



on mud-pillar nests near the clifftops, their weird calls echoing across the bays, while black and white Cape Pigeons cackle from cliff ledge nest sites below. Inquisitive fern-birds and black tits forage for insects from the top of the island to the tideline, and the indomitable skuas dive, screaming, at anyone who approaches their nests or chicks.

Fur seals breed among rock tumbles below the granite cliffs, and huge Hooker's sealions lumber into the forest to lie in wait for unwary naturalists.

Noisy enough during the day, the wildlife can be deafening after sunset. The braying of penguins is overwhelmed by the shrieks and moans of muttonbirds and the softer cackles and croonings of prions and diving petrels. Mottled petrels indulge in aerial chases over the clifftops, giving vent to hysterical giggles or long drawn-out wails. Smaller animals are also more active at night – weta scavenge at seabird carcasses, while large, flightless weevils and beetles feed on the large-leaved punui. Leeches, up to 10cm long, come out of hiding to feed on muttonbirds, penguins, mollymawks, sealions, or even the occasional snipe researcher.

Snipe occur over the two main islands and the largest offshore stack, with a total population of about 1000 birds. Densely vegetated areas are preferred; few snipe are found in the interior of the island, where the activities of the muttonbirds keep the forest floor bare.

### High densities, low productivity

In favourable habitats on The Snares, snipe occur at densities of 2.5 pairs/ha, far higher densities than recorded for Northern Hemisphere snipe. Mortality rates are much lower than those for relatives in North America and Europe. Annual mortality for Wilson's Snipe in Canada is around 50 percent, with a longevity record of 12 years. Far less banding has occurred in New Zealand, but we already have one bird known to be over 14 years old, and The Snares population has an estimated annual mortality of 22 percent.

High mortality in Northern Hemisphere snipes is due to a combination of predation,

shooting, and the stress of migration. Natural predators are virtually absent for New Zealand snipe, although skuas and harriers occasionally catch adults that stray from cover during the day, and I have one record of a red-billed gull consuming a snipe chick on The Snares.

Compared with their relatives, New Zealand snipe have smaller clutches and slower growth rates, possibly because there is less food for them – as the result of the inhospitable climate in the southern seas and high snipe densities.

Nests are depressions under overhanging vegetation, or in the centre of grass or sedge clumps, and are lined with grass, leaves or fern fronds. On The Snares nests are usually situated under solid wood or fern stems, to give protection from crash-landing muttonbirds.

Both sexes of New Zealand snipe incubate, and the adults each care for one of the chicks independently. Only females incubate in other snipe species, but care of young is usually shared.

Snipe chicks have disproportionately large legs and feet at hatching, and are capable of following their parents away from the nest soon after they are dry. Chicks are fed by the parent birds until their bills are long enough for efficient probing. They can become independent when about eight weeks old, though some remain with their parents for longer periods.

### One feeding method

Snipe get all their food by probing in soft soils, so occur most abundantly in moist areas. A wide variety of prey is taken, but important items include earthworms, amphipods, adult and larval beetles, and fly larvae.

They are vigorous feeders, probing almost continuously during feeding periods, and moving rapidly between feeding areas. I have counted 344 probe holes in an area 30 x 30 cm. Favoured feeding sites include among dense mats of low vegetation and the bases of tussocks.

Adult snipe hold food items in the tip of the bill when feeding young, and the same method of food transfer is used during courtship feeding.



Only male snipe defend territories, which are about 0.4 ha in area on The Snares. The territories are only defended against other males that call within them; birds that do not call can feed unchallenged alongside the territory owner. This system appears to ensure that other males cannot mate with the female, but the food resource within the territory is not defended.

The birds cease defending territory when the eggs hatch, and the territory is taken over by one or more territorial males, which are mainly one-year-olds. These birds occasionally breed, so a territory may be used sequentially in one season by two different pairs.

The original territory owner usually regains his territory by the following breeding season. Mates are also generally retained from year to year.

Management attempts with New Zealand snipe have met with mixed success. Following the rat invasion of Big South Cape Island, two snipe were caught during August–September 1964. Unfortunately these birds perished when rough weather delayed attempts to move them to another island.

Snipe require a constant supply of live food, as they feed almost continuously. Methods of keeping snipe in captivity were perfected before the successful transfer to Mangere Island in 1970, but food collection requires a huge investment of time and energy. Attempts by the Wildlife Service to raise Chatham Island snipe from eggs have not been successful to date. These experiments with the relatively accessible Chatham Island snipe population should continue, and will prove invaluable if rats or other vermin colonise any of the snipe's more distant retreats, where we won't have the time necessary to perfect management techniques.

We must understand the ecological requirements and life history of any species before forming a successful management plan. Much of the data collected during the present study of New Zealand snipe will prove invaluable for attempts at captive-breeding or island transfers. Important information already obtained includes habitat and dietary preferences, how to