The destruction by storm of the Australasian Gannet (*Morus serrator*) colony at Farewell Spit

The Australasian Gannet (*Morus serrator*) colony on Farewell Spit (40° 33´S, 173°02´E) has been described by Hawkins (1988) and continues to be studied by a research group of members of the Ornithological Society of New Zealand and Manaaki Whenua - Landcare Research, Nelson. This colony was established during the 1983/84 season and has since steadily increased in size. It is the only known colony of Australasian Gannets at sea level in New Zealand. The colony is 3 km east of the lighthouse and situated on some small sandbanks and shellbanks which are separated at high tide from the rest of the Spit. The colony occupies six separate small banks, referred to as sites 1, 2A, 2B, 3A, 3B and 3X (Fig. 1).

The census on 4 March 1996, after the colony had suffered from high tide storms, erosion of the banks and predation by Black-backed Gulls (*Larus dominicanus*), found that site 1 had been washed out, site 2A had 111 young, 2B had 15, 3A had 40, 3B had 56 and 3X had 224 chicks and 10 eggs. Observations in December 1996 showed that the colony had increased. Site 3X was used for the first time during the 1994/95 season and in January 1997 it was the largest site in the colony.

On 11 January 1997, five members of the study group (Kerri Gentleman, Henk Heinekamp, Alex Milne, Rob Schuckard and WAC) visited the colony to observe the impact of the combined forces of a predicted high spring tide and cyclone Drena. The cyclone was due to pass through Cook Strait from west to east. At this time the colony had a total of 800-1,000 nests, most with a single chick, the others with a single egg.

In just over an hour, the cyclone and high seas destroyed most of the colony. At 11:30h site 2B was washed over, followed by site 1 which had been protected to some extent by a large macrocarpa (*Cupressus macrocarpa*) trunk. Sites 3A and 3B were washed over next, followed by site 3X at 12:40h. Only sites 2A and 3B retained any semblance of the former banks. Site 2A, although much reduced, still had 120 adult birds sitting tight as the tide began to ebb. At this time many of the adult Gannets returned to the sites of their former colonies to find them virtually levelled.

Further observations on 14 January 1997 (K. Stark, pers. comm.) found that site 2A was subsequently reduced by tidal erosion and slumping of the marram (*Ammophila arenaria*) -covered sandbank so that only 41 nests survived. By 12 February 1997 this number had been reduced to 17 chicks at 2A and a further 5 at site 3X.

The predicted high tide at 12:06h on 11 January 1997 was 4.6 m, and this was exacerbated by storm waves of 2-3 m high (our subjective estimate). The New Zealand Meteorological Service estimated that the low pressure system of 992 hp associated with the cyclone would have raised the sea surface by a further 0.2 m (Bob McDavitt pers. comm.).

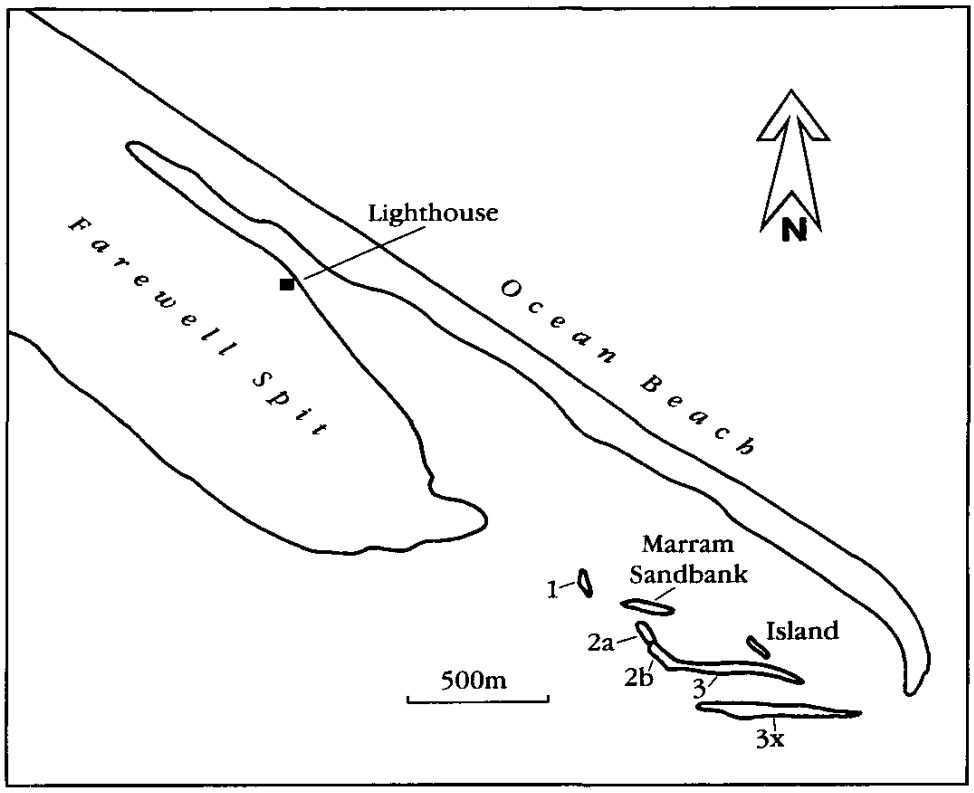

FIGURE 1 – The location of nesting sites at the Farewell Spit Gannet Colony.

An interesting observation at the time was that as the banks were destroyed by the waves dark staining of the sand and shells was revealed to a depth of 1.5 m. This was evident as discrete circular stains possibly corresponding to individual nests and caused by more than 10 years of guano leaching through the sand.

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