

Bohemian Waxwing Populations and Winter Ecology in North Dakota

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The Bohemian Waxwing (*Bombycilla garrulus*) winters irregularly in parts of North America where various types of fruit-producing trees persist, usually in the vicinity of dwellings and parks (Haarman 1967; Godfrey 1966). The present study was designed to investigate winter populations of Bohemian Waxwings in North Dakota, and to briefly comment on activity patterns and food habits in selected areas.

METHODS

Christmas Bird Counts (CBCs) of Bohemian Waxwings were compiled from 9 selected North Dakota reporting stations for the period 1961-1975 (*American Birds* 1962-1976). Only stations consistently conducting annual counts were included. Several previous workers have commented on methods of quantifying CBCs (e.g. Bock and Smith 1971), but because trends were desired in this study, only total numbers seen were plotted.

Activity patterns and food habits were studied during the winters of 1975-76 and 1976-77 in Grand Forks. During the first winter I observed waxwings at many points throughout the city, but during the second winter I concentrated observations on a 100 square block (80 hectare) study area in the northwest part of the city. Observation times were variable, but generally the birds were observed during 2 to 3 hour intervals. These intervals were spaced over the entire daylight period. I spent approximately 26 hours observing during the first winter and 31 hours the second.

RESULTS AND DISCUSSION

Winter Populations

Bohemian Waxwings appear to be regular winter visitors to North Dakota, but their numbers vary widely from year to year (Table 1). Evidently, the birds are found primarily in towns and around dwellings where fruit-producing trees persist, because some remote areas where CBCs are conducted (e.g. Tewaukon NWR and Arrowwood NWR) rarely see Bohemian Waxwings. This trend was previously noted by Haarman (1967) and Godfrey (1966).

Bohemian Waxwings are known to be highly irruptive (Bent 1965). Cornwallis (1961) studied the invasions of waxwings into Britain and suggested that they occur during years of poor food supply on the Scandinavian breeding

TABLE 1. Total numbers of Bohemian Waxwings found on selected Christmas Bird Counts in North Dakota, 1961-1975.

Year	Reporting Station									
	Arrowwood NWR	Bismarck- Mandan	Des Lacs NWR		Grand Forks	Jamestown	J. Clark Salyer NWR	Sully's Hill Game Reserve	Tewaukon NWR	
1%1	0	312	693	504	43	270	45			1867
1%2	0	0	222	60	7		29	0		318
1%3		0	1	82	21		0			104
1%4	0	0	50	0	0	0	1		0	51
1%5		24	21	5	0	0	3		0	53
1%6	116	180	714	83	0	163	50	0	0	1306
1%7	0	0	260	0	0	0	0	0	0	260
1%8	0	7	255	0	63	7	24	110		466
1%9	0	2	268	0	0	0	149	0	0	419
1970	0	0	20	0	1	0	0	0	0	21
1971		0	75	0	2	9	38	0	0	124
1972	25	478	892	137	63	134	115	560	0	2404
1973	0	0	0	64	36	0	3	0		103
1974	0	1	136	0	0	0	0	0	0	137
1975	0	118	253	23	95	46	50	74		659

grounds. A situation similar to this may have caused the large influxes of Bohemian Waxwings into North Dakota in 1961, 1966, and 1972.

Activity and Social Behavior

Some of the more conspicuous aspects of the Bohemian Waxwing's behavior are its gregarious nature, flock restlessness, and non-aggressive behavior shown to other bird species during the winter. Flocks ranging in size from 4 or 5 up to 400 were seen during my observations in Grand Forks.

Daily activity seemingly was influenced by climate and food supply. In areas of abundant food the flock was more stationary, while in areas of less abundant food the flocks moved around much more, often covering large areas of the city during a day. Windy and snowy days usually were typified by reduced activity as the birds sought sheltered areas to roost.

During the winter of 1976-77 my observations in the northwest part of the city showed that during the day, the birds usually divided their time between 2 main activities - feeding and perching. For 14 hours of observation during February 1977, approximately 11 (79%) were spent perching, 2.7 (19%) feeding and 0.3 (2%) at other activities including bathing, drinking, and flying.

As sunset approached the birds appeared to become more restless. On five days during February 1977 the birds left the feeding area an average of 74

minutes before **sunset**. Sometimes the flock would leave all together and at other times **in** smaller groups. I was never able to follow a large flock to its roosting site, but the flocks generally flew off to the **east**, possibly to the dense wooded areas along the Red River. Salt (1958) and I .aarman (1967) mention that Bohemian Waxwings roost in **evergreens**, but I was never able to substantiate this for the flocks in Grand Forks.

Other birds often are associated with Bohemian Waxwing flocks while **feeding**. Cedar Waxwings (*Bombycilla cedrorum*), Starlings (*Sturnus vulgaris*), and House Sparrows (*Passer domesticus*) were often seen intermingled in Bohemian Waxwing flocks, but no apparent animosity between these birds was noted. A possible exception to this occurred on **15** February 1976 when an American Robin (*Turdus migratorius*) was seen **feeding** in a berry tree with a group of waxwings. This bird attempted to drive the waxwings away, but was unsuccessful, and after several minutes left the tree.

Feeding

During December 1975 and January 1976 the major food item taken by Bohemian Waxwings was the **berries** from Mountain Ash (*Sorbus americanus*) **trees**. By the end of January, however, the Mountain Ash trees were depleted and the birds began eating **berries** from other trees and shrubs. During 1976-77, Mountain Ash trees in Grand Forks contained little food, following a pattern described by Svardson (1957) for the very similar Rowan (*Sorbus aucuparia*) tree of Europe. An abundant crop of berries one year is invariably followed by a light crop due to "tiredness" of the trees. The major food item the second winter was berries of the Radiant Flowering Crab (*Malus 'radiant'*).

During both years Bohemian Waxwings were observed to **also** feed on Russian Olive (*Elaeagnus angustifolia*) fruits, Chokecherries (*Prunus virginiana*), Hackberries (*Celtis occidentalis*), Hopa crabs (*Malus 'hopa'*), large crabapples (*Malus* sp.), rose hips (*Rosa* sp.) and buds of Cottonwood (*Populus deltoides*), Box Elder (*Acer negundo*), Elm (*Ulmus americana*), and Poplar (*Populus* sp.) trees. During April 1976, I also observed several Bohemian Waxwings catching flies, their manner and effectiveness much like other flycatcher species.

Apparently, the birds in Grand Forks fed all day from **sunrise** to an hour or so before **sunset**. On the average, an individual would eat three berries and rest for 8-15 minutes before eating again. This means that on an average midwinter day (**10½** hours from sunrise to **sunset**) a bird could feed **50** times, eating **three berries** each time. **150** berries of a Radiant Flowering Crab weigh approximately 228 grams, so the wintering Bohemian Waxwings I observed potentially were eating up to four times their weight in berries per day. Gibb and Gibb (1951) estimated that the waxwings in their study were eating up to **three** times their weight in berries per day.

At various times during the **first** winter I collected droppings from waxwings and examined their contents. On one occasion I collected droppings from birds that had just started feeding in a hackberry **tree** 15-20 minutes before. Upon examining these droppings, I found hackberry pits in them. The birds must have digested the berries during **this** time because this was the only tree of its kind in the area. Nice (1941) also noted that fruit fed to young Cedar Waxwings passes through the digestive tract in about 16 minutes.

I am very grateful to Dr. Richard D. Crawford for his encouragement and editing of this manuscript and to my wife, Laura, for her clerical and field assistance.

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