



**DESIGNATION ORDER**

USDA Forest Service, Eastern Region  
Chequamegon-Nicolet National Forest  
Great Divide Ranger District  
Bayfield and Sawyer Counties, Wisconsin

**Wilson Lake**

**RESEARCH NATURAL AREA**

Designation Order

By virtue of the authority vested in me by the Secretary of Agriculture in accordance with 7 CFR 2.42, 36 CFR 251.23, and 36 CFR Part 219, I hereby establish the Wilson Lake Research Natural Area. It shall be comprised of 1,162 acres (470 hectares) of land in Bayfield and Sawyer Counties, in the state of Wisconsin, on the Great Divide District of the Chequamegon-Nicolet National Forest, as described in the section of the Establishment Record entitled "Location" [and in the Land and Resource Management Plan for the Chequamegon-Nicolet National Forest map]

Approved by:

  
\_\_\_\_\_  
Kathleen Atkinson  
Regional Forester

  
\_\_\_\_\_  
Date

**SIGNATURE PAGE**

for

**RESEARCH NATURAL AREA ESTABLISHMENT RECORD**

**Wilson Lake**

**Research Natural Area**

Chequamegon-Nicolet National Forest

Sawyer and Bayfield Counties, Wisconsin

The undersigned certify that all applicable land management planning and environmental analysis requirements have been met and that boundaries are clearly identified in accordance with FSM 4063.21, Mapping and Recordation, and FSM 4063.41, Establishment Record Content, in arriving at this recommendation.

Prepared by: Marjory E. Brzeskiewicz Date 01/28/2015  
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Draft by: /s/ Dawn Hinebaugh Date: 2005  
Dawn Hinebaugh, WI DNR

Recommended by: Michael A. Martin Date 2/24/2015  
Michael A. Martin, District Ranger, Great Divide District

Recommended by: Paul I.V. Strong Date 3/17/15  
Paul I.V. Strong, Forest Supervisor, Chequamegon-Nicolet National Forest

Concurrence of: Michael T. Rains Date 3/16/15  
Michael T. Rains, Station Director, Northern Research Station



TITLE PAGE

United States  
Department of  
Agriculture

Forest  
Service

November 2014



# Establishment Record for **Wilson Lake** Research Natural Area

**Chequamegon-Nicolet National Forest,  
Great Divide District,  
Sawyer & Bayfield Counties, Wisconsin**



Cover photo: Wilson Lake RNA illustrating a bog mat in the foreground and dry-mesic conifer forest in the background. [Photo: Steven Spickerman 1997]

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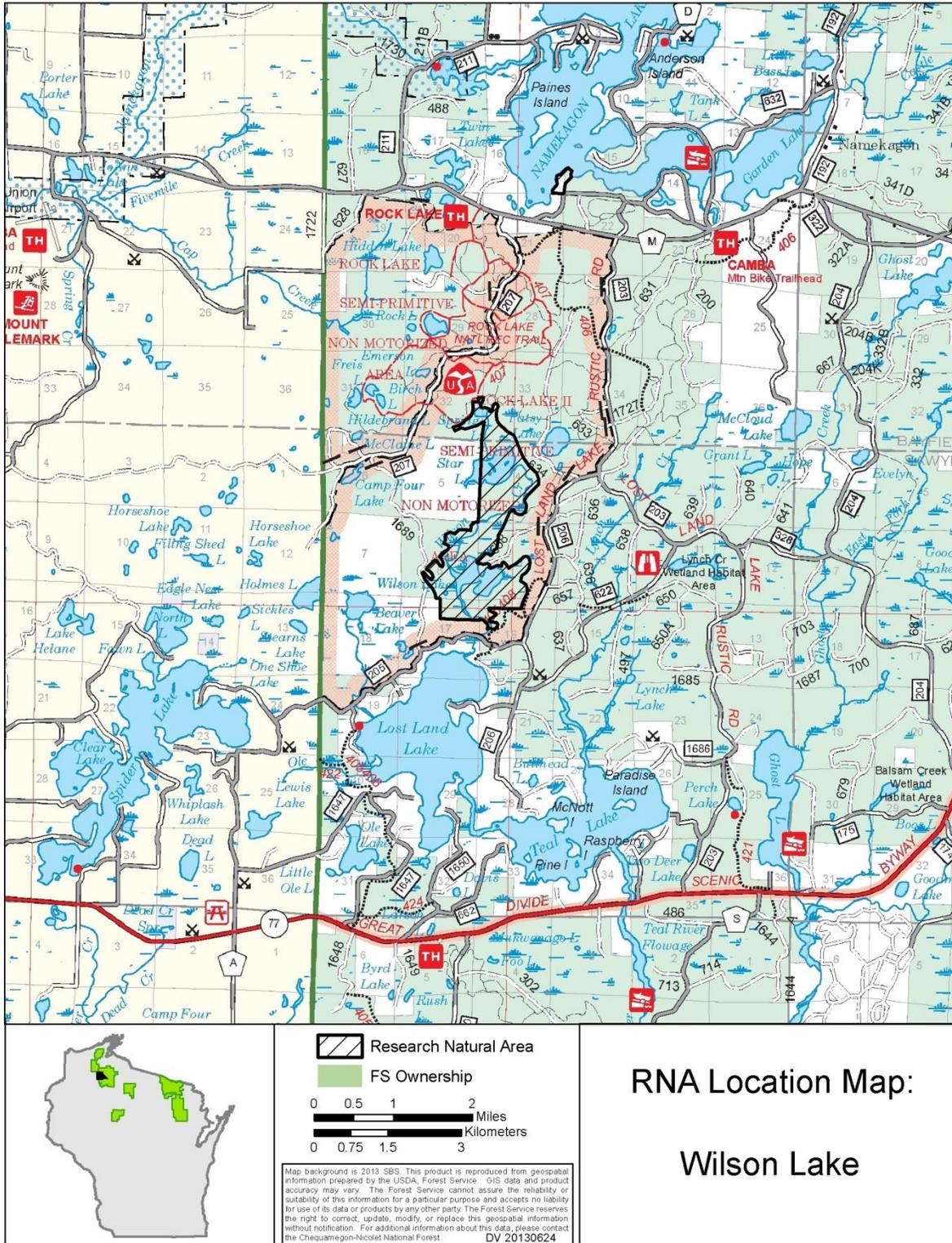
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Note: The Alpha/Numeric ordering in this document follows that within Forest Service Manual direction (FSM 4063) for Establishment Records.

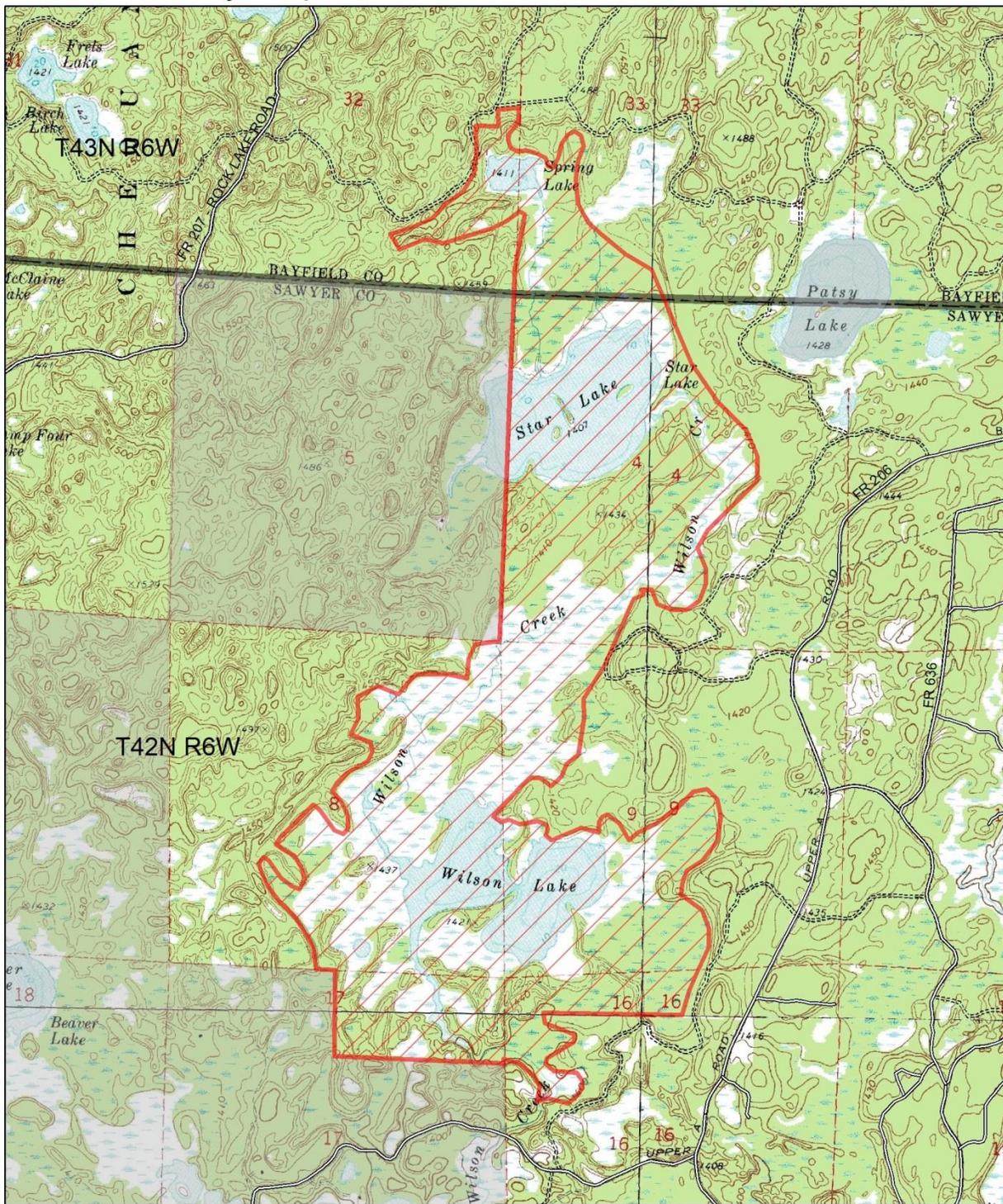
# 1. IDENTIFICATION SECTION

## Location Map

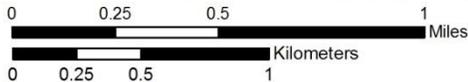


BOUNDARY MAP

RNA Boundary Map: Wilson Lake



- Research Natural Area
- Open Road
- NonFS ownership
- Trail



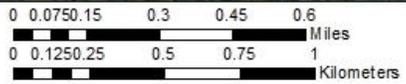
DV 20140417  
Acres: 1162

LANDSCAPE OVERVIEW WILSON LAKE RNA



 RNA Boundary

ESRI Basemap World Imagery  
MB 2013



## LEGAL DESCRIPTION

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The legal description of Wilson Lake RNA is attached as Appendix 6. GIS data of the perimeter boundary are on file at the Chequamegon-Nicolet National Forest Supervisor's office.

## 2. ADMINISTRATIVE SECTION

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This Establishment Record has been prepared pursuant to Forest Service Manual direction (FSM 4063). Establishment of the Wilson Lake RNA is documented with a signature page to follow and a Designation Order which is a separate document accompanying this document (FSM 4063.41.2) (USDA Forest Service 2004c).

The Station Director of the Northern Research Station (NRS) in consultation with the Chequamegon-Nicolet Forest (CNNF) Supervisor, Great Divide District Ranger, and NRS RNA Coordinator(s) will approve and coordinate research conducted in the RNA.

Requests to conduct research are referred to the Station Director, Northern Research Station, who will coordinate a review of the application. The Director or NRS RNA Designate will approve research proposals, and prior to the initiation of any projects, will coordinate the project or activity with the District Ranger. Any plant, animal, vegetation, or soil specimen(s) collected in the course of research conducted in the RNA are to be housed at a location designated by the Forest or approved by the Station Director.

Hard copies of research data files will be maintained in the following offices:

Chequamegon-Nicolet National Forest  
1170 4<sup>th</sup> St. South  
Park Falls, WI 54552

Station Director  
c/o Station RNA Field Representative  
Northern Research Station  
5985 Highway K  
Rhineland, WI 54501

### 3. BODY OF ESTABLISHMENT RECORD

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#### a. INTRODUCTION

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Wilson Lake Research Natural Area (RNA) is located on the Chequamegon-Nicolet National Forest (CNNF), Sawyer and Bayfield County on the Great Divide Ranger District. The RNA is located entirely on CNNF Land and is approximately 12 miles west of Clam Lake, Wisconsin (see Identification Section: *Location Map* and *Boundary Map*).



**Figure 1.** Shoreline of Wilson Lake where it transitions from upland forest to wet sedge meadow. [Photo: Steven Spickerman 2006]

The 1,162-acre (470 hectare) Wilson Lake RNA contains a mosaic of high quality wetland communities including open bog, sedge meadow, emergent and submergent aquatic communities, wild lakes, and a stream corridor (Spickerman et al. 1997). Other plant communities present include: northern wet and wet-mesic forest; northern mesic forest; and northern dry-mesic forest (Hoffman 1998).

Rare species include dragon's-mouth orchid (*Arethusa bulbosa*), spruce grouse (*Falci pennis canadensis*), and migratory bird species.

#### **Historical Background** - American

Indian tribes have lived on the lands that make up the CNNF for thousands of years with a long and complex history. They hunted, fished, gathered food, and obtained forest products for shelter, moved plants from other areas, and sometimes used fire to manipulate the land. Many of these practices continue today under reserved treaty rights (treaties of 1837 & 1842) with eleven Ojibwe tribes. The current Lac Court Oreilles Ojibwe Reservation lies 15 miles to the southwest of this RNA. See Section 4 d.(2) Cultural/Heritage for further discussion of Native American history on the site.

Northern Wisconsin was extensively logged in the late 1800s, clear cutting much of the area. Catastrophic wildfires burned the logging slash across the region. The area containing the RNA became National Forest in the 1930s. CNNF compartment examinations show that the forests within the RNA originated in the late 1800s. A vegetation cover map from 1938 indicates the forests of the entire RNA averaged 0-6 inches (15 cm) DBH (UWDC 2011); meaning the entire area was clearcut. In subsequent years, most of the uplands were designated "water impact zones" and were deferred from management. There was limited upland timber harvest (thinning or *wolf tree removal*) within three stands in the decades of the 1960s and 1980s (CNNF data). Low lying areas along Wilson Creek have been periodically flooded by beaver impoundments, especially the Star Lake and Spring Lake areas. See Section D(1) for information on the history of the selection of this area as an RNA.

**Uses** - Current use includes non-motorized recreation: hunting, fishing, and some canoeing and camping. A small portion of the Rock Lake National Recreation Trail (skiing, hiking, and biking) passes adjacent to the northernmost tip of the RNA (see *Boundary Map*).

**Ownership & Administration** - Wilson Lake RNA is owned outright by the USDA Forest Service. Administration and protection of the RNA is the responsibility of the Forest Supervisor of the Chequamegon-Nicolet National Forest, or designate. The Great Divide Ranger District, CNNF, provides day-to-day protection and maintenance of the area. The State of Wisconsin owns the title to all natural lake beds and has direct authority over navigable waters through the public trust doctrine (Kent & Dudiak 2001). The Wisconsin Department of Natural Resources is charged with management of the fishery resources in Wisconsin.

**Congressionally Designated Areas** - Wilson Lake RNA does not occur within any other administratively or congressionally designated areas. Refer to Appendix 1: *Ecological Evaluation d. (1) Research/education use* for an explanation of co-designation as a Wisconsin State Natural Area.

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## b. JUSTIFICATION SECTION

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### (1) JUSTIFICATION STATEMENT

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The wetlands within Wilson Lake RNA are pristine, disturbed only by natural water level fluctuation caused by beaver activity. All the components of a heterogeneous landscape are present and the critical interface between wetland and upland communities is intact. The RNA protects three lakes, a spring pond, and a soft-water creek. The upland forests were previously harvested in the late-1800s and now most stands are in older, maturing condition with large diameter trees. The site has good potential for research on wetland plant communities, and supports dragon's-mouth orchid and state-listed spruce grouse. Historic cultural sites will also be protected within the RNA.

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### (2) PRINCIPAL DISTINGUISHING FEATURES

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The most outstanding feature of Wilson Lake RNA is the high quality mosaic of sedge meadow communities in association with Wilson Creek (Figure 2), Wilson Lake, and Star Lake (Spickerman et al 1997). Several distinctive sedge community types are represented and classified by CNNF ecologists as: sphagnum dominated wire grass (*Carex oligosperma*) meadow; wire grass without sphagnum (poor fen); open sphagnum "lawns" without sedges; bluejoint grass (*Calamagrostis canadensis*) dominated meadows; and coarse sedge/cattail (*Typha latifolia*) marsh.

The site contains a number of glacier-formed eskers supporting northern dry-mesic forest with fire-origin white and red pine (*Pinus strobus* and *Pinus resinosa*). Most of the upland forest is re-growth from the extensive timber harvests in the late 1800s. The largest pines are now 14 to 20 inches (35-50cm) DBH on the islands and along the east shore of Star Lake. A small area of old growth eastern hemlock (*Tsuga canadensis*) hardwoods occurs on the south shore of Star Lake.



**Figure 2.** Three of the significant plant communities in Wilson Lake RNA illustrated in the photo are extensive wet meadows, creeks, and dry-mesic white and red pine forest. [Photo: Steven Spickerman 1997]

Of additional significance is the habitat provided for the state-threatened spruce grouse, nesting bald eagle (*Haliaeetus leucocephalus*), osprey (*Pandion haliaetus*), and other wetland birds. Uncommon due to loss of habitat, the dragon's-mouth orchid flourishes here in the thousands.

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### (3) OBJECTIVES

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Wilson Lake RNA was recommended for RNA designation in the 2004 Chequamegon and Nicolet National Forest Land and Resource Management Plan (hereinafter referred to as "2004 CNNF Forest Plan") and is incorporated by reference per the page citations that occur in this Establishment Record (USDA Forest Service 2004a pg 3-50). Objectives in the 2004 CNNF Forest Plan state that "RNAs and candidate RNAs (MA8E) and Special Management Areas (MA8F), as well as Old Growth and Natural Features Complexes (MA8G) serve in the role of minimum management requirements, because they cumulatively function as important contributors for sustainable ecosystem management including the provision of a long-term increase in security of species viability and diversity" (USDA Forest Service, 2004c p. 10). These include plant communities that are part of a larger network of ecosystems represented across the region and nation.

Wilson Lake RNA is one of thirty areas on the CNNF that will be managed to meet the research and educational objectives of the national RNA program. The specific objectives of this RNA are to preserve representative areas of riparian, wetland, and upland plant communities that will maintain biological and genetic diversity of species and protect against environmental disruptions. It will serve as a reference area for the study of succession as well as a control area for comparing results from manipulative research and resource management techniques executed elsewhere. It

protects habitat for rare and uncommon animals and plants and will maintain genetic diversity in a complex of lowland and upland habitats where researchers can measure ecological changes. Here succession will occur naturally following community-changing events such as wind throw and beaver flooding.

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#### c. LAND MANAGEMENT PLANNING

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The effects on RNA establishment were analyzed and disclosed in the Final Environmental Impact Statement (USDA Forest Service 2004b pg 3-110) and Record of Decision (USDA Forest Service 2004c pg 9). Wilson Lake RNA is part of a national network of ecological areas designated in perpetuity for research and education, and to provide important components of biological diversity for the CNNF.

The RNAs and candidate RNAs on the CNNF have been assigned to a management prescription (8E) that is consistent with RNA objectives (USDA Forest Service 2004c pg 9). Management Area 8E is characterized by ecologically significant natural features and representative ecosystems. It includes a broad array of community types occurring on the range of landforms and soil types that occur on the Chequamegon-Nicolet National Forest. Plant communities are generally of an older age class and contain all or most species characteristic of that community in the region (Appendix 3 - *Forest Management Area Direction* and USDA Forest Service 2004a pg 3-50).

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#### d. MANAGEMENT PRESCRIPTION

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The management prescription for Wilson Lake RNA is embodied in the management area direction and guidance presented in the 2004 CNNF Forest Plan.

The CNNF has not developed an individual site management plan for Wilson Lake RNA. When developed, such a plan will provide more specific detail of management needs and ensure that the objectives for which the RNA was created are met. In general, the management objectives are to allow natural processes to drive the structure and function of the ecosystems. The CNNF non-native invasive plant strategy (USDA Forest Service 2009) utilizes integrated pest management and will detect and manage invasive plants. RNAs are high priority areas for monitoring and controlling invasive species on the CNNF.

Refer to Appendix 1, section f.(1) *Potential or existing conflicts* to reference unique management issues that should be addressed for this RNA.

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#### e. USE OR CONTROL OF FIRE AND GRAZING

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Fire is not generally used as a management tool in wetland and mesic forest community types which make up over ninety-eight percent of this RNA. The drier pine communities on the well-drained esker soil could carry a fire in dry years given an ignition source. Fire is allowed if needed for specific objectives, however, fire has not been identified as a management need thus far. Once established, CNNF resource managers will write a specific management plan for Wilson Lake RNA that considers the role of natural fire in sustaining the plant communities in this ecosystem. The intention for a prescribed fire, if needed, will be to mimic natural conditions and re-establish a natural fire regime which is consistent with Forest Plan guidelines and objectives.

Occasional wildfires do occur in dry years in northern Wisconsin, but they are most often small in size - usually less than one acre (0.4 ha), limited by lack of fuel, and easily suppressed. Spring fires that occasionally occur in wetlands can be as large as 100 acres (Lucas pers comm). If wildfire suppression is needed within the RNA, it would employ those methods that cause the least disturbance.

There is currently no grazing on the Chequamegon-Nicolet National Forest, nor is grazing allowed in RNAs per the 2004 CNNF Forest Plan.

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## 4. APPENDIX 1 ECOLOGICAL EVALUATION

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The following ecological evaluation is included as an appendix to the establishment record and tiers to the 2004 CNNF Forest Plan (USDA Forest Service 2004a) and to the Final Environmental Impact Statement (USDA Forest Service 2004b). This evaluation provides the initial baseline information for the Research Natural Area, serves as a source of data for reports on the Research Natural Area program, and provides information to researchers seeking research sites or projects. More specific information on potential research sites should be obtained from the Forest RNA Coordinator.

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### a. PHYSICAL SITE DESCRIPTION AND CLIMATIC CONDITIONS

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#### (1) LOCATION

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Wilson Lake RNA is located on the Great Divide Ranger District of the Chequamegon-Nicolet National Forest, Ashland and Bayfield Counties, in the State of Wisconsin. The RNA's Mercator coordinates are 46° 08' N latitude and 91° 07' W longitude. See Establishment Record Identification Section for *Boundary Certification, Location Map, and Boundary Map*.



**Figure 3.** Approximate location of RNA

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#### (2) SIZE IN ACRES/HECTARES

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The RNA is comprised of 1,162 acres (470 hectares).

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#### (3) ELEVATION RANGE

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Elevations range from 1400 feet (427 m) to 1500 feet (457 m) above sea level. See *Boundary Map* in Identification Section showing ten foot contour intervals.

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#### (4) ACCESS TO THE SITE

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The site is located 12 miles (19 km) west of Clam Lake Wisconsin on the Sawyer/Bayfield county line (See Establishment Record Identification Section for *Boundary Certification, Location Map and Boundary Map*). Easiest access is via County Highway M west from Clam Lake for 11 miles (18 km), then south on Forest Road 203 3 miles (5 km), then west on FR 206 one mile (1.6 km). Park in the small parking area near the gate of FR 658 and walk one mile southwest to Wilson Lake. The intersection on this non-motorized road splits and provides two access points to the north side of Wilson Lake. A canoe is recommended for further access. This is not a designated wilderness so portage wheels are allowed up to the RNA boundary at the lake.

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## (5) CLIMATIC DATA

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The weather station nearest to the Wilson Lake RNA is Drummond Ranger Station (Station no. 472240, latitude 46° 19' N, longitude 91° 16' W). The station is about 18 mi (29 km) northwest of the RNA and experiences similar weather and climate. This station recorded temperature and precipitation data since 1948.

**Table 1.** Climate Data for Drummond Ranger Station (Midwestern Regional Climate Center 2003) from 1948 to 2000

Temperature	°F	°C
Mean annual	41.6	5.3
Mean April through September	58.6	14.8
Mean October through March	24.6	-4.1
Average daily maximum	52.6	11.4
Average daily minimum	30.6	-0.8
Record high	100.0	37.8
Record low	-44.0	-42.2
Precipitation	in	mm
Mean annual rainfall	34.3	870.0
Mean monthly- April through September	3.9	99.0
Mean monthly- October through March	1.8	46.0
Mean annual snowfall	68.1	1730.0

## b. ECOLOGICAL DESCRIPTION

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*Nomenclature for flora follows the USDA PLANTS database (USDA, NRCS. 2012); nomenclature for birds follows AOU Checklist (1983); nomenclature for vertebrates follows Watermolen & Murrell (2001). In Wisconsin, commonly used references for describing ecosystems include Forest Habitat Types (Kotar 2002) and Natural Communities (Curtis 1959).*

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### (1) ECO-REGION (TO THE LOWEST LEVEL OF DETAIL CURRENTLY AVAILABLE).

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Wilson Creek Wetlands RNA is located in the Laurentian Mixed Forest Province, 212X Northern Highland Section, Subsections Xa Glidden Loamy Drift Plain and Xf Hayward Stagnation Moraines, of the Ecological Units of the Eastern United States (Cleland et al. 2007). It includes Land Type Associations (LTAs) Xa03 Chequamegon Washed Till and Outwash and Xf02 Telemark Washed End Moraine.

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### (2) PLANT COMMUNITY TYPES

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The extensive wetlands surrounding and between Wilson Lake and Star Lake are the most outstanding community types represented (Spickerman 1997). The wetlands are a unique blend of diverse sedge meadow and open bog communities. CNNF ecologists have separated these out as distinct plant communities defined as: wiregrass [See section 3 (a) for scientific names] wet meadow with and without sphagnum; areas of sphagnum lawn without sedges (Figure 4); bluejoint grass meadow; and coarse sedge/cattail meadow. These communities grade into one another and are

associated with both the stream and lake riparian areas. Some of the wiregrass areas approach a “fen-like” meadow with obvious groundwater influence. Dragon’s-mouth orchid occurs here in large numbers along the bog shore of the lakes and streams.



**Figure 4.** Wet meadow plant communities in Wilson Lake RNA occur in distinct species assemblages. The photo shows “wiregrass meadow” surrounding “sphagnum lawn”. [Photo: S. Spickerman 2006]

Shrubs of the wetlands include sweetgale, bog rosemary, bog laurel, leatherleaf, and blueberry. Herbaceous species include round-leaved sundew, pitcher plant, common bladderwort, rose pogonia, arrow-grass, cotton-grasses, bog-bean, and wild calla.

Also present is a second-growth, white pine and red pine forest of fire origin (Figure 5). This forest community type is growing on medium coarse sand glacial deposits known as eskers that rise about 40 feet (12 m) above the surrounding wetlands. The forest originated in the late 1800s following extensive cutting. Fires that raged through the slash may have scorched the soil and set back succession or the area may have burned again which could explain why the trees are less than 100 years old. Historic vegetation cover maps from 1938 indicate the forest throughout the entire



**Figure 5.** An island of dry-mesic red pine and white pine forest on a high ridge of a glacial esker. Note the fire-scarred stump in the foreground. [S. Spickerman 2006]

area averaged 0-6 inches (15 cm) DBH (UWDC 2011). On other isolated “islands” within the wetlands the pines are larger 14-20” (35-50 cm) DBH.

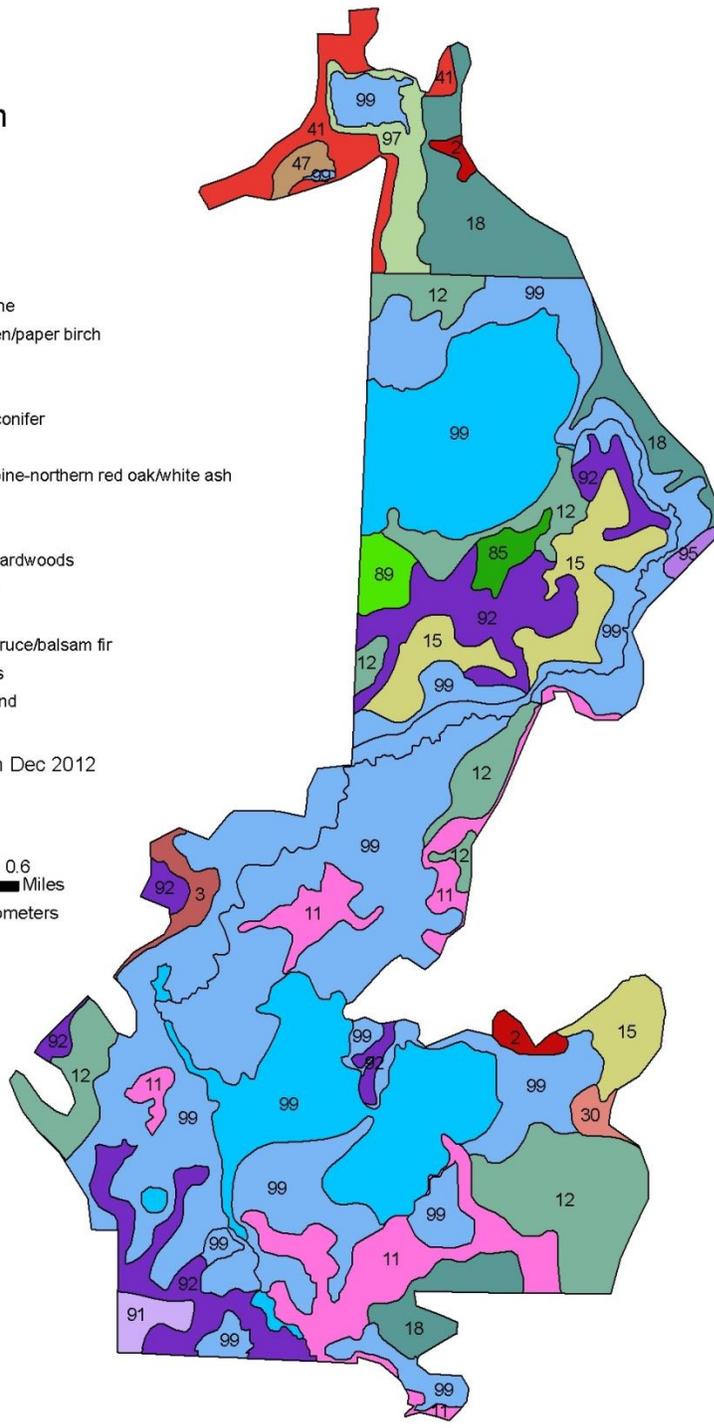
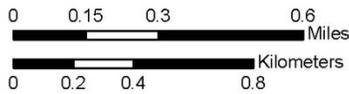
Small pockets of old-growth hardwood forest are found in several scattered locations near Star Lake where there is a moderate shrub layer, little coarse woody debris, and limited snags. Many of these stands occur as islands surrounded by both lakes and sedge meadow.

**Table 2.** Natural vegetation community types within Wilson Lake RNA using common classification systems for Wisconsin (Curtis 1959 and Kotar et al. 2002) and NGDC (2012)

Community Type (Curtis 1959)	Habitat Types (Kotar et al. 2002)	Dominant Species	NVCS Associations (NGDC 2012)*
<b>Northern dry-mesic forest</b>	PMV	white pine, red pine, paper birch	Pinus strobus - (Pinus resinosa) - Quercus rubra Forest CEGLO02480 or Pinus strobus - Tsuga canadensis Great Lakes Forest CEGLO02590
<b>Northern mesic forest</b>	ATM	hemlock, sugar maple	Tsuga canadensis - Acer saccharum - Betula alleghaniensis Forest CEGLO05044 or CEGLO02457
<b>Northern wet-mesic forest</b>	TMC	white cedar, black ash, balsam fir	Thuja occidentalis - (Larix laricina) Seepage Forest CEGLO02455
<b>Northern wet forest</b>	N/A	tamarack & black spruce	Picea mariana - (Larix laricina) / Ledum groenlandicum / Sphagnum spp. Forest CEGLO05271 or Picea mariana / Chamaedaphne calyculata / Sphagnum spp. Dwarf-shrubland CEGLO05218
<b>Northern sedge meadow</b>	N/A	tussock sedge, lake sedge ( <i>Carex stricta</i> , <i>lacustris</i> )	Carex stricta - Carex spp. Herbaceous Vegetation CEGLO02258
<b>Northern sedge meadow</b>	N/A	bluejoint grass	Calamagrostis canadensis - Eupatorium maculatum Herbaceous Vegetation CEGLO05174 or CEGLO05256
<b>Open bog</b>	N/A	labrador tea, leatherleaf	Chamaedaphne calyculata / Eriophorum virginicum / Sphagnum rubellum Dwarf-shrubland CEGLO06513 (and variations) or Chamaedaphne calyculata - Ledum groenlandicum - Kalmia polifolia Bog Dwarf-shrubland CEGLO05278
<b>Lakes: soft, acid, bog, drainage</b> (Wilson and Star)	N/A	pondweed, bullhead lily, coontail	Potamogeton spp. - Ceratophyllum spp. Midwest Herbaceous Vegetation CEGLO02282 or CEGLO02262
<b>Lake: shallow, hard, drainage</b> (Spring Lake)	N/A	pondweed, bullhead lily, coontail	Potamogeton spp. - Ceratophyllum spp. Midwest Herbaceous Vegetation CEGLO02282 or CEGLO02262
<b>Stream: slow, soft, warm</b> (Wilson Creek)	N/A	eel grass	Vallisneria americana

\* These National Vegetation Classification System associations are preliminary.

## Wilson Lake RNA Existing Vegetation



**Figure 6.** Existing Vegetation (formerly Forest Service Forest Type) in Wilson Lake RNA (CNNF data 2012; D. Veen)

**Table 3.** Existing Vegetation types (as dominant tree cover) and area in Wilson Lake RNA and key to Figure 6 (acreages based on CNNF GIS data 2012)

EV CODE	Existing Vegetation (EV)	Acres	Hectares
2	Red pine	7.0	2.8
3	Eastern white pine	8.7	3.5
11	Balsam fir-aspen/paper birch	81.9	33.1
12	Black spruce	118.2	47.8
15	Tamarack	63.0	25.5
18	Mixed swamp conifer	76.0	30.7
30	Mixed pines	4.9	2.0
41	Eastern white pine-northern red oak/white ash	29.1	11.8
47	Oak-aspen	5.2	2.1
85	Sugar maple	8.0	3.3
89	Mixed upland hardwoods	10.1	4.1
91	Quaking aspen	8.2	3.3
92	Paper birch	91.6	37
95	Aspen-white spruce/balsam fir	2.8	1.2
97	Lowland shrubs	20.3	8.2
99	Opening Lowland	425.1	172
99	Water	200.8	81.3
Grand Total		1,160.9	469.7

(3) DESCRIPTION OF THE VALUES OF THE RESEARCH NATURAL AREA.

(A) FLORA LIST

CNNF plant ecologists conducted several plant surveys in the years between 1996 and 2006 but not all areas have been visited. Further inventory will likely discover more species.

**Table 4.** Flora of Wilson Lake RNA (USDA PLANTS 2012)

Scientific name	Common Name	Scientific name	Common Name
<i>Abies balsamea</i>	balsam fir	<i>Betula pumila</i> var.	bog birch
<i>Acer rubrum</i>	red maple	<i>glandulifera</i>	
<i>Acer saccharum</i>	sugar maple	<i>Calamagrostis canadensis</i>	bluejoint grass
<i>Alnus incana</i>	gray alder	<i>Calla palustris</i>	water arum
<i>Amelanchier</i> sp.	serviceberry	<i>Caltha palustris</i>	marsh marigold
<i>Andromeda glaucophylla</i>	bog rosemary	<i>Carex aquatilis</i> var.	water sedge
<i>Antennaria neglecta</i>	pussytoes	<i>aquatilis</i>	
<i>Apocynum androsaemifolium</i>	spreading dogbane	<i>Carex arctata</i>	drooping woodland sedge
<i>Aralia nudicaulis</i>	wild sarsaparilla	<i>Carex aurea</i>	golden sedge
<i>Arethusa bulbosa</i>	dragon's-mouth orchid	<i>Carex chordorrhiza</i>	creeping sedge
<i>Asclepias incarnata</i>	swamp milkweed	<i>Carex echinata</i>	star sedge
<i>Aster macrophyllus</i>	big-leaf aster	<i>Carex interior</i>	inland sedge
<i>Aster puniceus</i>	purplestem aster	<i>Carex intumescens</i>	inflated sedge
<i>Betula alleghaniensis</i>	yellow birch	<i>Carex lacustris</i>	shoreline sedge
<i>Betula papyrifera</i>	paper birch	<i>Carex lasiocarpa</i>	woollyfruit sedge

Scientific name	Common Name
<i>Carex leptalea</i>	bristly-stalked sedge
<i>Carex limosa</i>	mud sedge
<i>Carex magellanica (paupercula)</i>	boreal bog sedge
<i>Carex oligosperma</i>	Few-seeded hop sedge
<i>Carex pauciflora</i>	Few-flowered sedge
<i>Carex pensylvanica</i>	Pennsylvania sedge
<i>Carex rostrata</i>	beaked sedge
<i>Carex stipata</i>	awl-fruit sedge
<i>Carex stricta</i>	tussock sedge
<i>Carex tenera</i>	Marsh straw sedge
<i>Carex trisperma</i>	three-seeded sedge
<i>Ceratophyllum demersum</i>	coon's tail
<i>Chamaedaphne calyculata</i>	leatherleaf
<i>Chimaphila umbellata</i>	pipsissewa
<i>Chrysosplenium americanum</i>	American golden saxifrage
<i>Cicuta bulbifera</i>	bulblet water hemlock
<i>Cirsium arvense</i>	Canada thistle
<i>Clintonia borealis</i>	blue bead lily
<i>Comptonia peregrina</i>	sweet-fern
<i>Coptis trifolia</i>	goldthread
<i>Corallorhiza trifida</i>	yellow coral-root
<i>Cornus alternifolia</i>	alternate-leaved dogwood
<i>Cornus canadensis</i>	bunchberry
<i>Corylus cornuta</i>	beaked hazelnut
<i>Danthonia spicata</i>	poverty oatgrass
<i>Diphasiastrum complanatum</i>	groundcedar
<i>Diphasiastrum digitatum</i>	northern running pine
<i>Drosera intermedia</i>	spoonleaf sundew
<i>Drosera rotundifolia</i>	roundleaf sundew
<i>Dryopteris carthusiana</i>	spinulose woodfern
<i>Dryopteris cristata</i>	crested woodfern
<i>Dulichium arundinaceum</i>	threeway sedge
<i>Elodea canadensis</i>	Canadian waterweed
<i>Equisetum arvense</i>	field horsetail
<i>Equisetum sylvaticum</i>	woods horsetail
<i>Eriophorum angustifolium</i>	tall cottongrass
<i>Eriophorum spissum</i>	tussock cottongrass
<i>Fragaria virginiana</i>	strawberry
<i>Galium triflorum</i>	sweet-scented bedstraw
<i>Gaultheria hispidula</i>	creeping snowberry
<i>Glyceria canadensis</i>	rattlesnake mannagrass
<i>Glyceria striata</i>	fowl mannagrass
<i>Goodyera tessellata</i>	checkered rattlesnake plantain

Scientific name	Common Name
<i>Gymnocarpium robertianum</i>	oak fern
<i>Hieracium aurantiacum</i>	orange hawkweed
<i>Iris versicolor</i>	blueflag iris
<i>Kalmia polifolia</i>	bog laurel
<i>Larix laricina</i>	tamarack
<i>Linnaea borealis</i>	twinflower
<i>Listera cordata</i>	heartleaf twayblade
<i>Lonicera hirsuta</i>	hairy honeysuckle
<i>Lycopodiella inundata</i>	inundated clubmoss
<i>Lycopodium clavatum</i>	running club-moss
<i>Lycopodium dendroideum</i>	northern tree club-moss
<i>Lycopus americanus</i>	American water horehound
<i>Lysimachia thyrsiflora</i>	tufted loosestrife
<i>Maianthemum canadense</i>	wild lily-of-the-valley
<i>Maianthemum trifolium</i>	three-leaf false Solomon's-seal
<i>Menyanthes trifoliata</i>	buckbean
<i>Mitchella repens</i>	partridgeberry
<i>Mitella nuda</i>	naked mitrewort
<i>Moneses uniflora</i>	one-flowered pyrola
<i>Myrica gale</i>	sweetgale
<i>Nuphar variegata</i>	bull-head pond-lily
<i>Nymphaea odorata</i>	American white waterlily
<i>Onoclea sensibilis</i>	sensitive fern
<i>Oryzopsis asperifolia</i>	roughleaf ricegrass
<i>Osmunda cinnamomea</i>	cinnamon fern
<i>Osmunda regalis</i>	royal fern
<i>Packera paupercula</i>	balsam groundsel
<i>Phegopteris hexagonoptera</i>	broad beechfern
<i>Phragmites australis</i>	common reed
<i>Picea glauca</i>	white spruce
<i>Picea mariana</i>	black spruce
<i>Pinus resinosa</i>	red pine
<i>Pinus strobus</i>	white pine
<i>Platanthera hyperborea</i>	northern green orchid
<i>Platanthera obtusata</i>	bluntleaved orchid
<i>Poa pratensis</i>	Kentucky bluegrass
<i>Pogonia ophioglossoides</i>	snakemouth orchid
<i>Polygala paucifolia</i>	gaywings
<i>Populus tremuloides</i>	trembling aspen
<i>Potamogeton amplifolius</i>	largeleaf pondweed
<i>Potamogeton natans</i>	floating pondweed
<i>Potamogeton oakesianus</i>	Oakes' pondweed
<i>Potamogeton obtusifolius</i>	bluntleaf pondweed
<i>Potamogeton robbinsii</i>	Robbins' pondweed

Scientific name	Common Name
<i>Potentilla palustris</i>	marsh cinquefoil
<i>Pteridium aquilinum</i>	bracken fern
<i>Quercus rubra</i>	red oak
<i>Rubus idaeus</i>	red raspberry
<i>Rubus pubescens</i>	dwarf red blackberry
<i>Salix spp.</i>	willow
<i>Sarracenia purpurea</i>	purple pitcherplant
<i>Saxifraga pensylvanica</i>	eastern swamp saxifrage
<i>Schoenoplectus americanus</i>	chairmaker's bulrush
<i>Scirpus validus</i>	softstem bulrush
<i>Sorbus americana</i>	mountain ash
<i>Spirodela polyrrhiza</i>	giant duckweed
<i>Taraxacum officinale</i>	common dandelion
<i>Thuja occidentalis</i>	white cedar

Scientific name	Common Name
<i>Trientalis borealis</i>	starflower
<i>Trillium cernuum</i>	nodding trillium
<i>Tsuga canadensis</i>	eastern hemlock
<i>Typha latifolia</i>	cattail
<i>Utricularia intermedia</i>	flatleaf bladderwort
<i>Utricularia vulgaris</i>	common bladderwort
<i>Vaccinium macrocarpon</i>	cranberry
<i>Vaccinium myrtilloides</i>	velvet-leaf blueberry
<i>Vaccinium oxycoccus</i>	small cranberry
<i>Vallisneria americana</i>	American eelgrass
<i>Viburnum acerifolium</i>	mapleleaf viburnum
<i>Viola macloskeyi</i>	smooth white violet
<i>Waldsteinia fragarioides</i>	barren ground strawberry

#### (B) FAUNA LIST

There has been no systematic inventory of fauna; more work is needed (See Table 5 for scientific names). Wilson Lake RNA provides important habitat for spruce grouse, a state threatened species, which is known to occur here (Figure 8). Nesting bald eagles and osprey have been observed within the wetland complex. Other species observed during initial ecological surveys are listed in Table 5.

**Table 5.** Fauna observed in Wilson Creek RNA during CNNF plant surveys in 1997 & 2006 (AOU Checklist 1983; Watermolen & Murrell 2001)

Scientific Name	Common Name
<b>Birds</b>	
<i>Falci pennis canadensis</i>	spruce grouse
<i>Haliaeetus leucocephalus</i>	bald eagle
<i>Pandion haliaetus</i>	osprey
<i>Gavia immer</i>	common loon
<i>Anas platyrhynchos</i>	mallard
<i>Aix sponsa</i>	wood duck
<i>Anas discors</i>	blue-winged teal
<b>Fish*</b>	
<i>Micropterus salmoides</i>	largemouth bass
<i>Perca flavescens</i>	perch
<i>Lepomis macrochirus</i>	bluegill
<i>Lepomis gibbosus</i>	pumpkinseed
<i>Ameiurus sp</i>	bullhead
<b>Mammals</b>	
<i>Castor canadensis</i>	beaver
<i>Ondatra zibethicus</i>	muskrat
<i>Odocoileus virginianus</i>	white-tailed deer

(\*No CNNF survey, list based on Sather and Threinen 1968)

This site is embedded within an area recognized by the Wisconsin Bird Conservation Initiative as an *Important Bird Area* which by definition provides essential habitat to one or more species of breeding or non-breeding birds (Steele 2007). The identification of a site as an Important Bird Area carries no legal status or regulatory requirements.

### (C) GEOLOGY

The geology of northern Wisconsin was shaped by long periods of cooling climate and expansion of glaciers; the last expansion is known as the Wisconsin Glaciation. This glacial advance began about 26,000 years ago when the Laurentide Ice Sheet spread across the continent. As this glacier retreated, till deposition and glacial melt-water formed an irregular landscape of hills pocked with depressions that later became lakes and wetlands (WGNHS 2011).

The majority of the RNA lies within Chequamegon Washed Till and Outwash Land Type Association (LTA) (WI DNR 2003). This LTA contains metamorphic, igneous, and volcanic bedrock. Greater than 70% of the bedrock is within 5 feet of the land surface. The balance of the RNA is within Telemark Washed End Moraine. Here the bedrock is carbonates and the bedrock is between 100 and 50 feet of the land surface. Geomorphologic processes throughout the RNA include till and glacial meltwater deposition.

The site contains numerous glacial eskers that rise abruptly above the otherwise flat marshes and lakes (Figures 5 and 7). Eskers were formed when glacial melt water ran through the ice, depositing debris as it flowed. When the glacier retreated it left behind a long, sinuous ridge of unsorted material.



**Figure 7.** A steep-sided glacial esker rises sharply out of Wilson Lake and is accessible only by canoe. [Photo: Steven Spickerman 1997]

### (D) SOILS

Wetland soils of the RNA fall into the Loxley, Beseman, and Dawson peat series while the majority of upland islands are of the Padus-Karlin series (USDA NRCS 2003). The peat soils of the wetlands are generally found in depressions and drainages. The soils are very poorly drained and consist of organic material derived largely from sphagnum mosses and herbaceous plants. The water table is at the surface throughout the year.

The upland areas consist of soils that are well drained and occur on steep side slopes of eskers and large drumlinoid features that have an outwash core. Textures include a silt loam, fine sandy loam, or sandy loam surface over medium and coarse sands. The underlying sands may have some gravel mixed in but the layer that is predominantly gravel is usually less than 2 feet (0.6 m) thick.

(E) TOPOGRAPHY

The topography is mostly level with short, steep ridges (eskers) shown in Figure 7 that rise 30 to 40 feet (9-12 m) above the surrounding level wetlands. See Identification Section: *Boundary Map* showing 10-foot contour intervals. Characteristic landform pattern is rolling collapsed moraine and outwash plain complex. The general landform pattern of Telemark Washed End Moraine (very northern tip of the RNA and westernmost portion in section 8) is hilly collapsed moraine.

(F) AQUATIC/RIPARIAN

The RNA surrounds Wilson Lake, a 103-acre (42 ha) acid bog lake. It supports a healthy fish population (Table 5) that also includes undetermined species of minnows. Spring Lake is a small 11-acre (4 ha) lake whose unnamed outlet stream, flows into Star Lake. It has several spring water sources. The 104-acre (42 ha) Star Lake is also an acid bog, shallow lake with a maximum depth of 15 feet (4 m) and is the headwaters of Wilson Creek.

Wilson Creek originates from two small feeder streams flowing into Star Lake and then flows south through the RNA into Wilson Lake and finally into Lost Land Lake on the Teal River System (Johannes et al. 1970). Wilson Lake RNA is within the West Fork Chippewa River Watershed of the Upper Chippewa River Basin that flows to the Mississippi River (WI DNR 2013). The state of Wisconsin maintains authority over the natural lakes of the state and the DNR is charged with management of fishery resources (Kent & Dudiak 2001).

(G) RARE, THREATENED, ENDANGERED, OR SENSITIVE SPECIES

There are no known federally listed species within Wilson Lake RNA. Species tracked by Wisconsin Natural Heritage Inventory are listed in Table 6. All are *globally secure* (G5 rank). The site needs further inventory of invertebrates, bats, herptiles, and bryophytes.

**Table 6.** Rare and unique species in Wilson Lake RNA, State status and Natural Heritage rank

Common Name	Scientific Name	State Status, Heritage Rank <sup>1</sup>
dragon’s mouth orchid	<i>Arethusa bulbosa</i>	not listed
spruce grouse	<i>Falcipennis canadensis</i>	THR S1S2B,S1S2N
osprey	<i>Pandion haliaetus</i>	SC/M S4B
bald eagle	<i>Haliaeetus leucocephalus</i>	SC/P S4B S4N
common loon (no longer tracked)	<i>Gavia immer</i>	SC/M S3S4B



**Figure 8.** A spruce grouse in Wilson Lake RNA perches in its name-sake tree. [Photo: S. Spickerman, 2007]

<sup>1</sup> see Appendix 4: *Wisconsin Natural Heritage Working List – Rank Definitions*

(H) LIST OF RARE ELEMENTS AND RARE PLANT COMMUNITIES

The plant communities within Wilson Lake RNA tracked by Wisconsin Natural Heritage Inventory are listed in Table 7. While none of the communities are especially rare, the assemblage of continuous riparian habitats in unspoiled condition is uncommon in the state.

**Table 7.** Uncommon Plant Communities within Wilson Lake RNA, Global Rank and State Rank (WI DNR 2013)

Element/Community Name	Global Rank	State Rank <sup>1</sup>
open bog	G5	S4
northern dry-mesic forest	G4	S3
lake- shallow, soft, drainage	GNR	S3
lake- soft, bog	GNR	S4
lake - spring	GNR	S3

<sup>1</sup> see Appendix 4: *Natural Heritage Working List-Rank Definitions*

### c. RESOURCE INFORMATION

This section discusses resources that occur in the RNA framed within the context of *potentially conflicting uses* - where future conflicts may arise. The surface rights of Wilson Lake RNA are owned by the United States government. The land is administered by the USDA Forest Service, Chequamegon-Nicolet National Forest and its day to day protection is the responsibility of the district ranger.

#### (1) MINERALS

Outstanding, Reserved, and Federal minerals are open to hardrock prospecting within the Research Natural Area (Table 8) and the Forest Service must allow access to the surface to the mineral owner. The state of the knowledge of the bedrock geology and where actual ore bodies may be found (if they exist and are commercial) is not precise enough to assign relative probability of prospecting activity within the RNA (Knight pers comm 2013). Mineral ownership does not preclude use of the site for research but if prospecting took place ground disturbance to localized areas would occur.

To date there has been no hardrock prospecting permit activity in the RNA. Forest Standards and Guidelines regarding minerals development are listed in Appendix 3: *Management Prescription*.

**Table 8.** Mineral resources within Wilson Lake RNA (CNNF Forest data, 2005)

Township-Range	Section	Acres*	Hectares	Mineral ownership	Comments
43N 6W	32	all	all	Federally owned	
	33	all	all	Reserved	Statement of Mineral Claim filed
42N 6W	4	160	65	Reserved	Statement of Mineral Claim filed
	8,17,16	all	all	Reserved	
	9	40 balance	16 balance	Outstanding Reserved	Statement of Mineral Claim filed

#### Definitions:

**Outstanding:** Third party (mineral rights were not owned by the surface land owner when the land was sold to the National Forest) mineral ownership rights are described in deed and State Law. Forest Service must allow access to the surface to the mineral owner.

**Reserved:** The surface land owner owned the mineral rights and retained those mineral rights when they sold the surface land to the National Forest. These mineral rights are subject to Secretary of Agriculture's Rules & Regulations and State laws based on date of land purchase. Forest Service must allow access to the surface to the mineral owner.

**Federally owned:** Mineral estate is administered by Bureau of Land Management and are open for prospecting.

**Statement of Mineral Claim** was filed by the Forest Service: State of Wisconsin Law provides a way for a surface owner to file for and acquire the Outstanding mineral rights when those rights have become “dormant”. Dormant mineral rights are acquired by filing a Statement of Mineral Claim.

**All:** Means the total acreage within the RNA boundary in that section.

**Balance:** Means the remaining acreage minus the listed acres within the RNA boundary in that section.

**\*Acres:** This represents only a rough estimate of the number of acres within the proposed RNA boundary. Mineral ownership acreage is estimated because RNA boundaries are meander lines and mineral ownership is a legal description.

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## (2) GRAZING

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There is no grazing on the Chequamegon-Nicolet National Forest. The 2004 CNNF Forest Plan includes a standard that prohibits grazing in Research Natural Areas (Appendix 3 -*Forest Management Area Direction*).

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## (3) PLANTS (INCLUDING TIMBER AND SPECIAL FOREST PRODUCTS)

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Approximately half of the forested area (Table 3) within the RNA [250 acres (101 ha)] are of upland timber types routinely harvested elsewhere on the CNNF. The balance is lowland forest (black spruce, tamarack, northern white cedar) that is not harvested due to regeneration and viability concerns (USDA Forest Service 2004a pg 2-8).

The 2004 CNNF Forest Plan includes a guideline that prohibits gathering Special Forest Products for personal use or commercial sale within RNAs (USDA Forest Service 2004a pg 3-50). When the CNNF issues a permit to gather products such as club moss or firewood, the permittee is provided with a map of areas, including RNAs, which are off-limits to harvesting. The CNNF supplement to the Forest Handbook (FSH2409.18) states that “gathering small amounts of fruit, nuts, berries, and fungi (mushrooms) for personal use is allowed” in RNAs.

Wilson Lake RNA at the time of establishment is not designated as an Ojibwe Tribal RNA (Tribal-USDA MOU) which would limit tribal gathering. The CNNF is continuing to work with the Tribes to protect these unique features and to provide for the exercise of treaty-reserved hunting and gathering rights. See Section d.(2) -*Cultural/Heritage* for further discussion.

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## (4) WATERSHED VALUES

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The RNA is within the West Fork Chippewa River Watershed in the Mississippi River basin (WI DNR 2012). The RNA will protect the headwaters of Wilson Creek and the quality and quantity of water that is supplied by Wilson Creek, Spring Lake, Star Lake, and Wilson Lake to the watershed. Wilson Lake RNA is ninety-eight percent wetland (see *Landscape Overview* in Identification Section) and stores an enormous amount of water. See Section b. (3) (f) for more information on the *Aquatic/Riparian Values* within the RNA.

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## (5) RECREATION USE

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Cross-country skiers, anglers, birders, canoeists, campers, horse-back riders, mountain bikers, and hikers have been known to frequent Wilson Lake via an old road (FR 658) that is not part of the RNA. There are two user-developed campsites on the north side of Wilson Lake that were open to motor vehicle access prior to the 2004 CNNF Forest Plan designating the area as non-motorized. The lake receives less boating and camping use now that motorized access is restricted, however, one could use a portage wheel to move a canoe. A small parking area was created in 2011 on Forest Road 206 east of Wilson Lake where the gated FR 658 leads to the boundary of the RNA. FR 658 is a spur of the Chequamegon Area Mountain Bike Association trail system that is entirely outside the RNA (CAMBA 2013). Rock Lake National Recreation Trail passes adjacent to the northern tip of the RNA (see *Boundary Map*).

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## (6) WILDLIFE

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RNA designation protects 1,162 acres (470 ha) in an undisturbed state for wildlife. Osprey and bald eagles nest within the site. The area provides habitat for many game animals, birds, and fish. Hunting and fishing are compatible with RNA status and hunting may be crucial in reducing high white-tailed deer numbers.

Although no bat surveys have been conducted within Wilson lake RNA, it does provide potential habitat. Seven species of bats occur on the CNNF and three have been listed as Regional Forester Sensitive due to the looming threat of *white-nose syndrome*. All bats rely at one time or another on a matrix of older forests and water such as Wilson Lake RNA provides. Large trees in older forests with open understory are more often selected, and bats especially rely on deep tree cavities, loose bark, and lightning strike crevices for roosts. Because of the ephemeral nature of such structures, the successional changes within a large RNA will provide these essential habitat characteristic over time (Heeringa 2012).

This site is embedded within an area recognized by the Wisconsin Bird Conservation Initiative as an *Important Bird Area* which by definition provides essential habitat to one or more species of breeding or non-breeding birds (Steele 2007).



**Figure 9.** Forest Service ecologists explore the upper reaches of Wilson creek after crossing a beaver dam [Photo: Steven Spickerman 1997]

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## (7) TRANSPORTATION/ROAD SYSTEM

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No roads or trails are identified within the RNA nor do roads form any of the boundary. The current rule guiding motorized access is contained in the Travel Management Project Decision Notice via a Motorized Vehicle Use Map for 2014 (USDA Forest Service 2014). This map shows roads available for motorized use. The RNA is embedded within a large semi-primitive non-

motorized area so no motors are allowed within or up to the boundary of the RNA. There is an old road (FR 658 on some maps) leading to the RNA boundary on the north shore of Wilson Lake that became non-motorized with the 2004 CNNF Forest Plan and was gated in 2011. This road has a well-drained native surface and is beginning to revegetate. Since it is popular and part of the Chequamegon Area Mountain Bike Association trail system it will likely remain a path with moderate use.

#### d. HISTORICAL INFORMATION

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##### (1) RESEARCH/EDUCATION USE AND INTEREST: HISTORY OF ESTABLISHMENT

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The Forest Service conducted plant surveys here in the mid-1990s as well as breeding bird surveys. Information on these surveys is available from the CNNF RNA coordinator. The RNA was evaluated for a Wisconsin DNR “Peatlands Study” (Anderson et al 2006).

##### History of establishment:

The CNNF began a forest-wide ecological inventory to identify high quality ecological features in the early 1990s (Parker 1999). Wilson Lake was one of the highest ranked sites based on its ecological values. It was assigned a high conservation priority and deferred from management activity. About the same time, the UDDA FS Eastern Region and Northern Research Station undertook a gap analysis of high-quality examples of alliances (ecological communities) within each subsection (Tyrrell et al 2000). This site filled a cell in that gap analysis.

The Natural Heritage Inventory Section of the Bureau of Endangered Resources of the Wisconsin DNR worked closely with CNNF ecologists in evaluating this site, making numerous field visits and assisting with ecological inventory and evaluation. They completed a *Site Evaluation* and recommended Wilson Lake for protection.

The Wisconsin Department of Natural Resources was also interested in achieving ecosystem representation within the State Natural Area Network (WI DNR 2011). They signed a Memorandum of Understanding (MOU) in 2008 with the CNNF to co-designate all current and future RNAs and CNNF Special Management Areas (SMAs) as State Natural Areas. This designation does not restrict the goals of research and education for the site. This RNA may be listed as *Wilson Creek Wetlands* on the State website and represents 600 acres (243 ha) of open bog and northern sedge meadow community types in the state Natural Areas Network.

The “Wilson Lake Wetland” site was identified as a Candidate RNA in the Draft Forest Plan and analyzed in the Environmental Impact Statement. It was recommended for designation as a Research Natural Area in the 2004 CNNF Forest Plan Record of Decision (USDA Forest Service 2004c).

A 2008 region-wide analysis was conducted in conjunction with the USDA FS Northern Research Station to evaluate all candidate RNAs in the Eastern Region. Based on this analysis, the Eastern Regional Office recommended Wilson Lake for establishment. Minor boundary modifications were made in 2011 that simplified the boundary for mapping and recordation purposes.

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## (2) CULTURAL/HERITAGE

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The RNA protects several pre-European contact sites, two dams, a bridge, and the remnants of an old log cabin within Wilson Lake RNA (USDA Forest Service 2003). None of the sites have been evaluated for the National Registry of Historic Places (Potaracke pers comm) hence a determination would have to be made on the potential effects of any ground-disturbing research near the sites.

While other Indian tribes currently live in Wisconsin, Ojibwe tribes specifically retained the right to hunt, fish, and gather on lands that make up the CNNF through a series of session treaties. The Forest Service (and Eastern Region, Northern Research Station and USFS Law Enforcement) recognizes treaty rights through a "Memorandum of Understanding" with eleven sovereign and federally recognized tribes of Ojibwe Indians (Tribal-USDA MOU). Today, these treaty rights are being exercised by Ojibwe Indian tribes under rules promulgated and enforced by the tribes. One of these rules recognizes twelve existing RNAs on the CNNF as "Tribal Research Natural Areas" because it is important to protect the unique features that these areas provide. The rule prohibits gathering in Tribal RNAs except for tribally-permitted ceremonial use.

At the time of establishment Wilson Lake RNA has not been adopted as an Ojibwe Tribal RNA which would require that tribal members follow the gathering regulation in the MOU. The CNNF is continuing to work with the Ojibwe Tribes to protect these unique features and to provide for the exercise of treaty-reserved rights. Upon establishment, the Tribes will have an opportunity to also designate it as a Tribal RNA (Tribal-USDA MOU). The 2004 CNNF Forest Plan includes an objective (USDA Forest Service 2004c p. 1-7) that "nothing in this Forest Plan or its implementation (i.e. establishing the RNA) is intended to modify, abrogate, or otherwise adversely affect tribal reserved or treaty guaranteed rights applicable within the CNNF".

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## (3) DISTURBANCE HISTORY

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Widespread timber harvest across Wisconsin in the late 1800s was followed by large wildfires that burned the slash, killed residual trees, and scorched the soil in places. When the area became National Forest in the 1930s, most of the upland areas within the RNA were designated as "water impact zones" and were deferred from management. The Forest Service harvested timber (thinning or *wolf tree removal*) within three stands in the decades of the 1960s and 1980s (CNNF data). Aside from these three stands, the forest has been undisturbed since the initial cutover.

Low lying areas along Wilson Creek have been periodically flooded by beaver impoundments, especially the Star Lake and Spring Lake areas. Beaver are active within the site (Figure 9).

There are two small concrete dams in a narrow area of Wilson Creek about 1,300 feet (400 m) below the outlet of Wilson Lake. They were likely built in the logging era of the late 1800s to hold water for larger lakes downstream. Currently, these dams are falling apart and do not restrict much flow (Reinecke pers comm).

Until 2011, a road was open to vehicular travel right up to the shore of Wilson Lake where people launched small boats and camped. The entire RNA is within a larger non-motorized management designation (MA 6B) per the 2004 CNNF Forest Plan. Wilson lake is now only accessible by foot, bicycle, or horse. The old road is a spur of the Chequamegon Area Mountain Bike Association trail system (CAMBA 2013).

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#### (4) OCCURRENCE OF EXOTIC SPECIES

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The CNNF has developed an invasive plant strategy (USDA Forest Service 2009) that utilizes adaptive pest management to discover, prioritize, and control non-native invasive plants wherever they occur. All invasive plant sites are entered in to the CNNF database and will be monitored and considered for treatment. A few plants of Canada thistle (*Cirsium arvense*), a high priority species for control, found on the gravelly shore of Wilson Lake were pulled once in 2009 and are monitored. There is a patch of Common reed (*Phragmites australis*) on the western edge of the wetland which appears to be the native genotype. Other non-native plants of lower control priority occur on the old road outside the site: orange hawkweed (*Hieracium aurantiacum*), dandelion (*Taraxacum officinale*), and Kentucky bluegrass (*Poa pratensis*).

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#### e. OTHER INFORMATION

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##### (1) ANY PERMANENT RESEARCH PLOTS AND/OR PHOTO POINTS

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There are no permanent monitoring plots within Wilson Lake RNA as of 2013. The RNA photo record is of a general nature with no monumented photo points.

The Station Director shall establish and maintain a system for archiving data and reports from the RNA in a manner that will facilitate the exchange and transfer of information among Stations and scientists. Research data files are maintained by the following office: Chequamegon-Nicolet National Forest, 1170 Fourth Avenue South, Park Falls WI 54552.

Plant collections will be housed at a herbarium located at the University of Wisconsin-Madison Herbarium or a place approved by the Station Director. All animal specimens collected in the course of research will be properly preserved and maintained within the Chequamegon-Nicolet National Forest Supervisor's office or a designated university.

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##### (2) BIBLIOGRAPHY

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A listing of citations used in this document, useful references, reports, and journal articles that resulted from study within this RNA are listed in Appendix 2 – *Bibliography*.

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##### (3) POTENTIAL RESEARCH TOPICS

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Potential research topics include peatlands, sedge plant communities, shallow softwater lake systems and northern dry-mesic forest community in juxtaposition with groundwater-influenced wetlands.

The Northern Research Station along with the Chequamegon-Nicolet National Forest shall encourage the use of this RNA by scientists and educators. This site has been co-designated by the State of Wisconsin as a State Natural Area and as such appears on their web site (WI DNR 2011).

f. EVALUATION OF SPECIFIC MANAGEMENT RECOMMENDATIONS ON THE RESEARCH  
NATURAL AREA

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The Great Divide district ranger has responsibility for the protection of Wilson Lake RNA.

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(1) POTENTIAL OR EXISTING CONFLICTS; PRINCIPAL MANAGEMENT ISSUES

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Principal management issues will be adjacent forest management and recreation. Federal lands surrounding Wilson Lake RNA are designated for Even-aged Hardwoods: Oak-Pine (Management Area 3B) within a Semi-Primitive, Non-Motorized, Moderate Disturbance overlay (MA 6B) (USDA Forest Service 2004a). Standards and guidelines for both Management Areas are applied and when they conflict, the more restrictive standards or guidelines prevail. In MA 3B large patch conditions are restored or maintained with a relatively continuous canopy. Even-aged management activities (primarily shelterwood and removal harvests) create temporary openings up to 40 acres (16 ha). The non-motorized designation (6B) should provide protection from damage and introduction of invasive species caused by vehicles.

There is private land bordering the RNA in the west and south (grey shading on Location Section - *Boundary Map*) which has potential for conflict depending on the private land use. There is a house on the western private land on a hill above Star Lake. There are no outstanding timber rights on any of the tracts in the RNA, nor are there any outstanding special use permits.

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(2) SPECIAL MANAGEMENT AREA IF THE RESEARCH NATURAL AREA IS WITHIN ONE

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The Wilson Lake RNA is does not include any lands designated by congress in any special management category.

g. PHOTOGRAPHS

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All photographs used in this Establishment Record are the property of the Chequamegon-Nicolet National Forest but not copyrighted. Older slides from the 1990s were scanned to include in this document and are with the site file housed in the Park Falls office of the CNNF. An electronic file is part of this establishment record.



**Figure 10.** A shallow shoreline of Wilson Lake showing the clear, lightly tannic acid-stained water common throughout the RNA. [Photo: S. Spickerman, 2008]



**Figure 11.** A sedge and low shrub dominated wetland community with scattered tamarack and black spruce trees [Photo: S. Spickerman]

## APPENDIX 2 BIBLIOGRAPHY

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Below is all literature cited in this establishment record including references useful for researchers, and journal articles or publications that have resulted from studies conducted on the site.

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## APPENDIX 3 FOREST MANAGEMENT AREA DIRECTION

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The management prescription for the Wilson Lake RNA is embodied in the management area (MA) direction and guidance presented in the Chequamegon-Nicolet National Forests 2004 Land and Resource Management Plan under Management Area 8E - Existing and Candidate Research Natural Areas (USDA Forest Service 2004b pg 3-50). A copy of that management prescription follows:

### MA 8E Existing and Candidate Research Natural Areas (RNA)

#### **Theme**

In this document, the term RNA will refer to both Existing and Candidate Research Natural Areas. MA 8E is characterized by ecologically significant natural features, representative ecosystems, and/or unique areas managed as Candidate or Existing Research Natural Areas. A broad representation of Forest community types is included in this MA. In combination with other RNAs in the nation, they form a national network of ecological areas for research, monitoring, education, and maintenance of biological diversity.

#### **Landscape Description**

MAs 8E is characterized by nearly level to steep topography with slope gradients ranging from 0 to 30%. Glacial landforms include drumlin ground moraine, collapsed and uncollapsed outwash plains, washed moraines and eskers. The soils range from sandy to silty in the surface over loamy to sandy sediments. Soil moisture regimes range from dry to mesic and nutrient status ranges from poor to rich. A broad array of Forest Habitat Types and LTAs are represented in this MA.

#### Desired Future Condition

#### **Landscape Composition and Structure**

RNAs are chosen as high quality representatives of ecological communities found on the Forest. In general, they exhibit minimal evidence of past human disturbance, and contain all or most species characteristic of that community in the region. They may range in size from less than 100 acres to thousands of acres. They are generally well buffered from incompatible activities on nearby lands. RNAs are meant to include a representation of ecological types and vegetative cover across the Forest. However, composition results primarily from natural ecological processes rather than human-caused activities. As a result, late-successional upland types such as northern hardwoods, northern hardwood/hemlock, and mixed-conifers dominate the MA. A variety of wetland types may be present, from small isolated ponds and bogs to large (over 1000 acre) wetland complexes.

#### **Site-Level Composition and Structure**

Compositional diversity typically reflects late successional mature conditions. Dominant upland tree species are sugar maple, hemlock, yellow birch, basswood, and American beech. Lowland areas support tree species such as black spruce, northern-white cedar, and tamarack. Shade-intolerant species such as aspen, white birch, and jack pine are uncommon, limited to areas affected by natural disturbance such as windfall. Ground flora reflects the full diversity of native upland and lowland communities, and is generally unaffected by invading exotics. Structural diversity is complex, with features such as super-canopy trees, snags, den trees, downed woody debris, and canopy gaps commonly found.

#### **Disturbance Regime**

Natural ecological processes and natural disturbances shape the landscape-level and site-level vegetation composition. Components of the natural disturbance regime include individual tree throw and infrequent

larger scale blowdown, infrequent low-intensity fire, insect damage, and beaver flooding. Timber harvesting does not occur.

## **Standards and Guidelines**

### Minerals

#### Standard:

- Prohibit the development of new sources of common variety minerals.

#### Guidelines:

- Surface disturbing mineral activities and will be approved or disapproved on a case-by- case basis where minerals are federally owned. Whenever possible surface disturbance will be limited.
- When surface disturbing mineral exploration and development of reserved and outstanding mineral rights is proposed, consider reasonable alternatives that minimize impacts to RNA values.
- Acquisition of reserved and outstanding mineral rights will be considered on a willing seller / willing buyer basis.
- Existing common variety minerals developments may be utilized. Consider RNA values if full utilization requires vegetation disturbance.

### Biological Diversity

#### Guideline:

- Use native plant species for restoration activities. Use non-native plant species only if they are needed to prevent irreversible resource damage.

### Vegetation

#### Standard:

- Prohibit domestic livestock grazing.

#### Guidelines:

- Vegetation management is not permitted unless the desired vegetation type would be lost or degraded without treatment. Management practices will approximate the vegetation and processes that govern natural succession.
- Hazard trees may be cut but not removed.

### Special Forest Products

#### Guideline:

- Prohibit the gathering of special forest products for personal use or commercial sale.

### Wildlife and Fish

#### Guideline:

- Wildlife and fish habitat manipulation will not be permitted unless it's consistent with RNA objectives and is needed to maintain the character or purpose of the area.

### Fire Management

#### Guidelines:

- Allow prescribed fire within a prescription designed to accomplish specific RNA objectives where it is part of the natural disturbance regime, where it is needed to maintain or restore ecosystems, and where it is called for in the establishment record.
- Minimize the disturbance of soil and water resources by designing fire suppression activities to fit each individual situation.

### Insects and Disease

#### Guideline:

- Minimize the disturbance of soil and water resources. Minimize control actions against native insects and diseases, and native plant and animal pests. Allow limited control actions to protect adjacent resources or the features for which the research natural area was established.

#### Recreation

##### Standard:

- Prohibit recreational use that threatens or interferes with the objectives or purposes for which the RNA was established.

##### Guidelines:

- Do not install signs or construct trails or other improvements unless they contribute to RNA objectives or area protection.
- Prohibit the use of horses, bicycles, and motorized vehicles on RNA trails.

#### Heritage Resources

##### Guideline:

- Protect significant heritage resources by dispersing or limiting public use of RNAs.

#### Lands

##### Guideline:

- Clearly identify RNA boundaries, monument corners, and turning points.

#### Special Uses

##### Standard:

- Prohibit the establishment of new facilities and corridors for utility rights-of-way.

##### Guideline:

- Do not issue special use permits except as mandated by law or agreement. Exceptions may be made for research or educational activities. Phase out existing special use permits when feasible.

#### Facilities

##### Guideline:

- Do not construct buildings unless they are needed to meet RNA objectives. Existing structures may be maintained.

#### Transportation Systems

##### Guidelines:

- Do not construct new roads.
- Restore all decommissioned roads to some level of landscape restoration.

#### Research

##### Standard:

- Permit educational and research use as long as it will not result in unacceptable impacts to RNA values.

## APPENDIX 4 WISCONSIN NATURAL HERITAGE WORKING LIST – RANK DEFINITIONS

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The Wisconsin NHI Working List records which elements are tracked in the state. The working list is revised as species' populations change (increase or decrease) and as knowledge about their status and distribution in Wisconsin increase. The Working List presented here was revised in 2012. Definitions of ranks are provided below, along with definitions for other abbreviations used in the Working List.

**US Status:** Current federal protection status designated by the Office of Endangered Species, U.S. Fish and Wildlife Service indicating the biological status of a species in Wisconsin. LE = listed endangered; LT = listed threatened; PE = proposed as endangered; NEP = nonessential experimental population; C = candidate for future listing; CH = critical habitat

**State Status:** Protection category designated by the Wisconsin DNR. END = Endangered; THR = Threatened; SC = Special Concern.

WDNR and federal regulations regarding Special Concern species range from full protection to no protection. The current categories and their respective level of protection are as follows: SC/P = fully protected; SC/N = no laws regulating use, possession, or harvesting; SC/H = take regulated by establishment of open closed seasons; SC/FL = federally protected as endangered or threatened, but not so designated by WDNR; SC/M = fully protected by federal and state laws under the Migratory Bird Act.

Special Concern species are those species about which some problem of abundance or distribution is suspected but not yet proved. The main purpose of this category is to focus attention on certain species before they become threatened or endangered.

### Global Element Ranks

**G1** = Critically imperiled globally because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extinction.

**G2** = Imperiled globally because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extinction throughout its range.

**G3** = Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range (e.g., a single state or physiographic region), or because of other factor(s) making it vulnerable to extinction throughout its range; typically 21-100 occurrences.

**G4** = Uncommon but not rare, (although it may be quite rare in parts of its range, especially at the periphery) and usually widespread. Typically >100 occurrences.

**G5** = Common, widespread, and abundant (although it may be quite rare in parts of its range, especially at the periphery). Not vulnerable in most of its range.

**GH** = Known only from historical occurrence throughout its range, with the expectation that it may be rediscovered.

**GNR** = Not ranked. Replaced G? rank and some GU ranks

**GU** = Currently unrankable due to lack of data or substantially conflicting data on status or trends. Possibly in peril range-wide, but status is uncertain.

**GX** = Presumed to be extinct throughout its range (e.g. Passenger pigeon) with virtually no likelihood that it will be rediscovered.

Species with a questionable taxonomic assignment are given a "Q" after the global rank.

Subspecies and varieties are given subranks composed of the letter "T" plus a number or letter. The definition of the second character of the subrank parallels that of the full global rank. (Examples: a rare subspecies of a rare species is ranked G1T1; a rare subspecies of a common species is ranked G5T1.)

#### State Element Ranks

S1 = Critically imperiled in Wisconsin because of extreme rarity, typically 5 or fewer occurrences and/or very few (<1000) remaining individuals or acres, or due to some factor(s) making it especially vulnerable to extirpation from the state.

S2 = Imperiled in Wisconsin because of rarity, typically 6 to 20 occurrences and/or few (1000-3000) remaining individuals or acres, or due to some factor(s) making it very vulnerable to extirpation from the state.

S3 = Rare or uncommon in Wisconsin, typically 21-100 occurrences and/or 3000-10,000 individuals.

S4 = Apparently secure in Wisconsin, usually with >100 occurrences and >10,000 individuals.

S5 = Demonstrably secure in Wisconsin and essentially ineradicable under present conditions.

SNA = Accidental, non-native, reported, but unconfirmed, or falsely reported.

SH = Of historical occurrence in Wisconsin, perhaps having not been verified in the past 20 years, and suspected to be still extant. Naturally, an element would become SH without such a 20-year delay if the only known occurrence were destroyed or if it had been extensively and unsuccessfully looked for.

SNR = Not Ranked, a state rank has not yet been assessed.

SU = Currently unrankable. Possibly in peril in the state, but status is uncertain due to lack of information or substantially conflicting data on status or trends.

SX = Apparently extirpated from the state.

#### State Ranking of Long-Distance Migrant Animals

Ranking long distance aerial migrant animals presents special problems relating to the fact that their non-breeding status (rank) may be quite different from their breeding status, if any, in Wisconsin. In other words, the conservation needs of these taxa may vary between seasons. In order to present a less ambiguous picture of a migrant's status, it is necessary to specify whether the rank refers to the breeding (B) or non-breeding (N) status of the taxon in question. (e.g. S2B,S5N).

([http://dnr.wi.gov/org/land/er/wlist/06\\_2011\\_Working\\_List.pdf](http://dnr.wi.gov/org/land/er/wlist/06_2011_Working_List.pdf) Last Revised: May 31, 2012)

## APPENDIX 5 CONTRIBUTORS

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## APPENDIX 6 LEGAL DESCRIPTION

Wilson Lake RNA is located on the Great Divide District of the Chequamegon-Nicolet National Forest in Bayfield County: T 43N, R 06 W, Sections 32 and 33, and Sawyer County: T 42 N, R 06 W, Sections 4,8,9,16 and 17. The boundary is delineated as follows:

**Beginning** at the Southeast corner of Section 32, T 43 N, R 06 W,

Thence North along the East line of Section 32, 366.1 feet,

Thence Northeasterly N 11° E 781 .1 feet,

Thence Northeasterly N 6° E 101.1 feet

Thence N 58° W 95.1 feet,

Thence Southwesterly the following courses:

Direction	Distance (feet)
S 54 W	237.7
S 62 W	261.4
S 73 W	790.3
N 78 W	298.3
S 68 W	424.6

Thence westerly 20° W 250.0 feet,

Thence Northeasterly the following courses:

Direction	Distance (feet)
N 73 E	337.7
N 66 E	351.9
N 44 E	313.9
N 55 E	325.1
N 32 E	321.3
N 1 W	433.4

Thence Northeasterly approximately 600 feet to the intersection of the South R.O.W. of Forest Road 435 and the East R.O.W. of Forest Road 407,

Thence Easterly along the South R.O.W. of Forest Road 435 approximately 200 feet to the East line of Section 32,

Thence South along the East line of Section 32, 167.7 feet,

Thence Southeasterly the following courses:

Direction	Distance (feet)
S 13 W	15.7
S 13 W	48.0
S 39 W	207.7

S 6 W	101.2
S 20 E	118.0
S 61 E	126.2
N 81 E	132.5

S 74 E	146.7
S 65 E	166.8
S 17 E	136.9
S 77 E	92.8

Thence Northeasterly the following courses:

Direction	Distance (feet)
N 25 E	189.2
N 12 E	195.5
N 33 E	167.7
N 66 E	121.8

Thence Southerly thru sections 33, 04, 09 the following courses:

Direction	Distance (feet)
S 59 E	117.5
S 13 E	175.9
S 21 W	248.8
S 6 W	283.8
S 5 E	374.0
S 29 E	333.5
S 48 E	285.3
S 50 E	472.1
S 60 E	472.7
S 23 E	1583.2
S 35 E	707.2
S 45 E	643.8
S 22 E	432.9
S 0 W	382.4
S 45 W	257.5

Direction	Distance (feet)
S 45 W	824.1
S 31 W	318.7
S 21 E	351.6
S 0 W	236.8
S 20 W	270.7
S 54 W	247.7
S 90 W	236.8
N 67 W	236.7
N 23 W	236.8
N 88 W	157.8
S 20 E	89.9
S 68 W	162.8
S 24 W	320.2
S 23 W	812.1
S 32 W	606.6

Direction	Distance (feet)
S 2 E	292.2
S 9 W	581.5
S 52 W	229.8
S 22 W	217.1
S 49 W	214.4
N 56 W	218.0
S 90 W	151.0
S 48 W	149.9
S 43 W	698.6
S 54 E	136.9
N 72 E	159.3
S 66 E	175.9
N 79 E	276.6
S 70 E	149.7

to the west ROW of FR 222268

Thence south along the west ROW of FR 222268 183.4 feet

Thence Easterly the following courses:

Direction	Distance (feet)
S 51 E	127.1
N 67 E	492.2
S 75 E	281.0
N 3 E	171.5
N 32 E	95.0
N 67 E	76.7
S 53 E	231.8

Direction	Distance (feet)
S 31 E	307.5
N 49 E	198.4
N 65 E	285.2
N 53 E	483.8
N 42 E	285.4
N 81 E	221.5

Thence Southerly the following courses:

Direction	Distance (feet)
S 48 E	219.3
S 11 E	278.5
S 8 W	386.3
S 37 W	389.8
S 58 W	278.0
S 18 W	230.4

S 6 W	164.9
S 54 E	404.5
S 21 E	311.2
S 0 W	273.1
S 25 W	423.6
S 24 W	318.0
S 16 W	397.7

Thence westerly N 90 W 677.8 feet

Thence westerly N 89 W 1474.4 feet

Thence southerly the following courses:

Direction	Distance (feet)
S 10 E	161.9
S 69 E	271.7
S 67 E	221.7
S 5 W	116.0
S 60 W	483.1
S 13 W	96.0
S 50 E	171.9
S 86 E	358.2
S 31 E	160.4
S 10 W	140.7
S 38 W	103.3
S 46 W	182.9

Thence westerly the following courses:

Direction	Distance (feet)
N 72 W	121.7
N 78 W	208.2
S 75 W	170.9
N 11 E	229.8
N 27 W	184.5
N 50 W	300.7
N 73 W	258.9

to the west line of Section 16,

Thence south along the west line of Section 16, approximately 75 feet to the North 1/16 corner of Sections 16 and 17,

Thence west along the North 1/16 line of Section 17, approximately 2,630 feet to the Center North 1/16 corner of Section 17,

Thence north along the north-south ¼ line of Section 17, approximately 1,320 feet to the ¼ corner of Sections 8 and 17,

Thence west along the south line of Section 08, 299.1 feet,

Thence northeasterly the following courses:

Direction	Distance (feet)
N 6 W	338.8
N 31 W	352.5
N 33 W	240.2
N 45 W	327.7
N 38 W	280.1
N 22 W	370.5
N 36 E	125.1
S 60 E	100.9
S 35 E	332.5
S 53 E	201.5
S 67 E	130.9
N 29 E	167.4
N 14 W	171.7
N 29 W	229.8
N 60 W	221.1

Direction	Distance (feet)
N 55 W	122.9
N 32 E	131.5
N 46 E	719.4
S 48 E	135.5
S 35 E	382.9
S 70 E	149.7
N 41 E	107.1
N 0 E	201.4
N 24 W	243.5
N 43 W	220.9
N 33 E	136.9
N 43 E	215.1
N 60 E	383.6
N 30 E	153.7
N 10 W	161.6

Direction	Distance (feet)
N 69 W	334.8
N 27 E	270.3
N 2 W	352.8
N 63 E	351.4
S 68 E	348.0
N 39 E	336.6
N 50 E	78.8
N 90 E	493.6
S 78 E	298.4
N 6 E	303.7
N 24 E	243.5
N 82 E	285.1
N 88 E	94.5

to Southwest corner of Section 04,

Thence north along the west line of Section 04 approximately 5400 feet to the **Point of Beginning**.

/s/ Randy Erickson                      March 18, 2013  
 Randy Erickson                              Date  
 Land Surveyor, Chequamegon-Nicolet National Forest