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AERIAL MOBBING OF A GYRFALCON BY GLAUCOUS GULLS

On 1–2 June 1990, while camped at a small island in Alexandra Fiord on Ellesmere Island (78°54'N 75°45'W) near a lowland oasis (B. Freedman and J. Svoboda 1982, *Can. Field.-Nat.* 96:56–60), I observed a male Gyrfalcon (*Falco rusticolus*) quartering back and forth in front of a cliff where the female was nesting. The orographic lift of the Gyrfalcon was interrupted by a group of three Glaucous Gulls (*Larus hyperboreus*) on two separate occasions, each lasting several minutes. During the first encounter, the gulls, which initiated the engagement, acted in unison, each gull taking turns diving at the Gyrfalcon, while the others circled close by calling loudly. The Gyrfalcon, in an attempt to fight the gulls, swiveled about, talons extended, occasionally even doing so while completely inverted. After returning to the nest, the Gyrfalcon ignored the gulls until after 10 min it tried to make a kill of a single passing bird. The panicked avoidance by the Glaucous Gull consisted of dropping vertically to several meters above the pack ice and calling loudly. Within a few moments, two gulls arrived and the three dissuaded the Gyrfalcon from hunting. The falcon then returned to the nest site where it stayed for the next hour of observation, disregarding nearby gulls.

Gyrfalcons commonly take prey in the air (e.g., C.M. White and R.B. Weiden 1966, *Condor* 68:517–519; S.A. Bengtson 1971, *Ibis* 113:468–476) and customarily prey upon seabirds (e.g., G.P. Dementiev and N.N. Gortchakovskaya 1945, *Ibis* 87:559–565; K.G. Poole and G.A. Boag 1988, *Can. J. Zool.* 66:334–344) including Glaucous Gulls (C.M. White and T.J. Cade 1971, *Living Bird* 10:107–150). Similar mobbing of Gyrfalcons by Common Raven (*Corvus corax*) has been noted previously (M.A. Jenkins 1978, *Auk* 95:122–127). N. Wooden (1980, *Raptor Res.* 14:97–124) also observed perched Gyrfalcons struck by passing Arctic Terns (*Sterna paradisaea*) which, however, never grouped to drive the raptor away as in the present encounter with the larger Glaucous Gulls. This seemingly paradoxical behavior of self-endangerment by mobbers may be necessary to “convince” the predator that their threat is real (S.A. Sordahl 1990, *Wilson Bull.* 102:349–353). The result is that both ravens (Jenkins 1978) and Glaucous Gulls (this study) can be ignored even when they fly directly beneath or over an occupied Gyrfalcon eyrie.—**R.L. France, Department of Biology, McGill University, 1205 Ave. Dr. Penfield, Montreal, PQ, Canada H3A 1B1.**

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AN AGGRESSIVE INTERACTION BETWEEN A NORTHERN GOSHAWK AND A RED-TAILED HAWK

During September 1987, D. Crannell observed an aggressive encounter between a Northern Goshawk (*Accipiter gentilis*) and a Red-tailed Hawk (*Buteo jamaicensis*) on the Alsea Ranger District (Township 13 South, Range 09 West) of the Siuslaw National Forest in the Coast Range of western Oregon. An adult Red-tailed Hawk was observed flying erratically, apparently grappling with another bird. The birds tumbled to the ground a short distance away and when this location was approached, the Red-tailed Hawk was seen hanging upside down in the talons of a mature goshawk about 3 m up in a small tree. The pair of birds were about 5 m from the observer. The goshawk dropped the Red-tailed Hawk, possibly because of the close proximity of a human, and after about 60 sec the Red-tailed Hawk hopped to an adjacent bush. The two hawks then watched each other for a few seconds, and the Red-tailed Hawk flew south across a pasture and landed in a tree. Within seconds, the goshawk pursued the redtail, struck it, and both birds went to the ground. The outcome of this last encounter was not observed.

Vegetation in the area was dominated by second-growth Douglas-fir (*Pseudotsuga menziesii*), vine maple (*Acer circinatum*) and red alder (*Alnus rubra*) growing where recent timber harvest had taken place. This habitat was not typical of most nesting sites for Northern Goshawks in Oregon, and goshawks are not known to nest in the Coast Range of Oregon (R.T. Reynolds et al. 1982, *J. Wildlife Manage.* 46:124–138), although sightings of goshawks are often recorded there. Red-tailed Hawks do nest in the Coast Range. No vocalizations were heard, so it was not known if either bird emitted alarm or defensive calls. It is possible that this encounter was an act of predation by the goshawk on the redtail rather than aggressive territoriality. We do not know if the goshawk consumed any of the redtail. Encounters between Northern Goshawks and Red-tailed Hawks are of interest because of the possibility that the two species are being drawn into closer proximity during nesting because of wide-spread alteration of forested habitat due to timber harvest (D.C. Crocker-Bedford 1990, *Wildl. Soc. Bull.* 18:262–269). Physically aggressive encounters between

two species of similar size are seldom observed, and may be rare in nature, but such direct sources of mortality or competition undoubtedly occur in the wild.

We thank E.C. Meslow, D.K. Rosenberg, and B. Woodbridge for reviewing this note.—**Dan Crannell, Bureau of Land Management, P.O. Box 10226, Eugene, OR 97440-2226; Stephen DeStefano, Oregon Cooperative Wildlife Research Unit, Nash 104, Oregon State University, Corvallis, OR 97331-3803.**

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THESIS ABSTRACT

HABITAT USE, MOVEMENTS, MIGRATION PATTERNS, AND SURVIVAL RATES OF SUBADULT BALD EAGLES IN NORTHERN FLORIDA

The state of Florida supports over half of the breeding population of Bald Eagles (*Haliaeetus leucocephalus leucocephalus*) in the southeastern United States; this represents a significant resource for the Southeast and for Florida. Currently, primary management emphasis and protection is focused on bald eagle nest sites. No habitat protection or management activities are aimed at foraging, roosting or loafing areas for subadult eagles. In fact, habitats and habitat characteristics important to subadults have not been quantified. In this study, I examined various aspects of eagle biology that might be pertinent to survival or management of the Florida subadult eagle population. Specifically, using radiotelemetry, I examined post-fledging habitat needs, factors affecting timing of migration, local movements, habitat use, and survival in north-central Florida from spring 1987 through spring 1991.

Fledgling eagles (birds prior to their initial migration) remained dependent on adults and remained within 4 km of the natal nest until they initiated migration (approximately 7 wk post-fledging). It was determined that habitat protection within the 229 m primary protection zone used in Florida was not sufficient to meet the habitat needs of fledgling eagles and that the protection period should extend until fledglings initiate migration in the summer. Timing of migration for fledgling and 1- to 4-year-old eagles appeared to be correlated more with prey availability than with temperature, although both factors appear to affect migration.

Locations of radio-tagged eagles outside of Florida ranged from South Carolina to Prince Edward Island, Canada. Data suggest that eagles are philopatric to summering areas, which emphasizes the need for protection of significant summering areas. Known and assumed mortality occurred primarily during migration in northern states. The 1½ year age class had the lowest survival. Survival was significantly lower for eagles fledged from 1-chick nests and for the younger chick in 2-chick nests. The minimum survival rate through 4½ years of age was 50% and did not vary by sex.

After subadults returned to the north-central Florida study area in the fall, individuals continued to use the same general areas each year. Temporally and locally abundant food sources resulted in temporary small concentrations of eagles. Certain portions of the study area were used consistently each year by large numbers of eagles. Subadult eagles were not distributed randomly over the study area. Logistic regression analyses revealed that eagles tended to be located close to large water bodies, and eagle nests were frequently in cypress and marsh habitats, and avoided main roads and developed areas. Immature eagles (1-year olds) tended to be located closer to eagle nests than 2- to 4-year-olds. Thus, management for subadult populations must include these heavily used concentration areas that supply the habitat features preferred by subadults. Survival of subadults may be affected if a highly used area becomes unsuitable.—**Petra Bohall Wood. 1992. Ph.D. thesis, Department of Wildlife and Range Sciences, University of Florida, Gainesville, FL 32611. Present address: West Virginia Coop. Fish and Wildlife Research Unit, West Virginia University, P.O. Box 6125, Morgantown, WV 26506-6125.**