WILLOW PTARMIGAN AT THE QUEBEC ZOOLOGICAL GARDENS

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Plate 32 (lower figure)

DURING the years of 1932–33, the northern parts of the Province of Quebec were invaded by the Willow Ptarmigan (*Lagopus lagopus*). Opportunity was thus given us for possible adaptation and breeding of this arctic grouse in the Zoological Park. Though our results are not very conclusive as to breeding, we hope that this species will soon become as used to captivity as is the Sharp-tailed Grouse.

The birds under observation came from the following localities: Comeau Bay and Trinity Bay on the North Shore of the St. Lawrence, Lake St. John district, Amos, and La Sarre in northern Quebec. In 1934–35 the ptarmigans had entirely vanished from these places. In the usual course of events about another seven-year period must elapse before the ptarmigan will be seen again. It is during the month of November that the ptarmigan settles down in Abitibi.

The exhibition of the ptarmigans is a relatively simple matter provided that care is given to their feeding and the hygienic conditions. The birds must be protected from assuming neighbors. The important problem encountered was feeding. We thought a fair chance of success could be hoped for by following closely the diet found by the ptarmigan in its habitat. Analyses of stomach contents were naturally our first step in this endeavor.

As its name implies, the Willow Ptarmigan finds its living in willow thickets. Some thirty specimens were examined as to stomach contents. It was found that buds, twigs and catkins made up about ninety per cent of the diet of the ptarmigan during spring and summer. Unfortunately, it was impossible to secure specimens at other seasons.

The following are typical results of stomach analyses:

SPECIMEN NO. 1 FROM COMEAU BAY

	Buds	*Twigs*	*Catkins*
15% *Salix nigra*	38%	59%	2%
12% *Salix cordata*	28%	67%	4%
66% *Salix rubra*	19%	79%	1%
6% *Salix lucida*	16%	75%	7%

SPECIMEN NO. 2 FROM TRINITY BAY

38% *Salix nigra*	54%	42%	3%
20% *Salix cordata*	25%	71%	2%
36% *Salix rubra*	51%	46%	2%
4% *Salix lucida*	31%	58%	9%

SPECIMEN NO. 3 FROM TRINITY BAY

91% *Salix nigra*.....	79%	15%	5%
3% *Salix lucida*.....	25%	50%	25%

We see from these analyses that in the ptarmigan's diet, twigs come first, then the buds and the catkins. Of these, the buds are the most important. In each stomach, we found from one to two per cent of gravel.

The feeding problem was discouraging at first since the species of willow mentioned were rather scarce on Charlesbourg Heights. Before attempting to hunt for this particular food in the Laurentides, we tried our ptarmigans on a diet made up of the following seeds: sunflower, buckwheat, hemp, wheat, oats. Whenever possible, blueberries, cherries and mountain-ash fruits were added. During the summer of 1933, a few hundred pounds of these fruits were frozen in our refrigerator and kept in reserve for the winter months. In view of the poor results obtained in the spring of 1934, buds and twigs from willows, birch and aspen were included. This change improved the health of our birds and induced them to eat more seeds, especially when we were short of buds.

Was this adaptation to a new way of life for good? We doubt it very much since the ptarmigans suffered heavily from aspergillosis. Following is a brief account of the cases. On March, 27, 1934, seven ptarmigans from a lot of ten were shipped to us. Three died before leaving Comeau Bay. After a few days of quarantine, they were put with the others in our aviary. On April 4, a dead specimen was brought to the laboratory. Tuberculosis was at first suspected but sections and cultures revealed *Aspergillus fumigatus*. Up to May 11, a dead bird was brought in every two or three days, and the same disease confirmed. This general infection may be traced back to cohabitation during the shipping or to improper feeding. Though a few other species of grouse suffered from aspergillosis in only a slight degree, none of our granivorous birds was infected.

Two questions arise from these experiments. Is the ptarmigan naturally more receptive to aspergillosis or does the artificial diet open the way for a constantly present source of infection by impairing the health of the ptarmigans? There is no doubt that granivorous birds are generally exposed to this infection due to the fact that they find their food on the ground and consequently they acquire resistance. Ptarmigan on the other hand seek their food above the ground where moulds and microbes are less abundant. Future study will tell whether it is a question of natural receptivity or of inadequate diet.

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