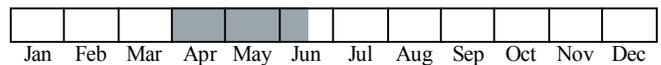


Best Survey Period



Status: State threatened

Global and State Rank: G5/S3S4

Family: Accipitridae (hawks)

Total range: Breeding range for eastern populations is from Maine and southern Quebec west to Minnesota, and south to Florida, Texas, and central Mexico (Evers 1994). Wintering range for eastern populations is from Oklahoma, southern Wisconsin, southern Ohio and southern New England south to the Gulf Coast and Mexico (Johnsgard 1990).

State distribution: The distribution of breeding red-shouldered hawks has apparently shifted from their historical range in the southern Lower Peninsula to their present concentration in the northern Lower Peninsula. Breeding records are known from 42 Michigan counties. Currently, however, most breeding activity occurs mainly in two Lower Peninsula regions centering on Manistee County in the northwest and on the Straits area, from Cheboygan and Emmet counties to Alpena County (Ebbers 1991). High concentrations of nesting red-shouldered hawks with good reproductive success have been documented in the Manistee county area (Ebbers 1989). Also, recent survey work in Cheboygan, Emmet, and Otsego counties (Pigeon River Country and Indian River forest areas) revealed numerous new nest locations that were highly successful over a two year period (Cooper et al. 1999). The Pigeon River Country and Indian River state forests areas and the Manistee County area provide good habitat for this species and these areas probably are

important in terms of maintaining a viable population in Michigan.

Recognition: Adult red-shouldered hawks can be distinguished by the **reddish** coloration of their **underparts and wing linings** and their **five to six narrow, white tail bands**. In flight, they show **crenate-shaped translucent patches** lining the bases of the long, **outermost wing feathers** (the “primaries”). These patches are sometimes referred to as “windows”. The bird’s red shoulders are often not readily visible. Their **call** during the breeding season is distinctive, a **loud, rapidly repeated “kee-yeer”**, though it is closely imitated by blue jays. Immatures have their underparts streaked with brown, teardrop-shaped spots. They may be readily identified by their underwing windows, as in the adults, and by their many narrow tail bands. Red-shouldered hawks can be distinguished from northern goshawks, Cooper’s hawks, and sharp-shinned hawks by their shape, with a wider, more rounded tail and broader, longer wings than these other forest-dwelling hawks. The red-tailed hawk, a very common species, can be differentiated by the band of dark feathers running horizontally across its light belly, by the dark feathers lining the leading edge of its underwings, and by its reddish tail, which looks pinkish underneath in flight. The red-shouldered hawk can also be confused with the broad-winged hawk, but that species has three distinct black tail bands and creamy white wings outlined in black.

Best survey time/phenology: The red-shouldered hawk is migratory along the northern edge of its range



and generally returns to Michigan in late February to early March, moving north with the retreating snow. Pairs arrive on their northern Lower Peninsula breeding grounds typically in mid-March (Ebbers 1991). Incubation of eggs occurs from late March to mid-April. Most young fledged in June (Craighead & Craighead 1956) and along with the adults remain near the nest site until migration in late fall.

Surveys are best accomplished from mid-April through early May, when birds are exhibiting territorial behavior, roads are relatively accessible, and leaves have not obscured nests. A standard and effective survey methodology for this species is to broadcast a red-shouldered hawk call with a tape recorder or predator caller in suitable habitat. Calling stations can be placed every 0.25 mile through suitable habitat. At each calling station a con-specific red-shouldered hawk call should be broadcast at 60 degrees for 10 seconds, 180 degrees for 10 seconds, and 300 degrees for 10 seconds. This calling sequence should be repeated three times (Kennedy and Stahlecker 1993). If a bird responds observers should look for a nest in the direction the call was initially heard.

Productivity surveys (i.e., nestling counts) can be conducted from early to mid-June. During this time period, young can often be viewed from the ground (Kochert 1986) or white wash (i.e., droppings from young) may be observed below the nest structure, which is evidence that young are or were recently present in a nest (Postupalsky, pers. comm.)

Habitat: In Michigan red-shouldered hawks utilize mature forested floodplain habitat, especially along the Manistee River. However, the majority of nests in Michigan have been found in large (usually >300 acres.), relatively mature deciduous or mixed forest complexes (medium to well stocked pole or saw timber stands). Typically these forest complexes have wetland habitats nearby or wetlands interspersed among these forested habitats (Cooper et al. 1999). Wetland areas such as beaver ponds, wet meadows and lowland forest are used primarily for foraging purposes (Howell and Chapman 1997). Upland openings are also used to some extent for foraging habitat (Evers 1994). Nests are typically placed in mature deciduous trees. American beech is the most commonly documented nest tree in Michigan and the presence of mature beech trees in forest stands may be an important factor that influences hawk utilization (Cooper et al. 1999, Ebbers 1989) However, a variety of nest trees have been utilized in Michigan (e.g., aspen, birch, ash, oak, etc.) which seems to indicate that tree structure and not the type of tree species is the most important factor that influences use of a tree for nest placement (Cooper et al. 1999). Nests are typically placed 35-40 feet above the ground but below the canopy, in a crotch 1/2 to 2/3 of the way up the tree (Ebbers 1989; Johnsgard 1990, Bednarz and

Dinsmore 1981, Cooper et al. 1999). Also, nest sites tend to be housed in dense stands of timber with a closed canopy structure and very near wetland habitat (typically within 1/8 mile) (Johnsgard 1990, Cooper et al. 1999).

Biology: The red-shouldered hawk is a highly territorial breeder, and territories and nest sites are often reused for many years (Craighead & Craighead 1956, Bent 1937). In a recent two-year study in Michigan, territorial re-occupancy was high (78% of breeding territories were re-occupied between years) and nest re-occupancy between years was reported at a high rate as well (50% of the same nests were re-used between years) (Cooper et al. 1999). This species is very vocal in territorial defense as well as during its high-flying nuptial displays. The large, bulky nests are built of twigs and are usually "decorated" with greenery and other materials. Two to four eggs are typically laid. Eggs are incubated for about one month 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. The young fledge at about six weeks of age and begin to breed typically at two years old. Prey includes small rodents and birds, snakes, frogs, crayfish, and larger insects, with the proportion taken varying in different locations and possibly over time (Palmer 1988). The bird hunts below the forest canopy and in open, nearby wetlands by perching and waiting for prey. They may also glide low to the ground and surprise prey up close (Palmer 1988).

Conservation/management: The primary threat to this species in Michigan is habitat alteration and destruction due to timber harvest, road construction, and residential development (Evers 1994). 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. Fragmentation of forest stands and the creation of larger openings favor the immigration of nest competitors and predators such as the red-tailed hawk (*Buteo jamaicensis*) and great-horned owl (*Bubo virginianus*) (Bryant 1986). These species can either displace a nesting pair or directly depredate young and/or adults from a nest site. Management practices that maintain greater than 70% canopy closure, retain large trees for nesting, and conserve large contiguous blocks of deciduous or mixed forest stands and associated wetland habitat should benefit this species. Currently management has focused on maintaining the critical components of individual home ranges such as the nest area, post fledgling area, and foraging area. However, a more proactive and ecologically sound practice, to ensure conservation of the species on a long term scale, would be to manage large tracts of forest as ecological units. Ecological units should be analyzed and managed across vegetation



types and land ownership pattern in order to maintain the array of ecological processes needed for this species (Graham et al. 1994).

Research needs: There are many research needs concerning this species some of which are listed below. More systematic survey of Michigan is needed in order to gain a better sense of breeding pair density and habitat use, especially in the Upper Peninsula. Further, once breeding territories are located productivity (i.e., the percentage of nests that produced at least 1 young to the fledgling stage) needs to be monitored in order to assess where viable populations occur. Also, little research has been conducted on the impacts of silvicultural practices on habitat use and nest productivity. Other research needs include but are not limited to home range size, movement patterns, analysis of landscape-level habitat patterns, impacts of predation, and investigation of post-fledgling habitat.

Related abstracts: mesic northern forest, Hart's tongue fern, fairy-bells, ginseng, goblin moonwort, large toothwort, showy orchis, walking fern, northern goshawk, woodland vole

Selected references

- Bednarz, J.C. and J.J. Dinsmore. 1981. Nest-site and habitat of red-shouldered and red-tailed hawks in Iowa. *Wilson Bull.* 94:31-45.
- Bent, A.C. 1937. Life histories of North American birds of prey. *U.S. Nat. History Mus. Bull.* 167:1-398.
- Bryant, A.A. 1986. Influence of selective logging on red-shouldered hawks, *Buteo lineatus*, in Waterloo region, Ontario, 1953-1978. *Can. Field Nat.* 100:520-525.
- Cooper, J.L., D.L. Cuthrell, and M.L. Rabe. 1999. Red-shouldered hawk inventories and assessment of nest productivity at the Pigeon River and Indian River forest areas. Report submitted to Mich. DNR - Forest Mgmt. Div. Michigan Natural Features Inventory, Lansing, MI. Report #1999-11.
- Craighead, J.J. and F.C. Craighead, Jr. 1956. Hawks, owls, and wildlife. Harrisburg, Pennsylvania, Stackpole Company and the Wildlife Mgmt. Inst. (Reprint 1969 Dover Pub.).
- Ebbers, B.C. 1989. Relationships between Red-shouldered Hawk reproduction and the environment in northern Michigan. Report to the Mich. DNR - Non-Game Wildlife Fund.
- Ebbers B.C. 1991. "Red-shouldered hawk." In, The atlas of breeding birds in Michigan. Brewer, R., G.A. McPeck, and R.J. Adams, Jr. Mich. State U. Press, East Lansing, MI. pp. 170-171.
- Evers, D.C., ed. 1994. *Endangered and Threatened Wildlife of Michigan*. The U. of Mich. Press, Ann Arbor, MI. 412 pp.
- Graham, R.T., R.T. Reynolds, M.H. Reiser, R.L. Bassett, and D.A. Boyce. 1994. "Sustaining forest habitat for the northern goshawk: a question of scale." In, Northern Goshawk Ecology and Management. Brock, W.M., M.L. Morrison, and M.H. Reiser (eds.). Cooper Ornith. Soc. *Studies in Avian Ecology*, No.16.
- Howell, D.L. and B.R. Chapman. 1997. Home range and habitat use of red-shouldered hawks in Georgia. *Wilson Bull.* 109:131-144.
- Johnsgard, P.A. 1990. *Hawks, Eagles, and Falcons of North America*. Smithsonian Inst. Press, Washington, D.C.
- Kennedy, P.L. and D.W. Stahlecker. 1993. Responsiveness of nesting Northern Goshawks to taped broadcasts of conspecific calls. *J. of Wildlife Mgmt.* 57:249-257.
- Mosher, J.A., M.R. Fuller, and M. Kopeny. 1990. Surveying woodland raptors by broadcast of conspecific vocalizations. *J. of Field Ornith.* 61:453-461.
- Kochert, M.N. 1986. "Raptors." In, Inventory and Monitoring of Wildlife Habitat. Cooperrider, A.Y., R.J. Boyd, and H.R. Stuart (eds.). USDI - Bureau of Land Mgmt. Service Center, Denver, CO. 858 pp.
- Palmer, R.S. 1988. "Red-shouldered hawk, *Buteo lineatus*." In, Handbook of North American Birds, Volume 4: Diurnal Raptors (Part I). Palmer, R.S. (ed.). Smithsonian Inst., Washington, DC. pp. 412-429.

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