SOME HIGHLIGHTS OF CONTEMPORARY RAPTOR RESEARCH

by Leif J. Robinson, Wellesley, and

Paul M. Roberts, Somerville

Allentown, Pennsylvania, is not a city you would want to visit for sightseeing or for a cultural experience. But it is situated only twoscore miles from the historical mecca of hawkwatching in North America--Hawk Mountain, the first sanctuary in the world devoted specifically to the protection of birds of prey. Thus, Allentown was an appropriate gathering place for some 600 participants in the annual conference of the Raptor Research Foundation (RRF), November 3-6, 1978. During this meeting, a one-day session of the Hawk Migration Association of North America (HMANA) was held concurrently.

Seven simultaneous all-day workshops prevailed during the first day, ranging from climbing techniques, to methods of Peregrine Falcon release, to raptor rehabilitation. Of course, we could not attend them all, so our reporting will necessarily be spotty.

At the workshop concerning the status of the Bald Eagle, it became apparent that this species is at least holding its own throughout the continent and is probably expanding as the result of better breeding success since the turn of this decade. Exceptions are Chesapeake Bay, where recent pollution has had disastrous effects, and Maine. The number of eagles found at wintering sites has also continued to grow, although this might be attributed to more extensive coverage.

At the session devoted to captive breeding techniques it became clear that the most difficult aspect of hand-raising Peregrine Falcons is in getting the eggs fertilized. Female falcons will readily lay, but the males are reluctant to copulate. Thus, much discussion centered around artificial insemination techniques, which are now being employed with greater effectiveness than previously.

During the next day's session on raptor migration, Peter Dunne brought forth the fascinating possibility that some species (Merlins in particular) may migrate nocturnally, or at least when only the vaguest hint of light prevails. From several years of study at Cape May, New Jersey, Dunne and his colleagues have found that, although scores of Merlins may be seen hunting in the evening twilight, these birds will have left by first light of the next day.

This leads to the basic question--which raptors might fly at night? Presumably those with the least wing-loading, that is, the birds with the least body weight per unit surface area of wings (harriers are another prime example).

On Saturday, William Clark reported on Merlin migration at Cape May from 1971 to 1977, citing increasing numbers. In the autumn, Clark observed, most Merlins appear between September 15 and October 7. Approximately 80% of these birds are immature, with females, which greatly outnumber the males, arriving 3-5 days earlier. Spring flights contain proportionally fewer immatures (60%), with female to male ratios of 5.4:1.8 for immatures and 1.6:2.1 for adults. Adult males precede the females by several

days in the spring, when the bulk of the flight occurs between April 20 and May 10.

According to Clark, most Merlins migrate out of sight of the coast from earliest light, working in towards the coast to hunt late in the day. Merlin flights at Cape May begin about 2 p.m. and reach a peak about 3 p.m..

If any species was highlighted at the conference, it had to be the Merlin, heretofore one of the least studied North American falcons. In a workshop on the techniques and problems associated with assessing Merlin populations, Lynn Oliphant noted how little we know about the breeding status of this small falcon. Between 1968 and 1978, relatively few breeding Merlins have been confirmed throughout its range. Total known nests for the entire decade are approximately as follows:

1-5 nests	6-10 nests	11-99 nests	100+ nests
Ontario	British Columbia	Newfoundland (20)	Manitoba
Nebraska	South Dakota	Montana	Saskatchewan
Idaho	Alberta	Wyoming	
Yukon Territory	NW Territories	Alaska	
Quebec			
Minnesota			

Our ignorance of Merlin population trends is due, in part, to the difficulty of locating nests. The feisty male often displays on territory for as much as a week, only to abandon the site. Food exchange and copulation are often performed on more than one territory in the area. Furthermore, Oliphant has personally found Merlins, especially the males, to be much less aggressive than reported elsewhere. When checking nests, he was often unmolested until he was half-way up the tree! This lack of aggression creates a need to develop other methods of locating breeding pairs.

In his research in Saskatchewan, Oliphant has been observing Merlins nesting in urban areas, including city parks. Recently, many have been wintering in the Canadian prairie cities, feeding on the waxwings and Starlings which, in turn, are feasting on ornamental plantings. Strangely, all of the wintering birds seen in Saskatchewan have been females or immatures. Adult males are not seen until late February, when they are found chasing Horned Larks.

Third birds, usually 1st year birds of either sex, are regularly observed near every nest site in Saskatoon and are not subject to much aggression from the paired birds. Nesting pairs have been found within 100 yards of each other; the usual range is ½ mile.

Although the mercury content in urban Merlins has declined over the last decade, the DDE and organochloride levels have not, despite the fact that these birds do not migrate to South America. Nevertheless, producing 4-5 birds per nest, the urban Merlin population is stable if not increasing.

Oliphant provided the visual highlight of the conference: an hour-long movie, with live narration, on Merlins breeding in Saskatoon, from

territorial establishment amid spring snows to training of the young in hunting techniques.

During the HMANA session, one of the more provocative talks was given by the first author of this article. From several lines of reasoning, he suggested that the flight of some 10,000 Broad-winged Hawks observed on September 13, 1978, at Mt. Wachusett, probably passed at altitudes two or three times higher than the generally supposed ceiling. There was a consensus at the session that measurement of Broad-winged Hawk flight altitudes is needed and that precise observations by hawk-watchers are possible.

Of local interest was Paul Spitzer's review of the status of the northeastern coastal Osprey population. Once having the highest nesting density ever recorded, this area has suffered an 85-90 percent decline during the last thirty years, mainly due to pesticide-induced nesting failure. At current densities--118 active nests between Long Island and southeastern Massachusetts--a fledgling rate of 0.75 to 0.85 young per nest provides population stability. This production is currently being exceeded, and it appears that our Osprey is recovering, albeit very slowly.

Joan Dobbs and her associates at the University of California, Davis, described laboratory tests to determine what factors influenced food acceptance by Red-tailed Hawks. They found that color, size, and texture are all important. Using artificially-colored chick carcasses, the hawks selected yellow over red, blue or green. Mice weighing less than 7.5 grams (about ¼ ounce) were swallowed whole; larger ones were torn apart. A prepared foodstuff was accepted if it was small enough to swallow whole, but larger pieces were rejected upon contact with the hawk's talons.

Foraging behavior of Prairie Falcons was the topic of Bruce Haak of Oregon State University. From studies of 6 males and 4 female radio-tagged birds, he learned that individuals would forage in specific areas. However, between the incubation and nestling stages, changes would take place in foraging distance, elevation, and, in some cases, prey species. From the six male falcons, the mean home range was 180.2 square kilometers (about 70 square miles). After the young hatched, the home range of three males increased about 30 percent. Foraging distances up to 21 kilometers (13 miles) from the nesting site were recorded.

Wayne nelson of Calgary argued that "only one of 10 published hypotheses of sexual size dimorphism in raptors appears to explain the direction and degree of size differences and the upper and lower size limits for each sex."

Since male birds use dangerous talons in territorial and courtship behavior, the smaller male will be favored because of its increased speed and agility. Small males will also be favored in capturing small swift prey in the air, but larger males will be favored in ground fighting with larger, sluggish prey.

"The proportion of aerial to ground fighting establishes the optimal size for males. The size for females in influenced by factors such as heat concentration, size and type of prey, and habitat," Nelson said.

Of special local interest, Michael Root reported on the status and breeding ecology of uncommon raptors in northwestern Connecticut. In the second year of his study with Peter DeSimone, 20 Gosnawks, 7 Red-shouldered Hawks, 7 Barred and 3 Great Horned Owl nests were found within a 15 mile radius of Sharon, Connecticut. The investigators are monitoring as many nests as possible, gathering data on nesting habits, territory size and utilization, food habits, and the interrelationship of these species within their nesting territories.

NOTES ON GREAT GRAY OWLS

by Tad Lawrence, Cambridge

A recent study in northeastern Finland, by P. Erkki and K. Loisa, focussed on nesting Great Gray Owls (Strix nebulosa) in spruce dominated mixed forests with clear areas of bog. It appears that these birds prefer this habitat, for all but one of the seven nests observed had been constructed by other species and were used without alteration by the owls.

Only the female incubated the eggs and cared for the young. The smaller male did the vast majority of hunting, primarily during the "darker half of the day," until the young could be safely left unattended. The female was provided with at least four voles (Microtus) daily. After the young hatched, as many as 14 were brought to the nest, comprising 88 per cent of the total prey. In light of the recent irruption of Great Gray Owl, this prey species is of special interest, for Microtus is widespread throughout the northeastern United States.

The authors note that the striking sexual dimorphism of these owls seems to be adaptive. The female's larger size is needed for thermal regulation during incubation; the male's smaller size aids agility in hunting. (This trait is common among raptors.)

I am unaware of anyone reporting size differences among birds seen during last winter's irruption. I would appreciate information from anyone who saw several birds, particularly on the same date. Write to the author at 17 Willard Street, Cambridge, Massachusetts 02138.