Wilson Bulletin, 116(2), 2004, pp. 179–180

Carnivorous Canada Geese

Joseph R. Jehl, Jr.[1]

ABSTRACT.—Geese are normally herbivorous. I report an instance of Canada Geese (*Branta canadensis*) feeding on alkali flies (*Ephydra hians*) at hypersaline Mono Lake, California. The bout was brief and possibly represented exploratory behavior by inexperienced birds. *Received 22 December 2003, accepted 25 May 2004.*

Because geese are grazers and only rarely depart from their herbivorous diet, observations of their deliberate ingestion of animal matter are unusual. On 9 October 2003, at Mono Lake, California, I encountered seven Canada Geese (*Branta canadensis*) and three Greater White-fronted Geese (*Anser albifrons*) standing in a loose group on the upper beach, about 20 m from the water. Along the shore were a few Northern Shovelers (*Anas clypeata*) and Green-winged Teal (*A. crecca*). The geese were resting, but shortly four of the Canadas began slogging through knee-deep mud toward the shore, where adult alkali flies (*Ephydra hians*) had formed a thick mat. They then began to feed by orienting their bills parallel to the ground and scooping flies from the surface. The shovelers were doing the same at the water's edge, while the other Canada Geese and the White-fronted Geese showed no interest. As the day was cool, the flies were sluggish and could be captured easily. The geese fed leisurely for about 5 min, then returned to the upper beach and went to sleep. There was no doubt regarding their behavior; I could see flies being captured and ingested. Furthermore, the mudflats were devoid of vegetation; there was nothing else to consume.

Alkali flies are abundant on the shores of hypersaline lakes and constitute a major food for California Gulls (*Larus californicus*), Eared Grebes (*Podiceps nigricollis*), Wilson's Phalaropes (*Phalaropus tricolor*), Red-necked Phalaropes (*P. lobatus*), and some ducks (Jehl 1988; JRJ pers. obs.), but they are ignored by geese. In more than 2 decades of observations at saline lakes, I have never seen any similar behavior. Indeed, reports of geese eating animal matter anywhere are exceptional, and the degree to which the few observations pertain to foods that might have been selected deliberately is open to question. Cottam et al. (1944:45) noted that animal food was occasionally found in the gizzards of Brant (*Branta bernicla*), but thought that it was probably ‘‘taken accidentally or incidentally.’’ Subsequently, Bayer (1980) showed that Brant in Oregon took advantage of herring (*Clupea harengus*) spawns and fed deliberately on the eggs that were attached to vegetation, and Emperor Geese (*Chen canagica*) frequently feed on mollusks (Peterson et al. 1994). Canada Geese, however, are almost exclusively herbivorous (Owen 1980, Mowbray et al. 2002). Although other observers (e.g., Mickelson 1975:22; J. S. Sedinger pers. comm.) have reported goslings of Cackling Canada Geese (*B. c. minima*) feeding opportunistically on small flying insects, that behavior probably represents environmental sampling.

The observations on Brant differ from mine on Canada Geese in that Brant had learned to exploit a source of animal food (fish eggs) that was available only sporadically. Further, they fed heavily and in large groups (maximum 36 individuals), and relished eggs to the extent of pulling them from the bills of other species (Bayer 1980). Presumably the eggs provided the Brant, and mollusks provided the Emperor Geese, with significant nutrition. In contrast, both migrating and breeding Canada Geese at Mono Lake ignore alkali flies, even though they are predictable, available, and abundant through much of the year. Evidently, geese found the flies unpalatable because they fed on them briefly and without gusto, and the amount ingested could not have contributed much to their dietary requirements. At Great

---

[1] Div. of Birds, U.S. National Museum of Natural History, Smithsonian Institution, Washington, DC 20560, USA; e-mail: grebe5k@cs.com

Salt Lake, Utah, alkali flies and waterfowl are far more abundant than at Mono Lake. Yet, I know of no reports of geese eating flies there or at any other saline lakes. I suspect that my observations were based on exploratory behavior by inexperienced juvenile geese.

ACKNOWLEDGMENTS

Thanks to J. A. Serie, T. Moser, W. S. Boyd, and J. S. Sedinger for comments and discussions.

LITERATURE CITED

Bayer, R. D. 1980. Birds feeding on herring eggs at the Yaquina Estuary, Oregon. Condor 82:193–198.

Cottam, C., J. J. Lynch, and A. L. Nelson. 1944. Food habits and management of American sea brant. Journal of Wildlife Management 8:36–56.

Jehl, J. R., Jr. 1988. Biology of the Eared Grebe and Wilson's Phalarope in the nonbreeding season: a study of adaptations to saline lakes. Studies in Avian Biology, no. 12.

Mickelson, P. G. 1975. Breeding biology of Cackling Geese and associated species on the Yukon-Kuskokwim Delta, Alaska. Wildlife Monographs, no. 45.

Mowbray, T. B., C. R. Ely, J. S. Sedinger, and R. E. Trost. 2002. Canada Goose (*Branta canadensis*). The Birds of North America, no. 682.

Owen, M. 1980. Wild geese of the world: their life history and ecology. B. T. Batsford, London, United Kingdom.

Petersen, M. R., J. A. Schmutz, and R. F. Rockwell. 1994. Emperor Goose (*Chen canagica*). The Birds of North America, no. 97.

Wilson Bulletin, 116(2), 2004, pp. 180–181

Intraspecific Predation among Northwestern Crows

Erik M. Andersen[1,2]

ABSTRACT.—Cannibalism is uncommon in birds, and instances of adults killing and eating other adults are especially rare. Cases of intraspecific predation among passerines constitute a very small percentage of published reports, and many of the cases are based on circumstantial evidence. In July 2001, I witnessed a group of Northwestern Crows (*Corvus caurinus*) kill and consume a conspecific adult in Olympic National Park, Washington. I am aware of no other published reports of adult-adult cannibalism for this species or the Corvidae family. *Received 3 November 2003, accepted 27 April 2004.*

Reports of cannibalism in which wild birds kill and consume conspecifics are uncommon; most instances have involved predation of eggs or young by adults (Stanback and Koenig 1992). Intraspecific predation among adult birds is especially rare and has been reported for only four species: Common Moorhen (*Gallinula chloropus*; Cawston 1983), Great Gray Owl (*Strix nebulosa*; Fisher 1975), Red-tailed Hawk (*Buteo jamaicensis*; Clevenger and Roest 1974), and White Wagtail (*Motacilla alba*; Joslin 1964). Other than the White Wagtail report, I found no accounts of adult passerines killing and eating conspecific adults. Here, I describe my observation of a group of Northwestern Crows (*Corvus caurinus*) killing and consuming another adult.

The event described below occurred on 9 July 2001 near Tolbock Point in Olympic National Park, Washington. At 09:10 PST I heard a commotion in the forest approximately 30 m from the beach. A flock of about 15 Northwestern Crows were making loud and continual vocalizations similar to the mobbing call and dive-attack call described by Verbeek and Butler (1999).

Initially, I thought the flock was mobbing a predator, and I approached the group to investigate; at a distance of approximately 20 m, however, I saw that the flock was mobbing another Northwestern Crow perched on a branch about 3 m off the ground. I witnessed several crows swoop at the victim before one aggressor made hard physical contact and the two birds tumbled to the ground. From my position I watched as different members of the

---

[1] Dept. of Biology, Sul Ross State Univ., Alpine, TX 79832, USA.

[2] Current address: Alaska Peninsula/Becharof National Wildlife Refuge, King Salmon, AK 99613, USA; e-mail: erikmandersen@yahoo.com

flock took turns swooping down to where the victim had fallen. Each aggressor stayed on the ground for only 2–3 sec before flying back to a perch and being replaced by another aggressor. Occasionally more than one aggressor was present on the ground at the same time, but for the most part, members of the flock took turns mobbing the victim.

My view of activities on the ground was obscured by the undergrowth, so after approximately 3 min of observing the mobbing, I approached the scene for a closer look. As I neared the victim, the aggressors retreated to adjacent perches, but continued their raucous calling. The victim was splayed on its back with wings spread and feet in the air. The crow was breathing heavily and following my movements with its eyes, but it made no attempt to flee as I approached. Other than lost feathers, the only visible injury was a large laceration on the right leg. The presence of a metallic gloss on the feathers of the head, throat, and breast indicated that the victim was not a juvenile, but either an immature or adult bird.

I returned to my original point of observation and the attacking group promptly resumed the mobbing. After 20 min, the activity began to decline substantially, and after another 10 min I approached the victim again. The crow was dead and the body cavity was empty. Because no tissue was found around the carcass, it seemed evident that the attacking crows consumed the victim on the ground during the attack or carried parts of the victim away from the scene.

Intraspecific predation among adult birds has been well documented in captive birds, especially domestic hens, pheasants, and turkeys, and is thought to be correlated with the stressful conditions associated with captivity. Although rarely reported, the occurrence of adult-adult cannibalism in wild birds may not be unnatural, and could occur in response to stress, competition, or opportunity.

LITERATURE CITED

CAWSTON, J. M. 1983. One moorhen killing and eating another. British Birds 76:451.

CLEVENGER, G. A. AND A. I. ROEST. 1974. Cannibalism in Red-tailed Hawk. Auk 91:639.

FISHER, B. M. 1975. Possible intra-specific killing by a Great Gray Owl. Canadian Field-Naturalist 89: 71–72.

JOSLIN, D. 1964. Male Pied Wagtail killing another and persistently attacking the corpse. British Birds 57: 329–330.

STANBACK, M. T. AND W. D. KOENIG. 1992. Cannibalism in birds. Pages 277–298 *in* Cannibalism: ecology and evolution among diverse taxa (M. A. Elgar and B. J. Crespi, Eds.). Oxford University Press, New York.

VERBEEK, N. A. M. AND R. W. BUTLER. 1999. Northwestern Crow (*Corvus caurinus*). The Birds of North America, no. 407.

Wilson Bulletin, 116(2), 2004, pp. 181–184

White-winged Crossbills Obtain Forage from River Otter Feces

Daniel Gallant[1]

ABSTRACT.—Instances of coprophagy by birds are rare in comparison to coprophagy by other animals such as mammals and insects. Here, I report on White-winged Crossbills (*Loxia leucoptera*) obtaining forage from river otter (*Lontra canadensis*) feces in Kouchibouguac National Park, New Brunswick, Canada. In sequence, two male White-winged Crossbills landed on a scat, pecked at it, and ingested small pieces before flying away. The birds may have been feeding on fish bones or undigested fish present in the feces. *Received 28 October 2003, accepted 8 July 2004.*

White-winged Crossbills (*Loxia leucoptera*) mostly feed on seeds of spruce (*Picea* spp.), tamarack (*Larix laricina*), and sometimes fir (*Abies* spp.; Benkman 1987). When preferred seeds are scarce, they choose alternative foods, such as seeds from other conifers, deciduous trees, and grasses, as well as tree buds, insects, or spiders (Benkman 1992).

---

[1] Biology Dept., Univ. de Moncton, Moncton, New Brunswick E1A 3E9, Canada; e-mail: edg7602@umoncton.ca

Crossbills, predominantly the Red Crossbill (*Loxia curvirostra*), have been observed ingesting a great variety of rather odd items when supplementing their diet. Though data from captive Red Crossbills suggest that salt is not required in greater quantity than that found in their usual diet (Dawson et al. 1965), these birds regularly consume salt at various mineral sources in the environment. They have been observed obtaining salt by ingesting de-icing salt and sand spread on roads in winter (Lawrence 1982, Benkman 1992, Tozer 1994), mud in roadside pools (Tozer 1994), dog urine on snow (Manville 1941, Lawrence 1949), blocks of sulfurized salt kept for horses (Marshall 1940), and remains left from salt-pork barrels (Fisher 1888). They also have been readily attracted to saltlicks established by experimenters (Lawrence 1949, Bleitz 1958, Bennetts and Hutto 1985) and even by people harvesting them as a food source for subsistence (Fisher 1888). They can be approached easily when foraging for salt; Speirs (1985) observed them at his feet at a salt lick.

In addition to salt, crossbills are also attracted to sources of calcium. Observations of crossbills at calcium sources include calcium salts from cliff faces of andesite or pumice (Aldrich 1939), calcium chloride spread on a road (Meade 1942), fragments of calcium carbonate from a wall (Sainsbury 1978), putty from windows (Watson 1955), bleached deer bones (Baily 1953), and bone fragments from carnivore feces (Payne 1972). Crossbills also have been observed ingesting bits of charcoal (McMillan 1948), coal ashes (Lawrence 1949), and wood ashes (Tozer 1994). It is unclear whether the ash consumed in these instances is calcium-rich, as was the case for Ficken's (1989) observation of the same behavior exhibited by Boreal Chickadees (*Poecile hudsonica*). Lawrence's (1949) observations suggest that crossbills were probably attracted to coal ashes because salt had been thrown on them.

Crossbills are also known to ingest grit to help their digestion. They obtain it from various sources, such as the bases of uprooted trees (Benkman 1992), road cuts (Benkman 1992), mortar from stone chimneys and walls (Lawrence 1949, Bartlett 1976, Susic 1981, Tozer 1994), clay from the chinking in log houses (Nuttall 1903), or directly from the soil (Nuttall 1903). Tozer (1994) interpreted that crossbills may also consume mortar for its calcium content. Another unusual observation is that of Red Crossbills being attracted to soapy dishwater (Lawrence 1949). Only Benkman's (1992) and Meade's (1942) observations (cited above) concern the White-winged Crossbill.

Coprophagy is not unusual among mammals (van der Wal and Loonen 1998, Hirakawa 2001) and insects (Hendrichs and Hendrichs 1990), but is rare in birds. Pale-faced Sheathbills (*Chionis alba*), for example, readily feed on pinniped feces (Favero 1996), and one Wilson's Storm-Petrel (*Oceanites oceanicus*) was observed feeding on feces of North Atlantic right whales (*Eubalaena glacialis*; Krauss and Stone 1995). The only two previous accounts of crossbill coprophagy include Red Crossbills ingesting bones from carnivore feces (Payne 1972) and a young Scottish Crossbill (*Loxia scotica*) feeding its sibling seeds obtained from feces (Nethersole-Thompson and Whitaker 1984). These observations are not examples of coprophagy in the strictest sense, however, since no actual digested fecal matter was ingested. Here, I report on two White-winged Crossbills obtaining forage from river otter (*Lontra canadensis*) feces. Observations were recorded in Kouchibouguac National Park in eastern New Brunswick, Canada (46° 47′ N, 65° 01′ W). The region is part of New Brunswick's lowlands, where the majority of forested areas are mixed, dominated by balsam fir (*Abies balsamea*) and birch (*Betula* spp.), or coniferous and dominated by black spruce (*Picea mariana*; Graillon et al. 2000).

On 7 March 2003 at 15:03 AST, while conducting shoreline transects for river otter, I observed two male White-winged Crossbills perched in a balsam fir near a river otter burrow. From a distance of 5 m, I watched one of the crossbills fly to an otter scat near the burrow and peck at the scat and ingest small pieces. After approximately 30 sec, the crossbill flew to a nearby tree; the second crossbill then landed on the same scat and pecked at and ate bits of the scat for <10 sec before flying away. My close proximity enabled confirmation of ingestion. Subsequent inspection of the scats confirmed that they were fresh, unfrozen otter scats that contained several items of undigested fish flesh.

River otter defecation often results in large amounts of fecal matter concentrated in otter latrines (Testa et al. 1994, Bowyer et al. 1995, Swimley et al. 1998; DG pers. obs.). Because the visitation rate to latrines by river otters is high (Testa et al. 1994, Bowyer et al. 1995), and because scats thaw quite easily on sunny days (DG pers. obs.), feces could constitute an alternative food source for certain animals during winter.

It is possible that the two crossbills were trying to complement their diet by eating fish bones, which are numerous in otter scats, and would therefore constitute a ready source of calcium. Wild birds can be calcium deficient, which has been linked to adverse affects such as eggshell defects, clutch desertion, and empty nests (Graveland et al. 1994, Graveland and van der Wal 1996). Great Tits (*Parus major*), for example, do not obtain sufficient calcium from their usual diet of seeds and arthropods for adequate eggshell formation and skeletal growth (Graveland and van Gijzen 1994); they depend on snail shells as a complementary source of calcium (Graveland et al. 1994).

ACKNOWLEDGMENTS

I am grateful to M. A. Villard and J. S. Guénette for providing valuable insight for interpreting my observations, and to P. Roguet who also witnessed the event. I am also grateful to C. Bérubé, S. Reebs, and L. Vasseur for corrections and comments on the manuscript. Observations and preparation of this manuscript were conducted during a river otter field study funded by Kouchibouguac National Park, the Université de Moncton, and the New Brunswick Wildlife Trust Fund. I also thank C. W. Benkman, D. A. Leatherman, and M. Marquiss for reviewing the manuscript and improving its quality.

LITERATURE CITED

ALDRICH, E. C. 1939. Notes on the salt-feeding habits of the Red Crossbill. Condor 41:172–173.

BAILY, A. L. 1953. 1952 observations of the Red Crossbills, part 2. *In* The Red Crossbills in Colorado (A. M. Bailey, R. J. Niedrach, and A. L. Baily, Eds.). Denver Museum of Natural History Pictorial, no. 9:33–63.

BARTLETT, E. 1976. Crossbills feeding at chimney-stacks. British Birds 69:312.

BENKMAN, C. W. 1987. Food profitability and the foraging ecology of crossbills. Ecological Monographs 57:251–267.

BENKMAN, C. W. 1992. White-winged Crossbill (*Loxia leucoptera*). The Birds of North America, no. 27.

BENNETTS, R. E. AND R. L. HUTTO. 1985. Attraction of social fringillids to mineral salts: an experimental study. Journal of Field Ornithology 56:187–189.

BLEITZ, D. 1958. Attraction of birds to salt licks placed for mammals. Wilson Bulletin 70:92.

BOWYER, R. T., J. W. TESTA, AND J. B. FARO. 1995. Habitat selection and home ranges of river otters in a marine environment: effect of the Exxon Valdez oil spill. Journal of Mammalogy 76:1–11.

DAWSON, W. R., V. H. SHOEMAKER, H. B. TORDOFF, AND A. BORUT. 1965. Observations on metabolism of sodium chloride in the Red Crossbills. Auk 82: 606–623.

FAVERO, M. 1996. Foraging ecology of Pale-faced Sheathbills in colonies of southern elephant seals at King George Island, Antarctica. Journal of Field Ornithology 67:292–299.

FICKEN, M. S. 1989. Boreal Chickadees eat ash high in calcium. Wilson Bulletin 101:349–351.

FISHER, W. H. 1888. The American Cross-bill, *Loxia* (*L.*) *curvirostra minor*; (*Brelim.*) as to some of its habits and its fondness for salt. Journal of the Cincinnati Society of Natural History 10:203–204.

GRAILLON, P., L. PROVENCHER, AND M.-J. FORTIN. 2000. Biophysical mapping of a greater ecosystem: Kouchibouguac National Park, New Brunswick. Research Bulletin, no. 152–153, Université de Sherbrooke, Sherbrooke, Québec, Canada.

GRAVELAND, J. AND R. VAN DER WAL. 1996. Decline in snail abundance due to soil acidification causes eggshell defects in forest passerines. Oecologia 105:351–360.

GRAVELAND, J., R. VAN DER WAL, J. H. VAN BALEN, AND A. J. VAN NOORDWIJK. 1994. Poor reproduction in forest passerines from decline of snail abundance on acidified soils. Nature 6470:446–448.

GRAVELAND, J. AND T. VAN GIJZEN. 1994. Arthropods and seeds are not sufficient as calcium sources for shell formation and skeletal growth in passerines. Ardea 82:299–314.

HENDRICHS, J. AND M. HENDRICHS. 1990. Mediterranean fruit fly (Diptera: Tephritidae) in nature: location and diet pattern on feeding and other on fruiting and nonfruiting hosts and nonhosts. Annals of the Entomological Society of America 83: 632–641.

HIRAKAWA, H. 2001. Coprophagy in leporids and other mammalian herbivores. Mammal Review 31:61–80.

KRAUSS, S. D. AND G. S. STONE. 1995. Coprophagy by Wilson's Storm Petrels, *Oceanites oceanicus*, on North Atlantic right whale, *Eubalaena glacialis*. Canadian Field-Naturalist 109:443–444.

LAWRENCE, L. DE K. 1949. The Red Crossbill at Pimisi Bay, Ontario. Canadian Field-Naturalist 63:147–160.

LAWRENCE, L. DE K. 1982. A dash of salt. Nature Canada 11:28–32.

MANVILLE, R. H. 1941. Crossbills breeding in northern Michigan. Wilson Bulletin 53:240–241.

MARSHALL, W. H. 1940. More notes on salt-feeding of Red Crossbills. Condor 42:218–219.

MCMILLAN, E. 1948. A nesting record for the Red Crossbill in California. Condor 50:44.

MEADE, G. M. 1942. Calcium chloride—a death lure for crossbills. Auk 59:439–440.

NETHERSOLE-THOMPSON, D. AND D. WHITAKER. 1984. Young crossbill feeding a sibling. Scottish Birds 13:87.

NUTTALL, T. 1903. A popular handbook of the birds of Canada and the United States. Musson Books, Toronto, Canada.

PAYNE, R. B. 1972. Nuts, bones, and a nesting of Red Crossbills in the Panamint Mountains, California. Condor 74:485–486.

SAINSBURY, M. 1978. Crossbills ‘‘feeding’’ on soil. British Birds 71:540–541.

SPEIRS, J. M. 1985. Birds of Ontario, vol. 2. Natural Heritage, Toronto, Ontario, Canada.

SUSIC, G. 1981. Red Crossbills (*Loxia curvirostra* L. 1758) feeding on mortar in a wall. Larus 33–35: 197–200.

SWIMLEY, T. J., T. L. SERASS, R. P. BROOKS, AND W. M. TZILKOWSKI. 1998. Predicting river otter latrine sites in Pennsylvania. Wildlife Society Bulletin 26:836–845.

TESTA, J. W., D. F. HOLLMAN, R. T. BOWYER, AND J. B. FARO. 1994. Estimating populations of marine river otters in Prince William Sound, Alaska, using radiotracer implants. Journal of Mammalogy 75: 1021–1032.

TOZER, R. 1994. Red crossbills feeding at mineral sources. Ontario Birds 12:102–108.

VAN DER WAL, R. AND M. J. J. E. LOONEN. 1998. Goose droppings as food for reindeer. Canadian Journal of Zoology 76:117–1122.

WATSON, A. 1955. Crossbills breeding in Aberdeenshire. Scottish Naturalist 67:121–122.

Wilson Bulletin, 116(2), 2004, pp. 184–186

Atypical Nest Site of a Semipalmated Plover

Linh P. Nguyen,[1,3] Robert F. Rockwell,[2] and Drake Larsen[2]

ABSTRACT.—We report on an unusual nest site of a Semipalmated Plover (*Charadrius semipalmatus*) at La Pérouse Bay, Manitoba, Canada. The nest was located at the base of a 41-cm-high willow (*Salix* spp.) in a dense willow patch surrounded by coastal mudflats. Vegetation height and percent visual obstruction at the nest site were unusually high compared to height and cover previously described for Semipalmated Plovers. The nest was successful (≥2 eggs hatched). The discovery of this unusual nest site in dense vegetation suggests that some Semipalmated Plover nests may be overlooked, emphasizing the need to conduct thorough searches even in non-traditional habitats among shorebird species that typically nest in open habitats. *Received 9 October 2003, accepted 1 June 2004.*

Charadriidae shorebirds nest in unlined to thinly lined, shallow depressions in hardened clay or silt, or in loose stones, pebbles, or sand in flat areas with sparse vegetation (Cooper and Miller 1997, Nol and Blanken 1999, Nguyen et al. 2003, Amat and Masero 2004). The disruptive effects of a plover’s cryptic plumage and egg coloration against these substrates may enhance concealment from predators (Solís and de Lope 1995, Lloyd et al. 2000). Some plovers place their nests near objects or clumps of vegetation, which could provide microclimates that reduce thermoregulatory costs (Wolf and Walsberg 1996, Amat and Masero 2004). Cover, however, reduces visibility around a nest, which may result in a higher risk of predation compared to that of an exposed site (Koivula and Rönkä 1998, Amat and Masero 2004). Nest-site selection among shorebirds, therefore, may be a trade-off between needing security from predators, minimizing thermoregulatory costs, and having a view of the surrounding area (Wolf and Walsberg 1996, Koivula and Rönkä 1998, Amat and Masero 2004). Here, we report an unusual instance of a Semipalmated Plover (*Charadrius semipalmatus*) nesting in dense vegetation.

---

[1] Watershed Ecosystems Graduate Program, Trent Univ., Peterborough, ON K9J 7B8, Canada.

[2] Dept. of Ornithology, American Museum of Natural History, Central Park West, New York, NY 10024, USA.

[3] Corresponding author; e-mail: linhnguyen@trentu.ca

On 17 July 2003, LPN and DL found the unusual Semipalmated Plover nest site at La Pérouse Bay, Wapusk National Park, Manitoba, Canada (58° 45′ N, 93° 30′ W). Several times we observed a plover entering a large patch (6.8 m long × 5.1 m wide) of willow (*Salix* spp.) surrounded by coastal mudflats. We found the nest, which contained four eggs, at the base of a willow. The nest was approximately 1.7 m from the outer edge of the willow patch and 10.2 m from the nearest water. RFR observed eggs and adults at the nest on 21 July; 2 days later, the nest contained two chicks and two eggs. On 25 July, neither adults nor young were observed in the immediate area.

We used a tape measure at each corner of a 1-m^2 quadrat frame to calculate mean height (41 cm) of vegetation within 1 m of the nest site. We used a transparent, 20 × 20 cm density board (100, 2 × 2 cm cells) placed vertically on the ground at the nest site to calculate mean percent visual obstruction by vertical cover (97%) between the nest and the four quadrat corners (Nguyen et al. 2003).

Previous descriptions of nest sites used by Semipalmated Plovers (Cooper and Miller 1997, Robinson 1998, Nguyen et al. 2003, Smith 2003) have not mentioned sites in densely vegetated habitat. Vegetation height and percent visual obstruction by vertical cover at the unusual nest site described herein were much greater than those at other Semipalmated Plover nest sites: Akimiski Island, Nunavut (5.8 cm and 21%, respectively, n = 42; Nguyen et al. 2003); La Pérouse Bay, Manitoba (0 cm and 38%, respectively, n = 10; RFR unpubl. data); and East Bay, Nunavut (12 cm and 6%, respectively, n = 24; Smith 2003). Although Cooper and Miller (1997) did not report vegetation height and percent visual obstruction by vertical cover at plover nests in the Queen Charlotte Islands, British Columbia (n = 71), they described nest sites on open sand, under elevated ends of logs or planks, and on gravel patches, all different from the nest site that we observed. Similarly, Robinson (1998) did not report specific nest-site characteristics at plover nests in Churchill, Manitoba (n = 32), but his descriptions indicated that nests were found primarily on gravel and stone, or lichen and moss, suggesting that vegetation height and percent visual obstruction by vertical cover were different from those at the nest site we observed.

Semipalmated Plovers that nest in open sites with little or no concealment from vegetation may benefit from good visibility and early detection of predators. If true, one would expect a low rate of success among nests in dense vegetation. However, previous studies have shown that nest cover—an indicator of visibility—does not affect shorebird nest success at typical nest sites (Koivula and Rönkä 1998, Nguyen et al. 2003, Amat and Masero 2004). Additionally, nest sites used for renesting by Kentish Plovers (*C. alexandrinus*) had greater nest cover than those sites where the initial nest was depredated (Amat et al. 1999). We are not certain whether the Semipalmated Plover nest we found was the result of a late-nesting or renesting attempt. The discovery of a nest in dense vegetation, however, indicates that some Semipalmated Plover nests may be overlooked during monitoring or nest searching. We recommend that search efforts be increased in habitats of dense vegetation to assess the frequency of nesting in those types by shorebird species that typically nest in open habitats.

ACKNOWLEDGMENTS

We thank members of the La Pérouse Bay field station, the Hudson Bay Project, and Parks Canada. Financial support was provided by an Ontario Graduate Scholarship in Science and Technology to LPN, the Department of Indian and Northern Affairs Northern Scientific Training Grant Program, the Arctic Institute of North America Grant-in-Aid, Ontario Ministry of Natural Resources, and state and federal agencies of the Central, Mississippi, and Atlantic flyways. The cooperation of Wapusk National Park is greatly appreciated. We thank E. Nol and K. F. Abraham for providing valuable comments on earlier versions of the manuscript; J. A. Amat and three anonymous referees also provided valuable comments that improved the manuscript.

LITERATURE CITED

AMAT, J. A., R. M. FRAGA, AND G. M. ARROYO. 1999. Replacement clutches by Kentish Plovers. Condor 101:746–751.

AMAT, J. A. AND J. A. MASERO. 2004. Predation risk on incubating adults constrains the choice of thermally favourable nesting sites in a plover. Animal Behaviour 67:293–300.

COOPER, J. M. AND E. H. MILLER. 1997. Populations, status, and biology of shorebirds breeding near Masset, Queen Charlotte Islands. Pages 123–129 *in* The ecology, status, and conservation of marine and shoreline birds of the Queen Charlotte Islands (K. Vermeer and K. H. Morgan, Eds.). Canadian Wildlife Service Occasional Paper, no. 93, Ottawa, Ontario.

KOIVULA, K. AND A. RÖNKÄ. 1998. Habitat deterioration and efficiency of antipredator strategy in a meadow-breeding wader, Temminck's Stint (*Calidris temminckii*). Oecologia 116:348–355.

LLOYD, P., É. PLAGÁNYI, D. LEPAGE, R. M. LITTLE, AND T. M. CROWE. 2000. Nest-site selection, egg pigmentation and clutch predation in the ground-nesting Namaqua Sandgrouse *Pterocles namaqua*. Ibis 142:123–131.

NGUYEN, L. P., E. NOL, AND K. F. ABRAHAM. 2003. Nest success and habitat selection of the Semipalmated Plover on Akimiski Island, Nunavut. Wilson Bulletin 115:285–291.

NOL, E. AND M. S. BLANKEN. 1999. Semipalmated Plover (*Charadrius semipalmatus*). The Birds of North America, no. 444.

ROBINSON, C. 1998. A comparison of inland and coastal nest-sites of the Semipalmated Plover (*Charadrius semipalmatus*) in Churchill, Manitoba. B.Sc. thesis, Trent University, Peterborough, Ontario.

SMITH, P. A. 2003. Factors affecting nest site selection and reproductive success of tundra nesting shorebirds. M.Sc. thesis, University of British Columbia, Vancouver, British Columbia, Canada.

SOLÍS, J. C. AND F. DE LOPE. 1995. Nest and egg crypsis in the ground-nesting Stone Curlew *Burhinus oedicnemus*. Journal of Avian Biology 26:135–138.

WOLF, B. O. AND G. E. WALSBERG. 1996. Thermal effects of radiation and wind on a small bird and implications for microsite selection. Ecology 77: 2228–2236.

Wilson Bulletin, 116(2), 2004, pp. 186–188

Song in Female *Hylorchilus* Wrens

Héctor Gómez de Silva,[1,4,5] Curtis A. Marantz,[2] and Mónica Pérez-Villafaña[1,3]

ABSTRACT.—We report on the discovery of a distinct female song in Nava's Wren (*Hylorchilus navai*), similar to that recently discovered in Sumichrast's Wren (*Hylorchilus sumichrasti*). In both species, females sometimes countersing with males but do not combine their songs into a synchronized duet as in many other tropical wrens. We provide observations that suggest territorial defense, intra-pair contact, and perhaps mate-guarding as possible functions of female song in *Hylorchilus*, a little-known genus endemic to Mexico. *Received 12 December 2003, accepted 28 June 2004.*

In the largely Neotropical family, Troglodytidae, females show a diversity of singing behaviors (Farabaugh 1982, Barker 2003). In some species, females do not sing regularly, but in others female songs may be simple rattles (rapid repetitions of a single, low-pitched syllable), usually complementing their mates' more complex whistles. Female songs also may be sung in highly coordinated, whistled duets with their mates (Farabaugh 1982). Female rattles have been reported in Mérida Wren (*Cistothorus meridae*; Kroodsma et al. 2001), Carolina Wren (*Thryothorus ludovicianus*; Shuler 1965, Farabaugh 1982), House Wren [*Troglodytes aedon* (*musculus* group); cf. Skutch 1953, Farabaugh 1982, Sick 1993], Socorro Wren (*Thryomanes sissonii*; Howell and Webb 1995), and Sumichrast's Wren (*Hylorchilus sumichrasti*; Pérez-Villafaña et al. 1999). Here, we report on the discovery of female song in Nava's Wren (*Hylorchilus navai*) and provide observations on the context and possible function of female rattles in *Hylorchilus*, a little-known genus endemic to Mexico.

On 26 March 2002, while observing a singing male Nava's Wren at the type locality for this species northwest of Tuxtla Gutiérrez, Chiapas, Mexico (16° 56′ N, 93° 27′ W), HGdS and CAM heard and tape recorded a

---

[1] Inst. de Ecología, UNAM, A.P. 70–275, Ciudad Univ., UNAM, C.P. 04510, México, D.F., Mexico.

[2] Dept. of Biology, Univ. of Massachusetts, Amherst, MA 01003, USA.

[3] Calle 1537-3, Col. San Juan de Aragón, Sección 6, C.P. 07918, México, D.F., México.

[4] Current address: Xola 314-E; 03100—México, D.F., México.

[5] Corresponding author; e-mail: hgomez@miranda.ecologia.unam.mx

series of rapid whistles that they could not identify. Playback of this vocalization immediately provoked close approach by the male and the appearance of a second individual, a female, recognizable in the field based on her slightly shorter bill (cf. Crossin and Ely 1973) and the general resemblance of its song to that of female Sumichrast's Wren (see below). Soon, both birds began countersinging, and they continued to do so for several minutes. Countersinging is known to occur in Sumichrast's Wren (Pérez-Villafaña et al. 1999). Conceptually, it is sometimes difficult to distinguish bird songs from calls, but songs are usually given in the context of either territoriality or pairing behavior, whereas calls usually are not (Spector 1994, Langmore 1998).

Countersinging in response to tape playback suggests that female song in Nava's Wren is used in territorial defense for intrapair communication during an agonistic event. As in the Sumichrast's Wren (Pérez-Villafaña et al. 2003), the posture adopted by the female Nava's Wren while singing was similar to that used by the male, with the body held upright and the bill raised. This posture, the loud nature of the song, and the fact that it was given by birds perched atop limestone boulders, suggest that the song may be used as a long-distance signal.

The song of the female Nava's Wren is an introductory note followed by a rapid series of eight or more loud, shrill whistles; the song rises slightly, remains relatively steady, and ends abruptly: ‘‘*wup wick-wick-wick-wick-wick . . .* ’’ (Fig. 1A). Seventeen songs from a single bout of countersinging averaged 2.6 ± 0.6 sec (SD) in length and contained 14.9 ± 3.7 notes. Singing behavior appears to be similar in both species of *Hylorchilus*. As in countersinging pairs of Sumichrast's Wren (HGdS and MPV pers. obs.), the rate of song delivery in female Nava's Wren (5.4 songs/min) is somewhat slower than in the male (8.5 songs/min) and the individual songs are significantly longer in duration (female: 2.6 ± 0.6 sec, $n = 17$; male: 1.8 ± 0.1 sec, $n = 31$; t-test, $P < 0.001$). The song given by female Sumichrast's Wren is also a relatively steady series of notes, but notes are delivered at only about half the rate (Fig. 1B). Moreover, in female Nava's Wren the maximum fundamental frequency is higher (2.42 ± 0.08 kHz) than it is in the hoarse song of female Sumichrast's Wren (2–2.2 kHz). Unlike duets in many other wrens, the contributions of males and females in *Hylorchilus* are not highly coordinated or in synchrony. Instead, many male and female songs partly overlap. Successive female songs may begin near the beginning, middle, or end of the male's songs, with no apparent pattern. Indeed, some male songs in a duet do not

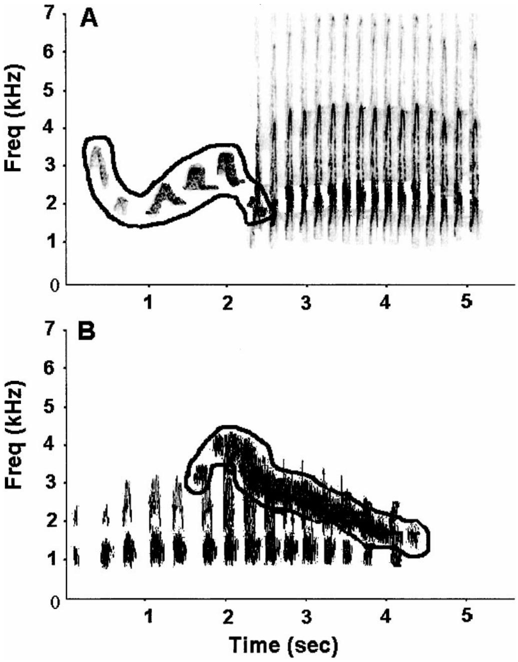

FIG. 1. Spectrograms of countersinging male and female *Hylorchilus* wrens. Contributions of males are encircled by solid lines. (A) Portion of a countersinging bout of Nava's Wren (*Hylorchilus navai*) featuring slightly overlapping male and female songs. Recorded by CAM at the type locality of Nava's Wren in Chiapas, Mexico (see text), on 26 March 2002, using a Nagra 4.2 and a Sennheiser MKH-20 microphone mounted inside a Telinga Pro parabola (CAM field #2000-07-04 deposited at the Library of Natural Sounds, Cornell Laboratory of Ornithology, Ithaca, New York). The spectrogram was made using Syrinx, version 2.2K (www.syrinxpc.com). (B) Portion of a duet of Sumichrast's Wren (*Hylorchilus sumichrasti*) showing complete overlap between male and female song. Recorded by S. N. G. Howell 1.5 km south of Amatlán, Veracruz (18° 50′ N, 96° 55′ W), on 21 September 1995 with a Sony TCS 430/450 and a Sennheiser ME66 microphone. The spectrogram was made using a Kay Elemetrics DSP Sonograph, Model 5500, in the sound analysis laboratory of L. F. Baptista, California Academy of Sciences, San Francisco.

overlap female song. It may be that all female songs in a duet are overlapped by male song, but our sample is small; overlap would suggest mate-guarding as one function of male song. Song by female Sumichrast's Wren has been heard throughout the year (Pérez-Villafaña et al. 2003) and in a paired female without offspring (Pérez-Villafaña 1997), indicating that it is not related to coordination of biparental care (e.g., Langmore 1998).

Males of both *Hylorchilus* wrens frequently sing alone, and solo song by females has been recorded in the better-known Sumichrast's Wren. For example, Pérez-Villafaña et al. (2003) documented solo song by a paired female that was foraging and transporting nesting material. Females sing much less frequently than males (Pérez-Villafaña et al. 1999). Taken together with how little is known about *Hylorchilus* wrens, this may explain why it took so long to document female song in these species. Whereas the songs of male Sumichrast's and Nava's wrens were first described in 1987 and 1993, respectively (Hardy and Delaney 1987, Atkinson et al. 1993), female song was not described in Sumichrast's Wren until 1997 (Pérez-Villafaña 1997, Pérez-Villafaña et al. 1999), and until now, countersinging and female song had remained undescribed in Nava's Wren.

ACKNOWLEDGMENTS

We are grateful to S. N. G. Howell for allowing us to use his spectrogram of countersinging Sumichrast's Wrens, and the late L. F. Baptista for use of sonograph equipment. B. E. Daniels, J. L. Dunn, P. Ginsburg, G. McCaskie, and M. San Miguel provided companionship in the field when recording Nava's Wren. We thank A. Ríos Chelén and C. Macías for their help in measuring maximum fundamental frequency in Sumichrast's Wren songs, and D. E. Kroodsma and three anonymous reviewers for providing valuable comments on the manuscript.

LITERATURE CITED

ATKINSON, P. W., M. J. WHITTINGHAM, H. GÓMEZ DE SILVA G., A. M. KENT, AND R. T. MAIER. 1993. Notes on the ecology, conservation and taxonomic status of *Hylorchilus* wrens. Bird Conservation International 3:75–85.

BARKER, F. K. 2003. A summary of evidence for female song, vocal duetting and cooperative breeding in species of the family Certhiidae (*sensu* Sibley and Ahlquist 1990). Online at <http://www.tc.umn.edu/~barke042/pdfs/Wren.behavior.pdf> (accessed 8 Nov 2003).

CROSSIN, R. S. AND C. A. ELY. 1973. A new race of Sumichrast's Wren from Chiapas, Mexico. Condor 75:137–139.

FARABAUGH, S. M. 1982. The ecological and social significance of duetting. Pages 85–124 *in* Acoustic communication in birds, vol. 2 (D. E. Kroodsma and E. H. Miller, Eds.). Academic Press, New York.

HARDY, J. W. AND D. J. DELANEY. 1987. The vocalizations of the Slender-billed Wren (*Hylorchilus sumichrasti*): who are its closest relatives? Auk 104:528–530.

HOWELL, S. N. G. AND S. WEBB. 1995. A guide to the birds of Mexico and northern Central America. Oxford University Press, New York.

KROODSMA, D. E., K. WILDA, V. SALAS, AND R. MURADIAN. 2001. Song variation among *Cistothorus* wrens, with a focus on the Mérida Wren. Condor 103:855–860.

LANGMORE, N. E. 1998. Functions of duet and solo songs of female birds. Trends in Ecology & Evolution 13:136–140.

PÉREZ-VILLAFAÑA, M. 1997. Contribución al conocimiento de la historia de vida de *Hylorchilus sumichrasti* (Aves: Troglodytidae) en el norte del Estado de Oaxaca. B.Sc. thesis, Universidad Nacional Autónoma de México–Campus Iztacala, México, D.F.

PÉREZ-VILLAFAÑA, M., H. GÓMEZ DE SILVA, AND A. DESUCRE. 2003. Observations of Sumichrast's Wren *Hylorchilus sumichrasti* in Cerro de Oro, Oaxaca, México. Cotinga 19:56–58.

PÉREZ-VILLAFAÑA, M., H. GÓMEZ DE SILVA, AND A. DESUCRE-MEDRANO. 1999. Sexual dimorphism in the song of Sumichrast's Wren (*Hylorchilus sumichrasti*). Wilson Bulletin 111:128–130.

SHULER, J. B. 1965. Duet singing in the Carolina Wren. Wilson Bulletin 77:405.

SICK, H. 1993. Birds in Brazil: a natural history. Princeton University Press, Princeton, New Jersey.

SKUTCH, A. F. 1953. Life history of the Southern House Wren. Condor 55:121–149.

SPECTOR, D. A. 1994. Definition in biology: the case of ''bird song.'' Journal of Theoretical Biology 168:373–381.