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STEPPE EAGLE (*AQUILA NIPALENSIS*) FORAGING BEHAVIOR IN MONGOLIA: A COMBINED USE OF DIVERSIONARY AND COVERT AMBUSH TACTICS?

KEY WORDS: *Steppe Eagle*; Aquila nipalensis; *foraging behavior.*

The generalist diet of the migratory Steppe Eagle (*Aquila nipalensis*) is well known in both its winter and summer range, and includes small- to medium-sized mammals, insects, some birds and reptiles, fish, and carrion (Ferguson-Lees and Christie 2001, Raptors of the world. Houghton Mifflin Company, New York, NY U.S.A.). Documented foraging strategies include soaring flight with short stoops (Watson 1997, The Golden Eagle. T. and A.D. Poyser, London, U.K.), kleptoparasitism (Naoroji 2006, Birds of prey of the Indian subcontinent. Christopher Helm, London, U.K.) and ground-ambushes at burrow entrances (Watson 1997; Ferguson-Lees and Christie 2001; Naoroji 2006). Although these foraging strategies are widely reported, most such reports simply comprise unreferenced and generalized statements about the species' opportunistic tendencies; there are few published accounts of detailed hunting behavior, and particularly its ambushing strategy. This lack of detail contrasts sharply with that on the foraging behavior of its congeners, such as the Golden Eagle (*A. chrysaetos*; Collopy 1983, *Auk* 100:747–749; Watson 1997) and the Spanish Imperial Eagle (*A. adalberti*; Ferrer 2001, The Spanish Imperial Eagle. Lynx Edicions, Barcelona, Spain). A notable exception is an account of Steppe Eagle foraging behavior in Ethiopia and East Africa, in which an eagle ambushed subterranean blind or semi-blind mole rats (*Spalax* genus) by waiting to observe heaving soil before pouncing and burying its talons just below the surface of the earth (Brown 1976, Eagles of the world. Purnell, Cape Town, South Africa). Here, we present a detailed description of observed Steppe Eagle foraging behavior in Mongolia that, while anecdotal, may suggest the use of a sophisticated, planned ambush strategy.

On 13 August 2007 at 1030 H local time, we were observing a mixed-species flock of avian scavengers at an ungulate carcass in the Khövsgöl province (49°09′N, 101°48′E), north-central Mongolia. The area is characterized by mountain forest steppe, with extensive areas of short grass (ca. 10 cm height) and undulating hills. Our hilltop vantage point (ca. 10 m above the predominant elevation) allowed unobstructed views of the carcass, ca. 400 m away. A steady stream of avian scavengers arriving at the carcass included Cinereous Vulture (*Aegypius monachus*), Bearded Vulture (*Gypaetus barbatus*), Black Kite (*Milvus migrans*), Common Raven (*Corvus corax*), and Steppe Eagle. At 1044 H, we observed an adult Steppe Eagle flying low (<5 m) over the ground below us, heading toward the carcass. It landed on the ground, approximately midway between our observation point and the scavengers (ca. 200 m from the carcass). It walked for a few paces before lying down on the steppe in an apparent 'incubating' posture behind a small tuft of grass (ca. 34 cm height), in direct line-of-sight of the carcass. Using a telescope (Swarovski AT80 20 × 60) and binoculars (Leica 8 × 32; Bausch and Lomb 8 × 42) we had an unobstructed lateral view of the eagle. At 1046 H, we observed a long-tailed ground squirrel (*Spermophilus undulatus*) in close proximity (later measured as 2.1 m away) to the 'incubating' eagle. We do not know if the ground squirrel was present when the eagle arrived, although we suspect it emerged after the

eagle had positioned itself. The ground squirrel was standing next to an isolated burrow entrance (inside another clump of grass, ca. 39 cm height), fully erect on hind legs in a highly vigilant antipredator posture, facing the carcass and with its back to the eagle. The eagle remained motionless, facing the ground squirrel, but with its head held low and its body flat on the ground behind the tuft of grass. They remained in these positions for 16 min, until, at 1102 H, the ground squirrel suddenly dashed away from the eagle and bolted down a burrow entrance in the next-nearest cluster of burrows, ca. 6 m away. As soon as the ground squirrel ran, the eagle immediately raised its head but kept its body flat on the ground. The eagle remained in this position for the following 20 min, constantly looking around but retaining its covert positioning, low behind the clump of grass. During these 20 min, a foraging flock of >400 Daurian Jackdaw (*Corvus dauuricus*) moved across the site, using short, low flights and walking. The flock passed close to the eagle (<3 m) but the eagle made no apparent response. At 1122 H, a second ground squirrel appeared, to the east of the eagle ca. 10 m away. The ground squirrel was running towards the eagle, but its attention appeared to be focused on the scavengers still present at the carcass. When the ground squirrel reached the clump of grass 2.1 m from the eagle, the eagle suddenly pounced towards it. The ground squirrel ran around the grass clump and the eagle ran after it with its wings outstretched and flapping. The ground-chase continued for ca. 45 sec before the ground squirrel was able to escape down the burrow. The eagle stood at the burrow entrance for approximately 1 min before flying away out of view.

We suggest that our observation may demonstrate a sophisticated foraging strategy by this Steppe Eagle. First, it appears that the eagle used the scavenger activity at the nearby carcass as a diversionary tactic, knowing that its potential prey (the ground squirrel) would be distracted by the presence of potential predators at the carcass. This supposition is supported by the alert posture of the ground squirrel as it watched the scavengers at the carcass and by the positioning of the eagle behind the burrow and in direct line-of-sight of the carcass. Secondly, it appears the eagle used covert tactics to ambush the prey. This is supported by the positioning of the eagle behind the grass clump and its motionless, 'incubating' posture, lying flat on the ground and out of view. Although it is possible that the eagle was merely waiting for an opportunity to feed at the carcass and its position near the ground squirrel burrow was accidental, we do not believe that to be the case because the eagle was so far from the carcass and probably was unable to see the carcass from its low position behind the clump of grass. It is not known whether the eagle deliberately selected an isolated burrow (thereby minimizing the opportunities for the ground squirrel to escape) or whether the isolation was coincidental, or whether the eagle selected this burrow because it had already seen the ground squirrel. Once the eagle's attack had failed, we surmise it left the site because its covert position had been exposed.

We suggest this is a potentially novel eagle foraging technique, previously unrecorded in the literature. However, as our hypothesis is limited to one observation, we would encourage further exploration and documentary evidence to improve our understanding of the range of eagle foraging behaviors.

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