Boud and Eldon (1950) took 18 birds from Lake Ellesmere during January. Native fishes were the most common food items in their sample.

It is obvious that none of these studies meet the requirements for assessing the effects of predation outlined by Duncan (1967). They are either not extensive enough (in time or numbers) or do not provide essential information on the population dynamics of the prey.

The present work attempts to provide a partial analysis of the interactions of predator (shags) and prey (fish) for Lake Mahinerangi. Information on one of the prey species, perch (*Perca fluviatilis*), has already been published (Duncan, 1967). Aspects of the trout population and the results of an experiment on the regulation of the fish populations by shags will be published on a future occasion.

METHODS

The birds sampled were shot in pursuance of the Otago Acclimatisation Society's shag destruction policy.* Each bird was opened almost immediately after death; the oesophagus and duodenum were tied off and the stomach injected with 20cc of four percent formalin to both preserve it and to reduce post-mortem digestion.

During the breeding season the nestlings were used to lure the adults into gunshot range. In consequence they were starved for most of the day and so were useless for analysis.

The method of removing and counting the stomach contents was standardised as much as possible. The stomachs were slit lengthwise and the distribution and degree of digestion of the various food items was noted. Large, easily recognised pieces such as fish, were picked out, identified and measured. Particular note was taken of whether or not the contents of the fishes' stomachs had been liberated into the lumen of the shag's stomach. The remaining material was inspected under a low powered stereoscopic microscope. The identification of fish remains was made possible by comparing them with a reference collection of bones, otoliths and scales.

The degree of digestion of each food item was estimated using the digestion index outlined in Table I.

TABLE I.—Rating system for the degree of digestion.

Index	Fish	Crustacea	Trichoptera Larvae	Coleoptera	Mollusca
A	Intact	Intact	Intact	Intact	Intact
B	Skin of head digested	" Loose jointed "	" Loose jointed "	" Loose jointed "	" Loose jointed "
C	Bones of head exposed. Stomach contents released into shag's stomach	Flesh partly digested	Case firm-flesh gone	Head, thorax, abdomen separated	Shell hard—flesh gone
D	Otoliths, tail-pieces, bones only	Joints separated	Case " soft "	Elytra intact	Shell " soft "
E	Otoliths, bones only	Fragments and gastroliths	Fragments	Fragments	Fragments

Regurgitated pellets from the Luella rookery at Lake Mahinerangi were examined to supplement the stomach analyses from this area. These pellets are the

* This policy has now been revised and the bounty on shags removed (Otago Acclimatisation Society; Annual Report for 1965).