



John H. Johns photo

A wapiti stag grazing on tussocks of the kind favoured by takahe.

tem which extracts only a small proportion of the nutrients from the food ingested. To obtain an adequate nutrient intake the bird spends over 90 percent of the day feeding and chooses the most nutritious individual plants. If there is a drop in the quality of food, the bird cannot compensate by feeding more. Similarly, it is not possible to feed faster. Research overseas on grouse has indicated that above an optimum food intake the digestion of nutrients actually decreases. The effect that changes in nutrients has is best illustrated by the striking increase in breeding success of takahe during tussock flowering years. When the tussocks flower (at about 3- to 4-year intervals, on average) there is an increase in the nutrient con-

tent of the succulent basal portion of the tussock tiller, the part the takahe eats.

In the 1950s takahe were found in the Kepler Mountains, the Murchison Mountains, and the Wapiti Block. At the time that takahe disappeared from the Kepler Mountains deer had reached their greatest concentrations in the Te Anau-Manapouri catchment. Similarly, the spread and build-up of deer numbers in the Murchison Mountains coincided with the decline in takahe numbers. There was a lag between the arrival of deer and the decline of takahe, because it took time for the most nutritious plants to be eliminated.

The surveys by the Forest Service (*Protection Forestry*

*Report 92*) showed that the degree of modification of the grassland was related to two factors: the ratio of forest to grassland and the ratio of palatable to non-palatable species of tussocks. This has been an important factor in the survival of takahe in an area.

Takahe disappeared very quickly from areas where the ratio of grassland to forested areas was low. Such areas include parts of the Kepler Mountains, areas west of the main divide, and the Wapiti Block. Takahe managed to survive better in the Murchison Mountains Special Area because not only was the grassland to forest ratio more equitable, but this area contained a higher proportion of alpine grasslands of palatable