SHORT NOTE

Seabird association with Hector's Dolphins and trawlers at Lyttelton Harbour mouth

Seabirds associate with subsurface predators in many parts of the world (Evans 1982). The seabirds feed either on prey forced closer to the surface (Au and Pitman 1986), or by scavenging food fragments (Martin 1986; Pitman and Balance 1992).

Slooten and Dawson (1988) observed groups of White-fronted Terns (*Sterna striata*) feeding in association with Hector's dolphins (*Cephalorhynchus hectori*), a coastal dolphin with an important population around Banks Peninsula. My results showed Spotted Shags (*Phalacrocorax punctatus*) or Black-backed Gulls (*Larus dominicanus*) (or both) frequently aggregating in a 3-way association of seabirds, Hector's dolphins, and working trawlers at the mouth of Lyttelton Harbour on Banks Peninsula. This association was the most common seabird aggregation in the study area.

STUDY AREA AND METHODS

I completed 26 observation periods at approximately monthly intervals between 13 December 1991 and 14 November 1993 from Godley Head (43°35.5′ S, 172°48.5′ E) on the northern side of the Lyttelton Harbour entrance (Fig. 1). The cliff-top observation site was 105 m asl. Observations were for 60 minutes starting between 0520 h and 0830 h NZST (depending on season), and only in low wind conditions. I used 9 x 25 binoculars and a 15 x 60 telescope.

During each observation period, I recoreded all vessels, and all bird aggregations (> 10 birds) not obviously travelling through the study area. Alternating 5-minute blocks were spent observing Hector's dolphin behaviour (if present), and searching the study area for bird aggregations, other dolphins, and vessels. The dolphin behaviour observations recorded dominant group behaviour every 30 s into directed movement, circling, and diving categories.

RESULTS AND DISCUSSION

Spotted Shags were the most common seabird in the study area during spring and summer. Other common species were Black-backed Gull, Red-billed Gull (*L. novaehollandiae*) and White-fronted Tern. Hector's dolphins were commonly seen from December to March. They were almost always within the hauling zone of a working trawler, where they showed a range of behaviours consistent with feeding. Trawlers were active throughout the year, and targetted flatfish (*Pleuronectidae*), red cod (*Pseudophycis bacchus*), and red gurnard (*Chelidonichthys kumu*).

I saw no seabird aggregations away from working trawlers. Seabirds were aggregated with working trawlers in the absence of Hector's dolphins on only one of 17 days on which working trawlers were observed. This event was on 16 September 1993 and involved 40-50 Black-backed Gulls and 5-10 Red-billed Gulls flying around a trawler deploying its net. In contrast, seabird

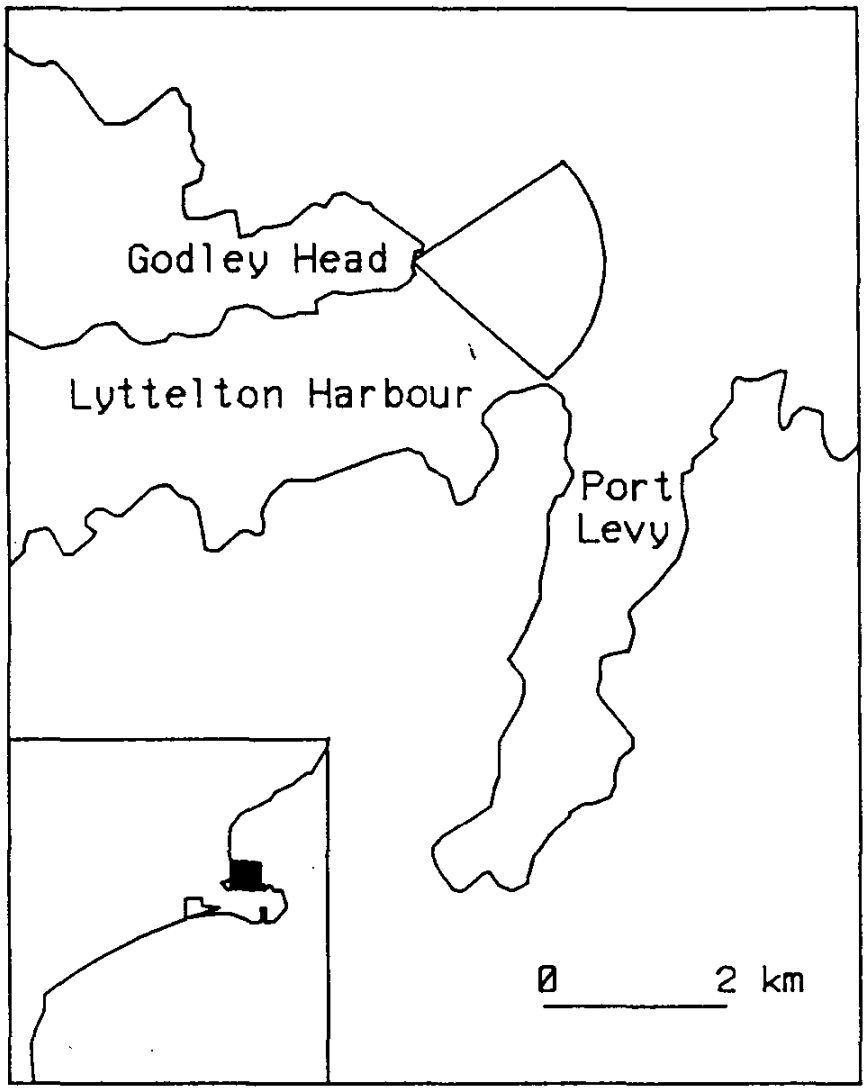

FIGURE 1 – Location of study area on Banks Peninsula, showing observation point and area searched

aggregations were found with Hector's dolphins within the hauling zone of a working trawler on eight of the 11 days on which I observed the Hector's dolphin/trawler association. Of these eight occasions, three involved only Spotted Shags, two involved only Black-backed Gulls, and three involved both species. I did not see White-fronted Terns associating with dolphins (or trawlers), in contrast to Slooten and Dawson (1988). Although White-fronted Terns were common in my study area, they always fed individually, and independently of dolphins. All seabird aggregations I saw involved <100 birds, most were <50 birds.

Further indication of the significance of the Hector's dolphin – working trawler – seabird interaction comes from the dolphin behaviour observations. Of 227 behaviour observations of Hector's dolphins accompanying a working trawler, 97 (43%) showed accompanying seabirds.

A typical example of the trawler – Hector's dolphin – seabird interaction was as follows. On 1 January 1993, 2-10 Hector's dolphins were seen simultaneously in the hauling zones of two trawlers. One was accompanied by 20-40 birds, the other by 50-100. Dolphins were surfacing among the birds. In both associations Spotted Shags were dominant (approx 80% of birds), the remainder being Black-backed Gulls. The shags were mostly swimming in the same direction as the trawler, with some birds diving. The shags maintained their position by successive short flights. When the dolphins dispersed, the seabird aggregation also broke up despite continued trawler operation.

The species association of Spotted Shag and Black-backed Gull is consistent with their feeding behaviour. On the Otago coast, 300 km south of the study area, Spotted Shags fed mainly on ahuru (*Auchenoceros punctatus*), red cod, Graham's gudgeon (*Grahamichthys radiata*) and sprat (*Sprattus antipodum*) (Lalas 1983). The range of these fish includes the Canterbury coast (Ayling and Cox 1982), where they may also be important in Spotted Shag diet. Ahuru, red cod and Graham's gudgeon are demersal as well as pelagic. The relationship between Hector's dolphin and Spotted Shag could therefore be due to the dolphins directly forcing prey within diving range of the shags. Alternatively, fish being pursued by the dolphins could be forcing prey species within reach of the shags. Black-backed Gulls in Otago ate small fish and the large, shoaling zooplankter *Munida gregaria* (McClatchie et al. 1989), although the *M. gregaria* may have been beach-scavenged (McClatchie *et al.* 1991). Therefore, the Black-backed Gulls I saw may have been preying on small fish forced to the surface, or scavenging on feeding debris from either shags or dolphins. The absence of Red-billed Gulls from aggregations near trawlers suggests the absence of zooplankton prey, since these gulls aggregate at zooplankton swarms (McClatchie *et al.* 1989).

Interactions involving shags or cormorants have been reported for both toothed whales (Würsig and Würsig 1980) and baleen whales (Swingle *et al.* 1993). However, such interactions are not well known overall (Evans 1982). It would therefore be interesting to see whether Hector's dolphins and shags are associated in other parts of New Zealand.

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A likely association of the New Zealand Owlet-nightjar (*Megaegotheles novaezealandiae* Scarlett) with early humans in New Zealand

The New Zealand Owlet-nightjar (*Megaegotheles novaezealandiae*) was described by Scarlett (1968) and is recorded in the 1990 New Zealand checklist (Turbott 1990) as being not known from middens and therefore possibly extinct before the human occupation of New Zealand.

Scarlett (1968) listed the sites from which, at that time, *Megaegotheles* bones had been recovered. Most of these sites are typically sinkholes or swamp, which would have been natural traps for a bird which was almost, if not wholly, flightless (Rich & Scarlett 1976). Two sites however, are open-fronted limestone rockshelters in which the bones were recovered from a floor deposit; here these birds could not have died as a result of being trapped. One of the rockshelters (Frenchman's Gully, Timaru) yielded only one partial bone. From the other, however, in Weka Pass, North Canterbury, a number of *Megaegotheles* bones were excavated by Scarlett on two separate occasions in 1961.

Bones of a number of other species, mostly birds, were also recovered from this shelter. Scarlett (1969) published the following species list (species as named by him): Kiwi, Finsch's Duck, Giant Goose, large hawk, Little Weka, South Island Weka, coot-like bird (*Pyramida hodgeni*), pigeon, small Kaka, Kakapo, Red-crowned Parakeet, South Island Thrush, Tui, South Island Kokako, South Island Saddleback, Bellbird, New Zealand Pipit, Cook's Petrel, Mottled Petrel, Fluttering Shearwater, Polynesian rat, tuatara,