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## SHORT NOTE

### Sightings of New Zealand fairy tern (*Sternula nereis davisae*) in the Kaipara Harbour following nest failure

KAREN BAIRD\*

Royal Forest & Bird Protection Society New Zealand, PO Box 108 055, Auckland, New Zealand

STEFANIE M.H. ISMAR

GEOMAR Helmholtz Centre for Ocean Research, Experimental Ecology, Düsternbrooker Weg 20, 24105 Kiel, Germany; Royal Forest & Bird Protection Society New Zealand, PO Box 108 055, Auckland, New Zealand; University of Auckland, School of Biological Sciences, PB 92019, Auckland 1142, New Zealand

DAVID WILSON

Department of Conservation, Auckland Conservancy, Warkworth, New Zealand

SIOUX PLOWMAN

New Zealand Fairy Tern Charitable Trust, Mangawhai, New Zealand

RANGI ZIMMERMAN

Department of Conservation, Whangarei Conservancy, Whangarei, New Zealand

MARK BELLINGHAM

Royal Forest & Bird Protection Society New Zealand, PO Box 108 055, Auckland, New Zealand

New Zealand's rarest endemic breeding bird (Hansen 2005), the New Zealand fairy tern (*Sternula nereis davisae*; hereafter NZFT) typically winters in the Kaipara Harbour (Goffin 1978; Chamberlin & Dowding 1985; Parrish & Pulham 1995a). The Department of Conservation undertook a comprehensive survey of sightings during autumn 2008, estimating a population size of only 38 birds (Wilson 2008). Cumulative sightings from surveys conducted by the Ornithological Society of New Zealand from 1991-2008 identified 12 seasonal

roosting sites within the Kaipara Harbour and 2 likely former breeding sites (G.A. Pulham *et al.*, *pers. comm.*) in addition to the current nesting site at Papakanui Spit (36° 26'S, 174° 12'E), which is now the only West Coast breeding site of the NZFT. Surveys of the Kaipara Harbour for NZFT have been few during Dec, as efforts are primarily concentrated on nest monitoring during the breeding season (G.A. Pulham, *pers. comm.*) at the 4 remaining breeding sites: Papakanui, and the 3 East Coast breeding locations of Mangawhai (36° 06'S, 174° 36'E), Pakiri (36° 14'S, 174° 43'E), and Waipu (35° 59'S, 174° 28'E). Given the small population of this bird, identifying the locations and habitat use of non-breeding and

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\*Correspondence: [K.Baird@forestandbird.org.nz](mailto:K.Baird@forestandbird.org.nz)



**Fig. 1.** Sightings of New Zealand fairy terns in the Kaipara Harbour, Dec 2010; white lines: GPS tracks of boat survey; white asterisks: roosting sites; black asterisks: feeding sites (Satellite image: 2013Cnes/Spot Image, Google™Earth; photo insert: diving NZFT, S. Ismar).

failed breeding birds during the breeding season could help ensure they are protected during a period in which they are otherwise not monitored.

We conducted a 5-day boat survey to locate non-breeding NZFT in Dec 2010, with the objective of determining previously unreported roosting and foraging sites used by failed breeders during the breeding season, and to locate non-breeding birds at this time of year. Our survey focused on the eastern estuaries and river arms of the Kaipara Harbour, and in Okahu Bay on the Poutu Peninsula of the Kaipara Harbour (Fig. 1). Some areas were visited more than once at different tidal states. Surveys were carried out on 5, 6, 14, 15 and 30 Dec 2010, using the 10 m flat-bottom fishing boat 'Tiaki'. The boat left Whakapirau at 08:30 h and returned in the late afternoon. High tides (at Poutu Point) were at 10:43 h (3.5 m), 11:48 h (3.5 m), 17:25 h (2.8 m), 18:23 h (3.0 m), and 06:23 h (3.0 m), respectively.

We saw NZFT on 6, 14 and 30 Dec, with a total of 42 sightings. We were able to obtain band combinations from 27 of these using a spotting scope, binoculars or camera. We approached the birds to within 30 - 50 m, while they were roosting on mud-, sand- and oystershell banks. We identified 16 different individuals, 7 of which were seen more than once during our survey. Sighted birds included: 2 failed breeding pairs from the east coast

(M-pGK, YM-B; M-KW, M-YB), 1 further potential east coast pairing (unbanded, pGB-M), 3 subadults banded in the 2009-2010 season (RM-W; KB-M; KpG-M), 4 males of potential breeding age (YM-R; M-K; Y(K)-M; M-R), 1 bird of unknown sex, for which there are no breeding records (MB-R), and 2 unknown birds due to band losses (Nil-M; W-M).

During our survey, we discovered a previously unreported high-tide NZFT roost in the Whakaki River (36° 15.925' S, 174° 20.689' E); roosting birds were also seen at a previously reported second site at Port Albert (36° 16.252' S, 174° 25.654' E). NZFT were observed flying and foraging close to and upstream from these roosts (Fig. 1). We observed foraging on 12 occasions in total, including 3 locations in the Whakaki River (36° 15.496' S, 174° 19.831' E; 36° 16.486' S, 174° 21.008' E; 36° 15.802' S, 174° 20.605' E) and at 1 location in the Oruawhoro River (36° 15.423 S, 174° 28.245' E). NZFT roosting at Port Albert were also observed feeding in the vicinity of their roost.

On 6 Dec 2010, 2 NZFT were seen flying along the south riverbank of the Whakaki River at 11:20, joining another NZFT, which was already roosting on a sandy riverbank characterised by shell patches between mangroves and rushes. Another 3 individuals were seen flying over the estuary at 11:31, and settled onto the sandbank at 11:35. These

birds included a breeding pair from Mangawhai (M-pGK, YM-B), that had recently lost its fostered chick on 3 Dec 2010 (Zimmerman 2011). At 13:20, we followed 3 birds a few hundred meters upstream and we observed them foraging in clear, calm water along the mangrove margins (Fig. 1). Two other NZFT flew in from the direction of the roost at 14:05, joining the first 3 feeding.

On 14 Dec 2010, we saw 12 NZFT roosting on a mudflat/oysterbank at Port Albert at 12:00, with around 100 white-fronted terns (*Sterna striata*). Sightings included the pair sighted 11 days before (M-pGK, YM-B), as well as the pair (M-KW, M-YB) that had a failed nesting attempt in the 2010-2011 breeding season, and subsequently re-nested at Mangawhai on 15 Dec 2010 (Zimmerman 2011). Two other birds seen (unbanded, pGB-M) may have been a third pairing from the Mangawhai breeding site. Possibly this unbanded male had previously been observed offering nuptial gifts and attempting copulation with female pGB-M at Mangawhai (Zimmerman 2011). It is also possible that this bird was a male which fledged in 2007-08 from an undiscovered nest in Papakanui Spit and was never banded. We observed these birds until 14:00, roosting and feeding along the shallows adjacent to the mud/oysterbank, and along the mangrove margins upstream from the roost, occasionally also diving for prey along the mangrove vegetated riverbank opposite the roosting site. White-fronted terns were also feeding here.

On 30 Dec 2010, we saw a NZFT flying from the east at Port Albert, which joined a roosting NZFT on the mudbank at 12:40 (band combinations KB-M and M-pGK); these 2 were then joined by a third, unbanded, NZFT at 12:50. We observed 1 of these birds fishing in the shallows at 13:00. At 14:00 we saw 3 NZFT foraging along mangrove margins in the Upper Oruawharo River for about 30 minutes. On our return to Port Albert at 14:30, there were 5 NZFT at the roosting site, a sixth bird landed at 14:35. Band combinations included an unbanded bird and pGB-M, again possibly the pair from the breeding grounds at Mangawhai.

The distance from the east coast breeding locations at Mangawhai, Waipu, or Pakiri, to the Kaipara Harbour is clearly within the range of foraging non-breeders and failed breeders feeding prior to re-nesting. However, it appears to be too far to enable the high provisioning rates that are observed at active nest sites (Parrish & Pulham 1995b) or during post-fledging care (Preddey 2008). In spite of their different hydrology and topography, the habitat where we observed foraging NZFT during this survey shares features with the habitat where most NZFT foraging activity was observed during breeding in the Mangawhai Harbour (Ismar *et al.*, *in press*): birds frequented

mid to upper estuaries with mangrove-vegetated shores. Our observations of NZFT feeding on the Kaipara Harbour, whose breeding had failed or was interrupted on the east coast, indicate that the Kaipara Harbour, apart from supporting most of the non-breeding NZFT population throughout the year, may provide productive feeding and safe roosting habitat, giving these birds the opportunity to regain breeding condition for re-nesting.

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