

In 1939 there was a reduction of area covered by nests in contact on the western slope and, in 1946, Fleming and Wodzicki (1952: figs. 33 and 34) first showed changes in the appearance of the surface at the northern edge of the saddle. Photograph taken in 1956 (fig. 12) and in 1964 (fig. 2) show progressive changes on the northern rim of the saddle (where about 100 old, empty nest mounds were counted in December, 1964) and on both eastern and western slopes (fig. 13). Erosion may therefore have led to the decline of the Cape Kidnappers gannet population (Table II).

POPULATION TRENDS

Fleming and Wodzicki (1952: 75) after careful examination of the results of the 1946-47 New Zealand census concluded that "the general trend of the New Zealand gannet population has been one of increase during the past century . . . perhaps due to fundamental changes in the ecology of the sea, possibly of cyclic nature". Since then, a new gannetry at Moutara Point on the East Coast has been established (Blackburn, 1956: 15) which supports this general upward trend, at least for the eastern coast of the North Island.

A similar trend was noted by Fisher and Vevers (1951: 467) in the North Atlantic Gannet whose East Atlantic population increased between 1939 and 1949 by 18%; and more recently by Barrett and Harris (1965: 203) in the large Grassholm gannetry.

The Hawke's Bay gannet population increased between 1945-46 and 1957 by 27% but remained steady over the next seven years. Probably this can be attributed to lack of nesting space at Cape Kidnappers caused by erosion which has accelerated since the vegetation has been killed by excreta. The large increases at Black Reef and Kidnappers Plateau ganneries might arise from immigration from the Cape Kidnappers colony; but a detailed analysis of recoveries and recaptures of banded birds at the Kidnappers Plateau (to be presented in a separate paper) indicates that growth probably results from young birds born at the gannetry returning and settling. Roosting generally precedes the establishment of a new gannetry (Wodzicki and Robertson, 1953), and some Black Reef stacks which served initially as roosts in 1945 but became nesting colonies by 1964 support this. The places selected by the birds for roosts are usually exposed stacks (fig. 3 and 5) or ledges on the mainland (figs. 3 and 5). It is not clear why some roosts develop into nesting colonies (e.g., rocks 1 and 2, fig. 3) but others do not. For instance the mainland roosting ledges at Black Reef had twelve nests in 1945 but since then have only once had a few nests.

Roosting birds are predominantly young, presumably unmated birds, and probably would eventually found a new colony at their former roost if this area is suitable. Adults that have lost nesting space at Cape Kidnappers may not breed at all, and the lack of increase in population from 1957 to 1964 may result from erosion proceeding faster than colonisation at the other ganneries.

Gannets feed mainly on small surface fishes such as garfish, herrings and young mullet, and squids are also caught (Oliver, 1955: 239; Wodzicki and Moreland, 1966). Unfortunately, there are no observations on the abundance of these fish nor on any other changes in the ecology of the sea in this part of the South-Western Pacific which could explain the general expansion of the gannet populations over the last half century or so. Further regular observations of the Hawke's Bay ganneries would undoubtedly be of considerable interest.