to New Zealand, 15-24 March 1977, which possibly carried the White-capped Noddy seen at Taieri River Mouth on 3 April; based on daily weather maps published by the New Zealand Meteorological Service. The large circle shown east of Norfolk Island is the 1005 mb isobar as recorded for midnight between 20 and 21 March.

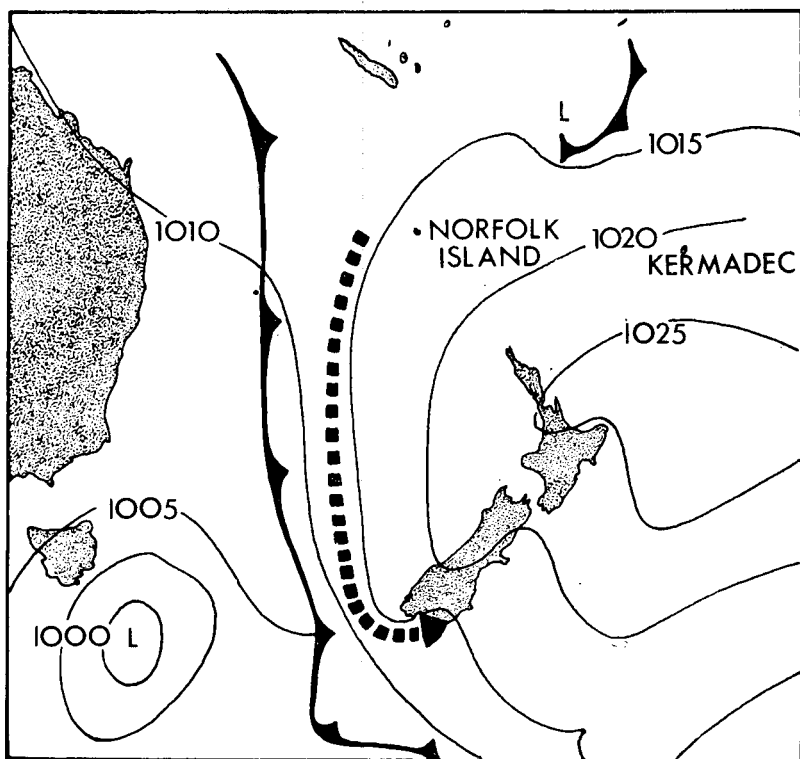


FIGURE 3 — Weather situation early on 29 March 1977 (modified from weather map of the New Zealand Meteorological Service) showing second possible arrival route of White-capped Noddy seen at Taieri Mouth on 3 April. The stippled arrow indicates possible flight path, considering changes brought about by rapid shifting eastwards of the cold front and low pressure system.

measures 120 km per hour and over, decreasing to some 50 km per hour at distances of 160-240 km from the centre (Taylor 1954: 252).

The second alternative was a situation developing on 29 March (cf. Fig. 3) when increasingly strong northerly winds, advancing in front of a strong cold front, moved eastwards from Australia and in the early hours of 29 March passed over Norfolk Island. This wind moving mid-Tasman in an almost straight north-south direction was influenced by a strong westerly wind developed by a low pressure system advancing rapidly across the Tasman from south-east of Tasmania. A bird caught up in this southerly (and later east-bent) air-stream would probably end up in Fiordland or southern Southland.

In favour of this second alternative are: (1) closer to noddy observation in time: (2) the bird would have made land-fall very close to point of observation a couple of days later: (3) lack of observations of noddies further north during this period, as after typhoon "Norman." Against this alternative counts the much longer travel distance involved, a minimum of c. 1900 km.

It is of interest to consider these two potential routes in the light of wind speeds and flight speed of the noddy. There are no published records of flight speeds of the White-capped Noddy, but for this purpose records of flight speed of the closely related (and almost similar-sized) Common Noddy and other terns will suffice. In his excellent early behaviour study, Watson (1908: 228) reported that 2 Common Noddies characteristically painted were transported 72 750 m from their breeding island, Bird Key in the Dry Tortugas, Florida Straits, to a nearby island, Marquesas Keys; they returned to their nest in 1 hour 45 minutes, corresponding to a ground speed of 42 km per hour. This figure is very close to flight speeds of two terns, measured by using a double theodolite system (Tucker & Schmidt-Koenig 1971): for Caspian Tern (*Hydroprogne caspia*) the mean recorded flight speed for 5 birds was 42 km per hour, and for 4 Royal Terns (*Thalasseus maximum*) 48 km per hour.

For this calculation the ground speed of the White-capped Noddy is estimated at a conservative 40 km per hour. This air speed, provided the bird flies with the wind, must be added to the wind speed as the bird moves within the advancing air mass independent of the ground. In both alternatives accepted in this paper, the noddy is shown to have moved with the prevailing wind towards New Zealand. In the case of typhoon "Norman" (ground speed 120+ km per hour), the effective forward speed could thus have been 160 km per hour or more, enabling a noddy to reach New Zealand from Norfolk Island in some 4-5 hours, provided it generally flew in the direction of New Zealand and not circled or tried to break out of the centre of the cyclone.

Considering the alternative of the longer but almost directly due south flight on 29 or 30 March, the likely wind speed of the southern wind movement in front of the advancing cold front can be estimated using the geostrophic wind equation (McIntosh & Thom 1969: 84); this equation which incorporates increased wind speed with decrease in isobar spacing and latitude indicated a wind velocity of 13 m per second near Norfolk Island (47 km/hour) on the day in question, increasing to 36 m per second (130 km/hour) west of Fiordland.

Provided the bird flew in a southerly direction and did not try to escape the rapidly increasing southerly airflow, it might have covered the 1900 km distance from Norfolk Island to Fiordland in as little as

15 hours, accepting as mean forward speed $\left(\frac{47 + 130 + 40}{2} \right)$ km per hour.

While the above presented indications of origin, travel route, speed and land-fall of the observed White-capped Noddy are purely speculative, based as they are on the assumption that the bird was a recent arrival (within the preceding 5 weeks), they do incorporate a number of known facts (the bird's ground speed and meteorological conditions, such as wind direction and speed during the period). They also throw some light on the effects of severe weather conditions and show how a single or a few birds in incredibly short time may move (be moved) long distances.

It would be realistic to assume that not one but many birds were caught in such typhoons and strong winds and that many would — after being caught — try to re-orient and adjust their flight path for the home island; many would perish in the effort. It might be only the odd bird which for unknown reasons proceed with (not against) the wind and thus survive to reach distant shores. It seems fruitless to speculate that noddies could rest on the sea (after all, they are seabirds) if tired during such a flight or during the night; not only would the sea during the conditions prevailing be in turmoil, but noddies rarely if ever land on water (they roost on or at the nest or elsewhere on the roosting islands) and fish off the sea surface without landing or diving (Watson 1908: 193; King 1967: 82; Serventy *et al.* 1971: 235).

Large numbers of seabirds succumb in storms at sea as is well known by members of the Beach Patrol Scheme and is dramatically illustrated in the latest report of that activity (Veitch 1977) — 21 425 dead seabirds found on 3681 km of coast patrolled in 1975. A few of the seabirds caught up this way survive and live to reach our shores.

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