

RED-SHOULDERED HAWKS WHIRLING WITH TALONS LOCKED IN CONFLICT.

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Whirling with talons locked has been described for eagles of the genus *Haliaeetus* and the Upland Buzzard (*Buteo hemilasius*) by Brown and Amadon (1968) and by Springer (1979) for a pair of Red-tailed Hawks (*Buteo jamaicensis*), as being aerial courtship. Both Brown and Amadon (1968) and Beebe (1974), however, caution that the whirling could, at times, be conflict rather than display. I here present an instance, observed by my wife and me at the Hendrie Ranch, 24 km south of Lake Placid, Florida, where the grappling was part of a conflict between the male of a breeding pair of Florida Red-shouldered Hawks (*Buteo lineatus alleni*) and a conspecific intruder. As far as I am aware, this is the first case of whirling described for *B. lineatus*.

We had been following the activities of a mated pair of Red-shouldered Hawks for 6 weeks when, at 1040 on 11 February 1981, I saw 3 Red-shouldered Hawks soaring over the woodland swamp at the edge of which the pair built a nest later in the month. One of the hawks lowered its talons as it dove on a second hawk and nearly struck it. It then rose and dove again. Next I saw 2 hawks interlocked and whirling toward the ground. At this moment my wife, who had been walking along another side of the swamp, saw the hawks dropping toward a spot in open pasture only 10 m from where she stood. Using 8 x 30 binoculars she could see that each was grasping one foot of the other, as with one leg free and wings partly spread they fell relatively slowly, as though some force were pulling them apart. When 10–15 cm above the ground, one shook its talons as if trying to get loose. The two then separated and rose upward, one pursuing the other in soaring flight to the east, well beyond the usual range of the pair. The female of the pair, meanwhile, landed in a leafless tree where her mate, returning from the pursuit, rejoined her 5 min later.

We identified the sexes on the basis of prior experience. We had noted from the beginning of observation 6 weeks before that one of the pair had notably redder underparts than the other. When the pair started copulating we were able to identify this bird as the male. The female was then identifiable by paler underparts, characteristic of the south Florida race (*B. l. alleni*) of Red-shouldered Hawks. She was also identifiable, at times, by her behavior. Thus on the last 2 of the 4 copulations which we witnessed, both on 9 February, she had given short cries before, during and for some time after copulating. On 11 February she gave the same cries in series of 3–5 every 15 to 20 sec during most of the 30 min she and her mate perched in the leafless tree. It seemed as though she were inviting him to copulate but he appeared to be uninterested.

Literature Cited

Beebe, F. L. 1974. Field studies of the Falconiforms. Occasional papers of the British Columbia Provincial Mus. 17:1–163.

- Brown, L. and Amadon, D. 1968. Eagles, hawks and falcons of the world. McGraw-Hill, New York.
- Springer, M. A. 1979. An observation of the aerial courtship of the Red-tailed Hawk. *Raptor Res.* 13:19.

ABSTRACTS OF THESES AND DISSERTATIONS

THE NESTING BIOLOGY AND BEHAVIOR OF WOODLAND RAPTORS IN WESTERN MARYLAND

This thesis reports the composition and status of the raptor community in the central Appalachian eastern deciduous forests of western Maryland. In addition, the breeding chronology, behavior, and food habits of these raptor species are described.

Red-tailed (*Buteo jamaicensis*), Red-shouldered (*Buteo lineatus*), Broad-winged (*Buteo platypterus*), and Cooper's (*Accipiter cooperi*) Hawks nest in western Maryland. Forty-one breeding pairs of these raptor species were monitored during the 1978 and 1979 nesting seasons.

Broad-winged Hawks were the most successful species with 82.3% successful attempts. Cooper's Hawks were the next most successful at 66.6% followed by Red-shouldered Hawks at 62.5% and Red-tailed Hawks at 50.0%. Fledging rates for Broad-winged, Cooper's, Red-shouldered and Red-tailed Hawks were 1.7, 2.5, 1.8 and 1.5 per successful attempt, respectively. Although Broad-wings were the most successful nesters in this area, Cooper's Hawks had the greatest productivity per successful nest.

Nesting survival to fledging was 58.8% for the Cooper's Hawk, 68.9% for the Broad-winged Hawk, 60.0% for the Red-shouldered Hawk and 50.0% for the Red-tailed Hawk. Small mammals, particularly the eastern chipmunk (*Tamias striatus*), were the major prey item for Red-shouldered, Cooper's, and Broad-winged Hawks. Prey remains from Red-tailed nests were composed primarily of the eastern fox squirrel (*Sciurus niger*) and the eastern gray squirrel (*Sciurus carolinensis*).

- Janik, Cynthia A. 1980. The nesting biology and behavior of woodland raptors in western Maryland. M.S. Thesis, Frostburg State College, Frostburg, Maryland.

NEST SITE SELECTION BY THE RED-SHOULDERED HAWK (*BUTEO LINEATUS*) IN SOUTHWESTERN QUEBEC

The patterns of nest site selection by the Red-shouldered Hawk (*Buteo lineatus*) were studied in 1978 and 1979 at two areas in southwestern Québec in order to investigate the potential effects of this behavior on reproductive success. Hawks arrived in the main study area (Vaudreuil County) by late March and began nesting activities almost immediately. A comparison of thirty nest sites and twenty-five randomly located control sites in that area indicated that there were significant ($p < 0.05$) differences in several habitat features between the two groups. The nests of the Red-shouldered Hawk were typically