

II. MONITORING AND EVALUATION REPORT

A. Navigating the Report

The Report is divided into three major sections. Section B addresses monitoring items that are required by NFMA, and Section C presents the results of the monitoring guided by our forestwide goals and objectives. For both sections, the Report contains monitoring items that were scheduled for monitoring during FY 2005. A comprehensive list of monitoring items can be referenced in the Forest Plan. Section D reports on the status of any Management Indicator Species and Management Indicator Habitats. Following the Report is a partial list of the many people who have contributed to this Report.

B. Legally Required Monitoring

Minimum monitoring and evaluation requirements have been established through the NFMA at 36 CFR 219. The following legally required monitoring tasks were accomplished during FY 2005:

Lands are adequately restocked (36 CFR 219.12(k)5(i))

During FY 2005, the CNNF certified the adequate restocking of trees for 4,034 acres of land. An additional 468 acres of land did not meet certification standards during this time, and are planned for restocking during the next three years. The success of restocking efforts will be determined through monitoring regeneration. If necessary, stands lacking adequate regeneration may receive fill-in planting to ensure adequate reforestation.

Lands not suited for timber production (36 CFR 219.12(k)5(ii))

To determine if lands are suited for timber production, an assessment is required during each forest planning cycle. The CNNF-wide analysis of land suitability was last formally reported as the baseline condition in the Forest Plan. However, since conditions may change before the next Forest Plan, follow-up assessments will be conducted continually to provide the baseline for the next Forest Plan. A total of 23,835 acres of CNNF lands were inventoried during FY 2005 to determine suitability for timber production. The vast majority (21,685 acres) of the inventory occurred on the Washburn and Eagle River-Florence Districts in nearly equal amounts (10,684 and 11,001 acres, respectively). Of that total, 20,991 acres were determined to be suitable for timber production.

A detailed analysis of the CNNF-wide land suitability is found in Appendix M of the Forest Plan Final Environmental Impact Statement. The most common reason lands may be considered not suitable or appropriate for timber production is that the lands have been designated as an MA that prohibits vegetation management, while other reasons include: a) soils are not appropriate for timber production; b) lands are not cost-efficient for

timber production; c) regeneration of the species cannot be guaranteed (i.e., hemlock and forested lowlands); and d) lands are open and do not contain timber.

A detailed breakdown of the acreages inventoried in FY 2005 that fall into each land suitability code (LSC) for the Medford-Park Falls (MPF), Washburn (WASH), Eagle River-Florence (ERFL), and Lakewood-Laona (LKLN) Districts is found in Table 1. Inventory contracts were awarded at the Great Divide, Medford-Park Falls and Lakewood-Laona districts shortly after the end of FY 2005, and as a result will be reported fully in next year’s monitoring report.

Table 1. Acreages of lands arranged by land suitability code (LSC) and Ranger District as determined during FY 2005.

LSC	MPF	WASH	ERFL	LKLN	TOTAL
200	0	420	0	4	424
300	0	0	18	0	18
500	14	10,064	10,975	1,990	23,043
720	0	20	0	142	162
808	0	0	8	0	8
810	0	66	0	0	66
820	0	114	0	0	114
Total	14	10,684	11,001	2,136	23,835

LSC	Descriptions
200	Openland (upland or lowland)
300	Withdrawn lands (Wild/Scenic/Recreation River corridors, Natural Resource Areas, etc.)
500	Suited for timber production
720	Physically not suited for timber production (soils)
808	Wild, Scenic or Recreation River corridor candidates
810	Not presently appropriate for timber production (recreation sites, etc.)
820	Not cost efficient for timber production

Maximum opening from even-aged management (36 CFR 219.12(k)5(iii))

Temporary openings are defined in the Forest Plan as a stand with an average crown closure less than 20% or the regeneration averages less than 12 feet tall. Forest Plan Goal 1.4e calls for increasing average vegetative patch size, and Goal 1.4m is to increase aspen clearcut average patch size toward 25 acres, excluding ruffed grouse management areas. However, Forest Plan guidelines also state that temporary openings will not exceed 40 acres in size except:

- Within Management Areas 4C and 8C;
- As a result of natural catastrophic occurrences such as fire, insect and disease attack, or wind storm;
- To benefit Connecticut warbler habitat within jack pine areas.

Two forestry management techniques were employed to create temporary openings in even-aged stands during FY 2005: clearcutting and overstory removal. For FY 2005 the average clearcut (total of 72 units) was 20.6 acres, ranging from 4 to 37 acres. A total of 10 overstory removal cuts averaged 24.6 acres, and ranged from 1 to 30 acres.

Control of destructive insects and disease (36 CFR 219.12(k)5(iv))

Efforts to control destructive insects and disease during FY 2005 focused primarily on three epidemics: gypsy moths, oak wilt, and spruce decline. The CNNF also maintains a vigilant eye out for the emerald ash borer—an insect that has decimated ash trees in eastern and central Michigan, but has not yet reached Wisconsin.

A Gypsy Moth Slow-the-Spread Program was active during FY 2005, treating 2,151 acres on four sites within the CNNF. One 337-acre site on the Medford-Park Falls District was successfully treated with an aerial application of Btk, which is a bacterium that only affects butterflies. On the Washburn District, three gypsy moth-infested sites (892, 272 and 650 acres) were treated with an aerial application of Gypcheck—a product that only impacts gypsy moths. Both treatments were evaluated in the April 2005 “Gypsy Moth Control—Slow-the-Spread” Environmental Assessment (EA).

Oak wilt was discovered at 31 individual sites within the Lakewood-Laona District during FY 2005. To suppress the spread of this disease, it was necessary to remove and dispose of 2,757 trees. At other locales on the District, monitoring continued at 87 sites that were treated in fall of 2004. During the summer of 2005, 79 of the 87 sites (91%) showed no remaining signs of oak wilt infection. The remaining eight sites had infected trees that were subsequently marked and designated for a second treatment.

Most efforts to combat spruce decline during FY 2005 were to monitor stands for symptoms of the disease under guidance of the 2004 Spruce Decline decision. A total of 3,136 acres at 135 sites were monitored on the Lakewood-Laona, Eagle River-Florence,



Crews from UW-Green Bay and CNNF remove spruce trees affected by spruce decline.

Great Divide, and Medford-Park Falls Districts. If monitoring reveals that one of several damage trigger points has been reached within a stand, it will be treated to suppress the spread. Apart from those stands being monitored, 108 stands from the 2004 Spruce Decline decision were either cut (221 acres) or sold (3,308 acres) during FY 2005. On the Medford-Park Falls District, four stands totaling 239 acres were salvaged under the Alpha Spruce decision.

Effects of off-road vehicles (36 CFR 219.21)

Areas on the CNNF open to motorized vehicles are generally extensively roaded, and have a long history of use. People have been accustomed to utilizing roads for traveling most parts of the CNNF. However, off-road vehicle (ORV) use, including all-terrain vehicles (ATVs), has risen steadily over the past two decades. The increased use has created new user and environmental conflicts.

The 1986 Chequamegon Forest Plan and Nicolet Forest Plan provided two different policies regarding access for off-road vehicles. The Chequamegon provided for extensive ATV access to the national forest; most of the forest was open for this use unless areas, roads, and/or trails were posted closed. In the 1986 Nicolet ATV policy, all areas, roads, and/or trails were closed to ATV use unless they are posted open; there were no open areas, and very few routes posted open. ATV use on the Chequamegon resulted in unacceptable resource damage by cross-country use and occasional conflicts with other recreation activities. Illegal ATV use on the Nicolet is an increasingly prevalent problem. A consistent policy between forests, as well as coordination with State regulation, was needed to provide for off-road use, and new direction was needed to address impacts to resources. Consideration also needed to be given to the expressed desire for designated four-wheel drive vehicle trails.

To these ends, the 2004 Forest Plan provides a more balanced policy across the CNNF, restricts ATV access to designated trails and roads, and prohibits cross-country travel.

To fully understand the quantitative impacts from ATV use, monitoring it and its related impacts is necessary. In general, the link between ATV use and the spread of non-native invasive species (NNIS) can be easily observed, and the degree to which this is true on the CNNF is just now being established through monitoring. Since 2002,



A CNNF employee pulls leafy spurge (an NNIS) along an ATV trail near Clam Lake on the Great Divide District.

and including FY 2005, 85% of all ATV segments on the Chequamegon land base have been surveyed for NNIS at least once. 100% of the ATV trail segments surveyed have NNIS infestations to varying degrees. In all, 56 NNIS sites have been located and infest 18 miles of the 266-mile ATV trail system (6.8%). This translates into one NNIS infestation for every 4.8 miles of trail, compared to one for every 12 miles of road surveyed. Unauthorized, user-developed ATV trails are also highly infested with non-native invasive species, although the extent has not been quantified.

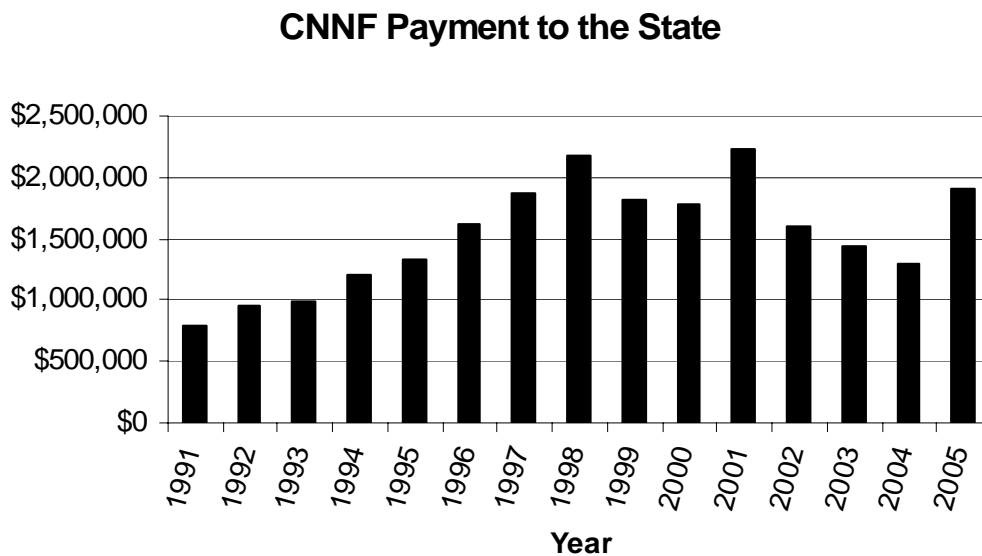
Effects to lands and communities adjacent to or near national forest and effects to the Forest from land managed by government entities (36 CFR 219.7(f))

Since 1908, the U.S. Forest Service has had the statutory authority (16 U.S.C. 500) to distribute twenty five percent of gross receipts generated on National Forest lands during the fiscal year. Sometimes referred to as the “Twenty Five Percent Fund,” the monies are distributed to the state and then onto the counties where National Forest lands reside.

An alternative option of distributing funds to counties (again, through the state) was established through the Secure Rural Schools and Community Self-Determination Act of 2000. The amount of the payment is based on the "Full Payment"—the highest three-year payments counties have received from the Twenty Five Percent Fund from 1986 to 1999. The counties are guaranteed to receive 85% of the payment, which is also adjusted yearly for inflation. Out of the 11 counties on the CNNF, four are receiving payments under the Secure Rural Schools and Community Self-Determination Act, and the other seven receive their payments under the Twenty Five Percent Fund.

Sources of funds reported for revenue sharing are: timber, grazing, land use, recreation special uses, power, minerals, recreation user fees and certain local special revenue sources. For the CNNF, timber is the primary revenue source. Revenues paid out to the state of Wisconsin for distribution to local counties during FY 2005 totaled \$1,908,071, representing a 32% increase over FY 04 and the third highest total ever (Figure 1). The primary explanation for this total was the value of products sold was higher than in the past.

Table 1. Total revenues paid to the state of Wisconsin during the years 1991-2005 by the CNNF.



Comparison of projected and actual outputs and services (36 CFR 219.12(k)(1))

Harvest volumes for softwood sawtimber were very close to those projected (Table 2). Markets for softwood sawtimber continue to be good. The CNNF has softwood sawtimber volume available for sale under the “Plantation Thinning” Environmental Impact Statement (EIS) at Lakewood-Laona and under the Spruce Decline decisions. Volume outputs of other species/product groups were less than projected due to a variety of reasons, including legal challenges and poor softwood pulpwood markets—particularly red pine.

*Table 2. Projected and actual wood harvest for the CNNF during FY 2005. *All values are reported in millions of board feet (MMBF).*

Species/Product Group	Volume Harvested*	Forest Plan Harvest Projection*	Sold Volume*
Hardwood Sawtimber	4	9	1
Softwood Sawtimber	10	10	12
Hardwood Pulpwood	35	58	14
Softwood Pulpwood	20	34	32
Aspen Pulpwood	21	33	11
Total	90	144	70

C. Goal and Objective Monitoring

In order to complete the anticipated monitoring schedule during FY 2005, different programs relied heavily on our cooperators to accomplish activities for selected goals described in the Forest Plan. For a comprehensive list of monitoring objectives to be conducted throughout the life of the Forest Plan, please refer to Table 4-2 of that document. Monitoring accomplishments for FY 2005 are shown below by the corresponding Forest Plan goal.

Goal 1 – Ensure Sustainable Ecosystem**1.3 – Aquatic Ecosystems**

Objective 1.3a: Reduce the number of road and trail stream crossings. Reduce sedimentation and improve fish passage in existing road and trail stream crossings.

In FY 2005, eight road stream crossings and two trail stream crossings were reconstructed to reduce erosion, prevent future failures, improve fish passage and restore channel morphology (Table 3). No road or trail stream crossings were created or removed in FY 2005. The condition of all crossings (in terms of erosion, sedimentation, fish passage, and channel morphology) will be reported and evaluated in future monitoring reports.

Table 3. Location and size of culverts placed in reconstructed stream crossings during FY 2005.

Ranger District	Stream	Road or Trail	Culvert Size (W x H)
Lakewood/ Laona	Wolf River	FR 2186	25' x 7'
Washburn	Tributary to Hawkins Creek	FR 383	95" x 67"
Washburn	Tributary to Whiskey Creek	FR 198	87" x 63"
Lakewood/ Laona	Tributary to Wolf Creek	FR 2186	73" x 55"
Lakewood/ Laona	Tributary to NB Peshtigo River	FR 2015	60" x 46"
Eagle River/ Florence	Scott Creek	FR 2183	42" x 29"
Washburn	Tributary to Rocky Run	Penokee Ski Trail	57" x 38"
Great Divide	Tributary to Marengo River	Snowmobile Trail 25	71" x 47"
Lakewood/ Laona	Mexico Creek	FR 2139	60" x 46"
Lakewood/ Laona	Johnson Creek	FR 2139	60" x 46"

Objective 1.3c: Restore large woody debris by annually treating some lakes with tree drops and/or cribs. Consult with the Native American tribes when proposing this treatment on lakes where spear fishing occurs.

During FY 2005, two lakes were treated to restore large woody debris in their ecosystems. A total of 28 tree-drops were installed on the Lakewood-Laona District's Richardson Lake. A National Forest campground is located on the shores of Richardson Lake, which provides fishing opportunities for bass, northern pike and panfish. Bass Lake, located near Iron River in the Washburn District, received 12 fish cribs to provide habitat for the lake's fish which include walleye, northern pike, bass and panfish. The Bass Lake work was accomplished through a partnership with the Bass Lake Association. Both large woody debris projects were conducted after consulting Native American tribes during the National Environmental Policy Act (NEPA) scoping process.

Objective 1.3d: To what extent have roads and trails in riparian management zones been relocated or reconstructed?

No road or trail segments were relocated out of riparian management zones in FY 2005. Wetland drainage was restored on one segment of the Deadhorse Run Motorized Trail on the Great Divide District through the installation of seven 24" diameter cross-drainage culverts and trail surfacing.

Objective 1.3e: Improve or restore habitat in streams and lakes.

In cooperation with the Wisconsin Department of Natural Resources (WDNR), fish populations were monitored in 32 lakes during FY 2005. Full surveys were completed on five of the 32 lakes, the remaining 27 lakes received spring or fall sampling to help monitor general trend of the fishery and determine year class strength. Overall fish populations across the forest are healthy and provide good to excellent recreational fishing opportunities. Findings from the five full surveys will be available in a separate report due out in FY 2007.

During FY 2005, CNNF operated ten winter aeration systems to prevent depletion of oxygen levels (commonly referred to as “winterkill”) within lakes. Monitoring dissolved oxygen levels throughout the winter on these lakes demonstrated the aeration systems were able to prevent winterkill conditions. In addition, 25 other lakes were monitored for dissolved oxygen. There were no observed major fish kills from low dissolved oxygen levels in FY 2005.

Additionally, habitat improvement work was conducted on eight streams (Chickadee, Swanson, Armstrong, North Otter, Catwillow, Twentymile, North Branch Oconto and Deerskin). Through a significant partnership with Trout Unlimited, over 3.0 miles of instream habitat were improved for brook trout overall. The work featured a variety of habitat improvement techniques, including brush bundle placement, brushing, and large wood placement. On the North Branch Oconto, the river channel required restoration after two remnant logging dams were removed in 2004. Work on other streams included improvements through the beaver management program (see Objective 1.3g). As soon as habitat restoration work is completed, fish populations will be monitored and data will be added to the existing baseline. Monitoring at other trout streams across the forest indicate that brook trout populations are stable, particularly in those systems that are maintained in a free-flowing condition. For a discussion on brook trout specifically, please see page 42.

As in past years, the CNNF and the WDNR worked cooperatively to restore trout stream habitat within the Forest during FY 2005. There are twenty six permanent sampling stations where long-term stream channel stability is monitored through cross-sections analysis; however, not each stream is monitored every year. The cross-section monitoring and analysis will allow us to determine the success of these restoration efforts, and what corrections may be necessary to maintain high quality trout stream habitat.

In FY 2005, cross-section monitoring focused on the Brule Creek and North Otter Creek habitat restoration areas. This habitat improvement focused on narrowing and deepening the channel and improving habitat complexity by adding wood and/or rock. Since the Brule Creek project was initiated in 2003, there is not yet enough data to provide any conclusions. On the other hand, habitat work was completed on North Otter Creek in the summer of 1997. Ten cross-sections were

established there in 1998 and monitored through 2005. The results of monitoring indicate the restoration was successful. Overall, average bankfull channel dimensions of the ten cross-sections were 2.9 percent wider, 10.9 percent deeper, and the area increased 14.5 percent. On average, the constructed floodplain aggraded 0.17ft. The bankfull elevation increased or stayed the same at all ten cross-sections with changes ranging from 0.00 to 0.47 feet.

Where channel cross-section monitoring stations have been established, WDNR conducts fish monitoring at each habitat improvement site before and after the restoration activity. Fish monitoring has indicated a positive response by brook trout to the work—especially in the larger size classes. At North Otter Creek, the pounds of brook trout per mile increased 187 percent for 9-11.9 inch fish and 564 percent for fish 12 inches and greater. The pounds per mile of brook trout less than 9.0 inches showed an increase of response that is typical for trout stream restoration projects in northern Wisconsin, which provide better habitat for adult fish while maintaining habitat for juveniles.

A large brook trout in spawning colors.



Historically, the South Branch Oconto, Little Deerskin, and Elvoy Creeks (all classified trout water) had poorly placed culverts at road crossings that resulted in upstream ponding, reduced fish passage, and sedimentation. When culverts were replaced, stations were established to monitor cross-section response. The new crossings were designed to remedy the problems associated with the old crossings, and if done correctly, monitoring will show the channel evolving into a more natural state. Monitoring will continue for several more years so that the sites can be adequately evaluated.

Objective 1.3g: Protect and restore coldwater stream communities by maintaining Class I, Class II, and segments of Class III trout streams and their tributaries in a free-flowing condition.

The CNNF contains over 2,000 miles of perennial streams, of which 1,072 miles are considered Class I and II trout streams. Trout streams with the best habitat receive a substantial ground water flow that maintains a high baseflow of cold, clear, alkaline water.

The CNNF water temperature monitoring program was developed in the mid 1990's. It was first utilized as part of the effort to develop an Aquatic Ecological Classification System for streams. This effort was successful in that all 2,000 miles of stream have been classified based on size, water temperature and water chemistry. The water temperature data that was collected helped to establish baseline condition for the trout streams on the Forest. This baseline information

is very important because brook trout have very specific needs in regards to water temperature. Optimal water temperatures for brook trout are below 22 degrees C. This work has helped to identify those trout streams that are temperature limited, which in turn has helped prioritize instream habitat improvement work. This information has also been used to help refine the group of streams within the beaver management program. Specifically the information has been useful in determining those systems that have the potential for improved water temperature conditions and those that don't. Currently, the CNNF is in the middle of monitoring water temperature on several habitat improvement projects. Results of that monitoring will be discussed in future monitoring reports.

Many of the CNNF trout streams have had impacts in the past that reduced their trout habitat. Over the last several decades, beaver have played a key role in the



The beaver...

overall health of brook trout ecosystems. Beaver can adversely affect trout habitat by blocking migration patterns, reducing shade through flooding, increasing water temperature, causing sedimentation of spawning areas, and altering habitat which causes increased competition from other fish species (Rosell et al. 2005). To help address all the issues related to beaver and trout, a program was initiated in 1988 to reduce the number of beaver on select trout streams within CNNF and throughout Wisconsin. Information from the water temperature monitoring program has been used to

identify the group of streams within the beaver management program. Currently, CNNF and WDNR maintain over 300 miles of trout stream in a free-flowing condition.

As part of this program, fall beaver colony surveys are conducted across CNNF using fixed-wing aircraft to map active beaver colonies on both trout and non-



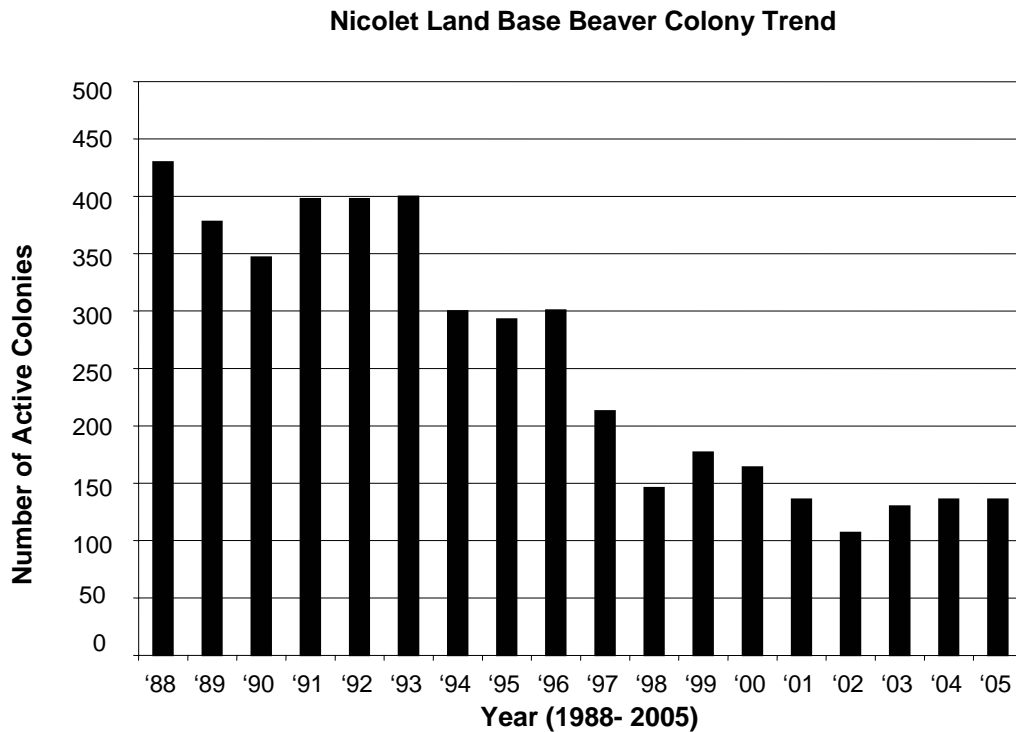
...and a well-constructed beaver dam.

trout water. This mapping has occurred on the Nicolet portion of CNNF since 1988 and covers 90% of all streams in that area. The Chequamegon survey started in 1995 and covers the majority of the streams on the Great Divide, Park Falls, and Washburn Districts. The Medford District in Taylor County has a subset of streams surveyed as there is minimal trout water on the unit. Well over 1,500 miles

of stream are surveyed in this effort every year, including FY 2005.

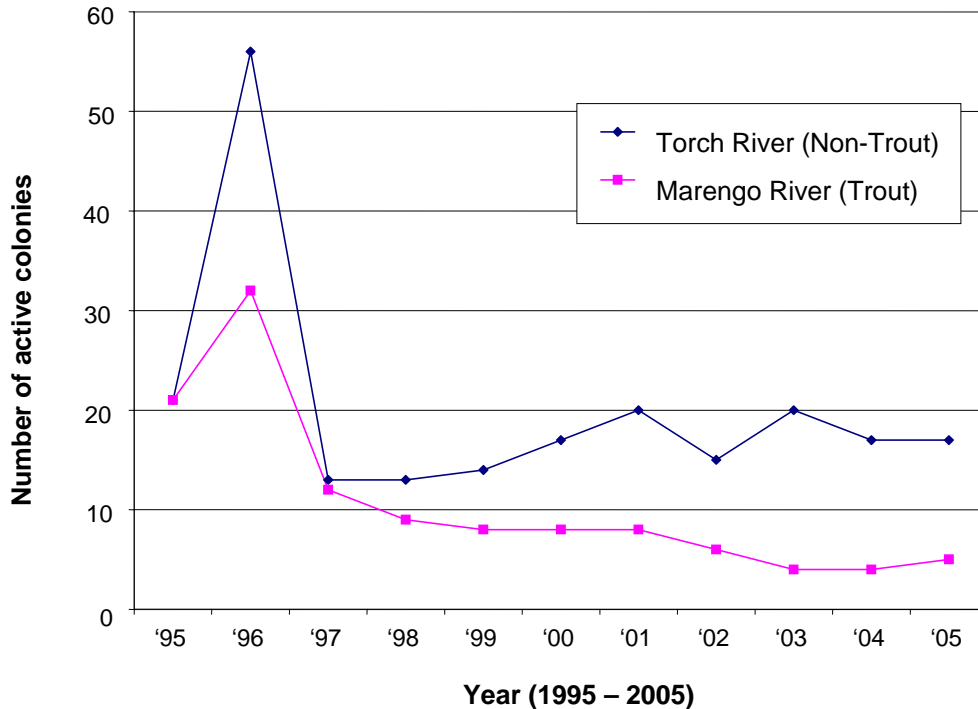
Figure 2 shows the number of active beaver colonies found on streams within the Nicolet land base over time. Colony numbers have ranged from a high of 430 in 1988 to a low of 136 in 2001. The streams currently in the beaver management program are now considered in maintenance mode, and the number of active colonies found within the trout streams where beaver management occurs is considered manageable.

Figure 2. The number of active beaver colonies found on streams within the Nicolet land base during 1988 – 2005.



There are over 800 miles of perennial streams on the Chequamegon land base, with 211 miles considered trout water. Because there is such a high mileage of non-trout water, the fall beaver colony flights offer an opportunity to monitor not only colony numbers on “beaver managed” streams, but also on systems where no beaver management occurs. Figure 3 compares two stream systems of similar size, the Torch and Marengo Rivers. The Marengo River has sections of river classified as both Class I and II trout water and is part of the CNNF beaver management program. The Torch River is a warmwater river that is not part of the beaver management program. Colony numbers are consistently higher on the Torch, suggesting what may happen to trout streams if beaver management did not occur. The number of colonies on the Torch River is consistent with most of the other warmwater streams within the Chequamegon land base, which also indicates that overall beaver populations are healthy.

Figure 3. Number of active beaver colonies on the Torch and Marengo Rivers during 1995 – 2005.



Objective 1.3i: Where were forestry Best Management Practices (BMPs) for water quality implemented and did they have the desired effects?

Wisconsin's Forestry best management practices for water quality are implemented as a matter of policy for all timber sales on the Forest.

The Forest participates in a state-wide effort to monitor the implementation and effectiveness of WDNR's forestry BMPs. No such monitoring was scheduled on the CNNF during FY 2005. Past monitoring of BMPs on the CNNF reported correct application 93 percent of the time, and adverse impacts to water quality were extremely rare when BMPs were applied correctly. Current plans for this state-wide effort call for monitoring of approximately 30 timber harvest units on the CNNF by state interdisciplinary teams in the fall of 2006.

1.4 – Terrestrial Ecosystems

Objective 1.4a: Maintain or restore vegetation communities to their desired conditions. Emphasize restoration/maintenance in MA 2B, 4B, and 8C.

To accomplish this broad objective, there are a number of monitoring questions that need to be addressed. Of primary importance is understanding the effects of

frozen ground-only timber harvest conditions in northern hardwoods stands in MA 2B relative to the effects in timber harvest in similar stands at other times of the year.

During FY 2005, Dr. Amy Wolf and graduate student Heather Gentry of the University of Wisconsin-Green Bay continued their work on the Nicolet land base that attempts to shed light on this subject. The primary objective of their study is to compare short-term effects of selective logging on understory plant species composition and diversity in winter-logged sites to the effects in summer-logged sites. A secondary objective of their project is to establish and describe experimental study plots for a long term comparison of the ecological impacts of winter vs. summer logging practices. Through cooperation with the CNNF the research will continue, and a report summarizing the results may be provided to us as early as FY 2006.

A Bit of Forest History



The Chequamegon-Nicolet National Forest is a work in progress. Seventy to 100 years ago, this land base was cut over, farmed, grazed and burned. The forest you see today is in early stages of reforestation. The forest grew back from the days of the timber barons and immigrant farmers who built a country through the intensive use of America's rich natural resources. The National Forest will continue to change in vegetation ages and structures as the Forest Service carefully and strategically manages this land to shape the Forest of the future.

Objective 1.4b: Restore and/or emulate natural disturbance regimes of pine barrens.

The Moquah Barrens are located on the Washburn District, in the northwestern portion of the CNNF. Barrens or savannah habitats were one of the most extensive habitats in Wisconsin prior to Anglo-European settlement (Curtis 1959). Fire was the dominant disturbance factor controlling the landscape of the pine barrens. Dry sands and slightly rolling topography created ideal conditions for frequent fires, which prevented reseeding of jack pine and left the open barrens habitat (Curtis 1959). In the early 1900's, settlement and fire suppression began in the vicinity of the Moquah Barrens. Initially, fire suppression was not very successful, and in 1931, over 74,000 acres burned in the pine barrens (Vogl 1964). However, the last known large wildfire at Moquah Barrens was in 1936,

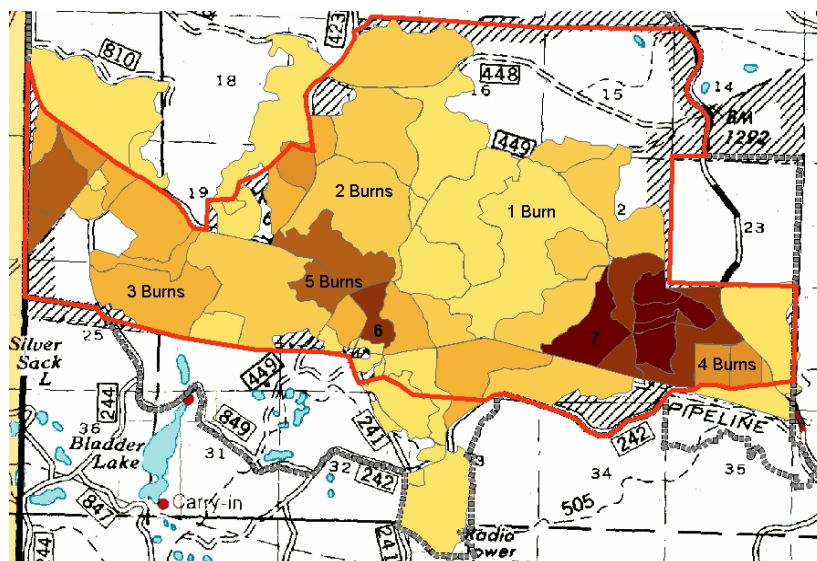
and without the natural disturbance, the Barrens began to succeed into dry northern and hardwood forests.

By the 1950's, much of the open areas were closing in, due to Civilian Conservation Corps era planting of jack pine and red pine and the suppression of fires. Concern grew as the sharp-tailed grouse population began to rapidly decline. In 1965, approximately 8,000 acres was established for wildlife management by the Forest Service and designated as the Moquah Barrens Wildlife Area. Over the following decades, more than 5,500 acres were harvested or sheared with bulldozers to convert forested areas back into open barren habitat. In 2004, more than 5,500 additional acres were designated for barrens restoration, of which approximately 700 acres had been harvested and burned.

Pine barrens restoration efforts have been implemented on the Moquah Barrens Wildlife Area since 1963 with minimal formal monitoring. As part of a two-phase monitoring approach, in cooperation with Northland College and the Sand County Foundation, a detailed vegetation cover map of the Moquah Barrens was first created based on species community types. Then, using this information, a total of 209 transects were evaluated to measure shrub species height and density as well as ground flora richness.

Transect results were analyzed for correlation to prescribed burn history and additional environmental variables (Figure 4). Vegetation composition was compared to historical reports as well as past studies in the Moquah Barrens to examine changes in species over time. The results of this project will assist in the development of guidelines for prescribed fire frequency, timing, and intensity for more effective restoration of the barrens community.

Figure 4. Number and location of prescribed burns that have occurred at the Moquah Barrens. The former designated boundary of the barrens is represented by the red line.



As expected, shrub cover significantly declined as the number of prescribed burns increased (Figure 5). Potential indicators of progress in barrens restoration are shrub densities less than 50% (Figure 6), increases in sand cherry and sweet fern, and a decrease in red maple. These indicators can be used to assess the success of our current restoration efforts as well as to effectively plan and monitor barrens restoration in the adjacent areas that have recently been designated MA 8C.

Figure 5. Shrub cover (sqrt.mtruecov) in portions of the Moquah Pine Barrens that have experienced 0-7 prescribed fires (fburns).

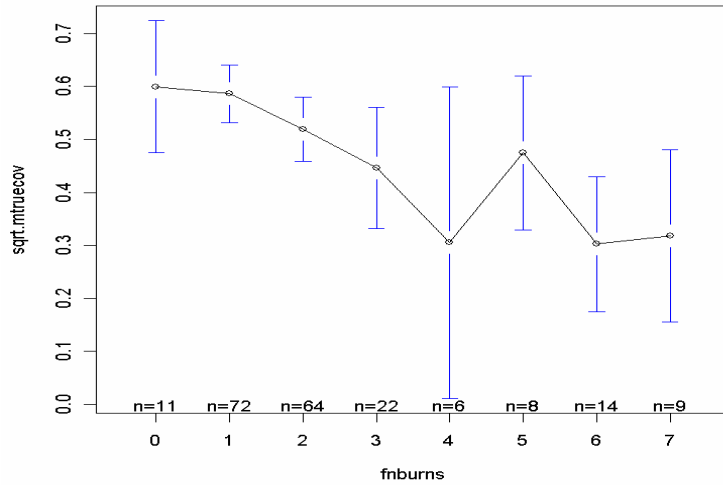
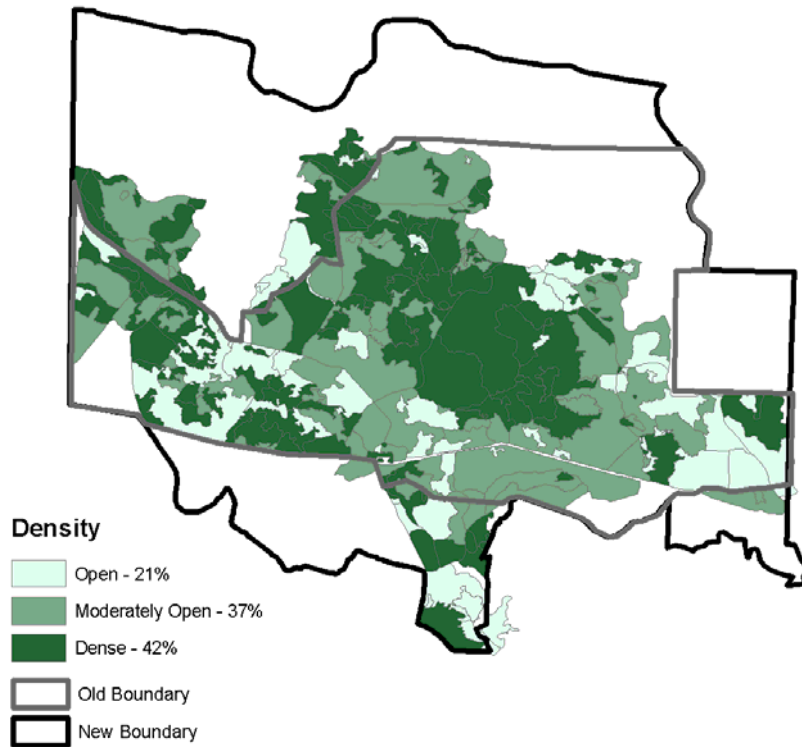


Figure 6. Vegetative density within the Moquah Barrens.



During FY 2006, the Moquah Barrens monitoring program will work to establish interagency FIREMON methods (<http://fire.org>). Quantified data on changes in vegetation composition and structure over time will enhance managers' ability to assess restoration efficacy.

Objective 1.4d: Maintain or expand existing dwarf bilberry populations.

The northern blue butterfly and its obligate host plant, dwarf bilberry, are both Regional Forester Sensitive Species on the CNNF, where these closely associated species are known only from ten upland openings. Each of these occurrences is located about 10 miles northeast of the town of Lakewood within the Lakewood-Laona District. These openings are "frost pockets" or other openings where soil, moisture, and light conditions are favorable. Historically, maintenance of these areas in an open condition would have occurred naturally through fire or the inherent tendency for unseasonable frosts in the frost pockets. In the past 150 years, disturbance regimes that would have maintained habitat for these species have been altered, and as a result, much of the habitat for these species have been lost or degraded. The dwarf bilberry and northern blue butterfly have been slow to recolonize. For that reason, the 2004 Forest Plan included an objective to maintain or expand existing dwarf bilberry populations, and in so doing, increase the amount of habitat available to the northern blue butterfly.

Presently, the dwarf bilberry patch sizes are unknown because the plant is low-growing and inconspicuous. In nearly every upland opening where it occurs, the actual plant patch size is a fraction of the opening size and a couple of the openings have more than one plant patch.

From 2002 to 2005, opening maintenance was accomplished at two known dwarf bilberry sites that had not been treated to maintain openings for approximately 10 years. The dwarf bilberry plants in these areas appeared to respond well to the removal of some overtopping spruce trees, however, further monitoring efforts are needed to understand dwarf bilberry's



A CNNF employee directs volunteer crews from UW-Green Bay before removing brush for dwarf bilberry restoration.



The same area after brush was removed to optimize conditions for the low-growing dwarf bilberry.

response to this type of management. No openings were created or expanded during 2005, although one opening was maintained with hand cutting.

In FY 2006 or 2007, several of the existing openings harboring dwarf bilberry will be expanded by harvesting approximately 3 rows of red pine that surround them and removing encroaching vegetation. Several rows of pines will also be removed to create travel corridors or “fly ways” that connect the frost pockets to promote movement of butterflies and recolonization of the plants between the openings. These activities were included in a red pine plantation thinning Environmental Impact Statement (EIS) completed in 2005 (see the “Plantation Thinning” EIS; Appendix F, p 88-90). Bracken ferns appear to be of greater concentration than in previous years, and have the potential to interfere with northern blue butterfly reproductive patterns. As a result, the bracken fern may be cut back as soon as FY 2006 to facilitate butterfly movement and host plant location.

The Oconto River Seed Orchard (White Lake, WI) is considering dwarf bilberry propagation for restoration activities on the Lakewood District although that program is not currently underway. In addition, the Ottawa National Forest is currently working to cultivate dwarf bilberry at the Toumey Nursery (Watersmeet, MI). Seeds were collected from the Lakewood District populations for possible restoration there. Only existing openings (mostly frost pockets) have been considered, thus far, for restoration of dwarf bilberry.

Table 4. Known occurrences of dwarf bilberry and northern blue butterfly on the CNNF examined during FY 2005.

Opening Size Containing Dwarf Bilberry (acres)	Northern Blue Butterfly Detected?	2005 Work (acres)
3.1	No	-
3.0	Yes	1.0
3.0	No	-
1.4	No	-
11.8	No	-
24.1	No	-
3.3	Yes	-
15.4	No	-
0.8	No	-
5.5	No	-

In 2005, Dr. Bob Howe and Dr. Amy Wolf of University of Wisconsin -Green Bay cooperated with CNNF biologists to establish butterfly survey transects through two openings that had northern blue butterflies. These surveys will be

conducted on an annual basis to monitor the population at these sites; if other populations are found, similar transects will be created.

Objective 1.4g: Annually treat non-roadside and roadside non-native invasive species (NNIS) sites. Develop an NNIS strategy to guide amounts and locations of treatment.



Above: At left, CNNF botany crews remove garlic mustard (an NNIS) from the shoulder of Archibald Lake Road in the Lakewood-Laona District. At right, the crew poses in the cleared patch with garbage bags containing only garlic mustard.

In FY 2005, the primary focus of CNNF invasive species coordinators was completing the NNIS control categorical exclusion document (CE) and the EA. The NNIS control EA, completed in July 2005, is considered a partial fulfillment of this monitoring item. A great deal of the EA's content will be used as a strategy for NNIS treatment. When fully developed, the CNNF's NNIS strategy will be more comprehensive than treatment. It will also address prevention, early detection, rapid response, and education. This more complete strategy will be prepared, reviewed, and completed during FY 2006.

FY 2005 marked the first year that herbicides were used to control NNIS. Early indications are that these treatments were successful; however, they will need to be repeated to ensure this prediction.

A biological control effort aimed at purple loosestrife at the Round Lake logging dam several years ago has now proven to be almost 100% effective. Unfortunately, seeds were dispersed down the Flambeau River and additional populations have been located there. These populations are now being treated with biocontrol beetles. Control efforts at the Kathryn Lake campground and Sailor Lake campground are now considered a success since no plants have been detected at these locations for the past two years.

Table 5. Non-native invasive plant control efforts during FY 2005.

	Acres or sites	Percent of Total**
Infested acres	107.8	11.0
Gross acres treated*	312.6	16.4
Number of sites treated	43	3.3

*Gross acres = infested acres multiplied by percent cover

**Based on current figures for total infestation on the CNNF

Objective 1.4h: Increase use of prescribed fire as a management tool within fire-adapted Land Type Associations. Reintroduce fire disturbance within RNAs where establishment records allow.

Prescribed fire can serve as an effective land management tool. For example, on the CNNF, it can be employed to combat the spread of NNIS, and it helps maintain forest openings in fire-adapted ecological communities like the Moquah Barrens (see Objective 1.4b for more information on the Moquah Barrens). The results from the Moquah Barrens research will enable us to increase proper use of prescribed fire as a management tool, both in those barrens and potentially elsewhere on the CNNF.

There were 325 acres of prescribed burning for ecosystem restoration accomplished on the CNNF during FY 2005. The objectives of these burns have been associated with hazardous fuels reduction, wildlife habitat improvements, restoration, and timber site preparation/reforestation. The Forest continues to identify areas needing treatment by the means of prescribed fire.

Objective 1.4m: What is the trend in average aspen clearcut patch size?

Forest-wide standards and guidelines for temporary openings (such as clearcuts), state they will not exceed 40 acres except in certain situations. During FY 2005, the average aspen clearcut patch size on the CNNF was 16.6 acres, which is on par with the averages of the past five years.

1.5 – Wildlife and Fish Habitat

This Forest Plan goal is to conserve habitat capable of supporting viable populations of existing native and desired non-native species, and retain the integrity and function of key habitat areas.

The University of Minnesota’s Natural Resources Research Institute (NRRI) has conducted breeding bird inventories in the National Forests of the western Great Lakes region (Chequamegon, Chippewa, and Superior National Forests) annually since 1991—two years before the Chequamegon and Nicolet National Forests were administratively consolidated in 1993. The results of their surveys have provided regional population data that expand upon the numerous efforts

involving management indicator species. NRRI has focused on relative abundance trends of individual species, as well as assemblages of species, over the 14 to 15 year time frame of the monitoring. Their report (Lind et al. 2006), as well as annual update reports from 1998 to 2004, can be found on the internet at: www.nrri.umn.edu/mnbirds/reports.htm.

Breeding forest songbird populations have been monitored since the early 1990's on the Chequamegon, Chippewa, and Superior national forests by NRRI. Breeding forest songbirds face many threats during their annual cycle. Determining which part of the annual cycle most limits populations is extremely difficult and sometimes controversial, especially for migratory species (Temple and Wiens 1989, Marra et al. 1998). For example, it is sometimes argued that the gains made from management actions on breeding grounds may be negated if factors on wintering grounds (ex., deforestation of South American rain forests) or along migratory pathways (ex., conversion of grasslands to agriculture in the southern United States) are limiting populations. However, causal factors away from breeding grounds are not justification for ignoring the requirements of these species during the breeding season. The NNRI report is an attempt to summarize bird trends and habitat use during the breeding season and provide potential mitigations in the hope that declining trends can be reversed in the future.

A separate effort to monitor birds on CNNF, the 19-year-old Nicolet National Forest Bird Survey (NNFBS), is the longest-running volunteer monitoring program on any U.S. national forest, beginning before the administrative consolidation of the Nicolet and Chequamegon National Forests. Every year, teams of volunteer observers led by at least one expert with proven field experience sample more than 250 permanent points during the second weekend in June. Altogether 512 points are monitored, approximately half during a given year. Observers use a standard 10-minute point count, separated into three time intervals (0-3 min, 3-5 min, 5-10 min) and three bird-to-observer distance categories (<50 m, 50-100 m, >100m). Since 1989, 75-100 volunteers have participated annually. The initial objective was to quantify the relative abundances, patterns of habitat use, and geographic distributions of breeding birds in the 661,400-acre Nicolet National Forest. The longevity of the survey now permits analyses of regional population trends and more detailed modeling of bird-habitat associations.



A black-throated blue warbler

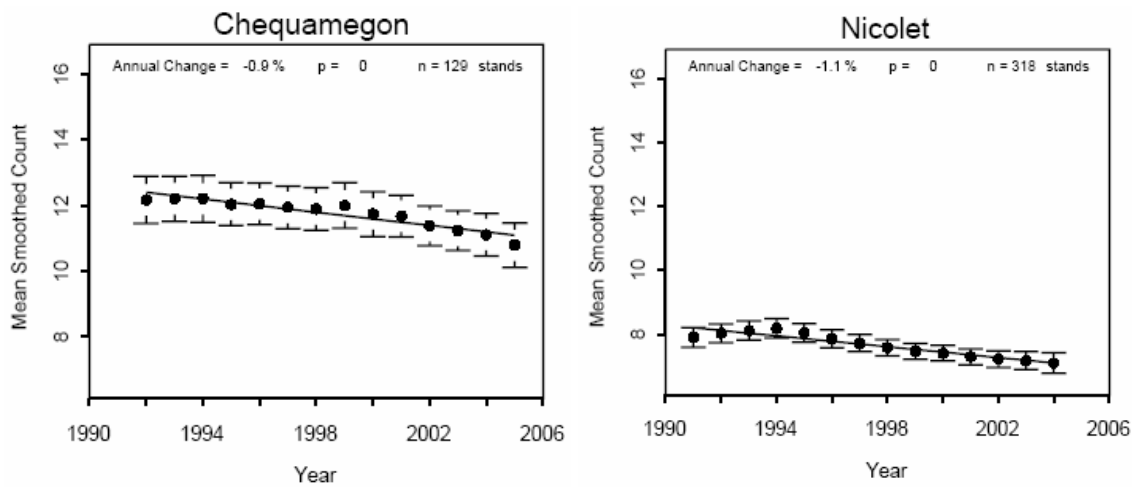
Data from the NNFBS are available at: www.uwgb.edu/birds/nnf/. Important findings include: 1) species assemblages sampled by the NNFBS are different

from those monitored by the North American Breeding Bird Survey; 2) a large number of species (45) have shown significant declines, compared with only seven species that have shown significant increases; and 3) data from the point counts can be used to identify species-specific habitat associations and geographic distribution patterns. Production of a custom CD of local bird songs has provided an incentive for participation and has helped cultivate a sustained base of expertise among volunteer observers in this regional bird monitoring program.

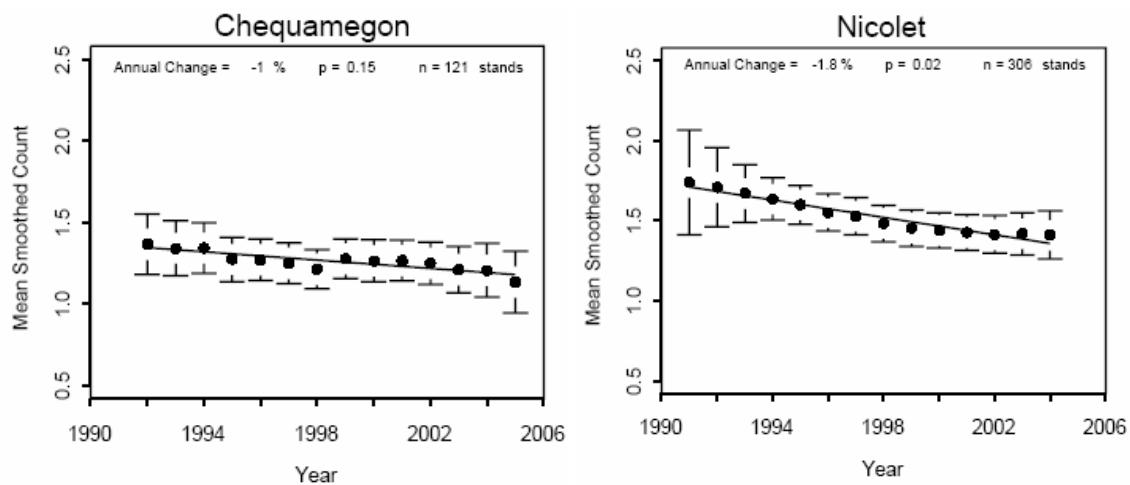
The 2005 results from both bird monitoring programs are consolidated in the NRRI report and in Figure 7 below.

Figure 7. Trends in relative abundance of breeding birds on the CNNF as grouped by various guilds. Source Lind et al. 2006.

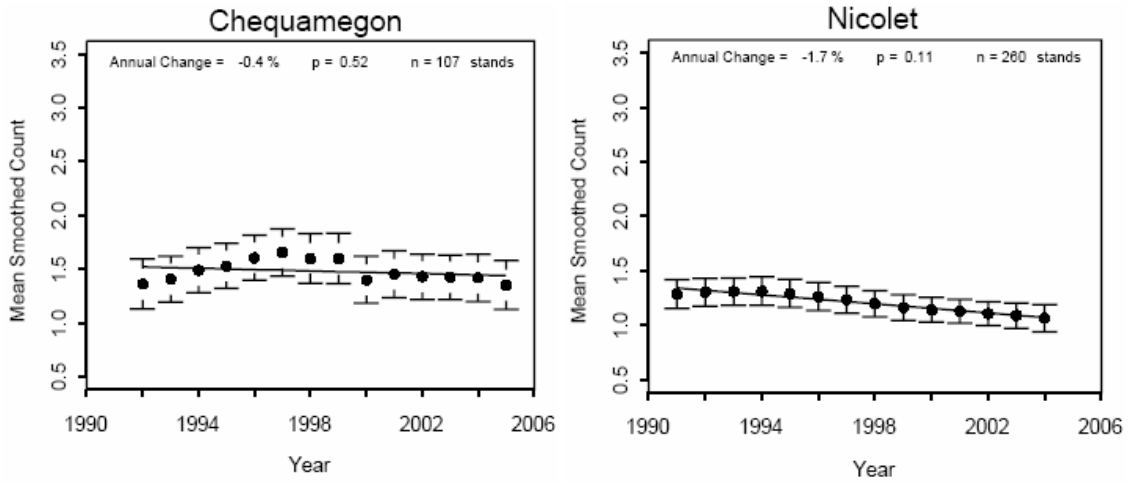
Long Distance Migrant Individuals



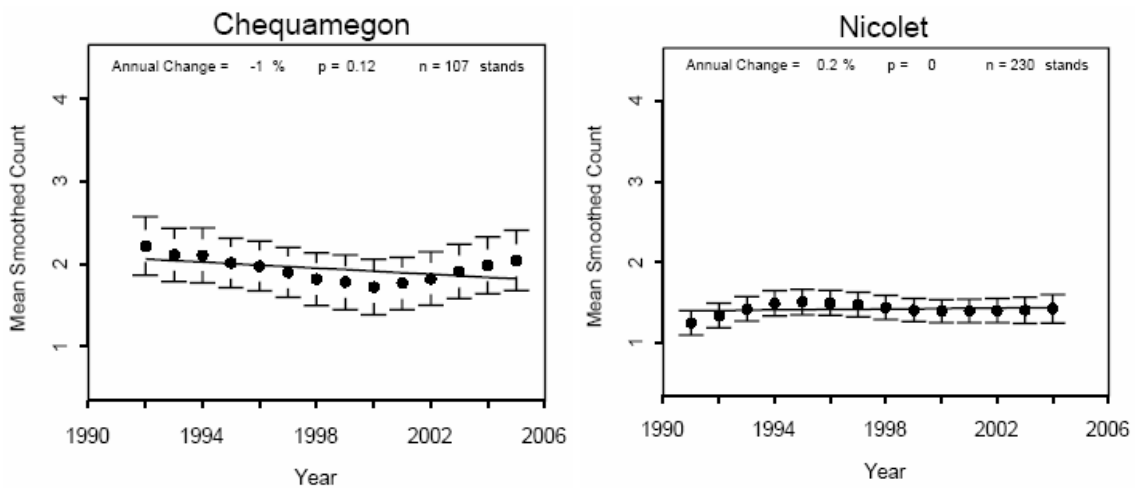
Permanent Resident Individuals



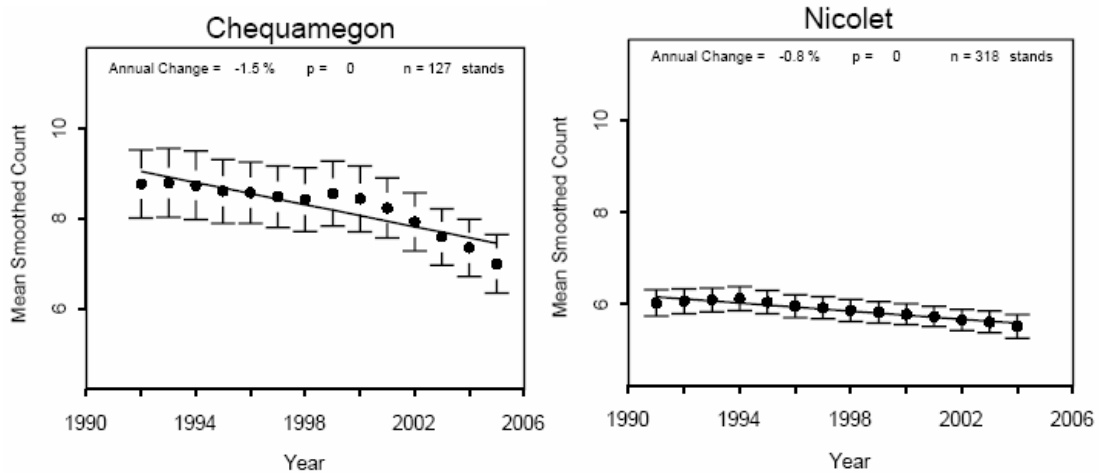
Coniferous Forest Habitat Individuals



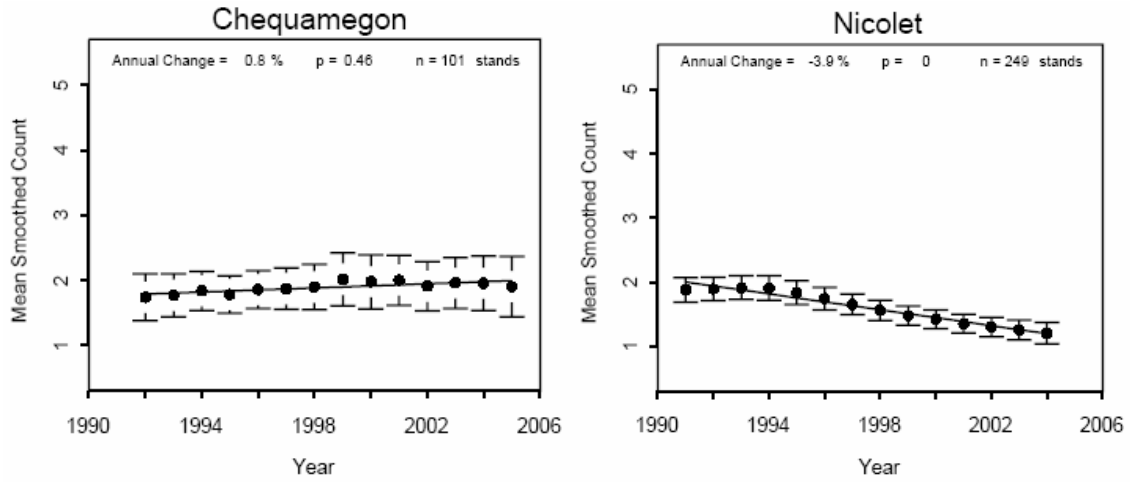
Lowland Coniferous Forest Habitat Individuals



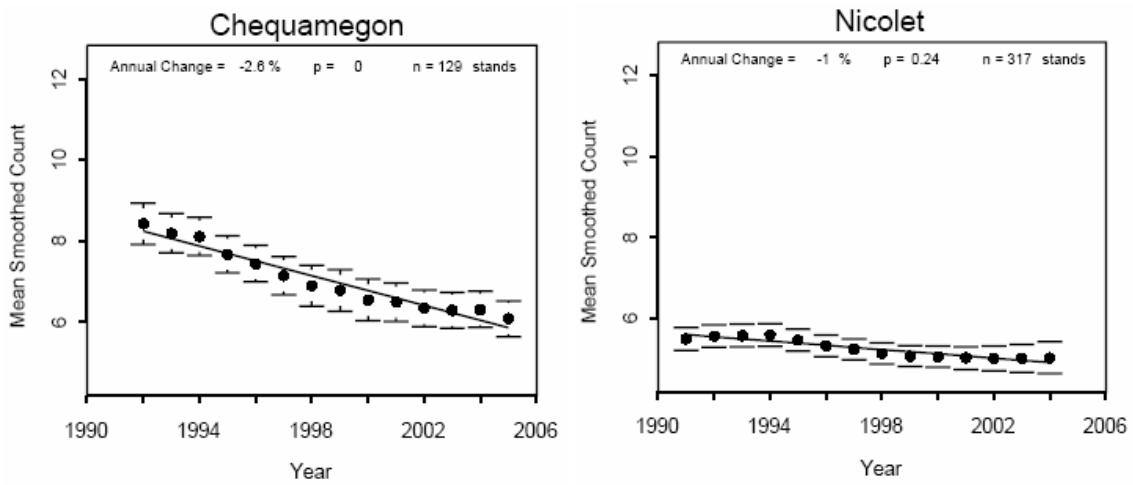
Deciduous Forest Habitat Individuals



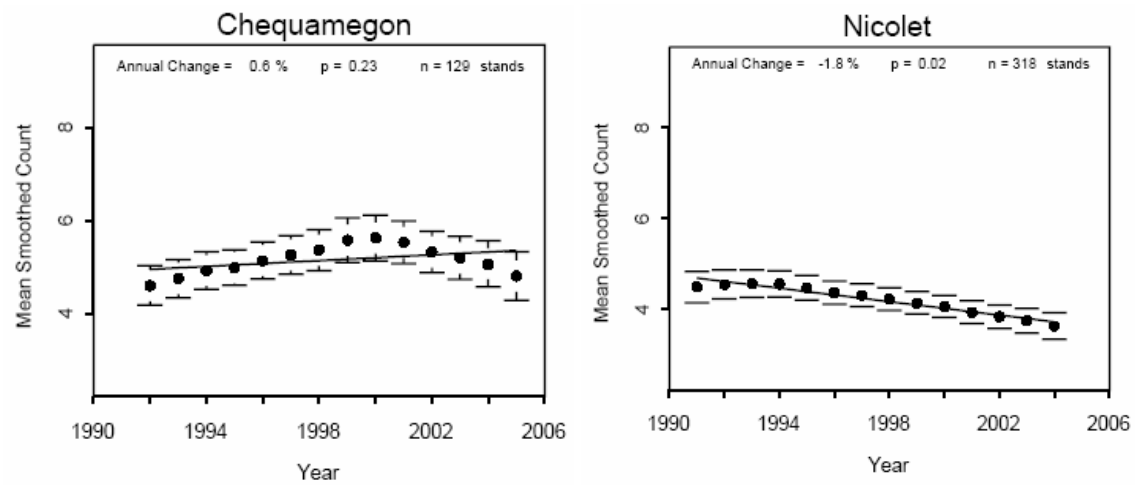
Early Successional Mixed Habitat Individuals



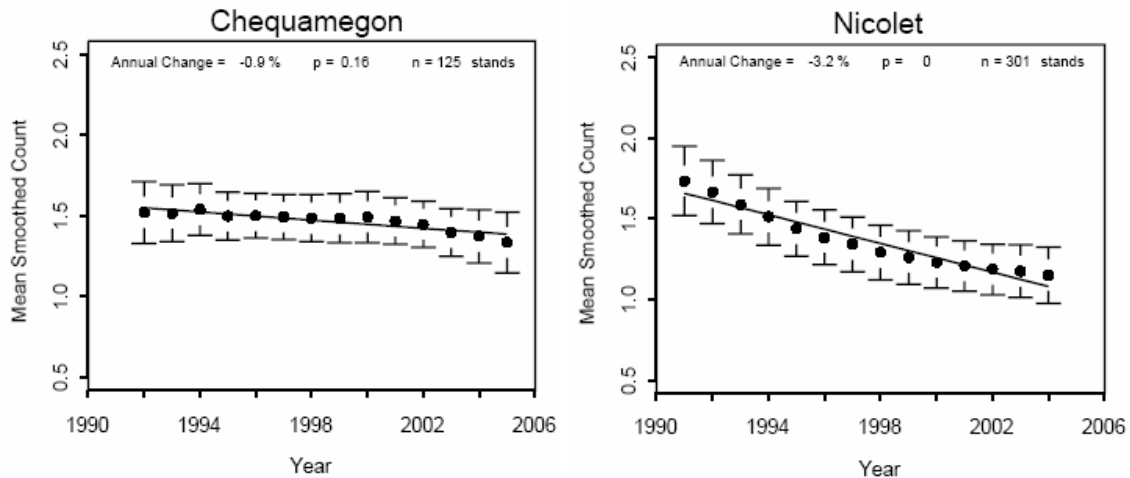
Ground Nesting Individuals



Shrub or Canopy Nesting Individuals



Cavity Nesting Individuals



1.6 – Air Quality

Objective 1.6a: How have forest management activities been conducted to protect or maintain air quality and what effects are prescribed burns having on Class I and Class II airsheds?

The Washburn District's 6,583-acre Rainbow Lake Wilderness Area (RLWA) is the only Class I airshed on the CNNF; the rest of the CNNF is a Class II airshed. The only forest management activity performed with a likely affect on these airsheds is prescribed burning. During FY 2005, the Forest implemented 17 prescribed burns totaling 1,110 acres in area. These burns had small, short-term impacts to air quality primarily in the form of increased particulate matter. These impacts were minimized by the limited area treated and by conducting burns under burn plans that ensure good dispersal of smoke.

Objective 1.6b: What are the current condition and trends for air quality related values (AQRVs) in the RLWA?

AQRVs are important wilderness characteristics that could be affected by air pollution. For RLWA these include water, vegetation, fauna and soil. The federal land manager has an affirmative responsibility to protect AQRVs from adverse effects by reviewing permits for major new sources of air pollution. Doing so requires monitoring of AQRVs to understand their current status and trend relative to air quality conditions.

Water is one of the most sensitive AQRVs associated with RLWA because there are several soft-water seepage lakes in RLWA that have minimal ability to buffer or neutralize acids and therefore are very susceptible to acid deposition. Three thresholds have been identified for alkalinity or acid neutralizing capacity (ANC).

These include an episodic “red line” value of 0 ueq/l, a general “red line” value of 10 ueq/l and a “green line” value of 25 ueq/l. Concentration below the red line values indicate adverse impacts from acidification are likely occurring to aquatic resources, while those above the green line value indicate impacts are unlikely.

The alkalinity and pH of seven lakes has been monitored several times beginning in 1984. Each lake was monitored once per year in late summer from 1999 through 2005. Bufo and Anderson Lakes had ANC’s between the red and green line values in 2005 while Reynard, Wishbone, Clay, Flakefjord and Beaver Lakes were above the green line value. This was an improvement over the period of 2000 through 2004 when several samples were below the red line value including three for Bufo Lake, two for Reynard Lake and one for Anderson Lake.

1.7 - Soils

Annual qualitative monitoring is conducted by the Forest Soil Scientist during formal timber sale reviews. As part of this process, an assessment of the activity area is made to assess the degree of disturbance (rutting, compaction, organic mater removal, erosion, displacement) resulting from timber harvest activities. The degree, extent and distribution of soil disturbance are summarized for each activity area, and a report is generated to document the Soil Scientist’s findings. During FY 2005, two timber sales were monitored for impacts to soil resources.

The Old North Sale from the Old North Road EA on the Lakewood-Laona District was assessed for compliance with the EA and overall project impacts relative to the soil resource. Although mitigation measures identified in this 1997 EA were appropriate for specific soil and water resource conditions, during project implementation the sale layout and marking crew imposed additional operating restrictions to protect soils beyond the level required in the EA. These additional restrictions were based on site-specific field observations and demonstrate the valuable sensitivity to resources CNNF employees provide beyond the NEPA process. Overall, the review determined that all BMP’s were followed, wetlands and riparian areas were protected, and there was only minor evidence of soil rutting/compaction (less than .01%). The threshold of soil rutting/compaction is 15%; therefore, the detrimental impacts are considered minor.

The Soil Scientist reviewed the Schooner Sale from the Hoffman-Sailor West EIS on the Park Falls District. Field review of selected payment units that were harvested during dry season and frozen ground conditions showed minimal (less than 1%) detrimental impacts to the soil resource. Little to no evidence of soil rutting, compaction or erosion could be found on the ground in these harvest units. Likewise, there were no direct impacts to wetlands within the observed payment units. The Soil Scientist did recommend improving consistency in inspection report details among sale administrators; however, overall, the monitoring indicates that design features and mitigation measures intended to

minimize or eliminate adverse impacts to the soil and water resources were effective.

Goal 2 – Provide Multiple Benefits for People

2.1 – Recreation Opportunities

A major draw to the CNNF is its diversity of recreation opportunities. It was recently estimated that the CNNF hosts more than 2 million visitors each year (Kocis et al. 2003). To maintain or enhance the diversity and quality of recreation experiences within acceptable limits of change to ecosystem stability and condition, it is imperative that we understand the goals and expectations of our visitors. As part of the National Visitor Use Monitoring project, the Forest participated in the pre-work for the second round of recreation use monitoring during FY 2005. Exit points were identified for the random selection process to determine where actual user counts and surveys would occur in FY06. The CNNF will conduct the counts and surveys in FY 2006 and prepare the summary report during FY 2007.



Canoeing is a favorite activity of many CNNF visitors.

Objective 2.1h: Close and rehabilitate one ATV “intensive use area.”

The Washburn Ranger District’s “Open 26” ATV play area has been closed since the summer of 2004. The closure activities included closing all road and trail access points to the area, erecting signs to explain the closure, and continuing a law enforcement presence in the area. The closure has been successful to date with very little violation of the closure area. Presently, native plants are re-colonizing the area, and this natural restoration is being monitored for success.



The “Open 26” ATV play area was closed in 2004 to rehabilitate resource damage like the erosion seen at left. Since that time, native vegetation has begun to return to the area. We’ll continue monitoring the area to ensure the site becomes fully restored.

2.4 – Heritage Resources

Although not identified as a requirement in the Forest Plan, the Heritage Program periodically inspects Special Management Areas (SMAs) to ensure that damage has not occurred through natural agents, project-related activities or through vandalism. With implementation of the Forest Plan, 30 heritage resources have been designated Management Area 8F—a SMA with archeological, historic or cultural values (see Forest Plan Final EIS, Appendix N-10). In FY 2005, 13 of these resources were visited to monitor current condition, four of which were GPS documented. Further, preliminary work was completed for documentation of 14 additional areas to be nominated as MA 8F. SMA nomination for these resources will be submitted to the Forest Leadership Team in 2006.

Objective 2.4a: Promote the scientific study of a selected heritage resource, primarily through public participation and institutional/governmental relationships.

The Heritage Program was busy during FY 2005. Two multi-year Heritage Program partnerships were completed during FY 2005, and three new ones were initiated. These ventures facilitated archaeological site evaluation, accomplishment of Infra Heritage Module development goals, interpretive media development, and management of historic records and documents.

FY 2005 marked the conclusion of a five year partnership with Northland College, one that annually enlisted students as participants in CNNF site investigations through archaeological field schools. Although this is a very popular and successful program, the partnership was suspended until another site relatively close to the College is selected for investigation (e.g., Washburn District). In FY 2005 (as in FY 2004) the Northland College partnership resulted in the evaluation of an archaeological site that was determined National Register of Historic Places (NRHP) eligible.

The second multi-year partnership that was completed in FY 2005 was with the Wisconsin Historical Society (WHS), Office of the State Archaeologist. The purpose of this partnership was to develop linkages between the WHS's archaeological database and the CNNF Infra Heritage Module database. The project was successful in cross-linking cultural resource site descriptors with the State-wide database, allowing easier conveyance and sharing of site information.

In FY 2005, a new multi-year partnership was initiated with the University of Wisconsin - Stevens Point (UWSP) College of Natural Resources. Under the direction of UWSP faculty, graduate students developed an interpretive plan for Boulder Lake Campground that interprets the campground's 1,000 year NRHP archaeological site. Panel mock-ups, included in the plan, were completed in 2005 and will be fabricated and installed in 2006. With positive results and

mutual benefits, the partnership will continue in 2006 with interpretive planning for another NRHP heritage resource.

The second new partnership of FY 2005 was established with the WHS's Division of Library and Archives. Concerned about loss of the Forest's historic records and documents, Forest staff turned to the WHS's Northern Wisconsin History Center. Through a five year challenge cost share agreement finalized in 2005, a WHS archivist will oversee a condition survey of Forest historic records. Based on survey results, a long-term plan for conservation and curation of historic records and documents will be developed.

The third new partnership of FY 2005 was initiated with Ascend Academy, an alternative school in Drummond, Wisconsin that offers community service projects in its curriculum. Through this avenue, a multi-year cooperative project was formulated that will focus on the rehabilitation and interpretation of the Rust Owen Lumber Company reservoir, a CNNF heritage resource located outside of Drummond. Field work will begin in 2006.

Objective 2.4b: Consult with tribal governments, institutions, and other interested parties to ensure the protection and preservation of areas, objects, and records that are culturally important to them.

CNNF leadership actively consults with tribal governments regarding proposed Forest Service undertakings, such as vegetative management projects. In those instances where heritage management is a project's primary purpose, the Heritage Program Manager represents the Forest Supervisor in initiating such contacts. In FY 2005, consultation was conducted with the Lac du Flambeau Band and the Lac Vieux Desert Band regarding the Butternut-Franklin Lakes Archaeological District NRHP nomination, which will be submitted to the Keeper of the National Register in 2006. Additionally, several tribes were invited to participate in our annual archaeological paraprofessional training, in which representatives of the Lac Vieux Desert Band and the Keweenaw Bay Band participated.

Objective 2.4c: Conduct scientific studies to further our understanding of human adaptation and influences on the landscape and to provide important information for NEPA analysis.

Approximately 29,000 acres of CNNF lands were surveyed by archeologists or archeological paraprofessionals to bring the historical total of surveyed areas to over one million acres. These efforts resulted in the discovery of 37 newly recorded heritage resources, adding to the Forest total of 2,405 heritage properties. In 2005, 18 of these properties were determined NRHP eligible, and will be nominated to the NRHP in 2006. Further, 81 previously recorded properties were monitored to determine current condition compared to site condition when initially inventoried. Monitoring results show no damage or

disturbance to these resources has occurred. These activities provide important information for NEPA analysis.

Objective 2.4d: Increase awareness and appreciation of cultural heritage through educational programs, university-sponsored archaeology field schools or other programs.

Thirty five volunteers contributed approximately 1,600 person hours towards several heritage projects. The first included the evaluation of the Isthmus Site, an archaeological property on Butternut Lake that was determined to be NRHP eligible. Secondly, volunteers assisted with inventorying and repackaging archaeological collections, helping the Forest move closer to our collections management goals. Thirdly, volunteers assisted with the management and conservation of historic photographs. Finally, as noted in item 2.4a, an interpretive plan for the Boulder Lake Campground through partnership with UWSP, interpretive panels to be fabricated and installed in 2006.

2.6 – Minerals and Energy Resources

There has been no active hardrock prospecting or exploration activity on the CNNF since 1998. Currently, the only related activity is the abandonment of existing drill holes. This work is scheduled to continue through FY 2006 and possibly into FY 2007 so that all drill holes can be permanently abandoned.

During FY 2005, twelve drill hole sites were granted a Certification of Reclamation, which is determined jointly by CNNF staff and the WDNR. All twelve drilling sites were completed ten years ago, and in that time native vegetation had re-established in the areas disturbed by drilling activities. The drill hole abandonment did not damage the re-established vegetative cover at the sites or on the access roads. All abandoned access roads were checked for erosion and vegetative cover before certification.

Permits are issued for public use of mineral materials, and plans of operations are attached to permits to ensure that gravel pits are mined according to the pit management plan; in turn, this promotes adequate utilization of the resource, pit safety, and environmental protection. As permits are issued, Engineering staff and District personnel conduct field checks to insure that permit operating plan requirements are implemented by the permit holder. There is currently no paper documentation of inspection reports. To improve our ability to document, monitor, and evaluate permit compliance and inspections, the Forest will be implementing a database (the *I-web Infra Mineral Materials Module*) in FY 2006.

CNNF biologists and ecologists have been inspecting active pit operations for NNIS infestations since 2000 and have been conducting NNIS eradication and control in gravel pits since 2004. A NNIS data base is established and tracks gravel pit NNIS inventories and treatment activities.

2.8 – Fire Management

Objective 2.8a: The safety of employees and the public is the highest priority during any fire or fuels management incident.

Although large catastrophic fires rarely occur in our region of the country, fires on the CNNF are relatively common and require an immediate and organized response to minimize their severity. There are two general categories of fire that regularly occur on the CNNF: prescribed and wildfire. While combating both types of fire, safety of CNNF employees and of the public is the highest priority.

Prescribed burning: The CNNF extensively promotes and implements safety as it relates to prescribed burning and wildfires. The forest has had no prescribed fires escape from control this year or within in the past several years. Burn plans are painstakingly developed that follow Forest, Regional and National direction. Prior to and after implementation of the action, each burn is fully reviewed and complete briefings are conducted to assess any possible means for improvement.



Carefully prescribed burns conducted by Forest Service fire crews act as an important land management tool.

Wildfire: Under the Thirty Mile Plan, the U.S. Forest Service requires each unit to review their response to wildfire each year. These reviews are to be conducted by the Line Officer, Forest Fire Staff Officer and/or the Forest Safety Officer. Under this requirement, 10% of the CNNF wildfire responses were reviewed for adequate safety measures during FY 2005. No safety inadequacies were identified.

Objective 2.8b: Expedite safe extinguishments of wildfires by the use of ground and/or air resources.

Safety is our top priority on the forest. The Forest Fire Staff Officer received no reports of any safety violations this year, which is typical on the CNNF. A good portion of our strong safety record can be attributed to the repetitive academic training, refreshers, fitness training, and adherence to policy and procedures. All fire personnel are encouraged to immediately report any and all safety violations.

The Forest had 61 fires during FY 2005. The size of these fires ranged from 0.1 acre to over 10 acres, with the average fire size held to 5 acres or less. Most of the fires occurred in the month of April, with a slight relief in June then activity

continuing until snow fall. The main cause of wildfires has been human caused (burning debris, brush, leaves etc).

Objective 2.8c: Reduce hazardous fuels within communities at risk, in cooperation with local, Federal, and State agencies.

The “Communities at Risk List” is a major component of the National Fire Plan that identifies areas where people and their property are most endangered by the threat of wildfire. The CNNF is in an ongoing process, working closely with the WDNR, to upgrade the federal register’s list of Communities at Risk. During FY 2005, 2,360 acres of hazardous fuels reduction in the wildland urban interface area were accomplished through brush and tree removal. We are also working towards an upgraded map to identify high risk fire areas that will help focus hazardous fuels mitigation work.

Objective 2.8d: Apply fire management as part of natural ecological disturbance regime.

Prescribed fire can serve as an effective land management tool. For example, on the CNNF, it can be employed to combat the spread of NNIS, and it helps maintain forest openings in fire-adapted ecological communities like the Moquah Barrens (see Objective 1.4b for more information on the Moquah Barrens). There were 325 acres of prescribed burning for ecosystem restoration accomplished on the CNNF during FY 2005. The objectives of these burns have been associated with hazard fuels reduction, wildlife habitat improvements, restoration, and timber site preparation/reforestation. The Forest continues to identify areas needing treatment by the means of prescribed fire.

2.9 – Treaty Rights

Nothing in the Forest Plan or its implementation is intended to modify, abrogate, or otherwise adversely affect tribal reserved or treaty guaranteed rights applicable within the CNNF. The Memorandum of Understanding Regarding Tribal – USDA Forest Service Relations on National Forest Lands Within the Territories Ceded in Treaties of 1836, 1837, and 1842 (MOU) has been in place for over five years and is running smoothly. Many projects have been put into place through the process laid out in the MOU without notable complications. Consultations under the MOU in FY 2005 include issues such as maintaining adequate northern goshawk and American martin habitat in the proposed Cayuga project, effects of proposed road closures as part of the Sunken Moose project, notification of birch bark gathering opportunities, and experimental scarification to enhance birch tree regeneration.

Goal 3 – Ensure Organizational Effectiveness

3.3 – Public and Organization Relations

Objective 3.3a: Consult with Tribes and intertribal agencies during decision-making processes. Consider effects of natural resource management decisions on the ability of tribes to exercise gathering rights. Site-specific project analyses address how project proposals might protect or impact the ability of tribes to exercise gathering rights.

As required by law, consultation on project level activities occurred during FY 2005 at various times and with varied amounts of success. Consultation included those tribes with ceded territory rights and those not signatory to the treaties of 1836, 1837 and 1842 but maintaining an interest on lands within the proclamation boundary of the CNNF.

Objective 3.3c: Cooperatively work with federal, state and county agencies, and other non-governmental organizations to control NNIS.

In May 2005, CNNF hosted a workshop on Cooperative Weed Management Areas at the Northern Great Lakes Visitor Center. The workshop was attended by over 50 people representing three states. Cooperative Weed Management Areas are local organizations that integrate invasive plant management resources across jurisdictional boundaries to benefit entire communities. They allow partners to share and leverage limited resources, raise awareness about invasive plant problems, and provide a mechanism for collaborative problem-solving on both public and private lands. The workshop led to the development of the Northwoods Cooperative Weed Management Area Group memorandum of understanding, which will be signed in FY 2006.

The CNNF is actively involved in several other important partnership efforts to combat NNIS, including the Invasive Plant Association of Wisconsin, the Midwest Invasive Plant Network, and the Governor's Council on Invasive Species. CNNF Ecologist, Linda Parker, serves on the Forestry Invasives Leadership Team, a subcommittee of the Governor's Council, and the Forestry Best Management Practices for Invasive Species Advisory Committee.

Objective 3.3d: Cooperatively work with federal, state, and county agencies and non-governmental organizations to integrate fire prevention programs and suppression resources. Cooperatively work across agencies to develop and implement hazardous fuels reduction projects that will reduce the risk of wildfire.

The CNNF's heavy involvement with other state and federal partners includes all aspects of fire management, such as prevention, suppression, training, and fuels. The fire program has written partnership agreements with the National Park

Service, Bureau of Indian Affairs, Menominee Tribal Enterprises, Fish and Wildlife Service, Bureau of Land Management, National Weather Service, and the WDNR. Two years ago, we developed a Wisconsin Interagency Wildfire Council (WIWC) made up of 7 agencies (six federal and one state agency) from Wisconsin. WIWC is becoming a great success, and June 12 – June 16, 2006 will be the first ever Wisconsin Wildfire Academy. This academy is in partnership with North Central Technical College in Wausau, WI. Nearly all of these agencies have been involved in one or more of our prescribed burns during FY 2005. The CNNF, WDNR and local fire departments commonly share equipment and personnel and support each other on wildfires throughout the year.

The CNNF has most recently completed a Community Wildfire Protection Plan (CWPP) in the local townships of Drummond and Barnes. This was a collaborative partnership between the CNNF, WDNR, local counties and fire departments. There are also two more CWPPs in progress on the southeast part of the forest. Collaboration is excellent among all agencies.

D. Management Indicator Species and Management Indicator Habitats

The Forest Service monitors population trends of selected wildlife species and their habitats, called Management Indicator Species (MIS) and Management Indicator Habitats (MIH), respectively, to help determine the effects of our management activities. These activities are required under NFMA, and by the Forest Service Handbook, section 2600. The regulations require the Forest Service to monitor MIS and MIH population trends at the scale of the “Planning Area,” which in this case is the entire CNNF. Further, the regulations state that MIS and MIH statuses must be monitored at prescribed intervals. The following species and habitats, identified in Appendix II of the Forest Plan, were monitored during FY 2005:

Pine Barrens

For a discussion on pine barren management and monitoring activities, please refer to earlier in the Report, Section II.B.1.4, *Objective 1.4b: Restore and/or emulate natural disturbance regimes of pine barrens.*

Gray Wolf

The CNNF relies primarily upon WDNR for their efforts in monitoring wolf populations throughout northern Wisconsin, including CNNF lands. During FY 2005, as in the previous 25 years, WDNR conducted surveys for gray wolves in the spring and summer. These monitoring efforts included live trapping, radio collaring, radio tracking and howl surveys. Monitoring also occurred during the winter, and consisted of snow tracking and radio tracking of collared wolves, which lead to population estimates. These efforts also enable wildlife managers to map the distribution of wolf packs throughout the state. The CNNF hosts a large percentage of the state’s gray wolf population, particularly on the Chequamegon land base (Figure 8).

Figure 8. Gray wolf distribution in Wisconsin. Winter 2004-2005. Source: Wydeven et al. 2005.

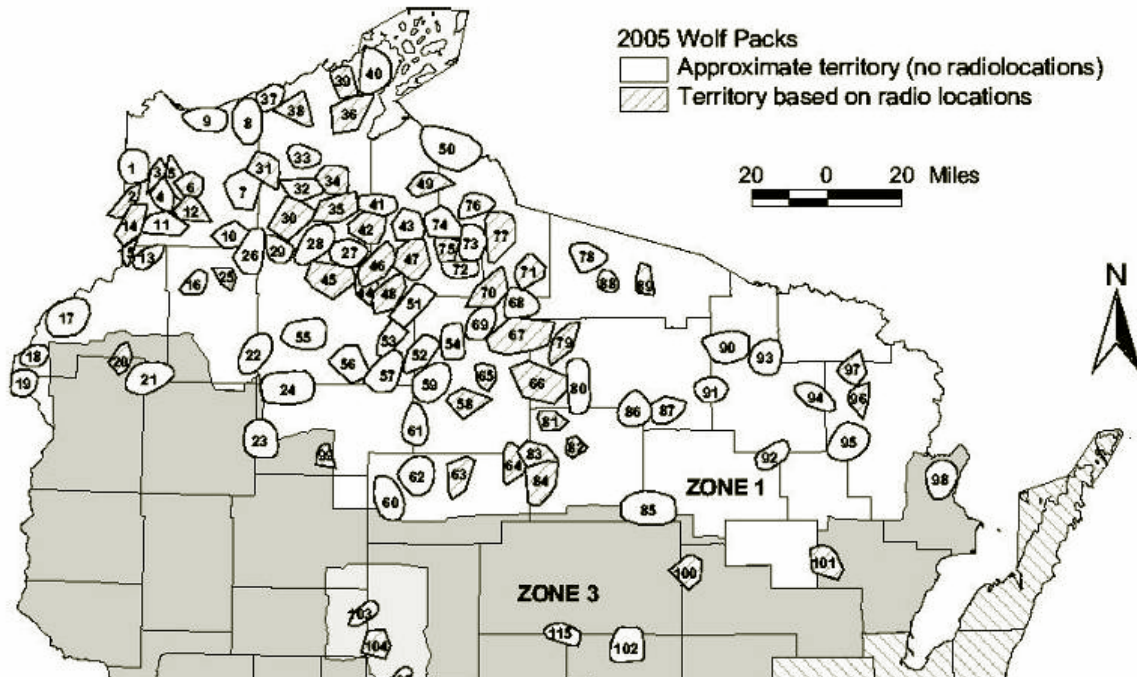


Figure 9. Changes in Wisconsin's gray wolf population 1980-2005. Source: Wydeven et al. 2005.

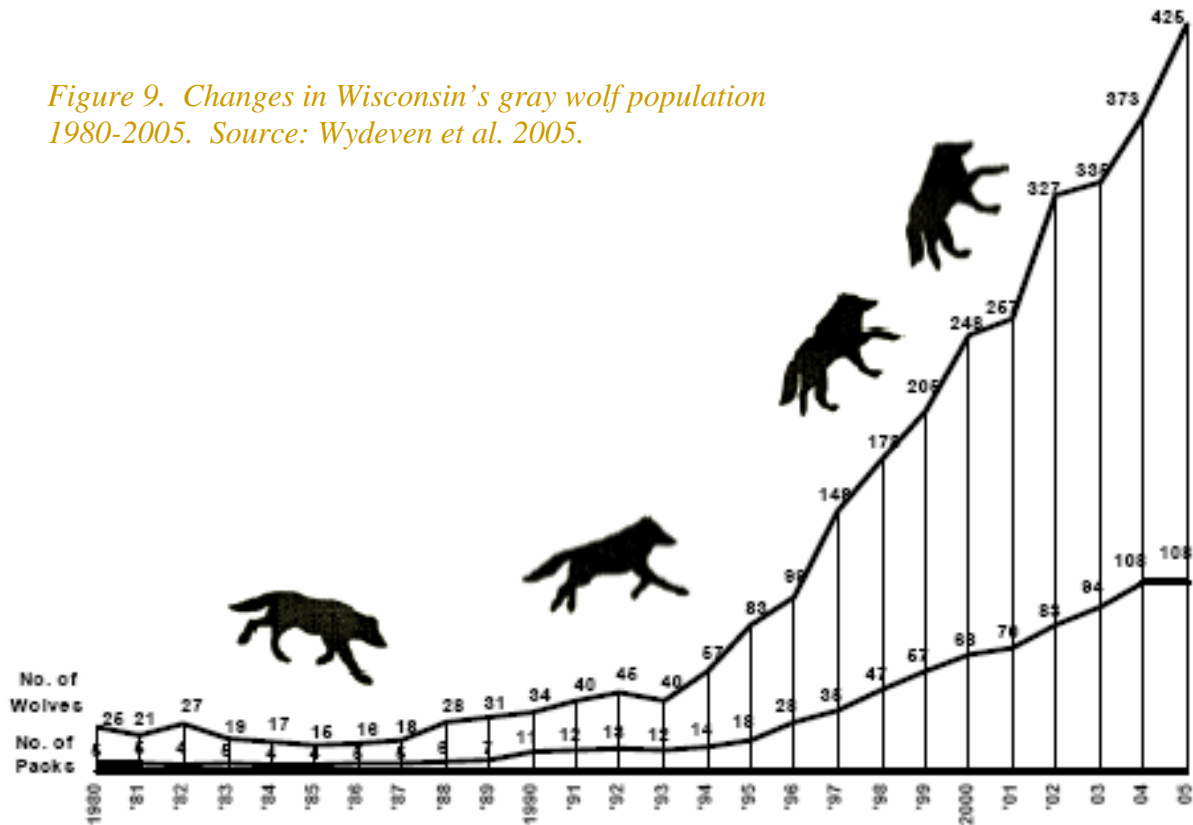
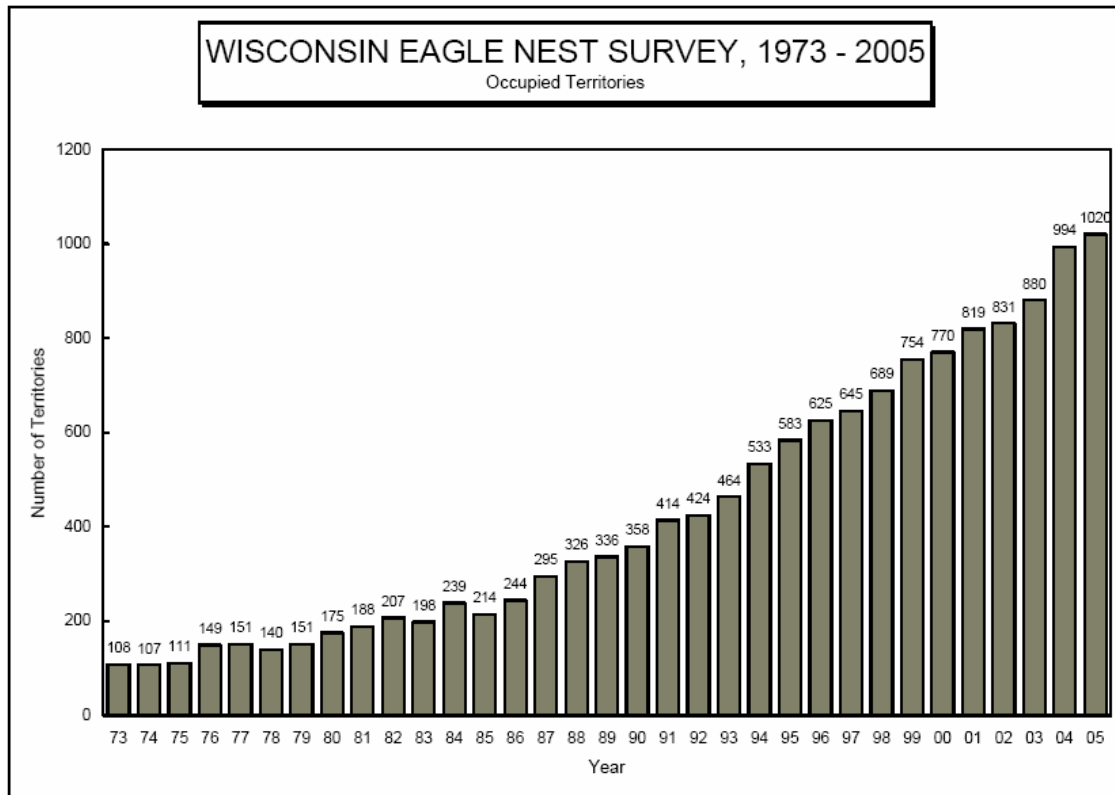


Figure 11. Number of bald eagle nests in the state of Wisconsin from 1973-2005.
Source: Eckstein et al. 2005.

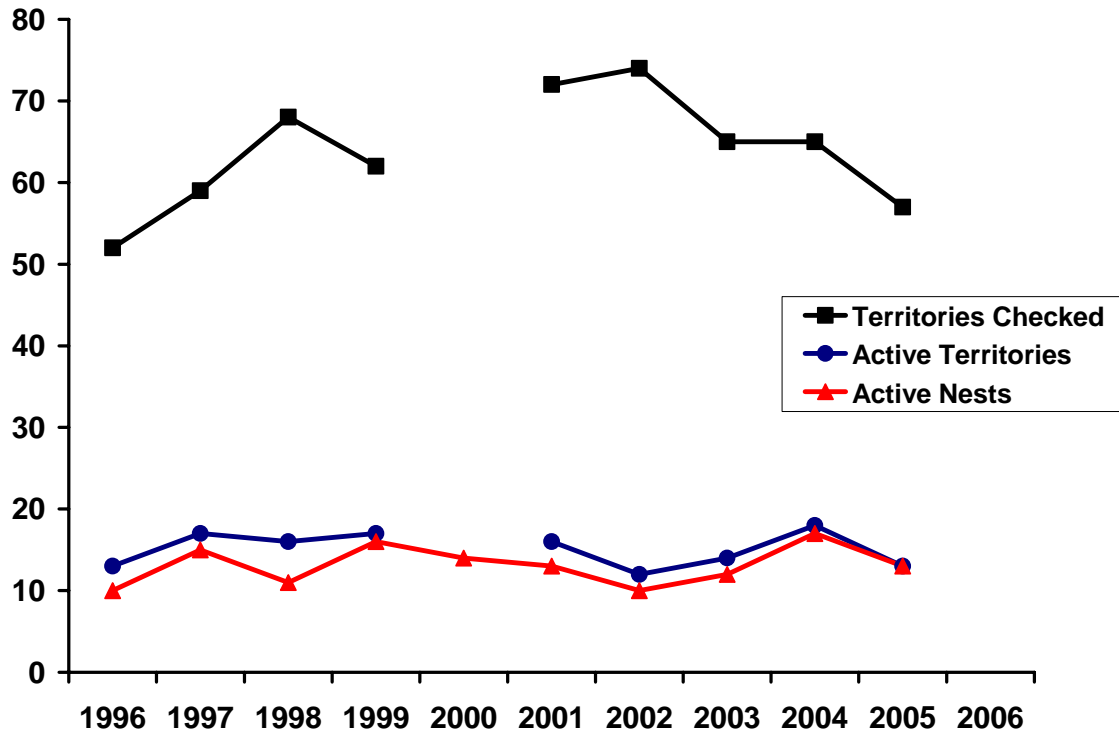


Northern Goshawk

Nesting surveys for northern goshawk were conducted in FY 2005 on the Nicolet land base (Figure 12). A total of 57 historic northern goshawk territories were visited, and one new territory was discovered. There were 13 active nests identified, eight of which successfully fledged offspring—a 62% success rate. From these eight nests, a total of 13 young fledged (five male, four female, four unknown), not including one that was taken with a permit for falconry. Mammal predation (particularly fisher) was the leading known cause of nest failure for northern goshawks. Mean mass was 984 grams for nesting females and 772 grams for males, which represents a decline from previous years (Erdman 2005). A more comprehensive evaluation of annual trends will be provided in future monitoring reports. Former northern goshawk nests were occupied in FY 2005 by a suite of other birds, including great horned owl, barred owl, red shoulder hawk, and broad-winged hawk.

Historically, the Chequamegon land base hosts far fewer nesting northern goshawks than the Nicolet land base. As a result, surveys for active territories are formally conducted every other year on the Chequamegon, the next year being FY 2006.

Figure 12. Survey results for northern goshawks on the Nicolet land base from 1996 - 2006.



Red-shouldered Hawk

Nesting surveys for red-shouldered hawk were conducted on the Nicolet land base during April and May of 2005. A territory is considered active when a male is observed defending it; a nest is active if a male with an active territory also attracts a mate. A total of 66 of the 87 known red-shouldered hawk nest sites were searched for activity. Nine of the 66 nests were newly constructed this year. Although 23 nests were active, only five were successful. This success rate (22%) is the lowest observed on the Nicolet land base during the last decade. Ten young fledged from the five nests, which also matches the lowest output during the last decade. Since 1992, the number of young per active nest on the Nicolet land base has averaged 0.73 (Jacobs 2005), which is much higher than the number observed in 2005 (0.43). A definitive explanation for this year’s relatively low production is not known at this time, though possible factors are localized outbreaks of West Nile Virus, increasing fisher and raccoon populations, or canopy defoliation by gypsy moths. Future monitoring will reveal if this year’s results are an anomaly or the beginning of a pattern.

American Marten

The CNNF has partnered with WDNR, U.S. Forest Service North Central Research, and the Great Lakes Indian Fish and Wildlife Commission (GLIFWC) for surveys of American marten (marten) on CNNF lands. During fall/winter 2004 and again in



An American marten fitted with a radio collar. Source: Woodford et al. 2006.

fall/winter 2005, researchers gathered data to estimate population abundance, understand marten habitat use, and determine the geographical range of the population. Since portions of both sampling seasons fell within FY 2005, and because they're meant to complement one another, both sampling efforts will be summarized below.

During September and October of 2004, martens were collected on the Nicolet landbase using wire live traps on lands surrounding and including the CNNF's Marten Restoration Area (Figure 13). All captured martens were sedated while their measurements were taken, and some were fitted with radio telemetry collars. Afterwards, all animals were successfully released at their capture sites.

A total of 39 martens were captured during the Nicolet study (Table 6); six martens that were captured in 2004 were recaptured in 2005. Thirty-two of these martens were fitted with radio collars and will be monitored during 2006. These monitoring data will provide information about habitat use and population range. Based on population estimation models, the marten population of the study area was estimated to be 221 individuals (± 61). Data is still inconclusive about the cause of the decreasing Nicolet marten population.

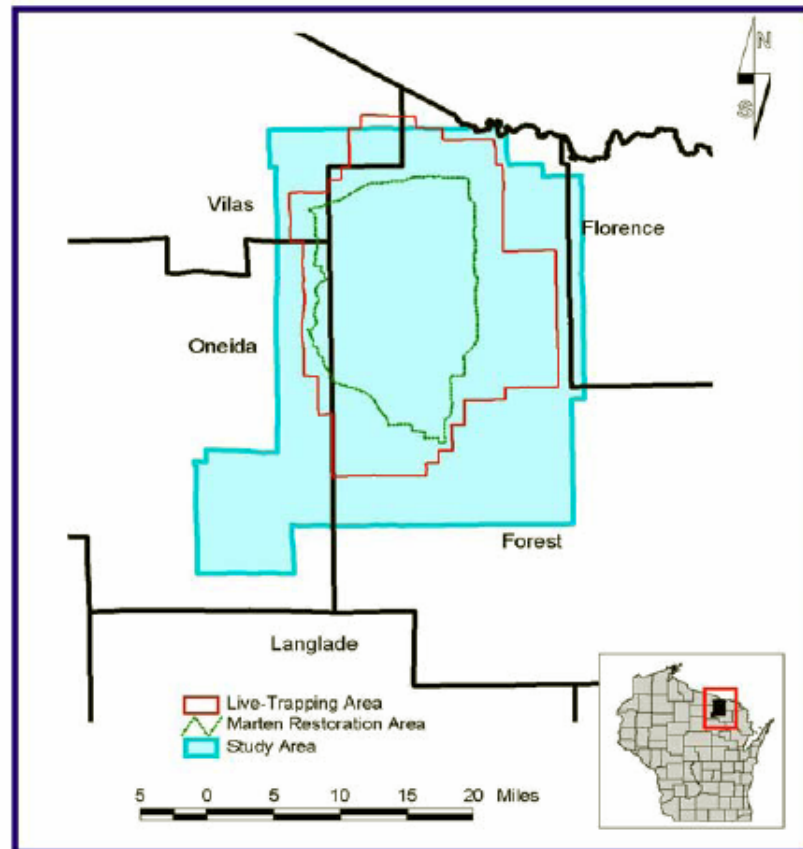


Figure 13. Study area for marten wire live trapping during fall of 2004, which included portions of Vilas, Oneida, Forest, and Florence counties. Source Woodford et al. 2005.

On both the Chequamegon and Nicolet landbase of the CNNF, baited hair snares were placed in areas where marten might be or are known to be present to assess the distribution and genetic relationships of marten across northern Wisconsin. These genetic samples (hair caught on sticky traps) are providing information about the success of the re-introduced marten. A summary of the study's findings is expected when researchers have completed their analysis.

Similar to the Nicolet marten population, the Chequamegon population is being studied. No results of the study are available at this time, but the Chequamegon population is expected to be smaller than the Nicolet population. Telemetry and trapping of animals in that population are contributing to monitoring of that experimental population.

Table 6. Comparison of catch rates for marten and fishers, within and adjacent to the Marten Restoration Area (MRA) during fall 1983, 1984, 2004 and 2005. Adapted from Woodford et al. 2006.

	MRA	OCT 2004 Outside MRA	Total	MRA	OCT 2005 Outside MRA	Total	OCT/DEC 1983* MRA	OCT/DEC 1984* MRA
Trap Nights	824	571	1395	1007	480	1487	1209	599
Martens Captured**	20	9	29	10	6	16	10	11
Marten/100 Trap-Nights	2.43	1.58	2.08	1	1.25	1.08	0.83	1.83
Fishers Captured***	2	9	11	8	5	13	17	33
Fishers/100 Trap-Nights	0.24	1.58	0.79	0.79	1.04	0.87	1.41	5.51

*Data from Kohn and Eckstein 1987.

**Individuals caught per trapping period.

***Total number of fishers trapped.

Brook Trout

The CNNF partners with WDNR for brook trout population surveys on CNNF lands. During FY 2005, WDNR established 6 sampling stations on three different stream systems on the Forest. Sampling stations varied from 700-2,000 feet in distance, and all brook trout were collected. Results from these surveys are used to estimate population abundance, and are added to the historical database. According to these records, brook trout populations on the CNNF have remained stable over the last decade. One major factor in the stable population is believed to be the beaver management program, since beaver dams result in higher water temperatures, barriers to fish movement, decreased oxygen levels, and other factors that negatively affect brook trout habitat. Perhaps equally as important to the stability of brook trout populations has been the stream restoration work that will also continue for years to come. Please see the discussion starting on page 11 of this report for more information.