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# POSSIBLE CHOKING MORTALITIES OF ADULT NORTHERN GOSHAWKS

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Choking deaths in wild birds are rarely reported in the ornithological literature. Such incidences have been reported in some easily-observed birds such as Pelecaniformes (Skead 1980, Wilson and Wilson 1985, Septon 1989, Bunkley et al. 1994) and Anseriformes (Septon 1989,

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Holzinger 1989), as well as in White-backed Vultures (*Gyps africanus*) (Carlyon and Meakin 1986). However, we only found one reported observation involving raptors, a Tawny Owl (*Strix aluco*) (Spirett 1984). Here we report on two cases of apparent choking mortality in female Northern Goshawks (*Accipiter gentilis atricapillus*) nesting in the western United States.

We fitted an adult female Northern Goshawk with a backpack-harness radio transmitter in early June 1998 at her nesting territory in western Washington. Weekly radiotelemetry monitoring over the next 30 d showed that she remained primarily in the nest stand and <200 m from the nest until early July. After that she began leaving the area to hunt and deliver prey to the one fledgling from this nest. Use of the surrounding landscape by this bird appeared normal over the next couple of weeks as she, and her mate, continued to supply food to the developing fledgling. On 12 July, we observed this goshawk about 4 km from her nest within minutes after capturing a Douglas' squirrel (*Tamiasciurus douglasii*). We approached the bird by homing in on the telemetry signal and identified the prey by fur remains below her perch site after she flushed. She landed 100 m away and continued feeding.

Seven days later we returned to the area and found her dead about 300 m from the location where the squirrel was killed. The goshawk had not been preyed upon or scavenged. There was no sign of any broken bone or recent wound. She was lying on the forest floor, ventral side down with wings spread out. About 10 m away we found a large Douglas-fir (*Pseudotsuga menziesii*) in which she apparently spent a considerable amount of time before dying. There were multiple patches of feces, five goshawk retrices, and one goshawk remige below this tree (other than these six flight feathers and a few chest feathers the carcass was completely intact). We inspected the oral cavity and extracted a considerable amount of Douglas' squirrel fur, of which about 1 cm in length was protruding from the mouth. In addition to the fur in the mouth, there were also bones from the squirrel in the crop, including a fully-articulated leg bone with the foot.

The fit of the harness holding the transmitter appeared normal and clearly did not directly affect the bird's flying ability. Additionally, the fit of the harness in the crop area at the post-mortem inspection did not appear to be unusually tight or high. Therefore, we do not believe that it was a factor in the death. We suspect, based on the presence of a large amount of fur in the oral cavity and a lack of evidence indicating another cause of mortality (e.g., predation, collision with tree, disease), that this bird suffocated to death while consuming the Douglas' squirrel. We are not certain if it was the same squirrel that was captured the previous week. It is possible that researcher disturbance played a role in this occurrence. Perhaps the goshawk was forced to fly at a time when it normally would not and a portion of the squirrel became lodged in the trachea, making breathing difficult.

The second case occurred in east-central Arizona. On 3 June 1999, we set up a remote camera at a Northern Goshawk nest in order to assess nestling food habits. Also, as part of a long-term demography study of this population, all adult females were marked with alpha-numeric coded, colored leg bands (not radio tagged). On 12 June, just prior to dawn, we set up a dho-gaza net array, with a Great Horned Owl (*Bubo virginianus*) as lure, to trap and mark the adult female. We had received no response from the adult female by 30 min after sunrise, so we examined the nest area. We climbed the nest tree and found the adult female dead, lying on her back on the outer rim of the nest. We also found two 10–14-d-old live nestlings, one whole Steller's Jay (*Cyanocitta stelleri*), a partially consumed chipmunk (*Tamias* spp.), Northern Flicker (*Colaptes auratus*) feathers, and the head of a short-horned lizard (*Phrynosoma douglassi*). Upon inspecting the adult female we found a 20-cm-long piece of cottontail rabbit (*Sylvilagus* spp.) hide stuck down her throat, of which about 5 cm protruded from the mouth.

We subsequently inspected the videotapes from 9–12 June and found that at 1515 H on 9 June the adult female brought a decapitated cottontail rabbit to the nest After feeding the young for ca. 30 min she left the remains of the rabbit in the nest and flew off. The tape stopped recording at 1615 H. When the camera resumed recording on 10 June, 0.5 hr before sunrise, she was already dead. For the following 2 d (10 and 11 June) the nestling goshawks consumed the rabbit.

While death by asphyxiation (caused by fur blockage of the tracheal passageway) appears to be the most parsimonious explanation for these events, we must consider possible alternative scenarios. Predation by avian or mammalian predators while the goshawks were consuming their prey is unlikely. Neither bird showed evidence of being punctured by teeth or talons. If an avian predator, such as a Great Horned Owl, killed either of the birds, it would seem likely that the owl would have then fed on the dead goshawk. If the goshawk was able to escape after being hit initially, it seems unlikely that it would still have a large amount of fur in its mouth when it died. Diseases, such as trichomoniasis, are a possibility; however, both of these birds were at least midway through a successful breeding season suggesting that they were healthy. In adult birds substantial mass loss occurs with this disease (Arnall and Keymer 1975) and birds will be emaciated upon collection. While the Washington bird was recovered too late to assess body condition, the Arizona bird was in good flesh with no signs of chronic mass loss. It is possible that the birds had a mild case of this disease and it, in conjunction with eating prey, caused difficulty in swallowing (P. Redig pers. comm.). Both of these birds were in relatively remote locations, which make diseases associated with eating pigeons or doves (Columbidae), such as trichomoniasis or liver hepatitis, unlikely causes. Neither of these birds received an immediate necropsy by a trained veterinarian. If conducted, these birds may

have showed important signs of cause of mortality, such as disease. In the absence of such an evaluation, however, death by asphyxiation associated with consuming mammalian prey is a reasonable deduction.

RESUMEN.—Reportamos dos casos separados de muertes por shock en dos hembras adultas de azor norteño (*Accipiter gentilis atricapillus*) en el oeste de los Estados Unidos. Los azores monitoreados durante la epoca reproductiva (uno con telemetria y el otro en el nido con una camara de video), fueron encontrados muertos con cantidades protuberantes de piel de mamifero en sus bocas. Ninguno de los dos mostro signos de mortalidad causada por depredacion o enfermedad. Aunque una necropsia hecha inmediatamente por un veterinario hubiera mostrado signos de de otra causa de mortalidad, como una enfermedad, esto fue descartado. In ausencia de dicha evaluacion, concluimos que estos azores murieron por asfixia asociada al consumir un mamifero.

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