

TABLE 1. Measurements of Crested Auklets collected on 18 January 1977, from among those wrecked aboard the F/V *Lynda* on 16 January 1977.

Measurement	n	Mean \pm SD	Range
Weight (g) ¹	11	249 \pm 16	221-273
Left testis			
Length (mm)	3	5.0 \pm 0.9	4.3-6.0
Width (mm)	3	3.3 \pm 0.6	2.9-4.0
Ovary ²			
Length (mm)	5	13.6 \pm 1.3	13.3-15.4
Width (mm)	5	4.9 \pm 0.8	3.9-5.8

¹ Only dry birds were weighed.

² In one ovary, the largest ovum measured 1.5 mm; in the rest, the ova were minute.

A crew member of the F/V *Polaris* told us that a wreck of tens of ducks, including Mallards (*Anas platyrhynchos*), occurred aboard that vessel in Whale Passage in winter of 1976, 16 km from where the Crested Auklets wrecked on the *Lynda*.

Irving M. Warner (pers. comm.) observed a wreck of Whiskered Auklets (*Aethia pygmaea*) aboard the 230-foot long processor *Mercator* in the Islands of the Four Mountains (52°55'N, 169°40'W) in early November 1964. The vessel was anchored in the lee of an island during a storm with 80-100 knot winds. Between 23:00 and 06:00, many Whiskered Auklets

were attracted to the outside processing lights, which were on continuously. Most of the birds that landed aboard were killed upon impact. Warner collected all of the dead auklets he could find. The total weight of the casualties was 136 kg, approximately 1,140 birds based upon an individual mass of 119 g, the average of seven measurements taken in the western Aleutian Islands in summer by Vernon Byrd. Gabrielson (in Gabrielson and Lincoln 1959), also in the Islands of the Four Mountains, was hit by a Whiskered Auklet attracted to the boat lights in July 1946, but stated that this was the only time an auklet came aboard when the lights were being used to attract petrels.

The positive phototropism among certain marine birds, e.g. storm petrels (Hydrobatidae), is well known. However, the phototropic response of Crested Auklets has not previously been documented. Oil and gas development in the Kodiak and other regions, accompanied by the construction of platforms with lights, flaring gasses, or both, pose possible new threats to seabirds.

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RAVENS ATTRACTED TO WOLF HOWLING

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Carrion is important in the winter diet of Common Ravens (*Corvus corax*; Sutton 1932, Bent 1946, Mech 1966, Temple 1974). Much of it is left from winter kills of large ungulates by predators such as wolves (*Canis lupus*; Mech 1966). Ravens probably find many carcasses by random search, but they may employ other methods as well. First, they are attracted to a carcass by the calling of ravens already there. Second, they often follow wolves or wolf tracks (Mech 1970:159), and thus, may be present when the wolves make a kill or shortly thereafter. Third, as reported here, ravens may be attracted by wolves howling, and may investigate the vicinity of the wolves for the presence of carrion.

I made the following observations during a study of wolf vocalizations in the Superior National Forest, Minnesota (Harrington and Mech, unpubl.). Human imitations of wolf howls were used to elicit responses from radio-collared wolves. Though most work was done at night, occasional daylight sessions afforded the opportunity to observe raven reactions to the howling.

On 25 October 1972, I found four wolves at the site of a kill of deer (*Odocoileus virginianus*). Between 12 and 20 ravens were perched in trees directly over the site. At 17:36 I howled and during the wolves' reply, many ravens called and flew about

within 5 m of their perches. When I howled again 20 min later, the wolves did not reply, but three ravens flew 200 m toward me in a zig-zag pattern, veering off sharply when 30 m away.

The next day, in a place far from the preceding observation, I howled several times from a dense stand of tall (10-20 m) spruce (*Picea mariana*) and balsam fir (*Abies balsamea*). Shortly after my howls, two ravens flew towards me, hovering briefly over several openings in the canopy as they came. When they reached an opening next to me, both birds quickly veered off and flew away.

On 14 December 1972, I howled as a raven was flying across a large swamp. The bird had been flying 300 m away from my location in the bordering forest. During my howling, it abruptly changed direction ($\approx 90^\circ$) and flew along the forest edge toward me. Its path took it about 50 m from me. When I howled again, the raven changed direction ($\approx 60^\circ$) once more and passed within 20 m of me.

On three other days that winter, single ravens approached within 10 to 15 m of me immediately after I howled. On one occasion, the bird had to fly through a dense grove of balsam fir and birch (*Betula papyrifera*).

Finally, on 26 August 1973, two ravens were flying past my site, about 200 m away. During my howling, one of them changed direction ($\approx 110^\circ$) and flew directly over me. When it was about 50 m past me, it resumed its former course.

In all these cases, ravens abruptly changed their flying course, approached me, and appeared to search (zig-zag flight, hovering), suggesting that they were attempting to find me. The advantages of such behavior are obvious. In winter, wolves that replied

most readily to other howling were at kills, especially fresh ones (Harrington and Mech, unpubl.). They probably often howl spontaneously at kills (Harrington 1975), and they sometimes howl after hunting in order to reassemble the pack (Murie 1944, Mech 1966, Harrington and Mech 1978). Thus by locating a howling wolf, a raven may find fresh carrion.

Although I howled throughout the year, I noted most responses by ravens to howling in fall and winter. The seasonal difference in the attractiveness of howling may be explained when the contexts of howling are considered with the wolf's prey. From mid-April through September, wolves usually hunt in small groups (Joslin 1967) and eat relatively small food items (e.g. beaver, *Castor canadensis*; Mech 1970), which can be consumed quickly or carried to young at home-sites. Most summer howling occurs at the home-sites (Harrington and Mech, unpubl.), where little or no carrion is available. Therefore, little opportunity exists for ravens to associate howling with the presence of carrion. Also, ravens rely less on carrion during the summer than they do in winter (Bent 1946).

From late September through March, however, wolf packs travel more as units, and kill larger prey such as deer and moose (*Alces alces*). Much activity is centered about kill sites. Thus the correlation between wolf howling and kill presence is probably high from October through March, but low from April through September, and the raven's association of howling with carrion probably varies accordingly.

Similar observations have been reported by Kruuk (1972:146), who noted that playback of sounds of hyenas (*Crocuta crocuta*) at kills sometimes attracted Hooded Vultures (*Necrosyrtes monachus*).

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SONG VARIATION IN DARK-EYED JUNCOS IN NOVA SCOTIA

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This paper describes the song repertoire of Dark-eyed Juncos (*Junco hyemalis*) in Baddeck, Nova Scotia. It follows a study we conducted in central coastal California (Williams and MacRoberts 1977). Our aim is to detail the song repertoire of Dark-eyed Juncos within a local population in the northeastern part of this species' range in order to determine if songs differ between geographically distant populations.

METHODS

The study was conducted between 4 July and 10 August 1976 at Bevis Point, 11 km NE of Baddeck, Victoria Co., Nova Scotia. The study area was a 120-ha peninsula on the Great Bras d'Or Lake. Habitat was mixed spruce-fir (*Picea glauca*, *P. mariana*, *Abies balsamea*) forest edge abutting hay fields and bogs. Fourteen male juncos were color-banded or were otherwise individually recognizable by peculiarities of plumage or behavior. We attempted to record all songs in each bird's repertoire. Each bird was tape-recorded on at least two different days and each was observed for at least 8 h. Playbacks were used to stimulate singing. After a bird began to sing it was allowed to complete its bout and to begin some other activity before being restimulated by more playbacks. This procedure often led to the bird changing song type. Birds usually responded well to playbacks and often continued to sing as long