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GYRFALCON PREDATION ON MALLARDS AND THE INTERACTION OF BALD EAGLES WINTERING IN CENTRAL ALBERTA

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The food habits of Gyrfalcons (*Falco rusticolus*) have been studied mainly by the collection and identification of prey remains (Palmer 1988, Poole and Boag 1988, Cade et al. 1998). Field observations of Gyrfalcons capturing prey are few and anecdotal (White and Weeden 1966, Bengtson 1971, Dobler 1989, Garber et al. 1993). The largest data sets of hunts and kills by wintering Gyrfalcons originate from urban study areas. Jenning (1972) and Dekker and Lange (2001), respectively, detailed the capture of 17 Mallards (*Anas platyrhynchos*) and 15 Rock Doves (*Columba livia*) in Stockholm and Edmonton. We present a comparable sample of Mallard kills by Gyrfalcons wintering in a rural region of Alberta. Bald Eagles (*Haliaeetus leucocephalus*) usually forage over water, and their kleptoparasitic habits are well known, particularly at the expense of the Peregrine Falcon (*Falco peregrinus*) (Anderson and DeBruyn 1979, Dekker 1987, 1995). In this paper, additionally, we describe observations of eagles hunting ducks over land and pirating prey from Gyrfalcons.

STUDY AREA AND METHODS

The latitude of the study area is 53°N and the climate is cold continental. The North Saskatchewan River, that flows through Edmonton, Alberta, is frozen from November to May except for a stretch of roughly 10 km downstream from the city. The open water attracts 1000–2000 Mallards that stay all winter. In fall, they make daily feeding flights of 2–10 km over gently undulating agricultural plains. After the ground is covered with >10 cm of snow, the ducks abandon the stubble fields and congregate at farms where cattle are being fed with grains or silage. Gyrfalcons are migrants and winter residents in central Alberta. Earliest and latest records are 25 September and 14 April, although the majority of sightings date from November to mid March (Dekker 1983, Court 1999). Bald Eagles winter in south-central Alberta where lakes or rivers remain ice free (Godfrey 1986).

To study the interaction between ducks and Gyrfalcons we used three principal methods. (1) Sitting in a parked vehicle, we monitored feeding ducks for sudden alarm behavior caused by the arrival of a predator. (2) From a vantage point overlooking the river valley, we frequently scanned the skies through binoculars, waiting for the Mallards to leave the river. (3) Gyrfalcons, either flying or perched, were observed in anticipation that they may initiate the pursuit of prey. Over three winters, 1999–2002, we visited the study area on 95 days (3–5 hr/d) and sighted one or more Gyrfalcons on 56 days.

A “hunt” was defined as an attempt by a Gyrfalcon to capture a duck of which the outcome was known (Dekker 1980). The term “kill” indicates that we saw the Gyrfalcon pursue and seize a duck, or that we located the falcon on its prey shortly after the hunt. A “probable kill” indicates that a Gyrfalcon, in close pursuit of a duck, chased it down to the ground and disappeared from view behind trees or sloping terrain in the distance. Additional clues were provided by Bald Eagles that flew to and descended in the same locality of the suspected Gyrfalcon kill.

RESULTS AND DISCUSSION

Gyrfalcons. During each winter, 1999–2002, we sighted four to seven different Gyrfalcons, ranging from very dark immatures to partly white adults (Court 1999, Dekker and Lange 2001). Some recognizable individuals stayed in the study area for a period of several days or weeks; others were sighted only once.

Gyrfalcons are known to hunt low over the ground and seize avian prey just after it flushes. The target prey may be first spotted from an elevated perch (White and Weeden 1966, Bengtson 1971, Palmer 1988, Clum and Cade 1994). A similar strategy of surprise was employed by the Gyrfalcons in this study. Their sudden arrival, flying low over the ground, caused the ducks to fly up. After selecting an individual duck, the Gyrfalcon chased it on an erratic, twisting course. If the hunt failed, the falcon perched on a post or tree and then launched another hunt. We saw a total of 42 low surprise hunts of which five resulted in a kill (Table 1). In four additional instances, we just missed seeing the attack and discovered the falcon on a fresh kill. Six successful low-surprise hunts

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Table 1. Hunting methods of Gyrfalcons preying on Mallards in Alberta, Canada.

HUNTING METHOD	HUNTS	KILLS	PROB- ABLE KILLS
Stealth attack on feeding ducks	42	5	—
High, open attack on flying ducks	25	10	3
Unknown approach	3	1	1
Totals	70	16	4

were reported to us by the associate observers listed in the Acknowledgments.

A very different strategy was employed by Gyrfalcons that flew out to meet airborne ducks at altitudes of 50–300 m and still >2 km away. Leaving a perch, the Gyrfalcon began a long climb, gradually increasing speed. At the falcon's approach, the ducks turned away and split up. In the terminal stage of the hunt, the Gyrfalcon selected a single duck that appeared to realize its vulnerability and descended in an attempt to reach cover. Twenty-five of these open hunts resulted in 10 confirmed and three probable kills (Table 1).

Most pursuits ended in a close tail-chase. In the two exceptions, the Gyrfalcon flew 20–100 m higher than the duck and stooped at it nearly vertically. In both cases, the duck dodged the stoop and landed, followed by the falcon. One was a confirmed kill, the other a probable kill. We saw no evidence that the falcons struck and knocked down their prey. In all observed captures, the falcon seized its prey in mid-air or on the ground.

The majority (77%) of ducks that were closely pursued escaped into low vegetation protruding from the snow, or into bushes or roadside trees. In two instances, the falcon landed on the road shoulder and, in a futile attempt to flush the duck, walked into the snow-drifted ditch under the trees. Eight ducks landed on the weedy shoulders or medians (10–15 m wide) of divided highways, and two of these ducks were seized by the falcon while heavy traffic passed by. In other cases, the falcon repeatedly swooped at the duck but failed to grab it. One drake, observed at close range, defended itself by lunging with gaping bill at the swooping raptor. After several failed passes, the Gyrfalcon perched in the vicinity. When the drake took off, it was immediately pursued until it again took cover. E. Pletz saw a Gyrfalcon pursue a duck until it went down on an open, snow-covered field. The falcon swooped at the duck, but did not seize it and landed 1–2 m away. Such stand-offs between Gyrfalcons and Mallards have been described by others (Jenning 1972). Gyrfalcons can be similarly reluctant to grab tethered decoy pigeons that refuse to flush (Dekker and Lange 2001, E. Pletz pers. comm.).

A true assessment of the hunting success rate of the Gyrfalcons in this study is difficult. Based on confirmed

kills, the success rate was 22.9%. The addition of probable kills brings the rate up to 28.6%. This is more than twice as high as the 10.6% success rate in 141 hunts by Gyrfalcons preying on Rock Doves (Dekker and Lange 2001). Mallards are less maneuverable than pigeons and usually escape from falcons by plunging into water. In this study, the Gyrfalcons outflow and forced down any Mallard they pursued with persistence. Although the long-range, high altitude interception of flocks of ducks by Gyrfalcons has not been described in the literature, similar direct-climbing attacks on other avian prey have been reported and the Gyrfalcon's capacity in this regard is well-known to falconers (Cade 1982). An identical mode of hunting, launched from a perch and aimed at the interception of high-flying ducks, was employed by male peregrines (*F. p. pealei*) wintering in British Columbia (Dekker 1995, 1999).

Although some Gyrfalcons observed in the study area were seen hunting Rock Doves or found feeding on Gray Partridges (*Perdix perdix*), their primary prey appeared to be the (locally-wintering) Mallards. Probably in response to predation risk, the ducks delayed their feeding flights. During fall, the flocks routinely traveled to the stubble fields near noon. However, after they had been attacked often, they might not leave the river until close to sundown. For instance, on 18 February 2002 the first flock (20–25 ducks) left the river at 1500 H. As soon as they detected an approaching Gyrfalcon, the flock turned back and escaped into water. The falcon remained in the area, often switching perches. Two hours later, the ducks suddenly left the river again in multiple flocks totalling hundreds of birds. At the approach of the Gyrfalcon, only the flock under direct attack returned to the river, pursued by the falcon, while other flocks continued on to a feeding area about 8 km away.

Of nine Mallard kills of which the sex was known, seven were drakes and two hens. In two instances, a Gyrfalcon ate only part of a drake and returned to the remains the following morning. Two other falcons consumed all flesh from the carcass in 35–45 min, leaving only the head, the pelvis, and the lower portion of the legs. As reported by a farmer who shot a number of raiding Mallards, by late winter these ducks were emaciated.

Bald Eagles. During the freeze-up period, the last of the Bald Eagles migrating through central Alberta actively hunt ducks in water holes of lakes (Dekker 1984). However, the food habits of the Bald Eagles wintering in the study area have not been studied in detail. Each year, we counted three to six eagles perched on trees along the open stretch of the river. One eagle was seen to catch a Mallard in the river. In late fall, the eagles also perched on trees overlooking the stubble fields where Mallards congregated. Some eagles actively hunted the ducks in fast, low-surprise attacks. However, all of 12 chases of ducks that flushed just ahead of eagles were unsuccessful. One immature eagle pounced on a drake that had turned back and landed again 20–25 m away. Associate

observers reported three additional captures of Mallards of which one was taken in flight (F. Whiley).

After the fields were covered in snow and the ducks commuted daily to cattle feedlots, the eagles left the river and perched on trees in view of the feeding ducks. We suspect that they were also watching for opportunities to steal prey from other raptors. We never saw Gyrfalcons attack ducks on farms, where eagles sat waiting on prominent perches. However, if falcons hunted in the distance, it was common to see eagles fly toward that direction, apparently searching the fields. We saw four eagles rob Gyrfalcons, which released their ducks at once. Two additional cases of kleptoparasitism were reported by associates (E. Pletz, F. Whiley). The Gyrfalcons did not defend their prey against the eagles. Other raptors seen to hunt the ducks were Northern Goshawks (*Accipiter gentilis*) (six low attacks), Prairie Falcon (*Falco mexicanus*) (one flush and long chase), and Snowy Owls (*Nyctea scandiaca*) (two low attacks). After watching a Gyrfalcon feed on its kill, one Snowy Owl scavenged the remains.

Note added in proof: During February and March of 2003, we saw 35 hunts (24 stealth and 11 open attacks), resulting in three probable and four confirmed kills. Additionally, the falcons seized two ducks, on or near the ground, which were released again moments later. Three confirmed kills were pirated by Bald Eagles. All of five known falcon kills were hen Mallards.

RESUMEN.—Patos de la especie *Anas platyrhynchos* que migraron a un estrecho no congelado río abajo de la ciudad de Edmonton, Alberta, intercambiaron diariamente los campos de siembra y las áreas de forraje de ganado, donde fueron atacados por halcones gerifaltes (*Falco rusticolus*). Setenta intentos de caza dieron lugar a 16 muertes confirmadas y cuatro probables. La mayoría (77%) de los patos perseguidos por los halcones escaparon a la captura, cubriéndose en el suelo, en arbustos, o a lo largo de los bordes de la carretera. Las presas fueron atrapadas en tierra o en aire. Los gerifaltes utilizaron dos métodos principales de caza: (1) ataques bajos por sorpresa contra patos que se alimentaban; (2) intercepciones de largo alcance de patos en vuelo alto. Las tasas de éxito para estos métodos de caza fueron 12% y 40%, respectivamente. Las águilas calvas (*Haliaeetus leucocephalus*) persiguieron a los patos sobre campos de cultivo, teniendo un éxito relativo. Adicionalmente, se apoderaron de patos que habían sido capturados por los halcones.

[Traducción de César Márquez]

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