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SHORT NOTE

First and second breeding of Australian gull-billed tern (*Gelochelidon nilotica macrotarsa*) in New Zealand

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The gull-billed tern (*Gelochelidon nilotica*) is a cosmopolitan wetland species, patchily distributed across the Americas, Europe, Asia, and Australia. Seven sub-species are recognised, including nominate *nilotica* breeding sparsely through Eurasia and NW Africa, *affinis* in SE Asia, *addenda* in coastal China, *aranea* in E. USA and Caribbean islands, *vanrossemi* in S. California to W. Mexico,

and *grönvoldi* in South America from Guyana to Argentina (Higgins & Davies 1996). In Australia two sub-species occur, overlapping in their ranges: *affinis* is a regular non-breeding visitor predominantly to coastal areas in the north of the country, while the widespread breeding population belong to the sub-species *macrotarsa* (Rogers *et al.* 2005). Having marked physiological, ecological, and behavioural differences from other gull-billed tern taxa (Rogers *et al.* 2005), *macrotarsa* is regarded as a full species by some authorities and was admitted to the IOC

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world bird list 9.2 as Australian tern (Gill & Donsker 2019). The taxon is considered a sub-species in the checklist of the birds of New Zealand; Australian gull-billed tern (*Gelochelidon nilotica macrotarsa*) (OSNZ checklist committee, 2022).

Gull-billed tern is a vagrant to New Zealand, with the first record being of two birds at Invercargill airfield (46°41'S, 168°31'E) in winter 1955 (McKenzie 1955). Since then, the species has occurred sporadically, with records from coastal or near-coastal locations scattered through both main islands, and from a number of inland lakes (Southey 2019). Many of these records are of multiple birds, with the largest groups seen following an influx in 2011, when up to 16 birds were present on the Manukau Harbour (37°03'S, 174°72'E), up to 15 at Lakes Forsyth (43°80'S, 172°75'E) and Ellesmere (43°77'S, 172°48'E), with numerous smaller groups around the country. Birds reaching New Zealand can stay for extended periods; one individual in the Hawkes Bay region was recorded annually between 1982 and 1996 (Southey 2019). Records to date are known only to be of *macrotarsa*; *affinis* could occur as a non-breeding straggler but is as yet unconfirmed in New Zealand (Southey 2019).

Following the 1955 record, gull-billed tern was not reported in Southland until one at Waituna lagoon (46°56'S, 168°60'E) in November 1985, with a further 14 sightings provided to the local recorder prior to the recent breeding records (P. Rhodes, *pers. comm.*). Of these 14, five records were submitted to, and accepted by, the Birds New Zealand Records Appraisal Committee (RAC) (C. Miskelly, *pers. comm.*).

All but one Southland observation has come from either the New River estuary (46°46'S, 168°33'E) or the Awarua-Waituna complex (46°57'S, 168°53'E), two sites separated from one another by a narrow isthmus of agricultural land, and together forming around 21,500 ha of Ramsar designated wetland of international importance. This protected landscape is one of New Zealand's largest remaining coastal wetland complexes (DOC 2022) and provides vital refuge for a wide range of birds, from breeders including Australasian bittern (*Botaurus poiciloptilus*) to short-range migrants such as wintering southern New Zealand dotterels (*Charadrius obscurus obscurus*) and global travellers like bar-tailed godwit (*Limosa lapponica*). The area is frequently visited by birdwatchers, and co-ordinated counts of the main wader roost sites have occurred three times annually since at least 1983 (Riegen & Sagar 2020).

A roving pair of adult gull-billed terns (and on two occasions three birds) were reported by birders each year between 2015 and 2019 from a number of sites within the wetlands. Although not confirmed during this period, breeding was suspected; for

example, GR observed two adults alarm calling, one showing breast staining which may have resulted from food spillage while chick rearing, at Tiwai Bridge sandspit (46°57'01"S, 168°43'35"E) in December 2018.

Re-visiting the spit on 21 December 2019, GR again observed two adult gull-billed terns, and was able to watch and photograph the pair attending a nest with clutch of three eggs (Fig. 1A). The scrape was located amongst mounded shells beside a clump of yellow flowering *Senecio*, close to a small number of nesting white-fronted terns (*Sterna striata*), one pair of Caspian terns (*Hydroprogne caspia*), and adjacent to a large southern black-backed gull (*Larus dominicanus*) colony. The record was submitted to the RAC (as Unusual Bird Report UBR 2019-094), and accepted as New Zealand's first confirmed breeding record for this species (Miskelly *et al.* 2021). Although not assigned to sub-species at the time, the birds are clearly identifiable as Australian gull-billed tern (*Gelochelidon nilotica macrotarsa*) based on diagnostic characters (I. Southey, *pers. comm.*). These features include pale silvery-grey upperparts in adult plumage, and heavy bill with strongly decurved upper mandible (Rogers *et al.* 2005).

The nest was still active on 27 December 2019 with an adult seen sitting when PR and SJ visited to make brief observations from distance. When GR returned on 04 January 2020 however, she found the tern colony deserted except for the Caspian tern pair, and signs of heavy disturbance including tyre tracks close to the now unoccupied gull-billed tern nest location. One of the adult birds was seen hovering briefly around a kilometre from the former nest site, but it was clear that the breeding attempt had been unsuccessful. Despite searches, there have been no further reports of the species from the Tiwai Bridge sandspit to date. Terns in general are sensitive to disturbance (Wu *et al.* 2020), and gull-billed tern is no exception, with Sears noting that his research visits to an American colony (sub-species not named) over three summers affected the distribution of nests, including abandonment of parts of the site (Sears 1978).

On 24 February 2021, SJ and JB visited the New River estuary shellbanks (46°48'03"S, 168°34'37"E) to undertake the Birds New Zealand wader census. The banks, separated from the mainland by a tidal channel, cover approximately one hectare, consisting of several low islands of mounded shells and an area of saltmarsh. Breeding birds include Caspian and white-fronted tern (c. 30 and c. 4 pairs respectively in 2021), southern black-backed gull and royal spoonbill (*Platalea regia*) (authors, *pers. obs.*). Whilst counting roosting waders in strong westerly wind and light rain, the observers found an adult and dependent juvenile gull-billed tern,

and were able to make detailed observations. The record was submitted to and accepted by the RAC (as UBR 2021-022), the committee agreeing with the sub-specific identification as *macrotarsa*.

Brown scalloping in the upperparts, short wings and bill all suggested that the young bird had recently fledged. It was reluctant to fly, showed no signs of foraging for itself and begged regularly from the adult. The adult encouraged flight by making short trips around the saltmarsh and banks, landing and calling to coax the juvenile to follow, which it was seen to do several times. At one stage the adult left on a long flight down river, returning with an unidentified food item that it provided to the juvenile which had remained huddled amongst the roosting waders. The parent was defensive and wary. Despite the distance of SJ and JB from the birds, and efforts made to minimise disturbance, it circled overhead on two occasions giving a distinctive bleating alarm call. JB recorded this call using a mobile phone and uploaded the sonogram to eBird for reference along with the species checklist (eBird 2022). The begging calls of the juvenile were also clearly audible at times, a thin, mewling cry.

The weak flight behaviour of the juvenile coupled with the exposed nature of adjoining habitats and the local scarcity of, and distance to, other suitable tern breeding sites, all suggested that nesting had occurred on the shell-banks rather than the birds having dispersed from elsewhere. This site would seem to suit many of the defensive characteristics that Sears (1978) noted gull-billed terns preferred in nesting locations, most notably its isolation offering protection from disturbance and mammalian predation.

The birds were still present on 28 February 2021 (Fig. 1B) when SJ and JB returned with PM and photographer JR, with the young bird appearing more mobile and stronger on the wing than on 24 February (possibly also aided by improved weather). On several occasions the juvenile took flights around the banks with the adult protectively describing wide circles above it, alarm calling at times. The young bird was still not observed foraging for itself, and frequently begged for food. SJ returned to the site on 5 March, when there was no sign of the gull-billed terns and very few Caspian terns remained.



Figure 1. **A)** Australian gull-billed tern (*Gelochelidon nilotica macrotarsa*) breeding pair, Tiwai Bridge sandspit, Southland 21 December 2019. The nest scrape and eggs are located close to the *Senecio* clump at the right of the image. Photograph: Glenda Rees. **B)** Adult and dependent juvenile Australian gull-billed tern, New River estuary shellbanks, Invercargill 28 February 2021, South Island pied oystercatchers (*Haematopus finschi*) in the foreground. Photograph: Joseph Roberts.

The two New Zealand breeding sites described here differ from those typically used by *macrotarsa* in their core range. The Southland birds chose coastal locations, bars or banks of mounded pea gravel and shells at the edge of extensive estuarine areas. In Australia, nesting also occurs on low banks, spits, or similar features; however, these are usually inland on large and often ephemeral lakes and swamps, and are rarely on near-coastal wetlands (Higgins & Davies 1996).

This ability to exploit new opportunities in the local absence of preferred habitat may be a function of the adaptability of this taxon. Australian gull-billed tern has adopted a high degree of plasticity in breeding and moult strategies to cope with an unpredictable climate (Rogers *et al.* 2005). In Australia it can be strongly nomadic, though there remains a broadly latitudinal and seasonal pattern to movements. Most breeding occurs in the south during September–January, and most of the population winters in the north; however, *macrotarsa*, in common with many Australian waterbirds, can breed at any time of the year if water levels are suitable (Higgins & Davies 1996; Rogers *et al.* 2005).

By contrast, gull-billed tern taxa elsewhere in the world include long-distant migrant populations (*affinis* for example), with tightly scheduled annual cycles (Rogers *et al.* 2005). Given the opportunism shown already in terms of choice of nesting habitat, it seems reasonable to speculate that were Australian gull-billed tern to establish as a regular breeding bird in New Zealand, some adaptation of movement patterns, breeding and perhaps moult strategies might be expected in response to the more strictly seasonal climate of this country.

Of additional note over the course of Southland *macrotarsa* gull-billed tern sightings is an observation of diet. Two birds that were hawking over the Tiwai Bridge sandspit on 20 April 2019 were seen to catch a number of common redpoll (*Acanthis flammea*) amongst a large flock of that species (P. Rhodes *pers. obs.*). This foraging behaviour matches that reported in Canterbury and further demonstrates the ability of this broadly carnivorous species to exploit novel food sources (Crocker 2014).

A large white-fronted tern colony formed on the New River estuary shellbanks late in 2021 (SJ, *pers. obs.*). Despite searches, however, no further sightings of gull-billed tern were made here or reported from elsewhere in Southland over the course of the 2021/22 summer breeding season.

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