



Status: State special concern

Global and State Rank: G5/S3S4

Family: Accipitridae (Hawk Family)

Total Range: The Cooper's hawk enjoys a large breeding range throughout forested portions of the United States, southern Canada, and Mexico.

State distribution: In Michigan the Cooper's hawk is classified as an uncommon permanent resident. It occurs scattered throughout most of Michigan but is much more likely to be encountered in the southern half of the state. During the 1950s and 60s there were few documented nesting occurrences of the bird in the state. This corresponds with the widespread use of DDT which impacted the reproductive success of most birds of prey. Other factors for the decline may be attributed to loss of habitat and large numbers of hawks killed by shooting or trapping (Kielb 1994a). High concentrations of nesting Cooper's hawks have been documented recently in the Ann Arbor area (Kielb 1994b). During the Breeding Bird Atlas Project 84 blocks contained confirmed breeding records and 450 blocks reported either probable or possible breeding records (Brewer et al. 1991). Southwestern counties had the greatest concentration of occurrences.

Recognition. Adults are **slender, crow-sized** birds with **short, rounded wings** and a **long, white-tipped tail rounded at the tip**. Males markedly smaller than females; total length in eastern U.S. males about 39 cm, females about 45 cm (Rosenfield and Bielefeldt 1993). Juveniles are brown above and light underneath with dark streaking. Cooper's and sharp-shinned hawks are nearly identical in all plumages however the Cooper's is **lankier, with a large head with a long neck and tail**. The sharp-shinned is small-headed with relatively long, broad wings that are slightly more fingered at the tips (Sibley 2000). The largest accipiter, is grayish above and whitish below, and is similar in size to the red-tailed hawk. In flight the Cooper's **wingbeats are stiffer and shallower** while the Sharp-shinned's are deeper with more wrist action (Sibley 2000). One other trick to help separate Cooper's from Sharp-shinned hawks is to watch where the birds perch. Cooper's often perch on fence posts or poles in addition to tree branches whereas the Sharp-shinned almost always perch on branches (Sibley 2000). Separating the three North American Accipiters can be problematic especially when one only gets a brief glimpse, sees them at great distances, or spots perched birds.

Best Survey Time/Phenology: The Cooper's hawk is largely migratory with most northern birds wintering in central and southern U.S. In Michigan, Cooper's hawks



can be found overwintering more commonly in the southern part of the state. The Cooper's hawk is a commonly reported avian predator at winter bird feeders (Dunn 1991). The return of migrating Cooper's hawks in southern Michigan occurs in mid to late April (Wood 1951) with peak activity in the UP in early to mid May (Betz 1991). Nest building has been reported from 23 March to 20 April in southeastern Michigan (Kielb 1994b). Incubation of eggs occurs from mid April through May with young fledging in late June into early July in some years. The optimal time to survey for active Cooper's hawk nests is from late March to early May because nests are more easily observed prior to leaf emergence and pairs are more vocal during this time period. A standard survey methodology for this species is to broadcast a conspecific call with a tape recorder in suitable habitat during the breeding season. Dawn vocalization surveys are effective at locating nests in small woodlots and determining re-occupancy of known breeding areas (Stewart et al. 1996). Calling stations should be placed at least every 0.8 km. throughout suitable habitat (Mosher et al. 1990). Repeat surveys are recommended every 5-10 days because breeding chronology varies among pairs and there is already a low probability of detection (Mosher and Fuller 1996). Some researchers have found the dawn vocalization surveys to be productive (Stewart et al. 1996, Rosenfield and Bielefeldt 1991). During the pre-incubation stage Cooper's hawks are more vocal and nest-building activities are more pronounced at dawn (Rosenfield and Bielefeldt 1993).

Habitat: In Michigan and elsewhere in eastern North America Cooper's hawks are found in a variety of forest types ranging from extensive forests to small woodlots (4-8 ha) (Rosenfield and Bielefeldt 1993). Pine plantations appear important in the Great Lakes Region, specifically Wisconsin, but nests have been constructed in a variety of tree species. Bent (1937) reported that the Cooper's hawk prefers nesting in white pine groves and other Michigan studies often associate nesting habitat with a field or scrub area in close proximity (Kelley et al. 1963, McWhirter and Beaver 1977). The most recent Michigan study in an urban area describes the nesting habitat as dominated by oak and hickory, sometimes with scattered pine, with a closed canopy. Woodlots ranged in size between 0.12 and 0.61 ha, with a mean of 0.3 ha. (Kielb 1994b). In contrast to the Sharp-shinned hawk which prefers coniferous forest or mixed forests

the Cooper's hawk tends to have a closer association to deciduous habitats including some mixed woods, open woodland habitats and riparian woodlands (Johnsgard 1990). If found in more extensive forest habitats the species is more likely to be found near forest edges, along roads, next to clearings, or associated with stream or lake edges (Johnsgard 1990). The nest itself is usually a broad, flat twig platform with the cup lined with bark flakes or chips usually newly built annually (Baicich and Harrison 1997). The nest is constructed in a main crotch or on a horizontal limb against the tree trunk and usually is partially concealed or shaded (Rosenfield and Bielefeldt 1993).

Biology: The Cooper's hawk is a highly territorial breeder, and territories are often reused for many years (Bent 1937). In a recent six-year study in Michigan, 10 territories have been active for 1-2 years and five for 3-6 years (Kielb 1994b). This species is vocal in territorial defense as well as during its high-flying nuptial displays. The platform-like stick nests are built between 8-15 m high in a tree. Three to five eggs are typically laid. Eggs are incubated for about 34-36 days primarily by the female, while the male supplies food to her, and later also to the chicks. Great-horned owls and raccoons are common nest predators. Nest destruction by windstorms and logging and removal of young by falconers has also been reported. The young fledge at about five weeks of age and begin to breed typically at two years old. Prey includes mostly birds although small mammals have been reported as important in some studies (Rosenfield and Bielefeldt 1993). Most birds taken are young-of-the-year and both male and female Cooper's hawks cache uneaten prey items on horizontal branches and later retrieve the items for themselves or their young (Rosenfield and Bielefeldt 1993). The hunting behavior of the Cooper's hawk consists of a combination of still-hunting from perches with short attack flights and longer surprise attacks where prey are taken from the ground, from branches, or in full flight (Johnsgard 1993).

Conservation/Management: The current primary threat to this species in Michigan is undetermined but may include habitat alteration and destruction due to timber harvest, road construction, and residential development. Habitat manipulation directly impacts the species by alteration of suitable structure around the nest site and indirectly by influencing the abundance, distribution, and vulnerability of prey species. Outright removal of small woodlots, or extreme thinning of



woods for highway construction, home building, and other developments (such as shopping malls and golf courses) have eliminated suitable nesting habitat. Historically both shooting and trapping were extremely damaging to populations and while now considered less of a threat, some limited amounts of both still occur (Rosenfield and Bielefeldt 1993). Contaminants were historically a significant population limiting factor for Cooper's hawks, although recent research in Wisconsin and elsewhere show very little to no egg-shell thinning and high hatching success (Rosenfield and Anderson 1980). Some recent deaths have been attributed to the west Nile virus, but effects on populations remains unclear.

Research Needs: There are many research needs concerning this species, some of which are listed below. Very limited systematic inventory has been completed throughout the state. Inventory is needed to better understand distribution patterns across the state. Information is lacking on the productivity and reproductive success of the Cooper's hawk and the differences between populations in the largely forested northern portion of the state and the more fragmented forests in southern Michigan. Also, little research has been conducted in Michigan on the impacts of silvicultural practices and the effects of urbanization on habitat use and nest productivity. More quantitative research is needed to assess the impacts of forest practices on the birds' abundance and productivity. Additional research needs include the impacts of predation, contaminants, and competitors on nesting success, landscape-level analysis of habitat, and analysis of micro-habitat features of the various components of the Cooper's hawk home range.

Related Abstracts: northern hardwood forest, oak barrens, northern goshawk, woodland vole.

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