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American Coot (*Fulica americana*) nest success, defined as at least one chick hatching, frequently exceeds 90% (Fredrickson et al. 1977), indicating success in avoiding nest predation during incubation. However, predation of juvenile coots may be an important factor in coot reproduction. Many anecdotal reports of predation on coots by mink (*Mustela vison*) exist (for example, Bailey 1926, Bennett 1938, Low 1945, Errington 1967, Arnold and Fritzell 1989). Studies of waterfowl predation (Sowls 1955, Sargeant et al. 1973) and diets of predators (Eberhardt 1973, Arnold and Fritzell 1987) report significant predation of coots by mink. Eberhardt and Sargeant (1977) estimated 52% of the maximum coot chick production in a marsh during one breeding season was depredated by a single mink family. In that study, maximum coot chick production was estimated by counting adult coots and assuming a nine-egg clutch for each pair of adults. Lacking, however, are reports of actual coot abundance relative to the numbers of coots depredated by mink.

During the course of monitoring coot reproduction at a restored prairie wetland in 1991, we located an active mink den and analyzed prey remains and scats deposited during the coot breeding season. Here we report levels of mink predation on coots in relation to coot abundance.

Study Area

The study was conducted at the Burnham Creek Wildlife Management Area, Polk County, Minnesota (47°40' N, 96°20' W). The 176 ha area, previously described (Delehanty and Svedarsky 1993), consisted of a 25 ha natural basin wetland (wildlife pool), a 30 ha reservoir (flood pool), and old-field and remnant prairie grasslands. The wildlife pool supported a mixed community of emergent vegetation dominated by hardstem bulrush (*Scirpus acutus*). Submergents, mostly *Potamogeton* spp., predominated in the flood pool, although stands of bulrush (*S.* spp.) and cattail (*Typha* spp.) were located along edges. The wildlife pool, as well as flood-pool edges, provided nesting habitat for coots. Mink used spoil piles from a ditch in the wildlife pool as a denning site.

Methods

Coot nests were located by wading through areas of emergent vegetation in the wildlife and flood pools. The entire marsh was searched for nests over three days (31 May, and 3, 4 June) with 20 additional visits made during the breeding season to monitor known nests and search for new nests. Nests were marked by flagging nearby vegetation. Number of eggs were recorded as well as egg fate when it could be determined. We also kept a record and description of dead coot chicks found within the marsh.

An active mink den was located on the edge of the wildlife pool on 27 June and a mink that we suspect was a male based on its size (Linscombe et al. 1982), was seen at the den site. Above-ground prey remains and scats were collected on 27 June and 8 July. Individual scats were washed through wire screen and coot chick upper bills were counted.

Results

A total of 381 coot eggs were observed in 47 nests. Forty eggs failed to hatch but were not consumed by mink. Eight of 20 dead coot chicks found during the course of the breeding season had intact upper bills. Thus, 333 of the 381 coot eggs we observed could have produced chicks from which the upper bill was consumed by mink.

Six of eight mink scats examined contained coot chick upper bills. A total of 26 upper bills were present in the scats (mean = 3.3, s.d. = 3.06). Thus, 7.8% of our estimated maximal coot chick production was accounted for in eight mink scats. Bill sizes varied, but most bills appeared to be from approximately hatch-size to two-week-old chicks. Above-ground prey remains included 16 adult water birds (ducks [*Anatini*], grebes [*Podicipedidae*], and coots) as well as 3 coot chicks, 6 ducklings, and 2 yellow-headed blackbird (*Xanthocephalus xanthocephalus*) chicks.

Discussion

The presence of 8% of our estimated maximal coot chick production in six of eight mink scats suggests mink predation on juvenile coots was an important factor in coot reproductive success. Numerically, the presence of coot bills in the mink scats could be accounted for by the consumption of relatively few coot clutches late in the incubation cycle. However, we did not observe depredated coot clutches consistent with this explanation. Hatch is often asynchronous in coots with one parent caring for chicks while the other incubates the remaining clutch

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(Gullion 1954). These characteristics led to complex patterns of reproductive success even within "successful" nests. For example, at least four of seven eggs hatched in one nest, but three decapitated chicks were found in the nest cup. The range of bill sizes found in scats indicated predation on juvenile coots and not simply predation on eggs late in the incubation cycle.

Failure to locate coot nests, hatch of some eggs before nests were located, and eggs being laid after nests were last visited would lead to an underestimation of the maximal coot chick production, inflating our estimate of predation. However, because coot nests are relatively easy to find, search effort was great, and later searches revealed few undiscovered nests, we feel most nests were located and that our estimate of maximal coot chick production was reasonably accurate. Because total mink predation likely is underrepresented by eight mink scats, 8% chick loss is a conservative estimate. Thus, predation during the prefledging period may be an important element of coot reproduction. Mink predation may significantly dampen coot reproductive success even when coots breed at high densities with high nest success.

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Literature Cited

Arnold, T. W., and E. K. Fritzell. 1987. Food habits of prairie mink during the waterfowl breeding season. Can. J. Zool. 65 :2322-2324.

Arnold, T. W., and E. K. Fritzell. 1989. Spring and summer prey remains collected from male mink dens in southwestern Manitoba. Prairie Nat. 21:189-192.

Bailey, V. 1926. North American Fauna No. 49. U.S. G.P.O., Washington, D.C. 226 pp.

Bennett, L. J. 1938. The Blue-winged Teal. Collegiate Press, Ames. 144 pp.

Delehanty, D. J., and W. D. Svedarsky. 1993. Black Tern (*Chlidonias niger*) reproduction at a restored prairie wetland in northwestern Minnesota. Prairie Nat. 25:213-218.

Eberhardt, R. T. 1973. Some aspects of mink-waterfowl relationships on prairie wetlands. Prairie Nat. 5:17-19.

Eberhardt, L. E., and A. B. Sargeant. 1977. Mink predation on prairie marshes during the waterfowl breeding season. pp. 33-43. *In* R. L. Phillips and C. Jonkel *eds.* 1975 predator symp. Univ. Montana, Missoula.

Errington, P. L. 1967. Of predation and life. Iowa State University Press, Ames. 277 pp.

Fredrickson, L. H., J. M. Anderson, F. M. Kozlik, and R. A. Ryder. 1977. American Coot. Pp. 123-147 *In* G. Sanderson, *ed.* Management of migratory shore and upland game birds in North America. Univ. Nebraska Press, Lincoln.

Gullion, G. W. 1954. The reproductive cycle of American Coots in California. Auk. 71:366-412.

Linscombe, G., N. Kinler, and R. J. Aulerich. 1982. Mink (*Mustela vison*). Pp. 629-643 *In* (J. Chapman, and G. Feldhamer, *eds.*) Wild mammals of North America. Johns Hopkins Univ. Press, Baltimore.

Low, J. B. 1945. Ecology and management of the Redhead *Nyroca americana.* Iowa Ecol. Monogr. 15: 35-69.

Sargeant, A. B., G. A. Swanson, and H. A. Doty. 1973. Selective predation by mink, *Mustela vison* on waterfowl. Am. Midl. Nat. 89:208-214.

Sowls, L. K. 1955. Prairie ducks. Stackpole Co., Harrisburg, Penn. 193 pp.