

## A PRAIRIE FALCON FLEDGLING INTRUDES AT A PEREGRINE FALCON EYRIE AND PIRATES PREY

by

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An unusual incident at a Peregrine Falcon (*Falco peregrinus*) eyrie in southeastern Arizona provides insight into the ability of adult falcons to recognize their own young and may have important implications in falcon reintroduction efforts. In 1980 Peregrine and Prairie (*Falco mexicanus*) Falcons nesting only ca 200 m apart engaged in a long series of agonistic encounters culminating in an episode in which a recently fledged Prairie Falcon entered the peregrine eyrie and received 3 prey items delivered by the adult peregrines.

Some remarkable interspecific behavioral sequences have been observed. Ratcliffe (1962, 1963) reported 2 instances of Peregrine Falcons apparently commandeering the eggs of European Kestrels (*Falco tinnunculus*) after the peregrines had apparently lost their own eggs. The peregrines successfully fledged the young kestrels in at least one of these attempts with no agonistic behavior noted between the adults and young. Cupper and Cupper (1981) reported a remarkable instance in which an adult Australian Kestrel (*Falco cenchroides*) responded to the energetic food begging of nestling Black Falcons (*Falco subniger*) only ca 50 m from its own nest by entering the Black Falcon eyrie and feeding the chicks. At the opposite extreme, C. M. White and J. H. Enderson (pers. comm.) found where a Peregrine Falcon killed a nesting adult female Rough-legged Hawk (*Buteo lagopus*) and subsequently laid their own eggs in the nest with the hawk eggs. In the account that follows both adult peregrines exhibited agonistic behavior toward the intruding congener.

Observations at the eyrie, where Groat was an assigned warden, began ca 2 weeks before egg laying and continued until 2 weeks after 2 young peregrines fledged. Over 650 observation hours were logged. Nearly all observations were made from a knoll ca 800 m from (and slightly below) the eyrie. Optical aids included a 20–45 x spotting scope and 10 x 50 binoculars.

Agonistic encounters involving the Peregrine and Prairie Falcons occurred in 54 bouts on 26 observation days. Near collisions were common and on 21 June a Prairie Falcon was struck at least twice by the adult female peregrine. Four probable strikes were also observed in that bout (2 by the male and 2 by the female peregrine). On 13 July, again in team attack, the adult female peregrine struck a Prairie Falcon. In nearly all of the encounters the peregrines were the aggressors and the peregrines dominated the combat.

Walton (1978) described an extreme example in which an adult male peregrine struck and apparently killed a Prairie Falcon after an extended aerial battle involving both peregrines. Cade (1960) observed a female peregrine grapple with a female Gyrfalcon (*Falco rusticolus*): both birds survived. Although none of Groat's observations resulted in death, in 1978 we found two dead Prairie Falcons (one a recent fledgling) below this same peregrine breeding cliff.

In the description that follows, the responses of the adult peregrines to the intruding juvenile Prairie Falcon must be judged in the light of this history of frequent interspecific agonistic encounters. Between 23 and 27 June the young Prairie Falcons fledged. On 28 June one young Prairie Falcon (hereafter prairie) followed the prey laden adult female Peregrine Falcon into the eyrie containing 4 week old young. An abbreviated log of this episode follows:

28 June 1045 The adult female peregrine with prey, arrived from the north wailing. As she landed at the eyrie mouth a juvenile prairie slipped past her into the eyrie. The adult female quickly left the ledge and stooped back and forth at the eyrie entrance loudly cackling. The adult female finally landed at the eyrie entrance and jabbed her foot into the narrow pothole (at the prey or at the prairie?). The adult female moved into the eyrie, but continually called. After about 3 min. the adult female left the eyrie and again stooped about the eyrie entrance cackling. After ca 5 min. the adult female perched ca 15 m from the eyrie but continued cackling.

- 1110 The juvenile prairie appeared at the eyrie entrance but at intervals walked deeper into the eyrie and fed. The large downy peregrine nestlings appeared unconcerned with the prairie.
- 1135 The adult female peregrine cackled less often now and the prairie, perched at the eyrie mouth, occasionally gave a food solicitation call.
- 1200 The adult female soared over the cliff and occasionally stooped at the prairie perched at the eyrie entrance. The prairie sometimes responded by scurrying back into the eyrie and calling or at other times by ducking as the peregrine passed.
- 1215 The adult female gave up the attack, soared off to the east and was lost to view.
- 1230 The juvenile prairie perched at the eyrie entrance.
- 1231 The adult male peregrine landed with prey. The juvenile prairie took the prey from the male and scurried deep into the eyrie. The adult male hesitated momentarily at the eyrie entrance, then flew out and stooped repeatedly at the eyrie mouth, cackling all the while. He attempted several landings at the eyrie but each time turned away. After protesting for about 5 min. the adult male left. The prairie fed at the eyrie entrance.
- 1240 One nestling peregrine fed at the eyrie entrance.
- 1247 Both nestling peregrines and the juvenile prairie with full crop perched side by side at the eyrie mouth.
- 1255 One nestling peregrine walked to the ledge brink and bobbed its head intently peering out. Soon the prairie joined it. The peregrine squatted by the prairie.
- 1330 The prairie at intervals walked to the eyrie entrance.
- 1400 The adult female peregrine arrived with prey. The prairie, perched at the eyrie entrance, squatted down and spread its wings as the adult arrived. The prairie snatched the prey and scurried into the eyrie. As at first, the female peregrine stooped and cackled at the eyrie entrance. She landed once at the entrance but quickly flew. After more cackling and hovering she landed ca 50 m from the eyrie.
- 1405 The adult female again stooped at the eyrie entrance barely touching down several times, then flew over to the prairie eyrie and returned. The adult female cackled incessantly while the juvenile prairie at intervals gave food solicitation calls.
- 1414 The adult female landed 15 m from the eyrie.
- 1415 The adult female stooped and cackled at the eyrie mouth ca 5 min., then perched again.
- 1430 The adult female flew near the eyrie entrance and perched ca 1 min., cackling at the prairie.
- 1431 The adult female returned to her more distant perch.
- 1500 The adult female left.
- 1533 The adult male perched ca 15 m from the eyrie and remained until the observation period ended at 1600.
- 29 June 0700 When the observation period began, the prairie was gone from the eyrie.
- 0745 The adult male arrived with prey and fed the young. The adult female perched nearby cackling.
- 0751 The adult male left the eyrie and, enroute to a perch ca 30 m away, nearly collided with a prairie. The prairie landed near the adult male. After ca 2 min. the adult male left and a second prairie appeared at this perch.
- 0753 Both adult peregrines repeatedly stooped at the first prairie nearly dislodging it.

In the foregoing incidents both adult peregrines were able to distinguish between the intruding prairie and their own young. Both adults responded aggressively while the young peregrines were apparently undisturbed by the intruder. The observations suggest, as has been learned from captive cross-fostering experiments (T. J. Cade and B. J. Walton pers. comm.), that in reintroduction attempts it is advisable to introduce downy young of the same age as natural siblings. A further suggestion from these observations is that productivity estimates based on fledgling counts in situations where eyries are in close proximity may sometimes be biased due to fledgling movements between family groups. Extreme values in the number of young fledged per eyrie, to be fully credible, should be corroborated by prefledging observations.

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**OBSERVATIONS ON THE USE OF RANGLE BY THE PEREGRINE FALCON (*FALCO PEREGRINUS TUNDRIUS*) WINTERING IN SOUTHERN BRASIL**

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The use of rangle, or gastroliths was investigated and summarized by Fox (1976). Some questions arose from his observations and comments, namely: (1) How frequently is rangle used by wild falcons, and (2) What factors stimulate the falcons to use rangle?

Recently I have been involved in a study of the Artic Peregrine Falcon, *Falco peregrinus tundrius* (Albuquerque 1978 and unpublished M.S.) wintering in Brasil. In the austral summer season, 1979, I observed one adult female on several occasions picking up gross grit from a sand storage on top of an old building under construction in downtown Porto Alegre. It was also recorded regurgitating this gross grit.

*Field Observations*

1. Porto Alegre (30°00' S, 51°10' W) 24 January 1979 at 1555. The adult female perched on top of an old building under construction, took a bath and picked up gross grit from a sand storage. *Remarks:* She consumed about 238 g of food over the last two days (119 g/day). I found carcasses in her favorite plucking place of the following prey species: 1 adult *Columba livia*, 3 rails (2 *Laterallus melanophaius* and 1 *Porzana albicollis*).

2. Porto Alegre, 14 February 1979 at 0545. She performed the same behavior as mentioned above. *Remark:* She ate 1 pigeon nestling weighing 120 g and 1 passerine of about 30 g over the 2 previous days and 2 passerines on this last day. One can tentatively estimate a food consumption of 210 g (105 g/day). In this instance, there is a decrease in food ingested from 105 g/day to 60 g/day on the last day.

At 0546 she regurgitated a significant portion of the gross grit swallowed minutes before. The grit was coated with mucous and her defecation was discolored like those described by Fox (op. cit.).

3. Porto Alegre, 16 February 1979 at 0634. She performed the same behavior mentioned above, except that regurgitation of grit was not noted. *Remarks:* Previously she was seen eating on 1 pigeon fledgling 2 days before swallowing the rangle, and was not seen eating anything on the previous day.

4. Porto Alegre, 3 March 1979 at 0613. She perched on a ledge of a waterfront building watching a rail flying close to the water (Albuquerque, unpublished M.S.). Before trying to intercept the rail, she regurgitated large amounts of gross grit. It was possible to see the sand and grit being cast up by the falcon. *Remarks:* She ate 1 fledgling the previous day.

5. Palmares (31°10'07" S, 51°20'08" W) 16 January 1980 at 1630. An adult female flew from a dirt road to a wet field as we approached in a vehicle. After a few minutes, she flew across the road to a termite mound and there cast up an object. Immediately thereafter, she began to hunt in a very direct manner, flying fast and coursing low over the ground. We later examined the termite mound to gather possible prey remains, but instead we found 2 large stones (12 × 10 mm and 20 × 20 mm) like those on the dirt road. They were moist and had an acrid smell. Her feces on the mound were dark and of oily appearance similar to those of an unfed captive falcon (C. M. White, pers. comm.).

*Discussion*

The theory on functions of gastroliths in seals and sea lions (Emery 1941), that on trituration, to crush worms and alleviate ulcers could also be correct for birds. The triturations function seems unlikely in raptors (Fox 1976), but rangle could stimulate and promote gastric secretions. Both mechanical and chemical stimulation act on gastrin producing cells and gastrin stimulates the secretion of hydrochloric acid (Jorgsen, 1977).

Falcons observed in Porto Alegre and Palmares performed hunting behavior sequences in association with the use of rangle. In both places they had fasted or at least gone without recent food when recorded using rangle, either in the morning or in the evening. In terms of an energy budget, it is advantageous to the predator to use one behavior that contributes to the maximization of its digestive efficiency.