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SHORT NOTE

Establishment of a new breeding colony of Australasian gannets (*Morus serrator*) at Young Nick's Head Peninsula

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The Australasian gannet (*Morus serrator*) population in New Zealand increased annually by 2.3% between 1946-47 and 1980-81, to a total estimate of 46,004 breeding pairs (Wodzicki *et al.* 1984). An unpublished census in 2000-2001, estimated that the New Zealand population had increased further since 1980 to 55,000 breeding pairs (Stephenson 2006).

Due to the continued increase of the gannet population in New Zealand, little management beyond monitoring colonies and reducing human and dog disturbance has been recommended (Taylor 2000). However, the secure status of the Australasian gannet makes it a good subject for trialling colony establishment techniques that could be further developed to preserve endangered, surface-nesting seabird species such as the masked booby (*Sula dactylatra*) or albatross (Family Diomedeidae; Gummer 2003).

Gannets, like many seabirds, have colonial nesting habits, strong colony-site philopatry and high levels of mate fidelity (Robertson 1985). These characteristics combine to reduce the probability of gannets colonising new habitat independently, and highlight the necessity for social factors and conspecific attraction to be considered as a fundamental element of habitat quality when undertaking seabird restoration projects (Parker *et al.* 2007).

Social attractants can include both visual (*e.g.*, decoys, mirrors) and acoustic (*e.g.*, vocalisation playback) components to give the impression of an active colony site (*Sterna nereis davisae*; Jeffries & Brunton) (*Sterna caspia*; Roby *et al.* 2002). Visual attractants are important for diurnal species such as gannets, while acoustic attractants can be used for both diurnal and nocturnal species (Gummer 2003). Social attraction techniques have been successfully used around the world to encourage the re-colonisation of extirpated seabird colonies in species such as the Arctic tern (*Sterna paradisaea*; Kress 1983), dark-rumped petrel (*Pterodroma phaeopygia*; Podolsky & Kress 1992) common murre (*Uria aalge*; Parker *et al.* 2007) and grey faced petrel (*Pterodroma macroptera gouldi*; Sawyer & Fogle 2010).

Although social attraction systems have been used effectively with other seabird families (*e.g.*, Alcidae; Kress 1988), there has been little recorded success with species in the Family Sulidae. A

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northern gannet (*M. bassanus*) project on Ile-aux-Perroquets, Quebec, employed decoys and acoustic attraction methods with the aim of re-establishing an extirpated colony. Several birds landed within the decoy colony (Steve Kress, *pers.comm*.); however, the project was abandoned after 6 seasons due to the lack of prospecting individuals, despite the large number of birds in the vicinity of the colony site (Louis Frederic Paquet 2000).

In New Zealand, concrete decoys and a sound attraction unit were installed with the hope of establishing a new colony of Australasian gannets on Mana I; to date, observations of gannets at the site are infrequent (Gummer 2003). In this paper we report on 2 attempts to establish a new colony of Australasian gannets on the east coast of the North I, New Zealand.

During Sep 2007, 18 life-sized gannet decoys were installed on Mapiri Peninsula (177° 55 E, 38° 49 S), 7 km south of Young Nick's Head. The decoys were situated *c.* 62 m above sea level in a small basin positioned 25 m from the cliff edge and behind a high point. This meant the decoys were not easily visible from the sea. Nine sitting decoys were positioned on seaweed nest mounds and another 9 decoys were free standing on aluminium supports. Decoys were spaced 1.1 m apart. Nest mounds measured 800 x 400 x 200 mm and were comprised of flapjack (*Carpophyllum maschalocarpum).* A solar-powered, remote sound system was installed. This system was comprised of 2 outdoor speakers positioned at ground level, 10 m on either side of the decoys. Sound was broadcast out to sea in a southerly direction. Gannet calls, recorded at Cape Kidnappers during Dec 1971, were purchased from the Les MacPherson Natural History Unit Sound Archive, and were played between sunrise and sunset to simulate a raucous and active gannet colony.

By Jul 2008, no gannets had been observed near the artificial colony and the decision was made to re-locate the decoys and sound system to Young Nick's Head Peninsula (177° 58 E, 38° 45 S). This site was chosen because it is a prominent and exposed headland, a similar landscape feature to Cape Kidnappers, 250 km south of Young Nick's Head, where a large Australasian gannet colony resides.

The artificial colony site at Young Nick's Head was situated *c*. 30 m above sea level on a coastal cliff edge, and within a pest-free enclosure. Most mammalian predators have been removed from the enclosure and human access is restricted. The enclosure contains several potential roosting and/or breeding areas in the form of terraces, encompassing a total area of *c.* 1000 m². A regular stream of gannets passes within 400 m of the headland, particularly during summer, as birds travel into and out of Poverty Bay (*pers. obs*.). This site is also exposed to all wind quarters, except it is sheltered from south-westerlies.

On 7 Sep 2008, the existing pasture grass sward was cut to ground level and sprayed with a 1% glyphosate herbicide. Water-based white paint was applied to the ground to mimic guano. The layout design employed at Mapiri Peninsula was used again on Young Nick's Head, with 9 sitting and 9 standing gannet decoys spaced at 1.1 m apart.

The first gannet flew directly above the decoys within 10 minutes of activating the sound system. The site was monitored opportunistically after this. Two gannets were observed roosting amongst the decoys on 29 Oct 2008. The number of birds on the ground continued to increase throughout Nov and Dec until the visiting population peaked at an estimated 200 birds on 5 Jan 2009. The number of individuals then progressively decreased again, with the last gannet sighting for the season recorded on 28 Apr 2009. The speakers were deactivated on 2 Jul 2009 and due to technical problems were not reactivated until Sep 2010. Consequently, the project was without the acoustic attraction component for the 2009-2010 breeding season.

Gannets were first recorded back at the artificial colony on 3 Sep 2009 and again their numbers increased throughout Dec with the largest sighting for the season of *c.* 100 individuals on 17 Dec 2009. Two eggs were discovered in natural nests within the decoy colony group on 18 Jan 2010 and 2 chicks were observed on 5 Feb 2009. Both chicks died prior to fledging; one survived to *c.* 4 weeks and the second to 8 weeks of age. During the 2010/11 breeding season, 11 chicks fledged and during the 2011/12 breeding season, ~28 chicks fledged (P. Matthews, *pers. comm*.).

To our knowledge, this is the first time that any Sulidae species attracted to a site through passive methods has settled to breed and has successfully fledged chicks. There are a number of factors that we believe contributed to the success of this project that should be considered further.

First, we regard the site position and exposure to be the key factors in the success of this project. The height of the colony above sea-level could be another key aspect in influencing project success. Ropert-Coudert *et al.* (2004) found that Cape gannets (*M. capensis)* dive from up to 30 m while foraging and we suggest that situating an artificial nesting site within the foraging flight altitude could optimise decoy and sound detection by passing birds.

The proximity of Young Nick's Head to another expanding population at Cape Kidnappers may also be important (Steve Kress, *pers. comm*.); there were a number of anecdotal sightings of gannets both rafting and flying near Young Nick's Head Peninsula prior to the installation of the social attractants indicating a visiting seasonal population in the area.

The success of this project illustrates the potential for passive social attractants to encourage the establishment of new or extirpated colonies of surface-nesting seabird species. Passive methods may be particularly important for surface-nesting seabird species due to the cost and difficulty of translocating a highly philopatric species.

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