LONG-TERM CHANGES IN NUMBERS OF VARIABLE OYSTERCATCHER (*HAEMATOPUS UNICOLOR*) AT TWO WINTERING SITES IN CANTERBURY, SOUTH ISLAND, NEW ZEALAND

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ABSTRACT

The total population of Variable Oystercatchers in New Zealand is believed to have doubled since the 1970's. Wintering numbers at two sites in the Canterbury Region of the South Island have been monitored since 1947 and 1985 respectively. Substantial increases in Variable Oystercatcher numbers are demonstrated from 1988 onwards.

INTRODUCTION

The Variable Oystercatcher *Haematopus unicolor* is endemic to New Zealand and is one of three oystercatcher species recognised from the region (Turbott 1990). It is almost exclusively a coastal wader, favouring sandy and rocky shorelines as well as estuaries and some shallow coastal lagoons.

Since the early 1970's, numbers of Variable Oystercatcher are thought to have doubled (Heather & Robertson 1996, Sagar *et al.* 1999). Credible total population estimates made over the last three decades have included c.2000 in 1970-71 (Baker 1973), c.2000 in 1979 (Baker 1985), 2000-3000 in the mid 1980's (Hayman *et al.* 1986), c.3900 in the late 1980's (Marchant & Higgins 1993), c.4000 in the mid 1990's (Heather & Robertson 1996) and 3413+ in 1999 (Sagar *et al.* 1999).

In the Canterbury Region on the east coast of the South Island, the Variable Oystercatcher has long been considered an uncommon species. Potts (1882) made the assessment that "*north, south and west, this wader is of common occurrence, yet in the Canterbury district it is rare.*" It is significant that neither Stead (1927) nor Hope (1927) included Variable Oystercatcher among comprehensive accounts of birdlife occurring in Canterbury over the period 1890's to 1920's. The local scarcity of this species was later reconfirmed, either implicitly or by inference by Falla (1939), Baker (1972, 1973), Bull *et al.* (1985), Harris & Crossland (1990) and Marchant & Higgins (1993). Potts'statement remained accurate for more than 100 years until a dramatic increase in numbers became evident from the late 1980's onwards.

During the post-breeding period (late December to February) and non-breeding season (March to early September) many Variable Oystercatchers move away from breeding areas and congregate at a small number of key wintering sites on the Canterbury coast (pers. obs.). From north to south, the most important sites (each supporting >10 birds) are Kaikoura Peninsula, Motonau Rivermouth, Ashley Estuary, Avon-Heathcote Estuary, Lyttelton Harbour, Okains Bay and Washdyke Lagoon (Fig. 1). Flocks at these wintering sites comprise adults as well as immatures and juveniles, although flocks between December and February tend to be dominated by immatures (pers. obs).

Two wintering sites, Avon-Heathcote Estuary and Lyttelton Harbour, are located close to Christchurch city and have been regularly visited by researchers and members of the Ornithological Society of New Zealand (OSNZ) for many years. In this paper, data from such observations are used to demonstrate the recent increase in Variable Oystercatcher numbers at these sites.

STUDY AREA AND METHODS

The Avon-Heathcote Estuary (43^{o} 33'S 172^{o} 45'E) is located on the eastern fringes of Christchurch city and supports the largest wintering flock of Variable Oystercatchers in the Canterbury Region with up to 75 birds. This site is a barrier-enclosed

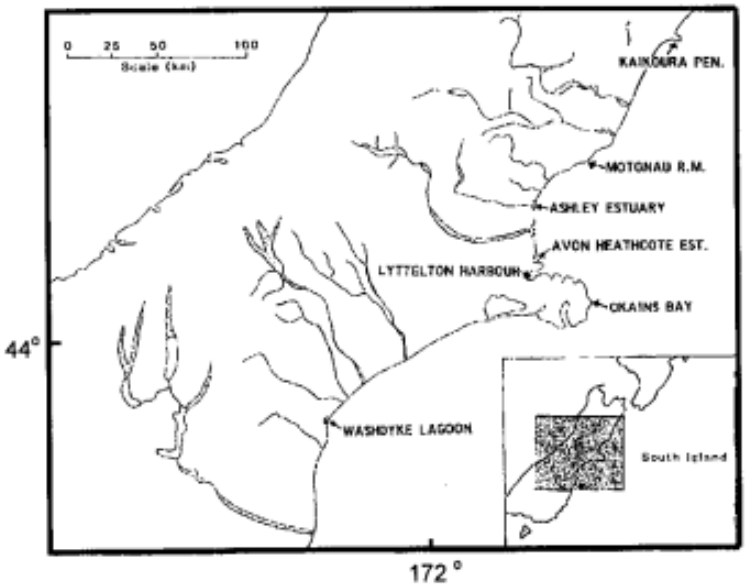

Figure 1. The Canterbury Region and location of Avon-Heathcote estuary and Lyttelton Harbour, South Island, New Zealand.

estuary containing approx. 650 ha of inter-tidal mudflats at low tide. The Avon-Heathcote Estuary supports up to 7000 waders, comprising mainly South Island Pied Oystercatcher *Haematopus finschi*, Bar-tailed Godwit *Limosa lapponica*, Pied Stilt *Himantopus himantopus*, Double-banded Plover *Charadrius bicinctus* and Masked Lapwing *Vanellus miles* (Crossland 1993). Variable Oystercatchers tend to congregate on the eastern, sandier side of the estuary and on adjacent sandy and rocky coastlines. During high tides they roost amongst large flocks of other waders (mainly South Island Pied Oystercatcher and Bar-tailed Godwit).

Lyttelton Harbour (43° 37'S 172° 45'E) is located on Banks Peninsula and occupies the partly submerged crater of an extinct volcano. This is another notable wintering site, but differs from the Avon-Heathcote Estuary in that Variable Oystercatchers have recently returned after being absent for many years. The inner harbour contains extensive inter-tidal mudflats which support up to 1200+ waders, dominated by South Island Pied Oystercatcher, Bar-tailed Godwit and Pied Stilt. Variable Oystercatchers however segregate themselves to the outer harbour, where they frequent wave-cut rock platforms, exposed reefs and sandy beaches. Interestingly, the high tide roost used currently, a reef adjacent to a small islet known as Ripapa Island, is the same site where Potts (1882) observed Variable Oystercatchers roosting and nesting in the 1850's to 1880's.

Where possible, the highest available count made between March and early September has been used, however, in some years (mainly prior to 1988) peak numbers sometimes coincided with a spring (September to November) or early summer (December) influx of non-breeders and immatures. In such cases, this count has been used.

RESULTS

Peak census data were available for 32 of the last 54 years on the Avon-Heathcote estuary (Fig. 2). Numbers were fairly stable at 1-4 birds over the first 40 years of monitoring (1947-1987), then increased steadily over the subsequent 13 years. Counts rose from 3 birds in 1987 to 75 in June 1999 (a 25-fold increase). The 70+ birds now wintering on the Avon-Heathcote estuary represents about half the total Canterbury regional population, estimated at 150+ birds in 1999 (Crossland in prep.). This estuary also now supports almost 2% of the World population of Variable Oystercatcher and therefore technically qualifies under Ramsar

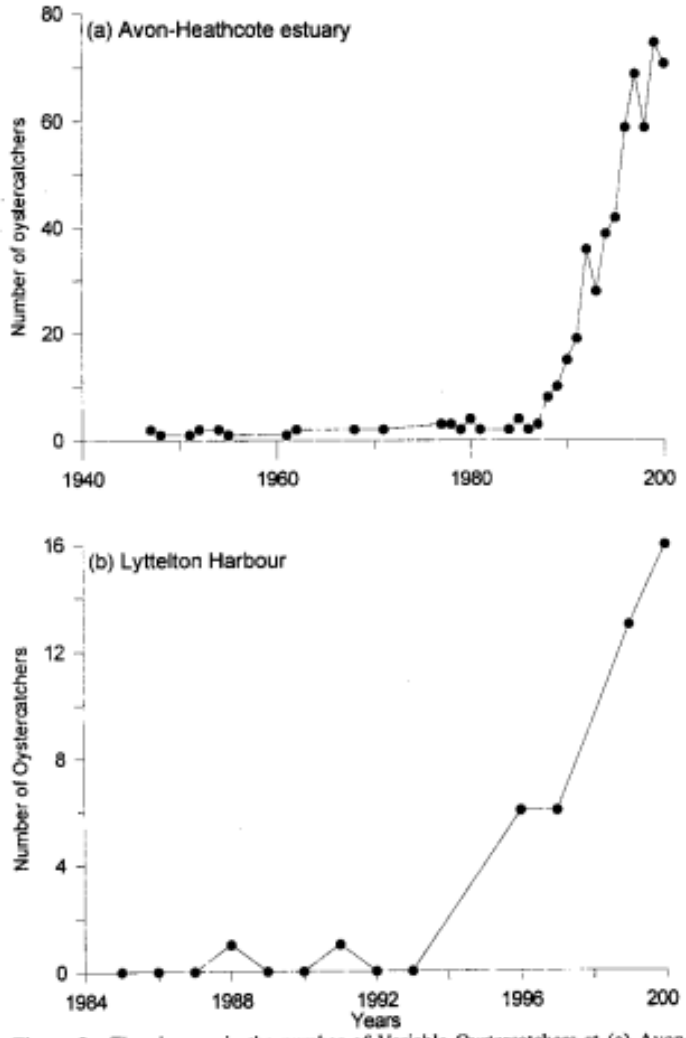

Figure 2. The changes in the number of Variable Oystercatchers at (a) Avon-Heathcote estuary from 1947 to 2000 and (b) Lyttelton Harbour from 1984 to 2000. Counts prior to 1984 were taken from Guy (1949), Bruce (1953), Rosenberg (1963), Baker (1969, 1972, 1973) and the records of Armstrong, Harrison, Howell and Turbott.

Convention criterion as an internationally important site for the species.

At Lyttleton Harbour, wintering numbers have been monitored only since 1985. Peak census data are available for 13 of the last 16 years (Fig. 2), and show a similar trend to the Avon-Heathcote Estuary except that numbers are lower and the increase started later. Variable Oystercatchers were absent or scarce on Lyttelton Harbour between 1985 and sometime between 1993 and 1996. No winter census was undertaken in either 1994 or 1995 so the precise date when the species reappeared is not known. Peak numbers increased 2.7-fold between 1996 (6 birds) and 2000 (16 birds). The latter total is probably the highest in decades as Variable Oystercatchers have been reportedly absent or very scarce on the harbour since at least the 1940's (Dawson & Cresswell 1949, CSN records).

The much later increase at Lyttelton Harbour (approximately eight years after numbers began to

rise on the Avon-Heathcote estuary) is probably due to a 'spill-over' effect. As numbers built up on the Avon-Heathcote, more birds began to feed at low tide along the rocky coastline that separates the two sites. By 1996 when 59 birds wintered on the Avon-Heathcote estuary, six were present at Lyttelton Harbour. By this time, the Avon-Heathcote may have become substantially 'filled up' and the small decline from 75 in 1999 to 71 in 2000 may suggest that the carrying capacity of the Avon-Heathcote estuary is c.70 birds.

DISCUSSION

The observed increase in the size of wintering Variable Oystercatcher flocks at the two Canterbury study sites reflects the general increase in abundance of this species nationally over the last 20 years (Marchant & Higgins 1993, Heather & Robertson 1996, Sagar *et al.* 1999). Large increases have also been recorded at other wintering sites. For example; a 78% increase in Variable Oystercatcher numbers was reported for Wellington Harbour between 1975-77 and 1986-88 (Robertson 1992) and peak wintering numbers on the Motueka-Riwaka coastline in the Nelson Region increased four-fold in 13 years from 44 in 1987 to 175 in 1999 (Crossland in prep.).

Why the Variable Oystercatcher has increasing in abundance is not clear, particularly as populations of most other coastal-nesting waders in Australasia are either declining (eg. Hooded Plover *Thinornis rubricollis*, Pied Oystercatcher *Haematopus longirostris*, Sooty Oystercatcher *Haematopus fuliginosus*, Beach Stone-Curlew *Esacus magnirostris*) or have already become extinct in much of their historic range (eg. Shore Plover *Thinornis novaeseelandiae*, New Zealand Dotterel *Charadrius obscurus*) (Marchant & Higgins 1993).

The Variable Oystercatcher population appears to have increased without significant direct conservation management. In some localities Variable Oystercatchers have undoubtedly benefited from habitat enhancement and predator control programmes aimed at protecting other bird species (such as New Zealand Dotterel and breeding colonies of terns, penguins and seabirds), but to date these programmes have occurred in only a small number of sites and their effect at national population level has probably been negligible. Also, populations have increased in regions such as Canterbury which are remote from where potentially beneficial conservation management has taken place (mainly in the northern half of the North Island). At the same time, an increase in human recreational activity along sandy and rocky shorelines, particularly with the upsurge in popularity of four-wheel drives, trail-bikes and all-terrain vehicles, would seem to threaten Variable Oystercatcher breeding success. This would seem even more likely given that the breeding season (September to February) coincides with the busy New Zealand summer holiday period when disturbance levels in coastal nesting areas is greatest.

The possibility that behavioural changes may have played a role in the population increase of Variable Oystercatcher merits investigation. Baker (1969, 1972, 1973, 1974a, b) described the narrow niche occupied by the species in terms of habitat selection, breeding, food and social behaviour. Casual observation suggests that since the period of Baker's study (late 1960's to early 1970's), Variable Oystercatchers seem to have become less restricted to a narrow rocky/sandy shoreline environment and now appear to more commonly utilise estuarine, coastal pasture, parkland and river mouth environments. In addition, the species may have developed more effective behavioural responses to introduced mammalian predators and to disturbance by humans, animals, vehicles and watercraft.

With reference to Potts (1882), Variable Oystercatcher numbers at the two study sites and in the Canterbury Region generally may now be larger than what they were at any time since the early phase of European settlement in the mid-late 19th Century. European settlement in New Zealand brought with it the mixed onslaught of habitat destruction, increased hunting pressure, the introduction of mammalian predators and new avian diseases. The impact on native birdlife was catastrophic (Potts 1882, Hope 1927, Stead 1927). and many species, presumably including Variable Oystercatcher, suffered substantial population declines. The Variable Oystercatcher is one of a number of native coastal and wetland bird species that have begun to show population recoveries in Canterbury in recent years (Crossland 1999).

It seems remarkable that a wader species, limited by a very small base population (c.2000 birds in the early 1970's), occupying a narrow habitat niche and highly vulnerable to predation because it feeds, roosts and nests on the ground, should be increasing in numbers so rapidly without the assistance of substantial direct conservation management. Further research into why this is occurring will not only prove enlightening but may also assist in efforts to conserve and enhance populations of other waders elsewhere in Australasia.

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