DESIGNATION ORDER

USDA Forest Service, Eastern Region
Chequamegon-Nicolet National Forest
Lakewood/Laona Ranger District
Oconto County, Wisconsin

South Branch Beech Grove

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 South Branch Beech Grove Research Natural Area. It shall be comprised of 226 acres (91 hectares) of land in Oconto County, in the state of Wisconsin, on the Lakewood/Laona 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

5/11/15
Date

SIGNATURE PAGE

for

RESEARCH NATURAL AREA ESTABLISHMENT RECORD

South Branch Beech Grove

Research Natural Area

Chequamegon-Nicolet National Forest
Oconto County, 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
Marjory E. Brzeskiewicz, Botanist, Chequamegon-Nicolet National Forest

Draft by: /s/ Dawn Hinebaugh Date: 2005
Dawn Hinebaugh, WI DNR

Recommended by: Jeff Seefeldt Date 2/18/15
Jeffery Seefeldt, District Ranger, Lakewood-Laona 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

January 2015

Establishment Record for *South Branch Beech Grove* Research Natural Area

Chequamegon-Nicolet National Forest, Lakewood-Laona District, Oconto County, Wisconsin

Cover photo: A large diameter beech tree (*Fagus grandifolia*) within the South Branch Beech Grove RNA (Photo: Chequamegon-Nicolet 2010)

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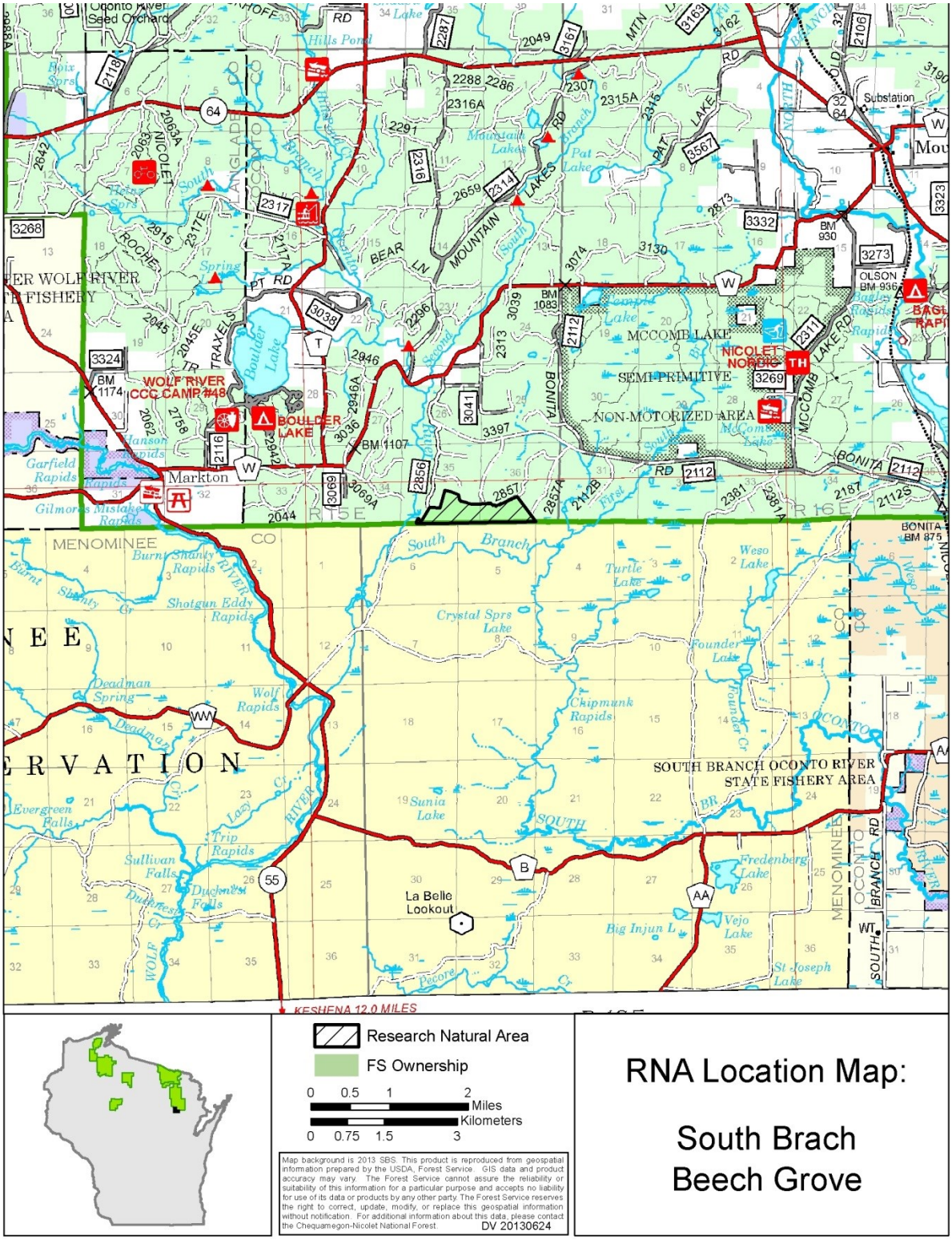
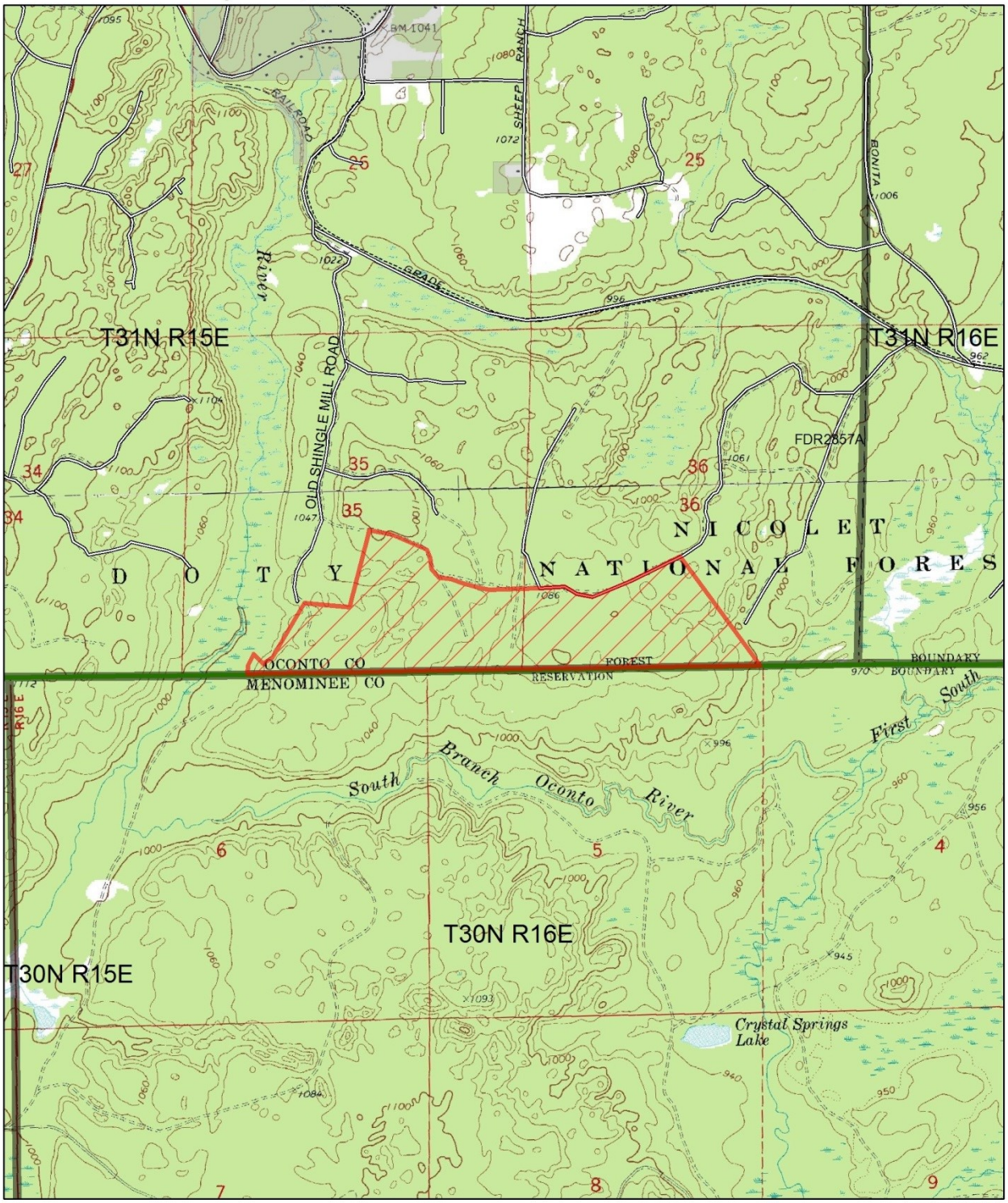
Note: The Alpha/Numeric ordering in this table of contents and document follows that within Forest Service Manual direction (FSM 4063) for Establishment Records.

1. IDENTIFICATION SECTION

Location Map



RNA Boundary Map: South Branch Beech Grove



Research Natural Area
NonFS ownership
Open Road
Trail

0 0.25 0.5 1 Miles
0 0.25 0.5 1 Kilometers

DV 20140417

Acres: 226

LANDSCAPE OVERVIEW - SOUTH BRANCH BEECH GROVE RNA

LEGAL DESCRIPTION

South Branch Beech Grove Located on the Lakewood-Laona Ranger District of the Chequamegon-Nicolet National Forest in Oconto County in the State of Wisconsin, T 31 N R 15 E Sections 35 and 36. The boundary is delineated as follows:

Beginning at the Southwest Corner of Section 36,

Thence west along the South line of Section 35, approximately 2640 feet to the South ¼ corner of Section 35,

Thence West along the south line of Section 35, 1624 feet,

Thence Northwesterly the following courses:

Direction	Distance (feet)
N 3 E	131.1
N 25 E	212.9
N 38 E	113.3
S 52 E	270.5
N 31 E	996.6
S 85 E	699.7
N 15 E	1183.5
N 15 E	54.7

to the South ROW of FR 94749,

Thence easterly along the South ROW of FR 94749, approximately 3041 feet to the South ROW of FR 943247,

Thence easterly along the South ROW of FR 943247, 2367.20 feet,

Thence S 36º E approximately 2010 feet to the South line of Section 36,

Thence West along the South line of Section 36 approximately 1100 feet to the South ¼ corner of Section 36,

Thence west along South line of Section 36 approximately 2640 feet to the Point of Beginning.

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

2. ADMINISTRATIVE SECTION

This Establishment Record has been prepared pursuant to Forest Service Manual direction (FSM 4063). Establishment of the South Branch Beech Grove 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, Lakewood-Laona 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 4th St. South
Park Falls, WI 54552

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

3. BODY OF ESTABLISHMENT RECORD

a. INTRODUCTION

South Branch Beech Grove Research Natural Area (RNA) features a mature upland forest of sugar maple (*Acer saccharum*) and American beech (*Fagus grandifolia*) bordering the edge of the National Forest. Pockets of large, mature beech (50 to 80 years old) are interspersed with areas in which pole-sized hardwoods predominate. The slow-growing, shade-tolerant beech reaches the northwestern edge of its range here. South Branch Beech Grove RNA is an excellent candidate to analyze old-growth northern mesic forest nested within a matrix of managed mature forest and second-growth forest. The RNA contains numerous rare and unique plant species and important habitat for the state-threatened red-shouldered hawk (*Buteo lineatus*).

The 226-acre (91 hectares) RNA is located on the Chequamegon-Nicolet National Forest (CNNF), Oconto County on the Lakewood-Laona Ranger District. The RNA is located entirely on U.S. Forest Service Land and is approximately 9 miles (14 km) southwest of Mountain, Wisconsin (see Identification Section: *Location Map* and *Boundary Map*).

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. The current Menominee Reservation lies adjacent to the southern boundary of the RNA. Other American Indian tribes in the area, the Ojibwe tribes, entered into session treaties with the United States in which rights to hunt, fish and gather were reserved by these tribes. See Section 4 d.(2) Cultural/Heritage for further explanation of Native American history.

Massive timber harvests in the mid-1800s in northern Wisconsin were followed by large-scale wildfire that was carried by the logging slash (Figure 6). Of historical interest are the original survey notes of the area by J. M. Marsh from 1851: "*Land rolling, soil good 2nd rate large detached rock in abundance. Timber Sugar, Hemlock, Beech.*" "*Land rolling. Timber Pine and Hemlock.*" (BCPL 2004). The area containing the RNA became National Forest in the 1930s. The southern part of the RNA has not been cut since the 1930s; a portion was thinned in the 1970s and a small area was clear cut.

This site was analyzed for RNA status in 1994 but was not designated at that time. Previous site surveys include a Wisconsin Natural Heritage Evaluation of selected plant communities (S. Janke, 1997; Epstein 1986).

Uses - Past land use included commercial logging but this site has not had any timber harvested since the 1970s. The site receives non-motorized recreational use including deer hunting. The southern edge of the RNA borders Menominee County and that land is actively managed for timber production by the Menominee Tribe of Native Americans.

Ownership & Administration - South Branch Beech Grove 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 Lakewood-Laona Ranger District, CNNF, provides day-to-day protection and maintenance of the area.

Congressionally Designated Areas - South Branch Beech Grove 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 (WI DNR 2013).

b. JUSTIFICATION SECTION

(1) JUSTIFICATION STATEMENT

Situated on rolling glacial moraine, South Branch Beech Grove RNA contains a mature beech and sugar maple forest with numerous rare plant species present (Chadde 1997; Epstein 1986). The site is significant for its beech component – here at its northern and western range limit in Wisconsin (Figure 1). Within the CNNF, the range of beech is restricted to Oconto, eastern Langlade, and southeastern Forest counties. Preservation of several beech stands is a valid RNA objective for the National Forest System especially in light of recent spread of *beech bark disease* into Wisconsin. Although the site has a history of harvest and some timber stand improvement, recent disturbance has been minimal. The most recent harvest activity was a small area of clear-cutting for aspen (*Populus tremuloides*) in the 1970s (Figure 3). Populations of four plant species considered state endangered or special concern are found within the RNA [See Section b.(3)(G)- *Rare, Threatened, Endangered, or Sensitive Species*], and the area supports the state-threatened red-shouldered hawk.

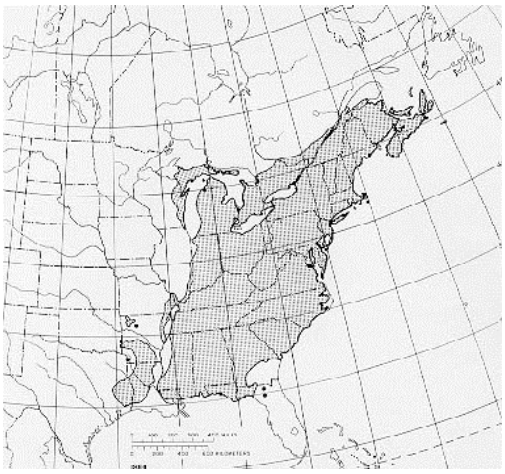


Figure 1. Native range of American beech (*Fagus grandifolia*) in the U. S. (Tubbs & Houston 2012)

(2) PRINCIPAL DISTINGUISHING FEATURES

The most outstanding feature of South Branch Beech Grove RNA is the mature hardwood forest of beech and sugar maple (Janke 1997). The stands have good old-growth characteristics including large coarse woody debris, snags, and canopy gaps from the natural loss of mature trees. These gaps are filling in with beech seedlings and saplings as well as sugar maple. The habitat has rich soil and a good component of American basswood (*Tilia americana*), sugar maple, with scattered bitternut hickory (*Carya cordiformis*), eastern hemlock (*Tsuga canadensis*), yellow birch (*Betula alleghaniensis*) and butternut (*Juglans cinerea*). The largest sugar maple, beech, butternut, and basswood trees measure 24-28 inches (60 -70 cm) dbh and approach the largest known size for those species on the CNNF.

(3) OBJECTIVES

South Branch Beech Grove 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 p. 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.

The South Branch Beech Grove 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 listed under FSM 4063.02. General objectives of this RNA are to preserve a representative area that typifies an important forest type that is of scientific interest and to serve as a reference area for research and education. It will maintain biological and genetic diversity and will serve as a refuge for organisms against environmental disruptions elsewhere. It can be used to monitor effects of natural large-scale environmental changes such as from wind events or disease outbreaks. Further objectives of South Branch Beech Grove RNA are to preserve and maintain the RNA's upland communities and populations of uncommon and rare plant species.

c. LAND MANAGEMENT PLANNING

The effects of RNA establishment were analyzed and disclosed in the Final Environmental Impact Statement (USDA Forest Service 2004b p. 3-110) and Record of Decision (USDA Forest Service 2004c p. 9) for the 2004 CNNF Forest Plan. South Branch Beech Grove 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 p. 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 found 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 p. 3-50).

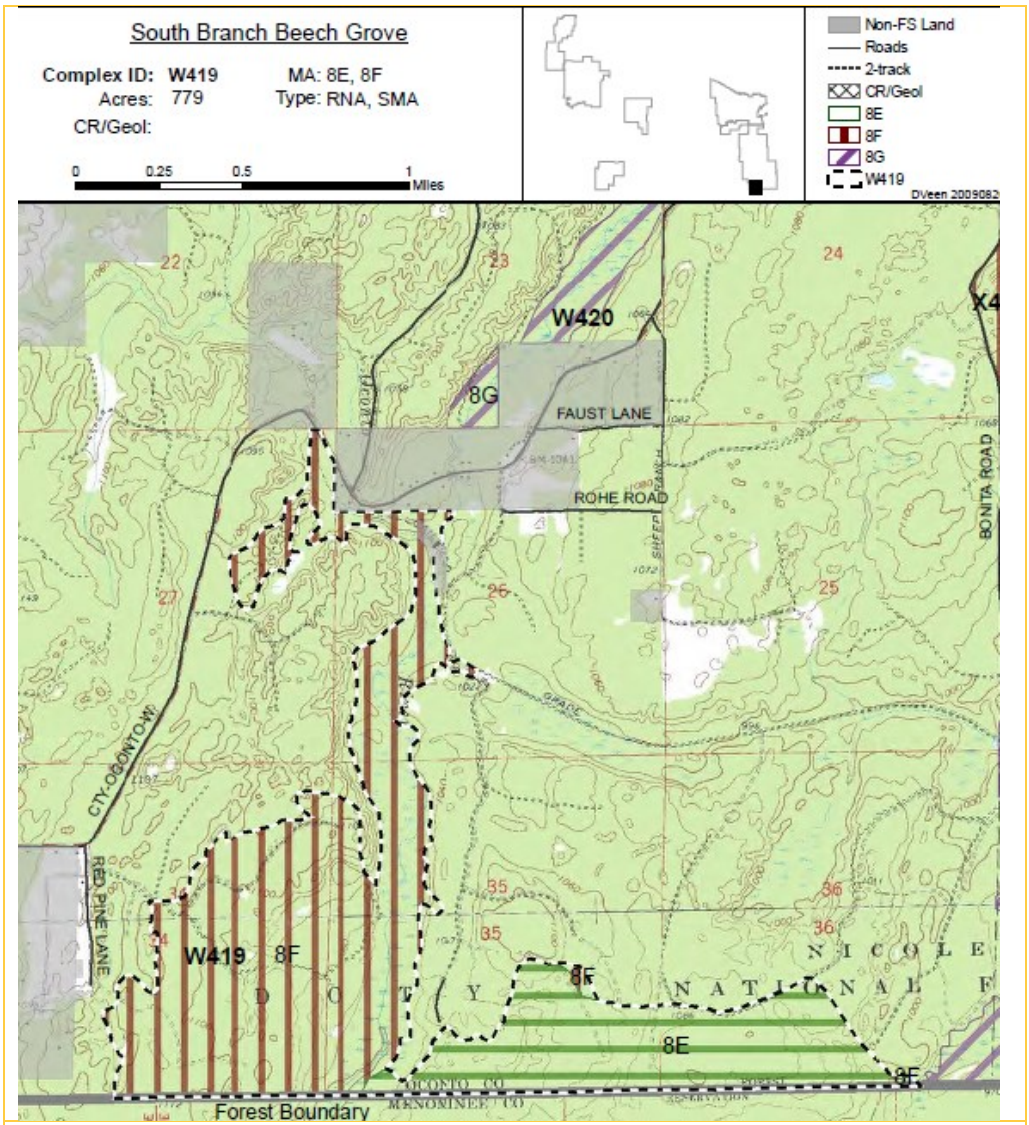


Figure 2. South Branch Beech Grove RNA (8E, horizontal stripe on map) is part of a larger ecological reference area of the same name that includes a Special Management Area (8F, vertical stripes). (Map: D. Veen 2009)

d. MANAGEMENT PRESCRIPTION

The management prescription for South Branch Beech Grove 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 South Branch Beech Grove 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) will detect, manage and prevent invasive plants as RNAs are high priority for monitoring and controlling invasives.

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

e. USE OR CONTROL OF FIRE AND GRAZING

Fire is not generally used as a management tool in these mesic community types. Fire is allowed if needed for specific objectives, however, fire has not been identified as a management need. Fire Management Guidelines in 2004 Chequamegon-Nicolet National Forests Land and Resource Management Plan are listed in Appendix 3: *Forest Management Area Direction*.

According to CNNF fire management records, occasional wildfires do occur in mesic forest during dry years, but they are most often small in size - usually less than one acre (0.4 ha), limited by lack of fuel, and easily suppressed. Wildfire suppression within the RNA 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 2004 CNNF Forest Plan standard.

4. APPENDIX 1 ECOLOGICAL EVALUATION

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 research sites can be obtained from the Forest RNA Coordinator.

a. PHYSICAL SITE DESCRIPTION AND CLIMATIC CONDITIONS

(1) LOCATION

South Branch Beech Grove RNA is located on the Lakewood-Laona Ranger District of the Chequamegon-Nicolet National Forest, Oconto County, in the state of Wisconsin. The RNA's Mercator coordinates are 45º 7' 11" N latitude and 88º 35' 30" W longitude.

See Establishment Record Identification Section for *Boundary Certification*, *Location Map* and *Boundary Map*.

(2) SIZE IN ACRES/HECTARES

The RNA is comprised of 226 acres (91 hectares).

(3) ELEVATION RANGE

Elevations range from 1,050 feet (320 m) to 1,100 feet (335 m) above sea level. As a comparison, the highest elevation in Wisconsin, Timm's Hill in Price County, is 1,951 feet (595 m) above sea level.

(4) ACCESS TO THE SITE

Access is provided by County W and Forest Road (FR) 2856 from the north and west. From the Village of Mountain on State Highway 32, go west on County W about 7.5 miles (12 km) to FR 2856 (Old Shingle Mill Road) located about 0.15 mile (0.2 km) east of the County W bridge over the Second South Branch Oconto River. Proceed south on the FR 2856 as far as it is drivable [1.5-2.0 miles (2.4 to 3.0 km)], park, and walk south along the road until the north boundary of the Menominee Indian Reservation is reached. (The reservation's east/west boundary is marked on the ground with blazes, stakes, and signs.) The RNA lies on the uplands to the east, adjacent to the north boundary of the reservation (see Identification Section: *Location* and *Boundary* maps).

(5) CLIMATIC DATA

The weather station nearest to South Branch Beech Grove RNA is Lakewood 3 NE (station no. 474523, Oconto County, Wisconsin, latitude 45° 19' N, longitude 88° 30' W). The station is about 18 mi (24 km) northeast of the RNA and experiences similar weather and climate. This station has recorded temperature and precipitation data since 1972 (Midwestern Regional Climate Center 2003).

Table 1. Climate Data for South Branch Beech Grove RNA in the decades from 1972 to 2000

Temperature	°F	°C
Mean annual	42.0	5.6
Mean April through September	58.0	14.4
Mean October through March	25.0	-3.9
Average daily maximum	53.0	11.7
Average daily minimum	30.0	-1.1
Record high	100.0	37.8
Record low	-43.0	-41.6
Precipitation	**in**	**mm**
Mean annual rainfall	33.1	841.0
Mean Monthly - April through September	3.6	91.4
Mean Monthly - October through March	1.9	48.3
Mean annual snowfall	64.7	1643.0

b. ECOLOGICAL DESCRIPTION

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).

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

South Branch Beech Grove RNA is located in the Laurentian Mixed Forest Province (212), Northern Great Lakes Section (212T). The majority of the site is located in the Subsection Athelstane Sandy Outwash and Moraines (212Tc), of the Ecological Units of the Eastern United States (Cleland et al. 2007). It includes Land Type Association (LTA) Mountain Moraines (Tc18). A very small portion of the site (western boundary) lies within the Subsection Green Bay Lobe Stagnation Moraine (212Ta), and includes LTA Lakewood Plains and Moraines (Ta01).

(2) PLANT COMMUNITY TYPES

South Branch Beech Grove RNA is best characterized as a mature or maturing hardwood stand in which sugar maple and beech are the canopy dominants (Epstein 1986). This excellent quality stand contains large beech, basswood, sugar maple and butternut with the largest trees measuring 24-28 inches (60 -70 cm) dbh. Sugar maple and beech are reproducing successfully. The canopy is composed of approximately 50% sugar maple, 30% beech, with lesser amounts of, yellow birch, basswood, red oak (*Quercus rubra*), red maple (*Acer rubrum*), paper birch (*Betula papyrifera*), bigtooth aspen (*Populus grandidentata*), and bitternut hickory. Butternut, which also occurs here, is uncommon on the CNNF and of management concern due to butternut canker disease which has caused widespread decline of this species. The site has a history of timber harvest and stand improvement in the mid twentieth century although the most recent harvest activity in the 1970s was a small area of aspen that was clear-cut (code 91 in Figure 3). Structurally the RNA includes pockets of mature timber intermingled with areas of younger forest.

The shrub layer is patchy and generally sparse where the canopy is closed and little light penetrates to the forest floor. Common species include maple-leaved viburnum (*Viburnum acerifolium*), beaked hazelnut (*Corylus cornuta*), American fly honeysuckle (*Lonicera canadensis*), and mountain maple (*Acer spicatum*).

The ground layer is characterized by herbs such as Canada mayflower (*Maianthemum canadense*), bluebead lily (*Clintonia borealis*), wild sarsaparilla (*Aralia nudicaulis*), rosy twisted stalk (*Streptopus lanceolatus*), blue cohosh (*Caulophyllum thalictroides*), and hepaticas (*Anemone acutiloba* and *A. americana*).

Table 2. Natural vegetation community types within South Branch Beech Grove RNA using common classification systems for Wisconsin (Curtis 1959 and Kotar et al. 2002) and NGDC (2012)

Curtis Community Type	**Kotar Habitat Types**	**Dominant Species**	**NVCS Associations** (NGDC 2012)*
Northern dry-mesic forest	AQVib, AFD	red oak - red maple - sugar maple	CEGL006173 Quercus rubra - Acer saccharum - Fagus grandifolia / Viburnum acerifolium Forest
Northern mesic forest	AViO, AFD	sugar maple - beech - red oak sugar maple - basswood - beech	CEGL005004 Acer saccharum - Fagus grandifolia - Betula spp. / Maianthemum canadense Forest

* These National Vegetation Classification System associations are initial approximations.

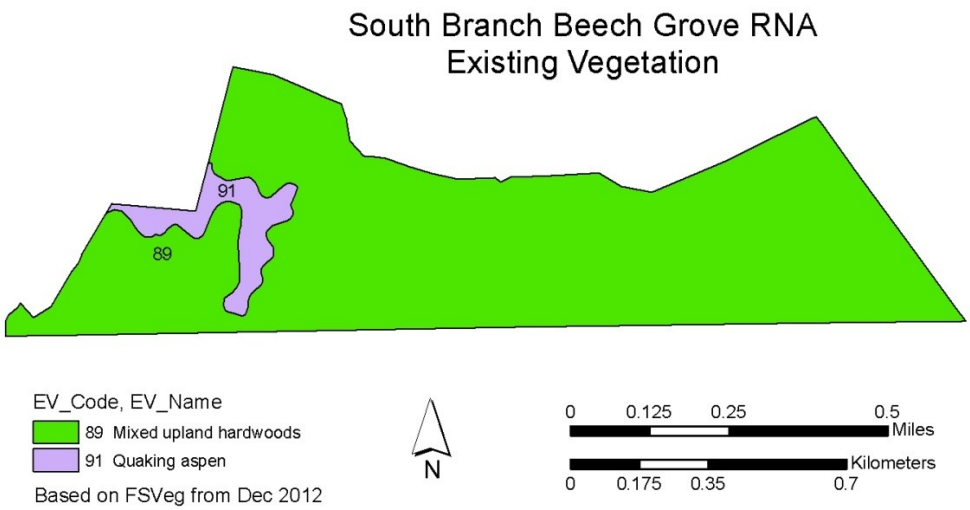


Figure 3. Existing Vegetation (formerly Forest Type) in South Branch Beech Grove RNA (CNNF data, 2012)

Table 3. Existing Vegetation (as dominant tree cover) in South Branch Beech Grove RNA and key to Figure 3 (CNNF data 2012)

EV Code	Existing Vegetation Name	Acres	Hectares
89	Mixed upland hardwoods	213.7	86.5
91	Quaking aspen	11.9	4.8
Grand Total		225.6	91.3

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

Botanists from the USDA Forest Service and Wisconsin Department of Natural Resources conducted plant and ecological surveys in the 1980s and 1990s.

(A) FLORA LIST

Table 4. Flora of South Branch Beech Grove RNA (Steve Chadde 1997; Steve Janke 1997)

Scientific name	Common name
Abies balsamea	Balsam fir
Acer rubrum	Red maple
Acer saccharum	Sugar maple
Acer spicatum	Mountain maple
Actaea rubra	Red baneberry
Adiantum pedatum	Maidenhair fern
Allium tricoccum	Wild leek
Amelanchier sp.	Juneberry
Anemone americana	Round-lobed hepatica
Apocynum androsaemifolium	Spreading dogbane
Aquilegia canadensis	Columbine
Aralia nudicaulis	Wild sarsaparilla
Aralia racemosa	Spikenard
Arisaema triphyllum	Jack-in-the-pulpit
Aster macrophyllus	Big-leaf aster
Athyrium filix-femina	Lady fern
Betula alleghaniensis	Yellow birch
Betula papyrifera	Paper birch
Botrychium dissectum	Cutleaf grapefern
Botrychium minganense	Mingan moonwort
Botrychium mormo	Goblin fern
Botrychium simplex	Least moonwort
Botrychium oneidense	Blunt-lobed grape-fern
Botrychium virginianum	Rattlesnake fern
Carex albursina	White bear sedge
Carex arctata	Drooping woodland sedge
Carex blanda	Eastern woodland sedge
Carex intumescens	Greater bladder sedge
Carex pensylvanica	Pennsylvania sedge
Carex plantaginea	Plantain-leaf sedge
Carya cordiformis	Bitter-nut hickory
Caulophyllum thalictroides	Blue cohosh
Claytonia virginica	Spring beauty
Clintonia borealis	Bluebead lily
Coptis trifolia	Goldthread
Corallorhiza maculata	Spotted coral-root
Cornus canadensis	Bunchberry
Cornus rugosa	Round-leaved dogwood
Corylus cornuta	Beaked hazelnut
Cryptotaenia canadensis	Honewort
Cryptotaenia canadensis	Canadian honewort
Cypripedium acaule	Pink lady's slipper
Desmodium glutinosum	Cluster-leaf tick trefoil

Scientific name	Common name
Diervilla lonicera	Northern bush honeysuckle
Diphasiastrum complanatum	Northern running pine
Dryopteris intermedia	Fancy wood fern
Epifagus virginiana	Beech drops
Equisetum scirpoides	Dwarf scouring rush
Equisetum sylvaticum	Woodland horsetail
Fagus grandifolia	Beech
Fagus grandifolia	American beech
Fragaria vesca	Woodland strawberry
Fraxinus americana	White ash
Galium triflorum	Sweet-scented bedstraw
Gaultheria procumbens	Wintergreen
Gymnocarpium dryopteris	Oak fern
Hamamelis virginiana	Witch-hazel
Hepatica nobilis var. acuta	Sharp-lobe hepatica
Hepatica nobilis var. americana	Round-lobe hepatica
Hieracium aurantiacum	Orange hawkweed
Huperzia lucidula	Shining club-moss
Juglans cinerea	Butternut
Linnaea borealis	Twin-flower
Lonicera canadensis	American fly honeysuckle
Lycopodium clavatum	Running club-moss
Lycopodium obscurum	Rare club-moss
Maianthemum canadense	Wild lily-of-the-valley
Maianthemum trifolium	Three-leaf false Solomons-seal
Medeola virginiana	Indian cucumber root
Mitchella repens	Partridge berry
Mitella diphylla	Two-leaf miterwort
Mitella nuda	Naked miterwort
Monotropa uniflora	Indian pipe
Osmorhiza claytonii	Sweet cicely
Osmunda claytoniana	Interrupted fern
Panax quinquefolius	American ginseng
Phalaris arundinacea	Reed-canary grass
Pinus resinosa	Red pine
Pinus strobus	White pine
Platanthera psycodes	Lesser purple fringed orchid
Populus tremuloides	Quaking aspen
Prenanthes alba	White rattlesnake root
Prunella vulgaris	Self-heal
Prunus serotina	Black cherry
Pteridium aquilinum	Bracken fern

Scientific name	Common name
Pyrola elliptica	Elliptic shinleaf
Quercus rubra	Northern red oak
Ranunculus abortivus	little-leaf buttercup
Ribes lacustre	Bristly swamp-currant
Rubus idaeus	Red raspberry
Schizachne purpurascens	False melic
Smilacina racemosa	False Solomon's seal
Streptopus lanceolatus v. longipes	Rosy twisted stalk
Taraxicum officinale	Common dandelion

Scientific name	Common name
Taxus canadensis	Canada yew
Thuja occidentalis	Northern white cedar
Tilia americana	Basswood
Trientalis borealis	Starflower
Trillium cernuum	Nodding trillium
Trillium grandiflorum	Large trillium
Tsuga canadensis	Eastern hemlock
Uvularia grandiflora	Large-flower bellwort
Viburnum acerifolium	Maple-leaf viburnum
Viola pubescens	Downy yellow violet

(B) FAUNA LIST

South Branch Beech Grove RNA contains important habitat for the red-shouldered hawk, a state-threatened species. The RNA is part of a larger area that supports the highest concentration of red-shouldered hawks on the CNNF. No thorough inventory of fauna has been completed. Table 5 lists species observed during plant surveys.

Table 5. Fauna observed in South Branch Beech Grove RNA (Epstein 1986, Janke 1997)

Common Name	*Scientific Name*
raccoon	*Procyon lotor*
eastern chipmunk	*Tamias striatus*
gray squirrel	*Sciurus carolinensis*
black bear	*Ursus americanus*
white-tailed deer	*Odocoileus virginianus*
red-eyed vireo	*Vireo olivaceous*
eastern wood pewee	*Contopus virens*
ovenbird	*Seiurus aurocapillus*
least flycatcher	*Empidonax minimus*
white-breasted nuthatch	*Sitta carolinensis*
blue jay	*Cyanocitta cristata*
red-shouldered hawk	*Buteo lineatus*
ruffed grouse	*Bonasa umbellus*

(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).

Bedrock includes igneous, metamorphic, and volcanic rock that is greater than 100 feet from the land surface (WI DNR 2003). Geomorphologic processes include till deposition. The surface is hummocky moraine.

(D) SOILS

Soils are loamy sand to sandy loam over sandy outwash or loamy sand till. Nutrient status is medium to rich and moisture regime dry-mesic to mesic. The majority of the soil falls into the Tilleda series. The Tilleda series consists of deep, well drained soils formed in loamy glacial till on ground moraines of late Wisconsinan age. These soils have moderate permeability. Slopes range from 1 to 35 percent. Areas of these soils are under cultivation, in pasture, or in woodland in other areas of the state. Native vegetation generally consists of mixed deciduous and coniferous forests with oak, maple, American elm, basswood, beech, white pine, and red pine predominating (USDA NRCS 2003).

A smaller area of Padus soil is also present within the RNA. The Padus series consists of very deep well-drained soils, which are moderately deep to stratified sandy outwash. These soils formed mostly in loamy alluvium and are underlain by stratified sandy outwash on glacial lake plains, outwash plains, stream terraces, eskers, kames, and moraines. Permeability is moderate or moderately rapid in the loamy mantle and rapid or very rapid in the sandy outwash.

(E) TOPOGRAPHY

The site occurs on rolling morainal topography with gentle slopes. Glacial erratics, mainly quartzite, are sparsely scattered throughout. Landform is rolling collapsed and uncollapsed outwash plain and collapsed moraine (WI DNR 2003).

(F) AQUATIC/RIPARIAN

South Branch Beech Grove RNA is located within the South Branch Oconto River watershed. The South Branch Oconto River (Figure 4) lies just outside the RNA to the west. RNA designation will help protect the water quality within the area. A two mile (3 km) stretch of this river is protected within the adjacent South Branch Beech Grove CNNF Special Management Area in the 2004 CNNF Forest Plan (Figure 2).

Figure 4. A view of the South Branch Oconto River taken upstream from the RNA. This river flows just west of the RNA. (Photo: L. Parker 2010)

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

Rare, uncommon, and notable organisms are listed in Table 6 (Janke 1997). The state threatened red-shouldered hawk is known to nest within the RNA. Beech, while not rare, is threatened by beech bark disease that reached Wisconsin in 2009 and the disease is known from Menominee County to the south. Canada yew is also present here and is designated as a *management indicator* species on the CNNF.

Table 6. Threatened, endangered, and unique species in South Branch Beech Grove RNA, Global Rank, State status and State Natural Heritage rank

Common Name	Scientific Name	Global Rank, State Status, State Rank[1]
Flora		
Little goblin moonwort	*Botrychium mormo*	G3, END, S1S2
Blunt-lobed grape-fern	*Botrychium oneidense*	G4Q, SC, S2
American ginseng	*Panax quinquefolius*	G3G4, SC, S4 (Region 9 Sensitive)
Indian cucumber root	*Medeola virginiana*	G5, SC, S4
Butternut	*Juglans cinerea*	G4, SC, S3?
Canada yew	*Taxus canadensis*	G5, C, S4 (uncommon)
Lesser purple fringed orchid	*Platanthera psycodes*	N/A (uncommon)
White bear sedge	*Carex albursina*	N/A (uncommon)
Cut-leaved grape fern	*Botrychium dissectum*	N/A (uncommon)
Least moonwort	*Botrychium simplex*	N/A (uncommon)
Fauna		
Red-shouldered hawk	*Buteo lineatus*	G5, THR, S3S4B, S1N

[1] see Appendix 4: *Wisconsin Natural Heritage Working List – Rank Definitions*

(H) LIST OF RARE ELEMENTS AND RARE PLANT COMMUNITIES

None of the plant communities within South Branch Beech Grove are listed as rare and all are ranked *apparently secure* (S4) or better within Wisconsin. However, forests with a high percentage of beech such as in the RNA are threatened by the non-native beech bark disease known from Menominee County to the south (Lampereur personal communication). See Section d.(4) - *Occurrence of Exotic Species* for more information on beech bark disease.

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. South Branch Beech Grove RNA is owned outright by the United States government and is administered by the USDA Forest Service, Chequamegon-Nicolet National Forest.

(1) MINERALS

Hardrock minerals within South Branch Beech Grove RNA (T31N R15E Sections 34 & 36) are all federally owned. The mineral estate is administered by Bureau of Land Management and is open for prospecting within the Research Natural Area. The RNA has potential for hardrock prospecting activity based on geology and recent hardrock prospecting permit activity nearby. 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). There are currently no active prospecting permits within the RNA.

Mineral ownership does not preclude use of the site for research but if prospecting took place disturbance to localized areas could occur.

(2) GRAZING

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*).

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

There are no outstanding timber rights on any of the tracts in the RNA, nor are there any special use permits outstanding. The entire RNA [226 acres (91 ha)] is forested in upland timber types that are actively managed elsewhere on the CNNF. Federal lands surrounding South Branch Beech Grove RNA are designated for Uneven-aged Northern Hardwoods (2A), Special Management Area (8F), and Old Growth and Special Features (8G) in the 2004 CNNF Forest Plan. See Section f.(1) for discussion of surrounding land management.

Figure 5. South Branch Beech Grove RNA supports several rare plants including ginseng above; here surrounded by maidenhair fern. (Photo: L. Parker 2010)

Numerous rare plant species are present within the RNA as well as plants that are uncommon on the CNNF (Table 6). Beech is a significant component of the forest canopy and this shade-tolerant species is readily regenerating in the understories so the trend is toward an increase in beech percentage (Lampereur pers comm). Beech is at its northwest range limits in Wisconsin (Figure 1) and is threatened by beech bark disease [see section d.(4)]. The RNA is an excellent control site for research of maturing northern mesic forest that is surrounded by managed mature forest.

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 p. 3-50). When the CNNF issues a permit to gather special forest 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.

South Branch Beech Grove RNA has also been designated as an Ojibwe Tribal RNA (Tribal-USDA MOU). The *Memorandum of Understanding* includes some restrictions on Ojibwe tribal gathering of forest products similar to the Forest Handbook as described above.

(4) WATERSHED VALUES

South Branch Beech Grove RNA is located within the South Branch Oconto River watershed. RNA designation will help protect the quality of water resources within the area. There are no rivers or lakes within the RNA itself.

(5) RECREATION USE

South Branch Beech Grove RNA currently receives light recreational use by hunters and others on foot. There are no roads within the RNA that are open to motorized use. Hikers and bird-watchers may be attracted to the RNA and as of 2014 all of Wisconsin's State Natural Areas including this one appear on Google Maps. Hiking and hunting are compatible with RNA status and no conflict is anticipated.

(6) WILDLIFE

The RNA provides nesting and foraging habitat for the rare red-shouldered hawk. Commonly hunted Wisconsin wildlife species that occur within the RNA include: white-tailed deer, black bear, and ruffed grouse as well as small mammals. The site needs a complete faunal survey.

(7) TRANSPORTATION/ROAD SYSTEM

New roads or trails are not allowed in RNAs per 2004 CNNF Forest Plan guidelines. 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. There are no roads open to motorize use within the RNA. Forest Road 2856 to the east (see Identification Section: *Boundary Map*) is open to the boundary of the RNA as are several other roads to the north. Portions of these low standard roads from past management still exist into the RNA but the corridors are revegetating and don't appear to receive any motorized use (Janke 2013). Monitoring will indicate whether these native-surface roads need treatment to restore hydrologic, geomorphic, and ecological processes and properties.

d. HISTORICAL INFORMATION

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

<u>History of establishment</u>:

South Branch Beech Grove was a candidate RNA in the 1986 Nicolet National Forest Land and Resource Management Plan and proposed for RNA status in 1994. It was not designated at that time because the now combined Chequamegon and Nicolet National Forests began a landscape scale ecological inventory to identify high quality ecological features across the two forests (Parker 1999). South Branch Beech Grove was one of the highest ranking sites based on its ecological values. It was assigned a high conservation priority and continued to be deferred from management activity. About the same time, the 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 (Wisconsin DNR) worked closely with Forest ecologists in evaluating this site, making numerous field visits and assisting with ecological inventory and evaluation. They completed a *Site Evaluation* and recommended further review (Epstein 1986).

The Wisconsin Department of Natural Resources is also interested in achieving ecosystem representation within the State Natural Area Network (WI DNR 2013). 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 (WI DNR 2013). This designation does not restrict the goals of research and education for the site.

South Branch Beech Grove was identified as a Candidate RNA in the 2004 Draft Forest Plan and analyzed in the Environmental Impact Statement. It was recommended for designation as a Research Natural Area in the 2004 CNNF 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 South Branch Beech Grove for establishment.

(2) CULTURAL/HERITAGE

USDA Forest Service cultural resource information indicates there are no known pre-historic or historic cultural sites recorded in South Branch Beech Grove RNA (USDA Forest Service 2003b).

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 (including South Branch Beech Grove) as "Tribal Research Natural Areas" because it is important to protect the unique features that these areas provide. The rule limits gathering in Tribal RNAs to small amounts of berries and nuts and for tribally-permitted ceremonial use.

The CNNF is continuing to work with the Ojibwe Tribes to protect these unique features yet still provide for the exercise of treaty-reserved hunting and gathering rights on federally-owned lands. 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".

The Menominee Indian Reservation is adjacent to the southern boundary of the RNA. Currently Menominee tribal members as well as other tribes in the state are under the same constraints as all

citizens with respect to RNA rules and would only be able to gather small amounts of fruits, nuts, berries, and fungi for personal use.

(3) DISTURBANCE HISTORY

Extensive logging and subsequent forest fires in the late 1800s set this area back to early successional forest (Figure 6).

Vegetation maps from 1938 indicate that for miles around, what is now the RNA was forested by 3 to 6 inch diameter (7-15 cm) aspen and paper birch (UWDC 2011).

Figure 6. A 1928 photo taken approximately 2 miles north of South Branch Beech Grove RNA showing the extensive cut-over and burned land typical throughout northern Wisconsin (Photo: UWDC 2011)

The site shows evidence of past selective harvest and clear cutting in the decades from 1950 to the 1970s. Red pine plantations are present on mesic soils bordering the complex and low-grade road corridors are still visible within the RNA. A field check in 2000 lists some wind damage and over-browsing by deer (Zimmer 2000). A later field check by CNNF Ecologist, Linda Parker noted a bear baiting station where someone painted several tree trunks with a food lure and cleared ground of vegetation to allow tracks to be visible. See Section f.(1) - *Management Concerns* for discussion.

(4) OCCURRENCE OF EXOTIC SPECIES

The Forest has developed an invasive plant strategy (USDA Forest Service 2009) and a forest-wide project to discover, prioritize, and control non-native invasive plants wherever they occur. CNNF data shows European swamp thistle (*Cirsium palustre*), and reed canary-grass (*Phalaris arundinacea*) on the road leading into the RNA. These sites were treated with herbicide in 2011. Within the RNA there is common dandelion (*Taraxicum officinale*) and orange hawkweed (*Hieracium aurantiacum*) on some of the old road corridors but there is no plan to control either.

Beech is threatened by *beech bark disease* that is spreading across the eastern United States. The disease is the result of an interaction between a non-native scale insect (*Cryptococcus fagisuga*) and a native fungus (*Neonectria*). Both the insect and fungus must be present for the deadly interaction to occur (Wright and Koch 2004). Beech bark disease was discovered in Michigan in 2000, in Door County, Wisconsin 50 miles (80 km) to the east, in September 2009 and in Menominee County to

the south of the in 2012 RNA (Wisconsin DNR 2014). CNNF foresters are monitoring for this disease.

e. OTHER INFORMATION

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

There are no permanent research plots or photo points within the RNA.

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.

(2) BIBLIOGRAPHY

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.*

(3) POTENTIAL RESEARCH TOPICS

The site is an excellent candidate for research of maturing northern mesic forest in relation to managed forest outside the RNA. It may be a valuable area for genetic study of beech as this species reaches its northwest range limits in Wisconsin at this site and is vulnerable to beech bark disease. This also provides an opportunity to monitor the demographics of tree species in response to changing climate conditions.

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 2013).

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

(1) POTENTIAL OR EXISTING CONFLICTS; PRINCIPAL MANAGEMENT ISSUES

The highest priority management issues are practice of compatible forest management methods on adjacent lands, potential for beech bark disease, and the potential for illegal motorized use due to old road corridors that are still visible.

The entire northern boundary of the RNA is adjacent to management area 2A: Uneven-aged Northern Hardwoods. This will be managed for a relatively continuous mid to late-successional uneven age forest of northern hardwoods with patch sizes in the thousands of acres. Edge habitat is uncommon and temporary patches are small [under 40 acres (16 ha)]. The most recent adjacent timber management was in 2000 and at that time the sale layout was deemed compatible with RNA status (Zimmer 2000). The RNA is bounded (Figure 2) on the west side by a short segment of Special Management Area (8F) and on the east side by Old Growth (8G) [less than 400 feet (120 m) on each side]. Neither 8F nor 8G are managed for timber so there will be no conflicting management here. The entire southern boundary is along the Menominee Tribal reservation which has been managed for mature forest and never clearcut.

Beech bark disease is discussed in Section d (4) above. This disease is likely to spread into the RNA. So far it hasn't resulted in any notable decline on the CNNF, but the district assistant ranger John Lampereur predicts it is only a matter of time. Creation of an RNA site plan will define how to respond to infestations of this type. Regular RNA checkups will identify problems.

Several old roads that lead into the RNA are closed to motorized traffic. They should be treated if necessary to restore hydrologic, geomorphic, and ecological processes and properties. Elsewhere within the RNA old native-surface roads are revegitating with herbaceous plants and the canopy above is closed (Janke 1997). Regular RNA monitoring will identify any illegal motorized use within the RNA.

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

The South Branch Beech Grove RNA does not include any lands designated by congress in any special management category.

g. PHOTOGRAPHS

Most photographs used in this Establishment Record are the property of the Chequamegon-Nicolet National Forest but not copyrighted. Older slide photos were scanned in some cases and are with the site file housed in the Park Falls office of the CNNF. An electronic file is part of this establishment record.

APPENDIX 2 BIBLIOGRAPHY

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

The management prescription for the South Branch Beech Grove 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 p. 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

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 Last Revised: May 31, 2012

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