



Credit: Jim Williams

Red-headed Woodpecker Minnesota Conservation Plan

*Audubon Minnesota
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Red-headed Woodpecker Conservation Plan

Melanerpes erythrocephalus

Priority for *Blueprint for Minnesota Bird Conservation*

- Prairie Parkland Region (Prairie Parkland Ecological Province): High Level Priority
- Boreal Hardwood Transition Region (Laurentian Mixed Forest Ecological Province): Highest Level Priority
- Tallgrass Aspen Parklands Region (Tallgrass Aspen Parklands Ecological Province): High Level Priority
- Prairie Hardwood Transition Region (Eastern Broadleaf Forest Ecological Province): Highest Level Priority

Executive Summary

Audubon Minnesota has selected the Red-headed Woodpecker as one of 26 Target Conservation Species in the state and one of eight species selected to represent Minnesota's Prairie Hardwood Transition Region (also known as the Eastern Broadleaf Forest Province by Minnesota's Ecological Classification System and Bird Conservation Region 23 by Partners in Flight). The other seven Target Conservation Species for the region and their level of priority are shown in the table below. Conservation Plans were only prepared for the highest priority Target Conservation Species in the region; so plans also have been prepared for the Cerulean Warbler, Eastern Meadowlark and Yellow-headed Blackbird.

Highest Level	High Level	Moderate Level
Red-headed Woodpecker	Louisiana Waterthrush	Forster's Tern
Cerulean Warbler		Wood Thrush
Eastern Meadowlark		Prothonotary Warbler
Yellow-headed Blackbird		

Minnesota currently supports a population of approximately 20,000 individuals (2012), down from an estimate of 94,000 in 2004, for a decline of nearly 80% in less than ten years. These estimates are derived from the U.S. Geological Survey's Breeding Bird Survey routes conducted in Minnesota since 1966. The species has experienced similar declines in other Midwestern states. The loss and deterioration of the woodpecker's prime habitat, oak savannas, is considered the primary culprit.

The Audubon Chapter of Minneapolis launched an aggressive effort in 2006 to recover Minnesota's population of Red-headed Woodpeckers. Inventory and research work at the University of Minnesota's Ecosystem Science Reserve in Anoka and Isanti counties, a site that supports the densest cluster of Red-headed Woodpeckers in Minnesota, has been their primary focus. Volunteers have coupled this work with a statewide effort to identify additional breeding clusters and the development of a set of best management practices.

This Conservation Plan is divided into two parts. The first provides background on the Red-headed Woodpecker, including its status, distribution, habitat requirements and management needs. The second is a detailed conservation plan that outlines specific management recommendations. In addition to supporting the work of the Recovery Project to delineate additional breeding clusters, Audubon Minnesota should focus additional efforts on at least four key Important Bird Areas where Red-headed Woodpeckers are found: Sherburne National Wildlife Refuge, St. Croix – Great Wild River, Vermillion River Bottoms-Lower Cannon River, and Whitewater Valleys.

Introduction

The Red-headed Woodpecker was selected as a **Target Conservation Species** for the *Blueprint for Minnesota Bird Conservation* (<http://mn.audubon.org/>). It is one of eight Target Conservation Species selected for the Prairie Hardwood Transition Region, one of Minnesota's four ecological regions (also known as the Eastern Broadleaf Forest Province by Minnesota's Ecological Classification System and Partners In Flight's Bird Conservation Region 23). The process for selecting Target Conservation Species is described in the *Blueprint's* conservation recommendations for the Prairie Hardwood Transition Region and is available on the Audubon Minnesota website. Briefly, Target Conservation Species are defined as birds 'whose status and trends are likely to be responsive to changes in ecological conditions, permit inference to the integrity of the overall ecosystem and provide meaningful information regarding the effectiveness of the plan.' This has been broadly adapted from the U.S. Forest Service's definition of Focal Species in the 2012 revisions to the National Forest System Land and Management Planning Rule (U.S. Forest Service 2012).

In the Prairie Hardwood Transition Region target species were selected to represent the following habitats as delineated and described by the Minnesota Department of Natural Resources in *Tomorrow's Habitat for the Wild and Rare* (Minnesota Department of Natural Resources 2006):

- | | |
|------------------------------|------------------------------|
| 1. Shallow Lakes | 5. River: Headwater to Large |
| 2. Oak Savanna/Brush Prairie | 6. Prairie Grasslands |
| 3. Forest Upland: Aspen-Oak | 7. Wetlands: Non-forested |
| 4. Forest Upland: Hardwood | |

The Red-headed Woodpecker was selected to represent Oak Savanna/Brush Prairie habitats, one of the rarest habitats in the region. A complete list of the other priority birds and conservation targets in the Prairie Hardwood Transition Region can be found in the *Blueprint*. Because the *Blueprint's* primary emphasis is to focus attention and resources on a small, select number of conservation targets, a comprehensive conservation plan was prepared for only four of the region's eight target conservation species, i.e. those that were designated the Highest Level Priority (Red-headed Woodpecker, Cerulean Warbler, Eastern Meadowlark and Yellow-headed Blackbird).

Background

Status

Legal Status: None

Other Status Classifications:

1. National
 - International Union for Conservation of Nature (IUCN) Red List: Near Threatened.
 - National Audubon Society (2007): Yellow Watch List Species.
 - U.S. Fish and Wildlife Service 2005 Focal Species (U.S. Fish and Wildlife Service 2005); not identified as a Focal Species in FY2012-2016 (U.S. Fish and Wildlife Service 2011).
 - U.S. Fish and Wildlife Service 2008 Species of Conservation Concern (U.S. Fish and Wildlife Service 2008).
 - Partners in Flight (PIF): Common Species in Steep Decline (67%) (Berlanga et al. 2010).
 - Partners in Flight (PIF): Species of Continental Importance; Conservation Action: Management (Rich et al. 2004).

2. Regional

- U.S. Fish and Wildlife Service Bird Species of Management Concern in USFWS Region 3 (Midwest) (*U.S. Fish and Wildlife Service 1995*).
- U.S. Fish and Wildlife Service Bird of Conservation Concern in BCR11 (Prairie Potholes), 12 (Boreal Hardwood Transition), 22 (Eastern Tallgrass Prairie), 23 (Prairie Hardwood Transition), and in USFWS Region 3 (*U.S. Fish and Wildlife Service 2008*).
- Focal species in the Upper Mississippi Valley/Great Lakes (UMVGL) Joint Venture Region (*Potter et al. 2007*).
- Focal species in the Prairie Pothole Joint Venture Region (*Casey 2005*).
- Partners in Flight (PIF) Bird Conservation Region 11 (Prairie Potholes): Continental Concern and Regional Concern Species; Recommended Action: Management (*Rich et al. 2004*).
- Partners in Flight (PIF) Bird Conservation Region 12 (Boreal Hardwood Transition): Continental Concern and Regional Concern Species; Recommended Action: Management (*Rich et al. 2004*).
- Partners in Flight (PIF) Bird Conservation Region 22 (Eastern Tallgrass Prairie): Continental Concern and Regional Concern Species and Regional Stewardship Species; Recommended Action: Immediate Management (*Rich et al. 2004*).
- Partners in Flight (PIF) Bird Conservation Region 23 (Prairie Hardwood Transition): Continental Concern and Regional Concern Species; Recommended Action: Immediate Management (*Rich et al. 2004*).

3. Minnesota

- Species in Greatest Conservation Need in Minnesota (*Minnesota Department of Natural Resources 2006*); the list is being revised and updated for the 2015 Wildlife Action Plan revision and the Red-headed Woodpecker remains on the list.
- Audubon Minnesota's Action List (*Audubon Minnesota 2008*).

Range

Historical Breeding Range: The species occurs throughout the eastern United States, west through the Great Plains to central Montana, Wyoming, eastern Colorado, New Mexico and Texas, and north to the southern regions of the eastern Canadian provinces (Figure 1).

Variations in the species abundance over the past 200 years were thought to be influenced during the non-breeding season by variations in the nut crops of northern beech forests (which are no longer present to the same extent today). Today, variations in the species abundance may be influenced by variations in the abundance of acorns (*Smith et al. 2000*). In Minnesota, the species historically occurred throughout much of the state, although it was most abundant in the southern half and absent in the northeast region. In Minnesota, Roberts (*1932*) reported that the species bred throughout the state but was most abundant in the southern half.

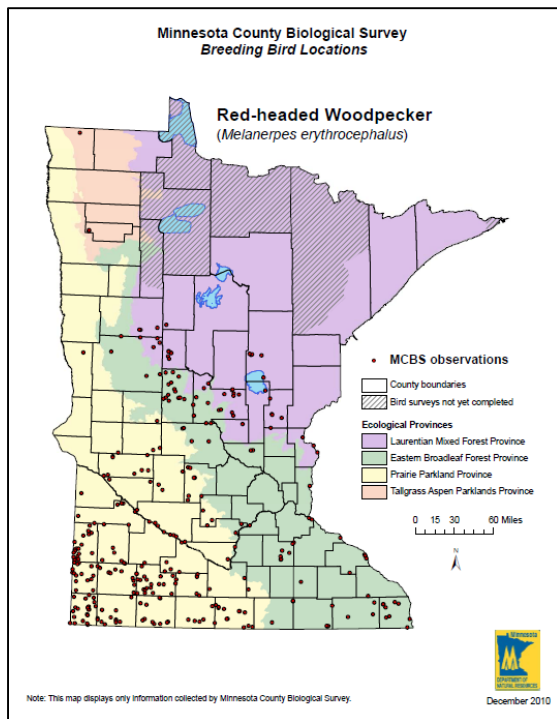
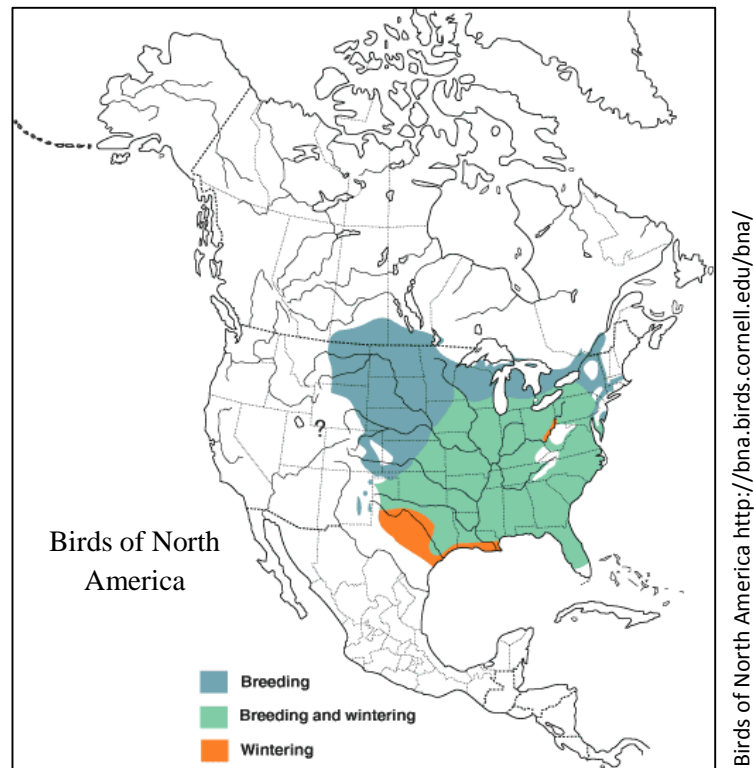
Current Breeding Range: The species national range has contracted in Ontario and is now restricted to the extreme southern region of the province. It has also disappeared from much of New England and into Labrador (*Smith et al. 2000*). The geographical extent of its range in Minnesota has not changed noticeably.

Summary of Presence on Minnesota Important Bird Areas (IBA): Among Minnesota's 57 Important Bird Areas (IBAs) Red-headed Woodpeckers have been reported from 47 and have been documented nesting on 17 (Table 1). The Camp Ripley-Pillsbury-Lake Alexander IBA and the Carlos Avery IBA are the only sites that have been surveyed intensively for Red-headed Woodpeckers and are known to support at least 20 pairs.

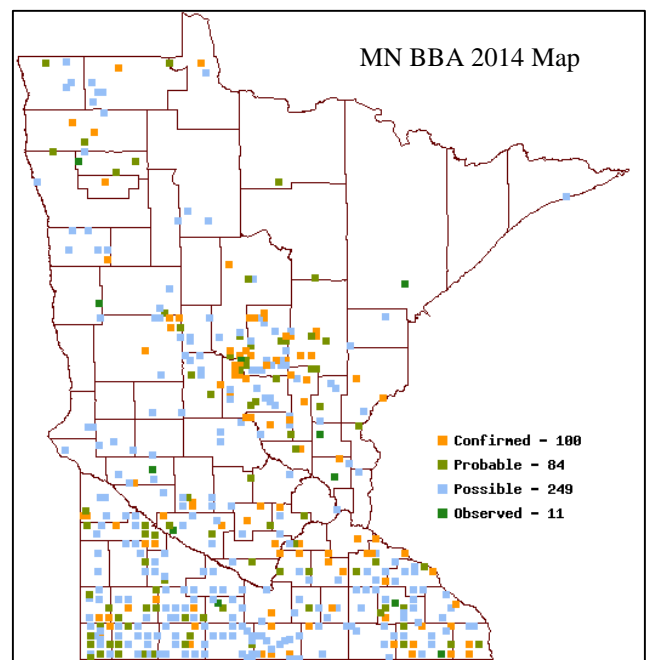
Table 1. Minnesota's Important Bird Areas with Confirmed Nesting Red-headed Woodpeckers

Camp Ripley-Pillsbury-Lake Alexander	Kittson-Roseau-Aspen Parklands	Thief Lake
Carlos Avery	Lac Qui Parle-Big Stone	Twin Cities Mississippi River
Chippewa Plains	Murphy Hanrehan Park	Vermillion Bottoms-Lower Cannon River
Des Moines River	Sherburne National Wildlife Refuge	Voyaguers-Kabetogama
Heron Lake	St. Croix-Greater Wild River	Whitewater Valleys
Kettle River-Banning State Park	Superior National Forest	

Figure 1. Red-headed Woodpecker Distribution Maps



MN DNR http://www.dnr.state.mn.us/eco/mcbs/bird_map_list.html



MN Breeding Bird Atlas <http://www.mnbba.org/>

Population Numbers

National

- In 2004, the U.S. and Canada population estimate was 2,500,000 (*Rich et al. 2004*); in 2012 the U.S. and Canada population estimate was less than half that number at 1,200,000 (*Partners in Flight Science Committee 2013*).

A small percentage of this difference can be attributed to changes in the model used to establish population estimates in 2004 for all landbirds monitored by the Breeding Bird Survey. A description of the original model can be found in Rosenberg and Blancher (2005) and Blancher et al. (2007).

Janet Ruth, a biologist with the U.S. Geological Survey in Fort Collins, is preparing a Status Assessment and Conservation Plan for the Grasshopper Sparrow (*Ruth, in preparation*). In the draft document she provides an excellent summary of the model changes that have been employed to update the population estimates for all landbirds in 2012:

The methodology for these initial PIF landbird population estimates are described in Rosenberg and Blancher (2005). Several evaluations (Thogmartin et al. 2006) and tests of assumptions have been conducted since the initial results were published in Rich et al. (2004). Thogmartin et al. (2006) expressed concerns about the biases related to sampling by BBS, on which most of the population estimates were based, as well as the inadequacy of the adjustment factors: pair, detection, and time-of-day adjustments, and made recommendations regarding how to address these issues and improve the estimates.

A sensitivity analysis of the estimation methods concluded that the most efficient means of improving the estimates would be to address distance detection, time-of-day adjustments, and variability in BBS count data (Thogmartin 2010). Field tests of detection distances have found that detection distances and detection efficiencies assumed by Rosenberg and Blancher (2005) were too high and concluded that the result was substantial underestimates for populations of some groups of landbirds (Confer et al. 2008; Hamel et al. 2009).

In response to reviews and publications, PIF has revised the population estimation methodology; (1) detection distance categories assigned to species have been revised using additional data and more refined distance categories, (2) instead of using a standard pair adjustment of 2X, species are now assigned to one of five different categories between 1.0 and 2.0, and (3) time-of-day adjustments have been revised in response to suggestions in Thogmartin et al. (2006).

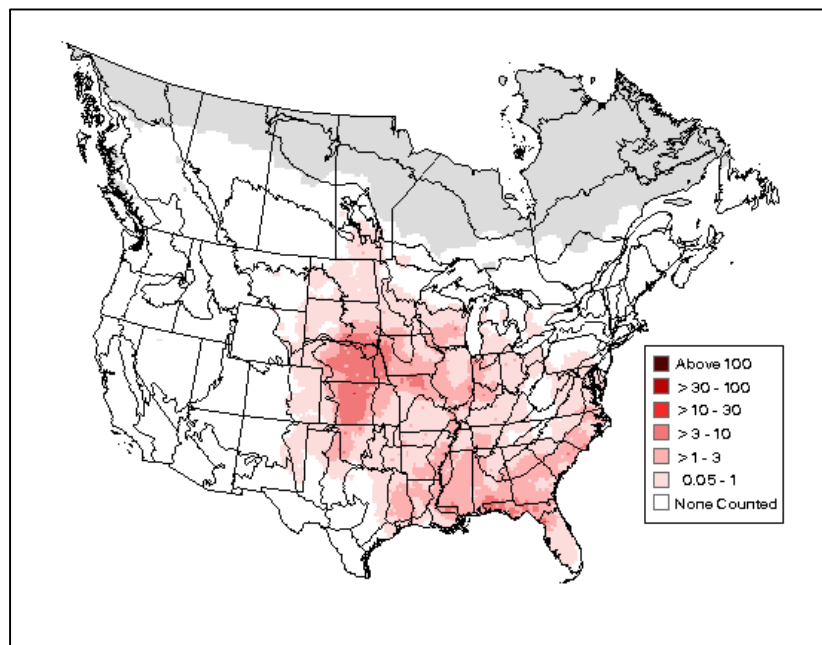
The adjustment factors used in the Red-headed Woodpecker model are shown in Table 2. The adjustments for detection distance and pairs were not changed; only the time of day adjustment was revised a small amount. The latter adjustment is an attempt to account for how a species detectability changes over the course of the 4-5 morning hours when the Breeding Bird Survey is conducted. Thrushes, for example, are heard more often at pre-dawn/dawn and woodpeckers usually later in the morning. The result of changing the Time of Day adjustment slightly downward is to reduce the overall population slightly. However, this small change does not fully account for the significant decline in the Red-headed Woodpeckers North American population. The woodpecker's decline appears to be due largely to habitat loss and degradation, although the exact factors responsible warrant investigation (*Smith et al. 2000*).

Table 2. Adjustment Factors used for the Red-headed Woodpecker Population Estimate

Year	Detection Distance	Pair Adjustment	Time of Day Adjustment
2004	200 meters	1.25	1.25
2012	200 meters	1.25	1.19

- Continental Population Objective: Increase 100% (*Rich et al. 2004*).
- The relative abundance of Red-headed Woodpeckers during the summer, based on Federal Breeding Bird Survey results from 2006-2012, is illustrated below (*Sauer et al. 2014*).

Figure 2. Relative Abundance of the Red-headed Woodpecker in North America (2006-2012)



Regional

- Approximately 12% of the population occurs in the Prairie Pothole Joint Venture Region (*Casey 2005*).
- Current estimate of population in UMVGL JV region: 968,500; the JV target is 1,937,000; the JV (*Potter et al. 2007*); this estimate is derived using the 2004 population data.

Minnesota

- 2004 Estimates (derived using data from the Breeding Bird Survey and available as an archived file on the Partners in Flight Population Estimates Database, *PIF Science Committee 2013*).
 - ✓ Estimated Minnesota population: 94,000 Target (increase 100%) is 190,000
 - ✓ Estimated MN population in BCR11 (Prairie Potholes): 48,000; target is 96,000
 - ✓ Estimated MN population in BCR12 (Boreal Hardwood Transition): 4,800; target is 9,600
 - ✓ Estimated MN population in BCR22 (Eastern Tallgrass Prairie): 9,100; target is 18,000
 - ✓ Estimated MN population in BCR23 (Prairie Hardwood Transition): 32,000; target is 64,000

- 2012 Estimates (derived using data from the Breeding Bird Survey and available on the Partners in Flight Population Estimates Database, *PIF Science Committee 2013*).
 - ✓ Estimated Minnesota population: 20,000 (note: in the PIF database the regional totals slightly exceed the state total)
 - ✓ Estimated MN population in Bird Conservation Region 11 (Prairie Potholes): 14,000
 - ✓ Estimated MN population in Bird Conservation Region 12 (Boreal Hardwood Transition): 2,000
 - ✓ Estimated MN population in Bird Conservation Region 22 (Eastern Tallgrass Prairie): 1,500
 - ✓ Estimated MN population in Bird Conservation Region 23 (Prairie Hardwood Transition): 7,000
- Minnesota does **not** have one of the highest centers of the species abundance.
- Approximately 4.95% of the Red-headed Woodpecker's breeding range occurs in MN; in 2012, 1.6% of its' 2012 global population occurs in Minnesota (down from 3.7% in 2004).

Population Trends

National Breeding Bird Survey (BBS) Data (*U.S. and Canada, Sauer et al. 2014*)

- Blue level of credibility (data of moderate precision; <http://www.mbr-pwrc.usgs.gov/bbs/credhm09.html>).
- 1966-2012: a statistically significant decreasing trend of -2.6% per year; 2002-2012: decreasing trend of -0.6% per year.

Regional BBS Population Trends (*Sauer et al. 2014*)

- The species has also declined significantly since 1966 and in the past ten years (2002-2012) in many Midwestern states including Iowa, Michigan, Missouri, Illinois and Wisconsin.
- Regionally, the Red-headed Woodpecker demonstrates annual population trends shown in Table 3.

Table 3. Red-headed Woodpecker Regional Population Trends

Region	Credibility Level ¹	1966-2012	Statistically Significant	2002-2012	Statistically Significant
Prairie Potholes	Moderate ²	-2.74% per year	Yes	-1.03% per year	Yes
Prairie Hardwood Transition	Moderate	-5.21% per year	Yes	-3.66% per year	Yes
Boreal Hardwood Transition	Important Deficiency ³	-4.66% per year	No	-3.52% per year	No

¹ Precise definition for each credibility level can be found at: <http://www.mbr-pwrc.usgs.gov/bbs/credhm09.html>.

² Reflects data of moderate precision

³ Reflects data with an important deficiency because species has a low abundance, small sample size, and/or the results cannot detect a 5% per year change in population.

Minnesota BBS Data (*Sauer et al. 2014*)

- The Breeding Bird survey data for Minnesota has a Blue level of credibility (moderate precision). The data document a statistically significant decline of -6.3% per year from 1966-2012, as well as a decline of -5.5% per year from 2002-2012.
- The only species monitored by the Breeding Bird Survey that declined more in the past ten years (2002-2012) are: the Ruffed Grouse (-7.5%); Black-crowned Night-Heron (-5.6%); Grasshopper Sparrow (-9.2%), Western Meadowlark (-8.2%) and Yellow-headed Blackbird (-5.7%).

- Average # birds/route from 1998-2007 was 0.47 (compared to 1.08 from 1990-1999) (*Partners in Flight Science Committee 2013*); found on 64 of 82 routes in Minnesota (*Sauer et al. 2014*).

Life History Characteristics Relevant to Recovery

Migration: Short-distance, temperate; the species is not truly migratory. It often shifts distribution during fall and winter to locations with greatest amount of mast (*Smith et al. 2000*).

Climate Change Vulnerability: Low (0) (*Butcher 2010*); some climate change models predict that the Red-headed Woodpecker's distribution will not change in Minnesota but that it will increase in abundance (*Matthews et al. 2004*).

Home Range and Territoriality: Little data available during nesting season. In Florida the size of summer territories ranged from 3.1-8.5 ha. The size of winter territories is much smaller, averaging 0.05 ha. During the winter individuals defend the trees where they store acorns, not the trees where they gather acorns (*Smith et al. 2000*).

At Cedar Creek Natural History Area in east-central Minnesota, where there is prime nesting habitat, the species appears semi-colonial in nature; 58 of 62 nests were in an area of about 200 acres (*Meyers 2010*). The species is often territorial during the winter so the birds are usually solitary (*Smith et al. 2000*).

Age at First Reproduction: Capable of reproducing in first year (*Smith et al. 2000*).

Nesting Dates: Mid-May to Mid-June (eggs) (*Smith et al. 2000*).

Clutch Size: Usually 4-7 with 5 being most common (*Smith et al. 2000*).

Longevity of Adults: One banded bird was recovered 9 years, 11 months later (*Smith et al. 2000*).

Food: The most omnivorous North American woodpecker, taking a wide variety of food items and the most expert and persistent flycatcher in the woodpecker family. An evolutionary explanation may be that this species occurs in more open areas than typical forest-dwelling woodpeckers and has evolved more diverse foraging modes and diet. Greater foraging diversity may also allow this species to occupy smaller woodlots than other woodpeckers. It is one of only 4 of 198 woodpecker species that commonly store food and the only woodpecker known to cover its stored food with wood or bark. Its summer diet consists of 34% animal material (mainly insects) and 66% plant material. Winter diet consists primarily of hard mast (e.g. acorns, beechnuts), but birds will capture insects on warm days (*Smith et al. 2000*).

Habitat Requirements and Limiting Factors Related to Habitat in Minnesota

Habitat Categorization: Open Woodland Species, including Oak Savanna

Limiting Factors during the Breeding Season:

From Upper Mississippi Valley/Great Lakes Joint Venture Landbird Conservation Plan (Potter et al. 2007):

- Fire suppression.
- Invasive shrubs.
- Suitable nesting sites.

Limiting Factors during the Winter Season:

From Upper Mississippi Valley/Great Lakes Joint Venture Landbird Conservation Plan (Potter et al. 2007):

- May be limited by winter acorn availability and will abandon areas with mast failure. Loss of bottomland forest may limit habitat availability of wintering Red-headed Woodpeckers.

General Habitat Descriptions

From Birds of North America (Smith et al. 2000):

Deciduous woods with an oak component, river bottoms, open woods, groves of dead and dying trees, orchards, parks, open agricultural fields, grasslands with scattered trees, forest edges, roadsides; farm pastures or golf courses with scattered large deciduous trees or groves of such trees and isolated woodlots. In these latter areas, at least a few snags or large dead limbs are needed. The species prefers more xeric woodlands and areas with tall trees with large circumferences, high basal area, and low density of stems in understory.

From Minnesota Volunteer Species Profile (Meyers 2009):

At the Cedar Creek Ecosystem Reserve, clusters of large living and dead oak trees, surrounded by open understory were important to woodpecker nesting. All nests were in savanna-like forests with bur, northern pin, or northern red oaks. During a good acorn year, some Red-headed Woodpeckers will overwinter at Cedar Creek. Open, human-altered habitats with scattered trees or woodlots, such as rural farmsteads, golf courses, and cemeteries can provide limited habitat.

From Red-headed Woodpecker Recovery Project 2010 Annual Report (Meyers 2010):

The species is a habitat specialist that prefers a savannah-type landscape, characterized by a large open understory, frequent burns, and small clusters of mature and dead mast trees. The open understory facilitates the bird's habit of swooping down from a high perch to capture grasshoppers, beetles, and other insects during spring and summer months. Small, scattered groups of mature oak trees that produce acorns provide the necessary food in fall and winter for the few birds that over-winter in Minnesota. A significant feature of good Red-headed Woodpecker habitat is the presence of large dead trees, or "snags" with limbs large enough to accommodate cavities for nesting, roosting, and food-caching activities.

From Upper Mississippi Valley/Great Lakes Joint Venture Landbird Conservation Plan (Potter et al. 2007):

Red-headed Woodpeckers are most common in oak savannas and prairie-forest transition areas; also found in bottomland hardwood forests. It nests most often in cavities of dead trees, but also will use cavities in living trees. Cavities are typically 2-24 m above ground. Occurs in forest fragments as small as 0.9 ha but are more consistently found in tracts >1.5 ha. Densities average 12 birds/km², with maximum densities reaching 60 birds/km².

Occurrence and abundance in winter appears to be greatly influenced by mast availability. Forested bottomlands and patches of forest within bottomlands with mast producing tree species appear to provide wintering and stopover sites during migration.

From Wisconsin Bird Conservation Initiative Species Profile (Kreitinger et al. 2013):

Recent research conducted on golf courses suggests that urban areas could provide suitable Red-headed Woodpecker habitat if proper vegetation structure and composition are present. The species selected golf courses containing more dead limbs, snags, and hard-mast trees for nesting. In another study, overall stand decadence around potential cavities may be more important than individual snag characteristics. Also appear to choose nest trees in patches containing high densities of potential nest trees.

Nest Trees: At Cedar Creek Natural History Area in Minnesota the average tree height was 45-49 feet; the average DBH was 14-16 inches and the average cavity height was 27-29 feet (Meyers 2010).

Threats

From Wisconsin Bird Conservation Initiative Specific Profile (Kreitinger et al. 2013):

- Loss of snags.
- Fire suppression, causing open woodlands to succeed to closed-canopy woodlands.
- Firewood harvest.
- Cavity competition with European Starlings.
- Invasive shrubs, such as buckthorn, may degrade existing habitat and pose a threat to birds.

From Minnesota Volunteer Species Profile (Meyers 2009):

- Car collisions (The woodpeckers have a habit of sitting on telephone poles and flying low across the road to pick up grasshoppers, making them susceptible to car collisions).

From Red-headed Woodpecker Recovery Project 2010 Final Report (Meyers 2010):

- Housing and industrial development.
- Intensive agriculture.
- Destruction of oak savanna communities.
- Pruning and removal of dead trees by home owners and public land managers.

Best Management Practices

From Wisconsin Bird Conservation Initiative Species Profile (Kreitinger et al. 2013):

- Protect snags, remove invasive shrubs and use controlled burns and timber thinning in oak woodlands.
- Girdle some mature trees for snag “creation” in savanna areas.
- Restore preferred ground-layer vegetation.
- Limit strategies that negatively affect stand decadence (e.g. pruning dead limbs and conducting salvage timber harvests in areas with high levels of standing dead woody fuel).
- During harvest consider creating a clumped distribution by retaining active nest trees and a clump of surrounding dead and dying trees.
- Consider opportunities to manage for this species on smaller private lands, golf courses, and city parks as tract size has little effect on breeding abundance or success.
- Inform homeowners and homeowner associations about the importance of snags and provide guidelines on snag retention.
- Build upon existing programs that encourage private landowners to manage woodlots in ways that promote this species.

From Birds of North America Species Account (Smith et al. 2000):

- Management programs that focus on creation or maintenance of snags will benefit Red-headed Woodpeckers.
- Snags should be retained in groups as the species requires multiple snags for roosting and/or foraging.
- Retain dead branches on big trees in nonurban areas and selectively prune hazardous branches in urban areas.
- Selective thinning of live trees in small woodlots also appears to have a positive effect.

- Prescribed burning and understory thinning create more open forest stands which presumably increased fly-catching foraging opportunities.

From the Minnesota Red-headed Woodpecker Recovery Project (Meyers 2010):

Minnesota's Red-headed Woodpecker Recovery Project has outlined specific Best Management Practices for the following groups (all three handouts are appendices to this species plan):

- ✓ For Private Landowners: <http://www.redheadrecovery.org/PgInfo/Papers/BMP%20Private.pdf> (Appendix 1).
- ✓ For Public Land Managers: <http://www.redheadrecovery.org/PgInfo/Papers/BMP%20Public%20Land.pdf> (Appendix 2).
- ✓ For Golf Courses: <http://www.redheadrecovery.org/PgInfo/Papers/BMP%20%20Golf.pdf> (Appendix 3).

Gaps in Knowledge

General Needs identified for Focal Species in the Upper Mississippi Valley/Great Lakes Joint Venture Landbird Conservation Plan (more specific details are available in the plan; Potter et al. 2007):

- Identify landscape and habitat characteristics (e.g., composition, structure and configuration) associated with high productivity and/or survivorship, including source populations. This information is needed to help ensure viable breeding populations at objective levels set for the region.
- Refine breeding density estimates across the JV region and improve models used to calculate habitat objectives. Joint Venture focal species whose estimated habitat requirements exceed the estimated habitat available should be completed first. This information is necessary to determine the location and amount of habitat needed to meet population objectives.
- Improve understanding of habitat requirements, management needs, and landscape attributes for species of high conservation concern. This information is needed to develop site specific management protocols for bird population maintenance and restoration.
- Quantify fine scale site characteristics important to JV focal species by providing information for explicit habitat prescriptions and identifying research/monitoring needs for fine scale characteristics that are unknown. This information is needed to develop site specific management protocols for bird population maintenance and restoration.

Specific gaps in knowledge for the Red-headed Woodpecker in the Upper Mississippi Valley/Great Lakes Joint Venture Landbird Conservation Plan (Potter et al. 2007):

- Although existing research indicates that Red-headed Woodpeckers benefit from savanna and woodland restoration, it is not known to what extent clearing of woody vegetation from prairies and savannas would be detrimental. This threshold should be identified.
- Better information is needed to evaluate characteristics of trees used for nesting, including the size, species, bark condition and state of decay of the nest site.

From Wisconsin Bird Conservation Initiative Species Profile (Kreitinger et al. 2013):

- Determine preferred nest site characteristics for this species, particularly in Wisconsin.
- Studies investigating interference competition with European Starlings are needed and underway in Wisconsin.
- Research into diseases and contamination may elucidate other factors in the species continuing decline.
- The importance of mast abundance warrants further study.
- The use of treated utility poles and the subsequent contamination of eggs has not yet been studied (from Smith et al. 2000: no young hatched in about 50% of nests found in 3 to 4 year old creosote

treated telephone poles; nests seem unaffected in older poles so the effect of creosote may be transitory).

- More information regarding the impact of invasive shrubs would help guide future management efforts.

From Birds of North America Species Account (Smith et al. 2000):

- Breeding rates; despite numerous anecdotal observations of nests and some excellent studies of nesting biology, estimates of nest success remain few and uncertain.
- The conspicuousness of these woodpeckers and their nest snags may make them attractive to predators, but little is known about the impact of predation (or other factors) on reproductive success.
- No information is available on growth and development of young.
- The species social system requires investigation; overlapping breeding territories have been documented as well as the presence of multiple adults at the nest site, suggesting that family groups may remain together.
- Juvenile bird survival and dispersal.
- Because the Red-headed Woodpecker is one of the few sexually monomorphic woodpeckers, the possible adaptiveness of this trait warrants investigation.
- How does the creation of cavities by Red-headed Woodpeckers influence populations of cavity-using animals such as bats, flying squirrels, tree frogs, arboreal mice, and secondary cavity-nesting birds.
- Both current and historical population dynamics of this bird and its associated tree species in the eastern deciduous forest also warrants study.
- The Red-headed Woodpecker has experienced fluctuating population levels in the past, due in part to changes in mast crops. This makes it somewhat difficult to put the current decreasing trends into perspective. Further research is needed to assess exactly what changes in land use are negatively affecting the species.

MINNESOTA CONSERVATION PLAN

Conservation Goal

Maintain a statewide population of Red-headed Woodpeckers of at least 40,000 birds through effective and efficient habitat conservation of Minnesota's endangered oak savanna habitat and support the Audubon Chapter of Minneapolis's Red-headed Woodpecker Recovery Project (<http://www.RedheadRecovery.org>).

Background - Population Goal

The Partners in Flight (*Rich et al. 2004*) population objective for the Red-headed Woodpecker is to increase populations by 100%. In 2004 the Partner's in Flight (PIF) population estimate for Minnesota was 94,000 individuals and the PIF target for Minnesota was 190,000 (an increase of a little over 100%). In 2012 Partners in Flight updated population estimates for all of the landbirds using the most recent data from the Federal Breeding Bird Survey (BBS) (*Partners in Flight Science Committee 2013*). The result was a dramatic population decline in Minnesota with the statewide estimate set at 20,000 birds. The average number of birds per BBS route in the state dropped from 1.08 birds/route (1990-1999) to 0.47 birds/route (1998-2007). As noted earlier, some of this decline can be attributed to a change in the Time of Day adjustment used in the 2012 population model. However, the change was relatively small and throughout the eight year span of time the number of birds observed on Minnesota BBS routes declined significantly. Because the population objective has not been updated, and the woodpecker's decline continues, this plan assumes that the objective remains to increase the population by 100%.

Background: Red-headed Woodpecker Recovery Project

The Red-headed Woodpecker Recovery Project is a cooperative effort of the Audubon Chapter of Minneapolis in cooperation with the University of Minnesota and Minnesota Department of Natural Resources. It was established in 2006 "to reverse the decline and encourage the recovery of Red-headed Woodpecker populations through the creation, preservation, and restoration of habitat and with research and public education" (*Meyers 2010*). The group has done an outstanding job of bringing attention to the species plight, not only in Minnesota but throughout its range. A major focus of their work has been on the dense population of woodpeckers residing at the University of Minnesota's Cedar Creek Ecosystem Science Reserve in Anoka County. Field studies have been undertaken to document the size and distribution of the local population as well as habitat requirements, nesting requirements and feeding activities. They also have located clusters of nesting birds found elsewhere in the state and have developed a series of best management practices designed for private landowners and public land managers. Since many of the small clusters of nesting pairs they found are located in and adjacent to golf courses they also developed management recommendations for these unique habitats.

The Red-headed Woodpecker Recovery Project is staffed by a committed group of volunteers who are passionate about the species. Collectively they have made a significant contribution to our knowledge and understanding of this critical species in Minnesota and deserve Audubon Minnesota's strong support and engagement.

Conservation Objectives

Initiate conservation actions designed to halt the decline of Minnesota's Red-headed Woodpecker population and monitor the effectiveness of those actions by increasing the population annually by an average of 2.5% per year over a 30 year period.

Background: Increasing Minnesota's Red-headed Woodpecker population from its current estimated population of 20,000 individuals to 40,000 in 30 years would require an average annual increase of at least 2.5% per year.

Actions Needed for Conservation

(Note: many of the following actions follow the goals and actions of the Minnesota Red-headed Woodpecker Recovery Project)

Inventory and Assessment Needs

- Identify and verify the locations of large clusters, or groups of birds. To date, the Minnesota Red-headed Woodpecker Recovery Project has identified seven clusters of birds with three or more nesting pairs (Meyers 2010, Table 4). Two of the sites are part of the network of Audubon Minnesota's Important Bird Areas.

Table 4. Location of Known Breeding Clusters of Red-headed Woodpeckers

Site Name	General Location	Audubon Important Bird Area	Estimated Number of Breeding Pairs
Cedar Creek Ecosystem Science Reserve	East Bethel	Carlos Avery Important Bird Area	25 pairs
Rutger's Bay Lake Golf Course	Deerwood		4 pairs
Blackberry Hills Golf Course	St. Cloud		8 pairs
Nerstrand Big Woods State Park	Northfield		3-4 pairs
Private land south of Onamia	Onamia		4-6 pairs
Manhattan Beach Peninsula	Whitefish Chain of Lakes		4-6 pairs
Camp Ripley National Guard Training Center	Morrison County	Camp Ripley-Pillsbury-Lake Alexander Important Bird Area	20+ pairs

Action: Identify if there are additional cluster areas (beyond those listed above) for Red-headed Woodpeckers in the eastern region of Minnesota (Red-headed Woodpecker Recovery Project).

Background: This action is an on-going effort by the Red-headed Woodpecker (RHWO) Recovery Project. Once the Minnesota Breeding Bird Atlas is completed (2013) these records should also be used to discern if there are additional clusters beyond those that have already been identified.

- Identify and target high priority landscapes and habitats for conservation action.

Action: Identify Important Bird Areas (IBAs) that are a priority for this species in Minnesota.

Background: Among the 57 IBAs, Red-headed Woodpeckers have been reported from 47 of them and are confirmed nesting on seventeen (Table 1). These 17 sites should be further examined to see if they harbor RHWO clusters. The Camp Ripley-Pillsbury-Lake Alexander IBA and Carlos Avery IBA are the only sites that have been surveyed intensively and are known to support at least 20 pairs (Table 4). Four of the fifteen sites where nesting has been recorded and which deserve the most attention are:

1. Sherburne National Wildlife Refuge IBA
2. St. Croix – Great Wild River IBA
3. Vermillion River Bottoms – Lower Cannon River IBA
4. Whitewater Valley IBA

Monitoring Needs

- Continue monitoring the statewide Red-headed Woodpecker population using the Breeding Bird Survey as an index.

Action: Work with the Minnesota Ornithologists Union to ensure that all 82 of Minnesota's BBS routes are surveyed each year.

Habitat Protection Needs

- Work with conservation partners to protect oak savanna habitats to provide for a sustainable Red-headed Woodpecker population.

Action: Protect the species current habitat of approximately 2,667 km² (659,030 acres) in Minnesota's Prairie Hardwood Transition Region (Eastern Broadleaf Forest Province).

Background

The habitat protection objectives for recovery are from the Upper Mississippi Valley/ Great Lakes Joint Venture Region (*Potter et al. 2007*); a similar goal has not been established for the Prairie Pothole Joint Venture Region.

In Minnesota protection efforts should focus on clusters of Red-headed Woodpecker occurrences which are indicators of large blocks of suitable habitat. To date, seven large clusters have been identified (Table 4), all within the Upper Mississippi Valley/Great Lakes Joint Venture Region where the recovery criteria noted above have been established. While there are numerous sightings and nesting reports throughout the state each year, the majority of these are of single pairs, often found in widely separated rural areas and scattered small farmsteads. Interested landowners should be provided information on best management practices but these more isolated sites are not the focus of this plan.

- Gather additional information about the sites that support the largest populations of Red-headed Woodpeckers, such as current and potential future threats, protection status, and management and restoration needs.

Action: Conduct a threats and opportunities analysis on Important Bird Areas that support the largest populations of Red-headed Woodpeckers in Minnesota.

Habitat management and restoration needs

- Work with conservation partners to restore and manage oak savanna habitats to provide for a sustainable Red-headed Woodpecker population.

Action: On appropriate sites work with conservation partners to restore/enhance 2,667 km² (659,030 acres) of oak savanna habitat within the Prairie Hardwood Transition Region (Eastern Broadleaf Forest Province).

Background: The habitat restoration objectives for recovery are from the Upper Mississippi Valley/ Great Lakes Joint Venture Region (*Potter et al. 2007*); a similar goal has not been established for the Prairie Pothole Joint Venture Region.

Action: Support the work of the Red-headed Woodpecker Recovery Team to work cooperatively with public and private landowners to restore and manage oak savanna habitat, with an emphasis on Important Bird Areas.

Background: The Red-headed Woodpecker (RHW) Recovery Team has focused a major part of their work on the known large breeding cluster of Red-headed Woodpeckers that breed on the Cedar Creek Ecosystem Science Reserve in Anoka and Isanti counties, documenting the population size, reproductive success and details about the nesting habitat. They have also worked with the biologists at the reserve on oak savanna habitat restoration and management efforts. They are now investigating opportunities to cooperate with land managers at the Sherburne National Wildlife Refuge, Belwin Conservancy, Minnesota Valley National Wildlife Refuge, Nerstrand Big Woods State Park, and the Camp Ripley National Guard Training Center to help improve the woodpecker's oak savanna habitats on these sites. Audubon Minnesota should be engaged and assist with these efforts. Their work is guided by a set of Best Management Practices that they have developed for the following groups (see Appendices 1-3):

- ✓ For Private Landowners:
<http://www.redheadrecovery.org/PgInfo/Papers/BMP%20Private.pdf>
 - ✓ For Public Land Managers:
<http://www.redheadrecovery.org/PgInfo/Papers/BMP%20Public%20Land.pdf>
 - ✓ For Golf Courses: <http://www.redheadrecovery.org/PgInfo/Papers/BMP%20%20Golf.pdf>
 - Assess the amount of habitat protected and restored at each of the cluster areas identified by the RHW Recovery Project as well as any new cluster areas and/or Important Bird Areas identified as providing significant habitat and numbers of breeding birds.
- Action:** Document and monitor the amount of habitat that is protected and restored and assess if it is meeting the Recovery Criteria established for the Minnesota portion of the Upper Mississippi River Valley/Great Lakes Joint Venture region.
- Assess whether the amount of habitat protected is indeed providing for a sustainable population of Red-headed Woodpeckers in Minnesota and the Upper Mississippi River Valley/Great Lakes Joint Venture Region.

Action: Work with population modelers in the Upper Mississippi Valley/Great Lakes Joint Venture science team to test whether the original goals of the JV are reasonable or need to be modified.

Specific Actions for Audubon Chapters:

- Assist the Red-headed Woodpecker Recovery Team identify Red-headed Woodpecker breeding clusters, particularly on nearby IBAs that are known to support Red-headed Woodpeckers. (e.g. the St. Cloud Chapter at Sherburne NWR and the Wild River Chapter at the St. Croix – Great River IBA).
- Educate local landowners where clusters exist on best management practices using information prepared by the Minnesota Red-headed Woodpecker Recovery Project.

Additional actions are detailed in Table 5.

Table 5. Red-headed Woodpecker Minnesota Conservation Implementation Plan

Conservation Goal: Maintain a statewide population of Red-headed Woodpeckers of at least 40,000 birds through effective and efficient habitat conservation of Minnesota's endangered oak savanna habitat and support the Audubon Chapter of Minneapolis's Red-headed Woodpecker Recovery Project (<http://www.RedheadRecovery.org>).

Conservation Objective: Initiate conservation actions designed to halt the decline of Minnesota's Red-headed Woodpecker population and monitor the effectiveness of those actions by increasing the population annually by an average of 2.5% per year over a 30 year period.

Action	Priority	Projected Timeline	Responsible Entity	Others Involved
Inventory and Assessment				
<ul style="list-style-type: none"> Identify if there are additional cluster areas for Red-headed Woodpeckers in the eastern region of Minnesota beyond the seven already identified by the Red-headed Woodpecker Recovery Project. 	#1	Ongoing	Red-headed Woodpecker Recovery Project	Minnesota Audubon
<ul style="list-style-type: none"> Identify Important Bird Areas that are a priority for this species in Minnesota (<i>Four IBAs are a priority for further investigation</i>). 	#2	2015-16	Minnesota Audubon	Local Audubon Chapters
Monitoring				
<ul style="list-style-type: none"> Work with the Minnesota Ornithologists Union (MOU) to ensure that all 82 of Minnesota's BBS routes are surveyed each year. 	#9	2014-2015	Minnesota Ornithologists Union	MN Audubon, DNR
Habitat Protection				
<ul style="list-style-type: none"> Protect the species current habitat of approximately 2,667 km² (659,030 acres) in Minnesota's Prairie Hardwood Transition Region (Eastern Broadleaf Forest Province). 	#6	Ongoing	Minnesota Department of Natural Resources	Minnesota Audubon, U.S. Fish and Wildlife Service, University
<ul style="list-style-type: none"> Conduct a threats and opportunities analysis on Important Bird Areas that support the largest populations of Red-headed Woodpeckers in Minnesota. 	#3	2016	Minnesota Audubon	IBA land owners
Habitat Restoration and Management				
<ul style="list-style-type: none"> On appropriate sites work with conservation partners to restore/enhance 2,667 km² (659,030 acres) of oak savanna habitat within the Prairie Hardwood Transition Region (Eastern Broadleaf Forest Province). 	#5	Ongoing	Minnesota Department of Natural Resources	Minnesota Audubon, U.S. Fish and Wildlife Service
<i>Continued on following page</i>				

Action	Priority	Projected Timeline	Responsible Entity	Others Involved
Habitat Restoration and Management continued				
<ul style="list-style-type: none"> Support the work of the Red-headed Woodpecker Recovery Team to work cooperatively with public and private landowners to restore and manage oak savanna habitat, with an emphasis on Important Bird Areas. 	#4	Ongoing	Minnesota Audubon	U.S Fish and Wildlife Service, MN Department of Natural Resources
<ul style="list-style-type: none"> Document and monitor the amount of habitat that is protected and restored and assess if it is meeting the Recovery Criteria established for the Minnesota portion of the Upper Mississippi River Valley/Great Lakes Joint Venture Region. 	#7	2018	Red-headed Woodpecker Recovery Project and Minnesota Audubon	Minnesota Department of Natural Resources, UMRVGL Joint Venture
<ul style="list-style-type: none"> Work with population modelers in the Upper Mississippi Valley/Great Lakes Joint Venture Region to test whether the original goals of the JV are reasonable or need to be modified. 	#8	2018	Minnesota Audubon	UMRVGL Joint Venture

Selected Resources for Red-headed Woodpecker Minnesota Conservation Plan

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Appendix 1. Red-headed Woodpecker Best Management Practices for Private Landowners

Red-headed Woodpecker Recovery
PO Box 3801
Minneapolis, MN 55403-0801
www.RedheadRecovery.org

PRIVATE LANDOWNERS **Best Management Practice**

Identification: Male and Female: Bright red head and neck; white breast, belly, rump, and vent; black back, tail, and wings with prominent white secondaries visible in flight and at rest. Juvenile: Mottled brown head and neck; white breast, belly, and rump variably marked with brown streaking; dark brown back and upperwings; white secondaries are broken by brown lateral bars; tail is dark brown.

Conservation Status - This species is of high conservation concern, primarily because of precipitous population declines nearly throughout its range. Overall, a 50 % loss has been noted rangewide since 1966. Reasons for this decline are not clear, and understanding this species' precise habitat relationships and sensitivity to silvicultural and other land-use practices will be important for conserving future populations. Listed as "Near Threatened" by International Union for Conservation of Nature, IUCN.

- Cornell Lab of Ornithology

Red-headed Woodpecker (RHWO) Conservation Needs:

Food – Diet: A wide variety of food items has been documented, including wood-boring and flying insects, fruit, corn, eggs and nestlings of small birds (e.g. Purple Martins and bluebirds), small vertebrates (e.g. mice), seeds; may be attracted to a backyard with suet, sunflower seeds, cracked corn, and bread. **Foraging Strategy:** An opportunistic forager, often seen on tree trunks and major limbs, but less likely to drill for food than other woodpeckers. Flies out from a perch to catch insects in the air or on ground; also gleans insects from bark and foliage. Gathers berries, acorns, and other nuts in fall, stores them in holes and crevices, and then feeds on them during winter.

- Cornell Lab of Ornithology

Breeding Habitat - Open oak savanna or woodland, especially with beech or oak, and open situations with scattered trees, e.g. parks, cultivated areas, gardens, groves, farm country, orchards, and shade trees in towns. Generally avoids unbroken forest, favoring open country or at least clearings in the woods. Also found in pine-savanna, pine-oak barrens, forested wetlands or flooded timber, and timber stands treated with herbicides or burns.

- Minnesota DNR & Cornell Lab of Ornithology

Nesting – Nest Site: The nest cavity is usually in a bare dead tree or limb. The male's winter roosting cavity may be used, or a new cavity may be excavated; both adults excavate (mostly the male), the female usually inspects the nest cavity. **Height:** Ranges from near ground level to over 100 feet (30 meters). **Nest:** No nest construction other than wood chips left in the bottom of the cavity.

- Cornell Lab of Ornithology

Migratory Information – RHWO are short range migrants. There are some that do not migrate. They formerly migrated in a southerly direction toward abundant beechnut mast (a favorite food). In the spring, they migrate between March and May and are probably nocturnal migrants. In the fall, they

migrate between August and November and are probably diurnal migrants, suggesting they look for hard mast.

Management Recommendations - Whether a hunter, farmer, or homeowner, you may own a piece of land that can be used by Red-Headed Woodpeckers (RHW). One key to RHW recovery is the presence of large dead trees, or dead tree limbs, and a source of mast food (nuts or acorns). If you have large trees on your lot, keep them. If live trees have large dead limbs, retain them.

Ideal Red-Headed Woodpecker habitat includes:

- Large trees. These may be hardwoods, like oak, and/or softer woods, like aspen or pines. RHW are very opportunistic.
- A savanna-like low density of trees. Large city lots, old farm land, shelterbelts and pastures are ideal.
- An open understory.
- Good number of mast trees, producing nuts and acorns, like oaks, hickory or beech. While RHW eat insects in the warmer months, these nut trees will help them through the colder months.
- Good availability of large dead trees or trees with large dead limbs. RHW need multiple cavities for nesting, roosting and food storage.

Large dead or dying trees are an essential component of Red-headed Woodpecker habitat. We call these wildlife trees or snags. These trees provide foraging, shelter, and nesting sites. In modern times, we have been taught to remove all dying trees as soon as possible. Any tree in decline is suspect, and any dead tree is removed immediately. The RHW has paid the price. The recovery of RHW calls for a more measured approach. If it's safe to leave a wildlife tree up for a few years, consider doing so.

The best overall RHW habitat is an open savanna type (www.savannaoak.org is an excellent reference on oak savannas), with scattered clusters of dead and live trees that include mast, i.e. nuts or acorns. A low understory is also beneficial as Red-headed Woodpeckers secure additional food by fly-catching insects. They like to swoop down from a perch to grab insects, and a low understory helps this foraging behavior.

Urban/Suburban Environment - Heavily wooded lots should retain any large dead trees. Small trees and shrubs should be removed providing an open understory. Try to plan long term. Large dead snags do not last forever. If several live trees are present you might consider girdling a large tree that has large limbs. In addition to girdling an entire tree, a couple of large limbs (lowermost) on a living tree could be girdled and most of the outer limb removed leaving a few feet of dead limb for cavity building. Red-headed Woodpeckers seem to have a preference for nesting in the limbs of trees. Owners should highlight their efforts to restore plant communities to their neighbors.

Rural Environment - In a savanna-type environment, like small abandoned farms, or shelterbelts, retain all large dead trees. All shrubs and small trees should be removed within a few acres of the dead trees. If at all practical the understory should be burned. Successful habitat creation at Necedah NWR in Wisconsin demonstrated that RHW respond very positively to savanna habitat that has been burned. If there are no dead trees, girdle a couple of large (preferably softwood) trees near each other. In addition to girdling an entire tree, a couple of large limbs (lowermost) on a living tree could be girdled and most of the outer limb removed leaving a few feet of dead limb for cavity building. If there are no mast (nut/acorn) trees present, plant some that are appropriate to your region.

Keep a positive attitude. Red-headed Woodpeckers can respond within a year or two to suitable habitat.

Red-headed Woodpecker Recovery

PO Box 3801

Minneapolis, MN 55403-0801

www.RedheadRecovery.org

PUBLIC LAND MANAGERS

Best Management Practice

Identification: Male and Female: Bright red head and neck; white breast, belly, rump, and vent; black back, tail, and wings with prominent white secondaries visible in flight and at rest. Juvenile: Mottled brown head and neck; white breast, belly, and rump variably marked with brown streaking; dark brown back and upperwings; white secondaries are broken by brown lateral bars; tail is dark brown.

Conservation Status - This species is of high conservation concern, primarily because of precipitous population declines nearly throughout its range. Overall, a 50 % loss has been noted rangewide since 1966. Reasons for this decline are not clear, and understanding this species' precise habitat relationships and sensitivity to silvicultural and other land-use practices will be important for conserving future populations. Listed as "Near Threatened" by International Union for Conservation of Nature, IUCN.

- Cornell Lab of Ornithology

Red-headed Woodpecker (RHW) Conservation Needs

Food – Diet: A wide variety of food items has been documented, including wood-boring and flying insects, fruit, corn, eggs and nestlings of small birds (e.g. Purple Martins and bluebirds), small vertebrates (e.g. mice), seeds; may be attracted to a backyard with suet, sunflower seeds, cracked corn, and bread. **Foraging Strategy:** An opportunistic forager, often seen on tree trunks and major limbs, but less likely to drill for food than other woodpeckers. Flies out from a perch to catch insects in the air or on ground; also gleans insects from bark and foliage. Gathers berries, acorns, and other nuts in fall, stores them in holes and crevices, and then feeds on them during winter.

- Cornell Lab of Ornithology

Breeding Habitat - Open oak savanna or woodland, especially with beech or oak, and open situations with scattered trees, e.g. parks, cultivated areas, gardens, groves, farm country, orchards, and shade trees in towns. Generally avoids unbroken forest, favoring open country or at least clearings in the woods. Also found in pine-savannah, pine-oak barrens, forested wetlands or flooded timber, and timber stands treated with herbicides or burns.

- Minnesota DNR & Cornell Lab of Ornithology

Nesting – Nest Site: The nest cavity is usually in a bare dead tree or limb. The male's winter roosting cavity may be used, or a new cavity may be excavated; both adults excavate (mostly the male), the female usually inspects the nest cavity. **Height:** Ranges from near ground level to over 100 feet (30 meters). **Nest:** No nest construction other than wood chips left in the bottom of the cavity.

- Cornell Lab of Ornithology

Migratory Information – RHW are short range migrants. There are some that do not migrate. They formerly migrated in a southerly direction toward abundant beechnut mast (a favorite food). In the spring, they migrate between March and May and are probably nocturnal migrants. In the fall, they migrate between August and November and are probably diurnal migrants, suggesting they look for hard mast.

Management Recommendations - Whether a Park, Nature Center or Wildlife Refuge, you may manage a piece of land that can be used by Red-Headed Woodpeckers (RHW). One key to RHW recovery is the presence of large dead trees, or dead tree limbs, and a source of mast food (nuts or acorns). If you have large dead trees on your land, keep them. If live trees have large dead limbs, retain them.

Ideal Red-Headed Woodpecker habitat includes:

- Large trees. These may be hardwoods, like oak, and/or softer woods, like aspen or pines. RHW are very opportunistic.
- A savanna-like low density of trees. Large city lots, old farm land, shelterbelts and pastures are ideal.
- An open understory.
- Good number of mast trees, producing nuts and acorns, like oaks, hickory or beech. While RHW eat insects in the warmer months, these nut trees will help them through the colder months.
- Good availability of large dead trees or trees with large dead limbs. RHW need multiple cavities for nesting, roosting and food storage.

Large dead or dying trees are an essential component of Red-headed Woodpecker habitat. We call these wildlife trees or snags. These trees provide foraging, shelter and nesting sites. In modern times, we have been taught to remove all dying trees as soon as possible. Any tree in decline is suspect, and any dead tree is removed immediately. The RHW has paid the price. The recovery of RHW calls for a more measured approach. If it's safe to leave a wildlife tree up for a few years, consider doing so.

The best overall RHW habitat is an open savanna type (www.savannaosk.org is an excellent reference on oak savannas), with scattered clusters of dead and live trees that include mast, i.e. nuts or acorns. A low understory is also beneficial as Red-headed Woodpeckers secure additional food by fly-catching insects. They like to swoop down from a perch to grab insects, and a low understory helps this foraging behavior.

Urban/Suburban Parks

Safety is always a concern. Heavily wooded parks should retain any large dead trees that are in low use or restricted areas. Small trees and shrubs should be removed providing an open understory in or adjacent to these areas. Try to plan long term. Large dead snags do not last forever. If several live trees are present you might consider girdling a large mature tree that has large limbs. In addition to girdling an entire tree, a couple of large limbs (lowermost) on a living tree could be girdled and most of the outer limb removed leaving a few feet of dead limb for cavity building. Red-headed Woodpeckers seem to have a preference for nesting in the limbs of trees. If there is a lack of suitable wildlife trees, erect untreated telephone poles. Also plant mast trees appropriate to the region. Managers should highlight their efforts to restore plant communities to the public.

Nature Centers and Wildlife Refuges

Research the area to determine the land type it was in the past. If it was a savanna, work to restore the savanna. Retain all large dead trees. All shrubs and small trees should be removed within a few acres of the dead trees. If at all practical the understory should be burned. Successful habitat creation at Necedah NWR in Wisconsin demonstrated that RHW respond very positively to savanna habitat that has been burned. If there are no dead trees, girdle a couple of large (preferably softwood) trees near each other. In addition to girdling an entire tree, a couple of large limbs (lowermost) on a living tree could be girdled and most of the outer limb removed leaving a few feet of dead limb for cavity building. If there are no mast (nut/acorn) trees present, plant some that are appropriate to your region.

Keep a positive attitude. Red-headed Woodpeckers can respond within a year or two to suitable habitat.

Red-headed Woodpecker Recovery

PO Box 3801

Minneapolis, MN 55403-0801

www.RedheadRecovery.org

GOLF COURSES

Best Management Practice

Identification: Male and Female: Bright red head and neck; white breast, belly, rump, and vent; black back, tail, and wings with prominent white secondaries visible in flight and at rest. Juvenile: Mottled brown head and neck; white breast, belly, and rump variably marked with brown streaking; dark brown back and upperwings; white secondaries are broken by brown lateral bars; tail is dark brown.

Conservation Status - This species is of high conservation concern, primarily because of precipitous population declines nearly throughout its range. Overall, a 50 % loss has been noted rangewide since 1966. Reasons for this decline are not clear, and understanding this species' precise habitat relationships and sensitivity to silvicultural and other land-use practices will be important for conserving future populations. Listed as "Near Threatened" by International Union for Conservation of Nature, IUCN.

- Cornell Lab of Ornithology

Red-headed Woodpecker (RHWO) Conservation Needs

Food – Diet: A wide variety of food items has been documented, including wood-boring and flying insects, fruit, corn, eggs and nestlings of small birds (e.g. Purple Martins and bluebirds), small vertebrates (e.g. mice), seeds; may be attracted to a backyard with suet, sunflower seeds, cracked corn, and bread. **Foraging Strategy:** An opportunistic forager, often seen on tree trunks and major limbs, but less likely to drill for food than other woodpeckers. Flies out from a perch to catch insects in the air or on ground; also gleans insects from bark and foliage. Gathers berries, acorns, and other nuts in fall, stores them in holes and crevices, and then feeds on them during winter.

- Cornell Lab of Ornithology

Breeding Habitat - Open oak savanna or woodland, especially with oak, and open situations with scattered trees, e.g. parks, cultivated areas, gardens, groves, farm country, orchards, and shade trees in towns. Generally avoids unbroken forest, favoring open country or at least clearings in the woods. Also found in pine-savanna, pine-oak barrens, forested wetlands or flooded timber, and timber stands treated with herbicides or burns.

- Minnesota DNR & Cornell Lab of Ornithology

Nesting – Nest Site: The nest cavity is usually in a bare dead tree or limb. The male's winter roosting cavity may be used, or a new cavity may be excavated; both adults excavate (mostly the male), the female usually inspects the nest cavity. **Height:** Ranges from near ground level to over 100 feet (30 meters). **Nest:** No nest construction other than wood chips left in the bottom of the cavity.

- Cornell Lab of Ornithology

Migratory Information – RHWO are short range migrants. There are some that do not migrate. They formally migrated in a southerly direction toward abundant beechnut mast (a favorite food). In the spring they migrate between March and May and are probably nocturnal migrants. In the fall they migrate between August and November and are probably diurnal migrants, suggesting they look for hard mast.

Management Recommendations - As a golf course, you may manage a piece of land that can be used by Red-Headed Woodpeckers (RHW). One key to RHW recovery is the presence of large dead trees, or dead tree limbs, and a source of mast food (nuts or acorns). If you have large trees on your course, keep them. If live trees have large dead limbs, retain them.

Ideal Red-Headed Woodpecker habitat includes:

- Large trees. These may be hardwoods, like oak, and/or softer woods, like aspen or pines. RHW especially like mast trees and they should be the predominate trees planted.
- A savanna-like low density of trees. Golf courses provide an ideal habitat since they replicate many features of a savanna-type environment.
- An open understory - Removal of invasive species like buckthorn is very important.
- Good number of mast trees, producing nuts and acorns, like oaks, hickory or beech. While RHW eat insects in the warmer months, these nut trees will help them through the colder months.
- Good availability of large dead trees or trees with large dead limbs. RHW need multiple cavities for nesting, roosting and food storage.

Large dead or dying trees are an essential component of Red-headed Woodpecker habitat. We call these wildlife trees or snags. These trees provide foraging, shelter, and nesting sites. In modern times, we have been taught to remove all dying trees as soon as possible. Any tree in decline is suspect, and any dead tree is removed immediately. The RHW has paid the price. The recovery of RHW calls for a more measured approach. If it's safe to leave a wildlife tree up for a few years, consider doing so.

The best overall RHW habitat is an open savanna type (www.savannaoak.org is an excellent reference on oak savannas), with scattered clusters of dead and live trees that include mast, i.e. nuts or acorns. Because oak savannas were converted to agriculture, overgrazed, developed, or fire deprived, an oak savanna is one of the most imperiled ecosystem in the country. A low understory is also beneficial as Red-headed Woodpeckers secure additional food by fly-catching insects. They like to swoop down from a perch to grab insects, and a low understory helps this foraging behavior.

Golf Course - All large dead trees should be retained where practical and don't pose a safety hazard. Where falling limbs represent a minor safety hazard, trim off all the limbs except the largest 4 - 6, which should be cut off about 3 - 5 feet from the trunk. If there are many large trees and no large dead trees, girdle a couple within 50 feet of one another in an area where they will not pose a safety hazard. Try to plan long term. Large dead snags do not last forever. In addition to girdling an entire tree, a couple of large limbs (lowermost) on a living tree could be girdled and most of the outer limb removed leaving a few feet of dead limb for cavity building. Small trees and shrubs within 50 feet of the dead trees should be removed and the area burned if practical. Successful habitat creation at Necedah NWR in Wisconsin demonstrated that RHW respond very positively to savanna habitat that has been burned. Managers should highlight their efforts to restore plant communities to the public.

On courses with few trees or the manager is unwilling to kill any trees, erect a couple of untreated wooded telephone poles within fifty feet of each other. Experiment with putting "limbs" about 6 inches in diameter on the poles.

Use of pesticides should be very limited within 300 feet of potential RHW habitat, since they often forage in turf and feed extensively on insects.

Keep a positive attitude. Red-headed Woodpeckers can respond within a year or two to suitable habitat. They are also very visible and will enhance a golfer's experience.