# Roosting of passerines over open water at night

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During night-lighting operations for the capture of waterfowl on the Chippewa National forest in north-central Minnesota, I recorded data on species of birds found over open water after dark. Using an air-thrust boat equipped with high-intensity lights, four large lakes that had emergent stands of wild rice *(Zizania aquatica)*, hardstem bulrush *(Scirpus acutus)*, and reed grass *(Phragmites communis)* were searched for ducks on 34 occasions in late July, early August, and early September 1971 to 1974. The following passerines were seen roosting in mixed flocks in the coarse emergent vegetation (mostly reed grass and bulrush): Barn Swallow *(Hirundo rustica)*, Cliff Swallow *(Petrochelidon pyrrhonota)*, Tree Swallow *(Iridoprocne bicolor)*, Bank Swallow *(Riparia riparia)*, Rough-winged Swallow *(Stelgidopteryx ruficollis)*, Purple Martin *(Progne subis)*, Red-winged Blackbird *(Agelaius phoeniceus)*, and Yellow-headed Blackbird *(Xanthocephalus xanthocephalus)*. Tree Swallows, Bank Swallows, and Barn Swallows were the most abundant roosting species. Cliff Swallows and Red-winged Blackbirds were also abundant. Purple Martins (immatures only), Rough-winged Swallows, and Yellow-headed Blackbirds were rarely observed.

Roberts (1932) referred to large flocks of mixed species of swallows found in the fall and their habit of roosting near lakes and lowland areas. But consistent over-water roosting is not mentioned in the literature for Minnesota even though large flocks of swallows and blackbirds are a common sight throughout the state in the fall.

Since 1970, late evening observations of swallows on a number of lakes, ponds, and beaver *(Castor canadensis)* flowages showed that the birds were drinking from the surface and/or feeding on numerous insects either emerging from the water or associated with the water surface and the emergent vegetation. On calm evenings, insects, mainly Trichoptera and Diptera, were abundant enough to cover the bow of our airboat around the lights to a depth of 2 cm. Since roosting swallows were observed over the water only on calm evenings, it is probable that they were roosting on the lakes after late evening feeding. Wind and wave action could blow the insects away and render the reed grass and bulrush stands untenable for roosting on windy nights.

Blackbird flocks were found roosting only in large marsh areas that had been used previously by nesting birds. Because most blackbirds in the area moved to uplands after the breeding season, the flocks seen were probably small groups that had been feeding near the lake margin earlier in the day and had moved to the emergent vegetation later in the evening, much as flocks of birds of mixed age and sex did near breeding marshes earlier in the year. Roosting blackbird flocks are a well-known phenomenon in the eastern and southern United States and present nuisance and depredation problems in many areas (Meanley 1971). However, in Minnesota, upland flocks are much more noticeable than lowland congregations, and even the largest flocks do not approach the numbers found in the eastern and southern states during the winter. Blackbirds were only rarely mixed with swallows in the flocks observed.

The use of night-lighting to capture wild animals is

not a new practice. Reeves (1966), Drewien, et al. (1967), and Labisky (1959) have summarized the history of the technique. Although most recent efforts have been concerned with game birds and mammals (Lindmeier and Jessen 1961, Labisky 1968, Bishop and Barratt 1969, and others), Cummings and Hewitt (1964) captured 27 species of game and non-game marsh birds without any concerted effort to capture miscellaneous species. Attempts to capture passerines at night with similar techniques have been generally limited to work in blackbird roosts (Neff and Meanley 1952, Meanley 1956, Spencer and De Grazio 1962, West and Besser 1967, and others) and during late fall or winter.

Knowledge of the conditions pertaining to overwater night roosting of blackbirds and swallows in late summer suggests that observation and capture of large numbers of local birds would be possible in mid to late summer. The birds I observed fell into and on our airboat, struck and clung to the operators, and were easily captured by hand and with dip nets as we moved through the roosting areas. Our specially designed airboat was an excellent craft for moving through thick vegetation and shallow water areas. But much less expensive night-lighting outfits could be designed from the plans of Bishop and Barratt (1969), the back-pack unit of Drewien et al. (1967), or the inexpensive portable unit used by Huempfner et al. (1975) to capture Ruffed Grouse *(Bonasa umbellus)* in Minnesota. If capture efforts are confined to warm, calm, overcast evenings and are utilized only in areas where night roosting has been observed, successful capture of many passerine species should be possible.

Whether or not capture for banding or marking is attempted, late summer roosting and flock behavior of these birds is worthy of detailed behavioral and ecological research. These initial and casual observations merely suggest that feeding factors are involved in over-water night roosting. The effects of predation have not been even preliminarily assessed. Knowledge of the relative effects of these not necessarily mutually exclusive selection processes is sorely needed in avian behavioral ecology research.

These data were collected incidental to a comprehensive study of woodland waterfowl ecology 1968-1974. Field research was a cooperative effort between the Department of Ecology and Behavioral Biology of the University of Minnesota (NIH Training Grant 5 T01 GMO1779 and ERDA Grant C00-1332-119), and the Northern Prairie Wildlife Research Center of the U.S. Fish and Wildlife Service. L.M. Cowardin, J.H. Riechmann, and T.W. Schoenfelder assisted with the night-lighting operations. Constructive comments from S.H. Anderson, T.J. Dwyer, C.S. Robbins, and R.E. Stewart are acknowledged.

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