DO HAWKS FEED DURING MIGRATION?[1]

by
P. B. Hofslund
Biology Department
University of Minnesota, Duluth
Duluth, Minnesota 55804

One question frequently asked by audiences at talks given about hawk migration or when watching a flight for the first time is, "Do hawks feed during migration?" I suppose the question arises naturally. The sight of thousands of raptors parading majestically across the sky or hearing that the total number of hawks seen in migration may exceed 60,000, creates a mental image of a horrendous slaughter of everything from small birds to rabbits along a relatively narrow migratory pathway. I have assured them, generally, that the majority of hawks seen on the Duluth Flyway probably does not feed during the migration flight.

On being asked the same question this year I found it necessary to qualify my statement because of our 1972 observations. I was further brought up short by Dr. Harrison Tordoff, James Ford Bell Museum, University of Minnesota, who said, "Of course they eat during migration. Migrations sometimes last for several weeks." What we were considering, of course, were two different kinds of migrations and migrators. I was considering not the total migration period, but the period of actual movement—not the time held up by unfavorable flying conditions, but flight from one point to the next under favorable conditions. Furthermore, I was considering mostly soarers, such as *Buteos* which dominate the Duluth Flyway. He was considering total migration involving thousands of miles. Though we are in general agreement about this point, the 1972 fall migration of Red-tailed Hawks (*Buteo jamaicensis*) has influenced me to reconsider the general question of hawks feeding on migration.

Normally, migration patterns of typical soarers and typical flappers are quite different with respect to possible hunting during migration. On a day of fair to good flying conditions soarers do not ordinarily appear until well into the morning, when thermals begin to form. Small groups rise out of the valley below, forming small kettles that move slowly away from the lookout in a generally southwest direction. As the day progresses larger kettles form at higher altitudes. Movement along the cloud streets is direct and rapid. In general flights are strongest between 0930 and 1600 hours Eastern Daylight Saving Time. On a particularly good day this may start earlier. I have seen strong flights of 100 or more as late as 1830 hours. During this time no general hunting behavior is shown, either in the morning prior to the inception of the flight, or in the evening when the major portion of the flight has ended.

As for flappers (accipiters and falcons mostly): while the flight seems to be

[1]Contribution No. 3 of the Hawk Ridge Nature Reserve.

directional and purposeful, it is frequently interrupted by the quick dash of a Sharp-shinned Hawk (*Accipiter striatus*) at a resting flicker, or the maneuverings of an American Kestrel (*Falco sparverius*) as it snatches a dragonfly out of the air to eat while still flying along its migration path. It seems to be well-known that trappers do best with accipiters and falcons, fair with Red-tailed Hawks, and most poorly with migrating Broad-winged Hawks.

The behavior of Red-tailed Hawks during the 1972 fall flight was quite different from normal. In particular, September and early October birds frequently hunted along the ridge as they moved in their flight. The frequency was sufficient for several observers to note and comment on it. Even the presence of considerable numbers of observers along the hillside did not significantly alter their hunting behavior. Attempted strikes and occasional kills were sometimes made directly in front of observers. Broad-winged Hawks did not show the same behavior, although four immatures were caught by banders. Golden Eagles (*Aquila chrysaetos*) were also noted hunting the area, the first time I have seen that during migration. Two were caught on the ridge. We watched another make a terrific stoop at a Red-tailed Hawk. One of the two eagles caught bore a partially-healed gunshot wound, which may have had some effect on his behavior.

In short, at least Red-tailed Hawks and, perhaps, Golden Eagles did not conform to what we recognize as the normal pattern of migrational behavior.

C. J. Pennycuick's comparison of soaring versus powered flight (*Ibis* 114: 178-218, 1972) has shown that a large bird in powered flight uses more energy than a smaller bird, and soaring, therefore, has more effect on the fuel consumption of a large bird than a smaller one. With an initial fat buildup it is possible for a bird adapted to soaring to travel for days without refueling. Powered flight is characteristic of accipiters and falcons, although they can soar. It may be that flappers need to refuel more often than soarers.

In 1972, Red-tailed Hawks may have been unable to start with the necessary fat reserves. Thus, they found it necessary to refuel along the way. Without the necessary banding information it is only speculative, but our best deductions indicate that the massive Goshawk invasion of 1972 was triggered by a shortage of the normal food in their breeding grounds. It is possible that Red-tailed Hawks also suffered from the same food shortage. The more versatile Broad-winged Hawks suffered less. Their patterns were not changed to the same degree as the patterns of larger raptors and powered flyers.

It is my belief that "normal" migration behavior of soaring hawks shows no regular pattern of hunting, once the flight is under way. Hunting becomes part of the pattern only when the flight is delayed by inclement weather or when the initial fat build-up is not sufficient to sustain flight for the necessary time. Powered flight may require more frequent refueling and powered flyers may respond to fortuitous prey. This is not difficult since small bird flights often occur at the same time, over the same paths. However, even here the flight for many is not interrupted once it is under way.

Manuscript received June 15, 1973