

OBSERVATIONS ON FOOD HABITS
OF INCUBATING FEMALE
BLUE GROUSE

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Few data are available concerning foods eaten by incubating birds. We know of only two such references to tetraonids in North America, each of which deals with observations on use of feeding sites by two birds only (Schladweiler, J. Wildl. Mgmt. 32:426-428, 1968; Pendergast and Boag, J. Wildl. Mgmt. 34:605-611, 1970). Our data too are limited, consisting of crop samples from 19 incubating female Blue Grouse (*Dendragapus obscurus*) collected on Vancouver Island, British Columbia, in the summer of 1962. Nevertheless, these birds were taken from

two structurally different habitats and give some insight into the range of foods acceptable to incubating Blue Grouse over a relatively short distance, the study areas being only 30 airline miles apart.

The areas from which our birds were collected are Comox Burn (10 birds), near Courtenay, and Middle Quinsam (9 birds), near Campbell River. Comox Burn was swept by wildfire in September 1961; thus, birds here were collected from an area in the first growing season following burning. New plant growth was mainly from seeds or rootstocks that survived the fire. In contrast, about one-third of Middle Quinsam was burned by wildfire in 1938 and the other two-thirds in 1951. Succession was well advanced by 1962 and structure of the habitat and availability of plants were very different than at Comox Burn (Zwickel and Bendell, Proc. XV Int. Ornithol. Congr., In Press, 1972).

RESULTS AND DISCUSSION

All birds but one were collected between 29 May and 22 June, and were on nests at the time of collection; one hen was taken from a nest at Middle Quinsam on 19 July. Thus, practically all birds were collected during a 3-4-week period, early in the growing season, and prior to fruiting of most plants.

TABLE 1. Crop analyses of 19 incubating female Blue Grouse collected at Comox Burn (10) and Middle Quinsam (9), Vancouver Island, B.C., 1962.

	Comox Burn				Middle Quinsam				Parts eaten
	N	% Freq.	Vol.	% Vol.	N	% Freq.	Vol.	% Vol.	
Coniferous Trees									
<i>Pseudotsuga menziesii</i>	5	50	18.0	9	5	56	24.0	31	Needles, buds
<i>Tsuga heterophylla</i>	1	10	13.0	6	1	11	t	<1	Needles, stems, buds
<i>Picea sitchensis</i>	2	20	1.0	<1	1	11	t	<1	Needles, buds
<i>Pinus contorta</i>					1	11	3.5	5	Needles, buds, cones
<i>Pinus monticola</i>					1	11	t	<1	Buds
Subtotal			32.0	15			27.5	36	
Shrubs & Deciduous Trees									
<i>Gaultheria shallon</i>	6	60	46.0	22	2	22	7.0	9	Leaves, buds
<i>Salix</i> spp.	5	50	45.0	22	1	11	t	<1	Buds
<i>Vaccinium parvifolium</i>	3	30	4.5	2	2	22	9.0	11	Leaves, stems
<i>Mahonia nervosa</i>	2	20	2.0	1	2	22	11.0	14	Leaves, stems
<i>Rosa gymnocarpa</i>	2	20	2.5	1					Leaves, galls
<i>Ribes</i> sp.	1	10	2.0	1					Leaves
<i>Alnus rubra</i>	2	20	t	<1					Leaves
<i>Spiraea</i> sp.	5	50	t	<1					Leaves
<i>Ledum groenlandicum</i>	1	10	t	<1					Leaves
Subtotal			102.0	49			27.0	34	
Herbs									
<i>Pteridium aquilinum</i>	4	40	42.0	20	4	44	5.0	6	Leaves
<i>Hypochaeris</i> spp.	6	60	18.0	9	2	22	1.0	1	Stems, leaves, flowers, buds
<i>Achlys triphylla</i>	4	40	8.0	4	1	11	t	<1	Seeds
<i>Carex</i> spp.	1	10	0.5	<1	1	11	14.0	18	Flowers
<i>Agoseris gracilens</i>	1	10	1.0	<1	2	22	t	<1	Flowers, buds, stems
<i>Equisetum arvense</i>	1	10	2.0	1					Leaves, stems
<i>Rubus ursinus</i>	2	20	1.0	<1					Leaves
<i>Alythium felix-femina</i>	2	20	1.0	<1					Leaves
<i>Senecio</i> sp.	1	10	t	<1					Leaves
<i>Pogonatum</i> sp.					1	11	4.0	5	Seeds
Subtotal			73.5	34			24.0	30	

Volume is in ml of water displacement. t = trace

The ages of birds from Comox Burn were six adults and four yearlings: those from Middle Quinsam, five adults and four yearlings. Eggs were collected from all nests and incubated artificially until hatched. Therefore, we know that 10 females were in the 1st-10th day of incubation and 9, in the 11th-26th day of incubation.

Hens from the two areas differed markedly with respect to both frequency and volume of various food items recorded (table 1). The number of species taken was greatest at Comox Burn even though all species recorded there were also available at Middle Quinsam, many of them in much greater abundance. The three major groups of plants—coniferous trees, shrubs and deciduous trees, and herbs—were all taken in about equal amounts at Middle Quinsam. Conifers were less well represented in samples from Comox Burn, probably because conifers were less available as a result of the fire in the previous autumn.

Despite the small size of our samples, we think that comparisons of use of three species are worth noting. Douglas fir (*Pseudotsuga menziesii*) ranked highest of all species in both frequency and volume at Middle Quinsam. It also rated high in frequency at Comox Burn, but much lower in volume than at Middle Quinsam. As with conifers in general, this probably reflects the low availability of Douglas fir at Comox Burn. Salal (*Gaultheria shallon*) and willow (*Salix* spp.) were both taken frequently and in relatively large amounts at Comox Burn, but less commonly at

Middle Quinsam, where they were, nevertheless, abundant. Thus, there appears to be a selection for Douglas fir, with willow and salal serving as acceptable alternates where fir is not as readily available.

In conclusion, these two populations were occupying markedly different structural habitats within the same general area and this was reflected in the food habits of birds concerned. Observations of Schladweiler (op. cit.) and Pendergast and Boag (op. cit.) suggest that incubating Ruffed Grouse (*Bonasa umbellus*) and Spruce Grouse (*Canachites canadensis*) may be highly selective in their feeding habits. Our data suggest that incubating Blue Grouse are also selective, but that they may select different foods in different areas. Moreover, the number of eggs laid and the survival of chicks was the same in both of our study areas (Zwickel and Bendell, op. cit.). Hence, incubating females may do equally well on different diets and selection may be, in large part, a matter of preference rather than need.

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