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PIRACY AS AN IMPORTANT FORAGING METHOD OF APLOMADO FALCONS IN SOUTHERN TEXAS AND NORTHERN MEXICO

JESSI L. BROWN,^{1,2} ANGEL B. MONTOYA,¹ ERIN J. GOTT,¹ AND
MARTA CURTI¹

ABSTRACT.—Piracy (kleptoparasitism) accounted for 14% of observed foraging attempts on vertebrates ($n = 125$) by Aplomado Falcons (*Falco femoralis*) in southern Texas and northern Mexico, and was over twice as successful as hunting (82% versus 37%). Aplomado Falcons pirated prey cooperatively as well as individually. Eight bird species were targeted for piracy, six of which were as large or larger than the falcons. The majority of prey items stolen were mammals. Received 10 December 2002, accepted 12 March 2003.

Piracy (kleptoparasitism) has been documented for many birds, particularly those living in open landscapes (Paulson 1985) and has been reported for 12 of 39 species of falcons (Cade 1982, Brockmann and Barnard 1979, Clark et al. 1990, Clark and Schmitt 1993). Hector (1985) observed Aplomado Falcons (*Falco femoralis*) taking small mammals from American Kestrels (*F. sparverius*) and White-tailed Kites (*Elanus leucurus*), and Clark et al. (1990) described piracy by this species on a Little Blue Heron (*Egretta caerulea*). The objective of this study was to determine if piracy is an important foraging mode for both individuals and pairs of Aplomado Falcons in southern Texas and northern Mexico.

We monitored two populations of Aplo-

mado Falcons in southern Texas: one near the Laguna Atascosa National Wildlife Refuge in Cameron County (26° 05' N, 97° 21' W) and the other at Matagorda Island National Wildlife Refuge (28° 14' N, 96° 37' W). We also observed Aplomado Falcons in the Mexican state of Tamaulipas near the city of Matamoros (25° 49' N, 97° 26' W). Most or all individuals were derived from captive stock as part of a long term release program of The Peregrine Fund (Mutch et al. 2000). We observed the activities of breeding pairs during February to June, 1999 to 2002. These pairs occurred in open coastal plains, characterized by low herbaceous cover and few, widely scattered trees and shrubs (Perez et al. 1996). Here we report only piracy and hunting attempts upon vertebrates with known outcomes.

Of 125 foraging forays for vertebrates, 17 (14%) were attempts at piracy, 14 (82%) of which were successful. The hunting success

¹ The Peregrine Fund, 5668 West Flying Hawk Ln., Boise, ID 83709, USA.

² Corresponding author;
e-mail: jbrown@peregrinefund.org

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FRONTISPIECE. Aplomado Falcon (*Falco femoralis*) in southern Texas. Watercolor on paper, by Barry Kent MacKay.

rate was 38% (41 of 108 attempts). This is similar to 37% ($n = 100$) reported by Hector (1986) for eastern Mexico. Piracy thus was more than twice as successful as hunting.

Although mammals have been included in qualitative accounts of the Aplomado Falcon's diet (Bendire 1892, Cherrie 1916, Bent 1938, Wetmore 1965), recent detailed studies of captured prey and prey remains show no evidence that mammals normally are an important food (only 1 of 341 vertebrate prey items; Hector 1985, Jiménez 1993). Only 2 of the 108 hunts we observed were for mammals, even though we saw Aplomado Falcons consuming mammalian prey of unknown acquisition. However, the majority of identified pirated items were mammals (9 of 13 items of known class; see Hector 1985), suggesting that piracy may account for this incongruity.

Eight (73%) of 11 observed piracy attempts by single falcons were successful, whereas all six attempts by pairs succeeded. These observations parallel the findings of Hector (1986) that pairs were more successful at hunting birds than individuals hunting alone. Our observations imply that piracy by pairs is a cooperative act, involving mutual monitoring of movements and food sharing (Hector 1981, 1986). Four successful piracies by single falcons were in the presence of a nearby mate, whose visibility may have increased the degree of intimidation of the target.

Aplomado Falcons targeted eight species for piracy: the American Kestrel ($n = 1$), Merlin (*F. columbarius*; $n = 1$), Peregrine Falcon (*F. peregrinus*; $n = 1$), White-tailed Kite ($n = 6$), Northern Harrier (*Circus cyaneus*; $n = 3$), Chihuahuan Raven (*Corvus cryptoleucus*; $n = 2$), a gull (most likely Laughing Gull, *Larus atricilla*; $n = 1$), and other Aplomado Falcons ($n = 2$). We commonly observed target species in Aplomado Falcon breeding habitat, and White-tailed Kites, the most frequent target for piracy, often nested within sight of Aplomado Falcon nests. Only two of these species, American Kestrels and Merlins, are smaller than Aplomado Falcons (approximately 250–400 g), whereas the others are similar in size or larger (Dunning 1984, Hector 1986). Aplomado Falcons relied on both their impressive flying skills and cooperative attacks to compensate for their lack of size.

Piracy by pairs typically was in the form of

a coordinated attack, with the falcons alternately stooping at the target bird, the latter visibly disoriented, vocalizing, and often dropping its prey. In two piracies on Chihuahuan Ravens, the ravens dropped their prey at the first sign of attack, suggesting routine harassment and habituation to surrender. JLB watched a pair of Aplomado Falcons approach a flying White-tailed Kite 5 m above the ground and perform a series of alternating stoops and horizontal attacks. The falcon pair effectively stopped the kite's forward movement, and within 5 s the kite flipped upside down in response to a stoop from the male falcon. The male seized the rodent prey still clutched in the kite's talons, then immediately dropped the prey, which the female falcon caught in mid-air.

Pairs of Aplomado Falcons defending a breeding territory also dominated larger species. Aplomado Falcons attacked and successfully expelled much larger raptors, including Turkey Vultures (*Cathartes aura*), Harris' Hawks (*Parabuteo unicinctus*), White-tailed Hawks (*Buteo albicaudatus*), Red-tailed Hawks (*B. jamaicensis*), Crested Caracaras (*Caracara plancus*), Peregrine Falcons, and Great Horned Owls (*Bubo virginianus*; The Peregrine Fund unpubl. data). In contrast, nonbreeding Aplomado Falcons tended to tolerate heterospecific intruders. Temeles (1990) suggested that such behavior by Northern Harriers increased opportunity for kleptoparasitism by not excluding potential future targets. Our observations indicate that Aplomado Falcons, particularly when paired, may improve their foraging efficiency and broaden their diet by pirating.

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