

floor. Also, the nest has never been disturbed by House Sparrows or other species.

The nest is attached to the side of a beam, and a large old nail was driven into the beam just below the nest. The nail does not support the nest, but could have served as a perch when the nest was built. Another large old nail occurs a short distance (7 in. or 0.18 m) from the nest. One of the parents (male?) perched on this nail at night when its mate was on the nest. In several years there were preliminary attempts to build a nest around this second nail. Eventually a complete nest was built but it has never been used, possibly due to its proximity to the other nest. It is possible that driving large nails into the sides of beams may increase the potential for nest construction by Barn Swallows.

The area underneath the nest has not been the quiet, passive environment that one might presume would be necessary to successfully rear young Barn Swallows. It has been the most frequently used play area for children, and small livestock (pony, rabbits) have been maintained nearby. Furthermore, repair of farm machinery has often occurred only a short distance away. These activities generate considerable noise (particularly entry and exit of machinery) as well as movement of humans directly underneath the nest (which is only 7 ft 5 in [2.26 m] above the floor). There has never been any indication that this environment has disturbed the Barn Swallows. They go about their business of raising brood after brood, which attests to their adaptiveness to this un-natural environment.

Foraging, Food, and Feeding

Just as important as nesting sites is an abundant food supply for sustaining the active adults and rearing young. Barn Swallows feed primarily on flying insects, many of which are captured in the pesticide-free vicinity of the barn. Occasional forays are also made over a cultivated field (corn/soybeans rotation) south of the barn. Toxic agricultural chemicals (deadly to most insects) are seasonally sprayed onto the field: herbicides just after the Barn Swallows have arrived in the spring; insecticides sometimes in summer; and anhydrous ammonia as fertilizer in early fall. When a human walks along the east-west road south of the barn after dark on a summer night there is deadly silence in the field south of the road, which contrasts greatly with the tremendous cacophony produced by the innumerable crickets, grasshoppers, and katydids in the pesticide-free area north of the road (they are so loud it is difficult for humans to sleep with the windows of the house open).

Although Barn Swallows are graceful and superb fliers expert at capturing flying insects, they are sur-



Fig. 2. The primary predator of Barn Swallows at a site in McLean County is the adult domestic house cat (*Felis domesticus*). Nationwide, cats are estimated to kill hundreds of millions of birds annually, according to the American Bird Conservancy. Photo by Marge Gibson. Courtesy of Cats Indoors! Campaign/ American Bird Conservancy.

prisingly clumsy when feeding their young. On many occasions I have observed parents return to the nest with insects, only to see the insects dropped to the concrete floor below the nest. The stunned insects (mostly flies) right themselves, take a moment to recover, and then fly off. However, the great abundance of insects and seemingly endless foraging by parents insures that the young receive adequate nutrition.

Interestingly, the peak in abundance of flies in and around

the old dairy barn coincides with the rearing period of young Barn Swallows. Davis (1968) found that a pair of Barn Swallows made an estimated minimum total of 626 trips in a day of foraging in search of food for their brood. Each adult had five-to-eleven flies in their bill when trapped as they approached the nest. Davis (1868) estimated a minimum total of 3,130 flies were captured by the parents in a single day. He then calculated that the brood consumed 59,470 flies during the 16 days the brood was fed in the nest. No doubt, Barn Swallows can have a tremendous impact in reducing flies around livestock barns.

Predators, Potential Predators, and Hazards

Predators —The primary predators on the Barn Swallows appear to be adult domestic cats (*Felis domesticus*) (n = 1-2), see Fig. 2, which are kept as pets and for keeping down rodent populations (introduced house mouse [*Mus musculus*] and native white-footed mouse [*Peromyscus leucopus*]). Fledgling Barn Swallows are most vulnerable, particularly immediately after they first leave the nest and are most likely to fly or land near the floor of the barn. The fledglings perch on the rim of the nest in the last few days before departing (L.E.B. personal observations; Moller, 1994), and thus they are clearly visible to cats. I have often seen cats stalking fledglings and with captured fledglings in their mouth. My daughter has seen the cats prey on many of the inexperienced fledglings