tinued to call and dive, although not as closely. After about 5 min, T.C. approached the spring and the coyote fled with the male harrier in close pursuit, diving with both feet swung forward attempting to grab the coyote. A single, pale-blue, harrier egg was found in the nest at the spot where the coyote had appeared to be eating. Both harriers circled and called over the human intruder but neither dived. A single adult male harrier was observed near the nest area on 24 April but on 2 subsequent visits no birds were seen. On 7 July the nest was visited again and only a few bits of egg shell were found; however, no harriers were present.

On 30 May at 1146 L.P. observed a male harrier escort a Golden Eagle (*Aquila chrysaetos*) from the harrier's territory. The harrier circled back toward its nest in a shallow undulating flight and began to vocalize and dive at something on the sagebrush slope above the nest site. As the male continued its vigorous dives, the object of the attack, a Coyote, appeared. A female harrier soon began circling over the area, occasionally making shallow dives at the Coyote. Shortly, a second male harrier flew into the area from a neighboring nesting territory to the east and joined the pair. The second male appeared to "sky dance" (Hamerstrom 1969) around the female at first but soon began to vocalize and dive at the Coyote also. The Coyote, followed by the defending hawks, gradually moved out of view toward the neighboring harrier territory. At 1155 a male harrier reappeared from the east and soared above the original harrier's territory.

Later that day at the same harrier territory, a male flew across the river from its nest area and dove several times at a Coyote that trotted eastward. After 1 to 2 min the harrier veered off, perched on a sagebrush briefly and then flew at an angle away from the Coyote and intercepted a second male harrier which was approaching the Coyote from the northeast. The first male briefly chased the invading hawk which attempted to dive at the Coyote. Soon, the first harrier flew back toward its territory and began to hunt. Within 5 min he captured a small prey item and delivered it to his mate at the nest across the river. When we visited the nest on 7 June, 1 egg and 2 nearly-hatched nestlings were found. Twenty-seven days later on a second visit the nest had been destroyed and only pin feathers of juveniles remained. The adjacent harrier nest to the east successfully fledged at least 3 young.

J.M. frequently saw Coyotes in the vicinity of harrier nests on the study area, and observed both male and female harriers, individually and jointly, diving at Coyotes. More often the male was the lone defender. As in the previously described observations, J.M. also observed a Coyote leap into the air after a defending adult male and at times observed several harriers cross well defined territorial boundaries to pursue a Coyote. Newton (1979) reports such communal nest defense among Marsh Harriers (*Circus aeruginosus*). In one location J.M. found a Coyote den at one end of a large marsh which contained 7 harrier nests. Five of those 7 nests failed, and 3 showed evidence of Coyote predation.

Although eye-witness accounts of predation at raptor nests are not common, our observations indicate that Coyotes do prey on Northern Harrier nests, especially in desert areas, perhaps where sparse riparian habitat attracts both animals. Furthermore, our report suggests a danger of leading this predator to harrier grounds nests by investigator scent trails (Fyfe and Olendorff 1976) as reported by Craighead and Craighead (1956) for a farm dog (*Canis familiaris*).

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NEWS AND REVIEWS

BEHAVIOR OF FLEDGLING PEREGRINES BY STEVE K. SHERROD; drawings by Karen Lynn Allaben-Confer. 1983. Fort Collins, Pioneer Impressions. xi + 202 pp., 59 figures, 23 tables. Price $10.00. Available from the Peregrine Fund, Inc., Ithaca, New York.

Peregrine Falcons are renowned for their spectacular aerial feats. How they develop this unique behavior is unfolded as 4 broods of fledglings, 2 broods from Australia and 2 from Greenland, are followed from first flight to dispersal. The book's sequ-

ence of chapters follows the development of fledgling behavior. Initial sections cover simple perch-to-perch flight behavior, followed by behavioral descriptions of soaring, stooping, pursuits of parents and siblings, pursuits of inanimate and animate objects, play, and development of the ability to kill. Later, types of food transfers from adults to offspring and various types of aggression are described. The final section covers the length of post-nestling dependency, including a discussion of stimulus for dispersal and parental care during migration.

The 1 overriding observation that leaps out to the reader is the aggressiveness of the young. Sherrod states "Aggression is a component common to the behavioral repertoire of the peregrine, and it is incorporated into many of the displays of this bird". A common phrase "don't bite the hand that feeds you" is scoffed at by fledglings. Parents are bitten, footed, bumped off their perches and chased relentlessly by juveniles seeking food — even when there is none to be had. Such aggressiveness provides the basis for the author's reinterpretation of the "luring" behavior reported by early observers of peregrine behavior. It has been thought that when adults flew by their nests with prey they were "luring" their young to fly from the nest. The author, however, provides many observations to indicate that adults are simply reluctant to land because they "fear" being rushed by thier young, bitten, footed or pushed off the ledge itself.

In addition to fledgling behavior of wild peregrines, extremely valuable behavioral comparisons were made with broods of fledglings without parents that are "hacked" from artificial nests. Most behaviors observed in wild young also recurred in hacked young but distinctions were present. For example, "Although hacked fledglings instinctively recognize other raptors, wild offspring probably learn which predators are an immediate threat in their natal territory by observing the defensive behavior of their parents".

I found this book valuable because it 1) provides a wealth of background information for future comparative behavioral studies of congeners, 2) provides a clear picture of the development of fledgling peregrine behavior (and associated adult behavior) for people who have never had the opportunity to observe nests, 3) provides descriptions of behavior that fill in gaps of knowledge for even experienced observers who are not fortunate enough to observe, uninterruptedly, fledgling behavior from first flights to dispersal and 4) focused attention on aspects of my own behavioral observations of peregrines that I did not put into context until after reading the book. For example, while I watched shorebirds at high tide on 3 November 1975 at the northern end of Humboldt Bay, California, 2 peregrines flew by and the adult male captured a small shorebird, Western Sandpiper (*Calidris mauri*) size, killed it, and then dropped it 10 m and recaught it Meanwhile the female struck a shorebird that fell into the water She made several passes at it but was unable to pick it up. When the 2 falcons rejoined in flight the male dropped his kill to the female below him but she failed to catch it. Moments later she captured a Willet (*Catoptrophorus semipalmatus*) sized shorebird but then dropped it into the bay. The male then caught another small shorebird, carried it out over the bay, accompanied by the female and heading south where they eventually disappeared. After reading Chapter 9, it occurred to me that what I may have observed was parental care during migration or, continuation of the adult pair bond after leaving the nesting cliff, although I could not be sure if the female was an adult.

Numerous format irregularities were distracting. When I first opened the book I was immediately struck by the contrast in type sizes, and then by the narrow margins. The feeling of being squeezed was further compounded by the narrow bar widths in Figures 3, 26a & b, 33a-e, and 56. Table and figure captions in the text are inconsistent with those given at the beginning of the book The drawings ranged from excellent to extremely poor. (Fig. 48 looks more like a Potoo (Nyctibius) than a Peregrine. Some figures seem irrelevant (Figs. 1, 20, 21) and 1 figure (38) appears to have been printed upside down. The eyes are virtually obscured in all Peregrine drawings. In defense of the book, however, all drawings do illustrate what is being demonstrated behaviorally.

The author seemed (understandably) reluctant to summarize much of his data because juvenile Peregrines show wide variation in the initiation of a behavior and its expression. Instead, numerous bar graphs are presented to visually depict the variation and midpoint of the data. A valuable addition would be a single timeline, summarizing when the mean onset of each behavior occurs in terms of fledgling age or time on the wing since first flight.

Despite a few shortcomings in the format, I highly recommend the work. It has immediate appeal to raptor biologists for behavioral descriptions. There is also a broader appeal because Sherrod makes numerous behavioral correlations between the offspring of Peregrines and the offspring of mammalian carnivores. — DOUGLAS A. BOYCE JR.