BIOLOGICAL ASSESSMENT

FOR

CAYUGA PROJECT ENVIRONMENTAL IMPACT STATEMENT

Chequamegon-Nicolet National Forest
Great Divide Ranger District

Prepared by _____
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Date _____

1. INTRODUCTION

This Biological Assessment will be used to determine the potential for effects on federally listed species from implementation of the Cayuga Project selected alternative (Alternative 5). The Forest Service Manuel directs that "Through the biological evaluation process, review actions and programs authorized, funded, or carried out by the Forest Service to determine their potential for effect on threatened and endangered species and species proposed for listing" (FSM 2670.31 – WO Amendment 2600-95-7). For Environmental Assessments and Categorical Exclusions, a single Biological Evaluation is generally used to analyze effects on both federally listed species and Regional Forester Sensitive Species. The Manual defines a Biological Assessment as "A biological evaluation conducted for major Federal construction projects requiring an environmental impact statement, in accordance with legal requirements under section 7 of the Endangered Species Act". A decision was made early in the analysis process to use Environmental Impact Statements for five large vegetation management projects on the Chequamegon-Nicolet, including the Cayuga project. Therefore Biological Assessments are being used as the documentation for federally listed species, and separate Biological Evaluations are being used as the documentation for Regional Forester Sensitive Species. The Biological Evaluation for Cayuga is found in the EIS as Appendix D.

The area affected by the Cayuga project is located in T43N, R2W, Sections 6, 7, 16-20, and 29; T43N, R3W, Sections 1-18, 23, and 24; T43N, R4W, Sections 1-3, 10-23, and 27-33; T43N, R5W, Section 24; T44N, R3W, Sections 19-23 and 26-35; and T44N, R4W, Sections 23-27 and 34-36, in Ashland County, Wisconsin.

The project area includes 32,338 acres of National Forest System lands within the project area, including a variety of upland and lowland forest and non-forest types. Two landforms, ground moraines and silt-capped drumlin hills dominate the topography within the project area. The vegetation on these landforms has changed over time. Past timber harvest within this area included extensive pine logging and slash fires prior to the turn of the century. This was followed by hemlock and hardwood logging and slash fires after the turn of the century until the mid 1930's. Post logging slash fires changed the composition of hemlock/hardwood dominated stands to aspen/birch/fir or even-aged second-growth hardwoods. There is no evidence of past intensive logging in the lowland conifer forests, although it is likely that they were entered by loggers and the best quality trees, particularly cedar, were removed.

The Cayuga project area is located within three 5th level watersheds, the Upper Bad River, Marengo River, and West Fork Chippewa River. Most of the streams within the project area are small headwater streams, with primarily warm or cool water. There are several smaller lakes, as well as Day Lake, a large impoundment on the West Fork Chippewa.

The project area is located within Goal Area 1 (aspen management emphasis) and Goal Area 2 (uneven-age hardwood management emphasis), as identified in the 1986 Chequamegon National Forest Land and Resource Management Plan (Forest Plan).

Paved roads within or adjacent to the project area include portions of County Road GG, State Highway 13/77, State Highway 77, and County Road M. The remainder of the roads within the project area are a combination of gravel and native surface arterial, collector, and local roads.

2. CONSULTATION HISTORY

The U.S. Fish and Wildlife Service (FWS) was contacted during initial project scoping. A response dated June 5, 2001 provided a list of federally listed species and habitat in Ashland County. FWS concluded in the letter that, due to the nature and location of the project activities, the listed species and habitat would not be affected. The letter stated that further action was not required, but that if the project was modified, or new information became available that indicated listed species or critical habitat could be affected, consultation should be initiated.

There have also been recent conversations with the Green Bay office of FWS, by Dan Eklund, Forest Biologist (3/12/2003) and Steve Mighton, Region 9 Endangered Species Biologist (3/10/2003). These contacts were made to clarify consultation procedures for the five Environmental Impact Statements in progress on the Forest, including Cayuga.

3. PROPOSED MANAGEMENT ACTIONS

The selected alternative, Alternative 5, was designed to not only meet Forest Plan direction, but also to incorporate new information and findings (e.g. "Scientific Roundtable on Biological Diversity", Forest Plan Revision process). Implementation of these management activities would be expected to begin within 5 years.

3.1 Timber Harvest and Silvicultural Treatments *(see Appendix J, Stand Treatment Table, in the EIS, for a site-specific list of treatments by compartment and stand.)*

Approximately **5,610 acres** are proposed for timber harvest under Alternative 5. (This includes all harvest activities further described below.) This harvest would yield an estimated **25.0 million board feet** (MMBF) of timber volume. Stands would be grouped into several timber sales, to be offered beginning in 2003.

Even-aged thinnings are proposed on approximately **1,359 acres**. Of this total, about **722 acres** of mixed northern hardwoods would be thinned to promote the development and growth of mid-tolerant species like basswood and ash. Approximately **383 acres** of conifers would be thinned to promote the health and vigor of these stands, and to address recreation concerns. Approximately **247 acres** of aspen, and **7 acres** of paper birch, would be thinned to encourage conversion of these stands to longer-lived hardwoods or conifers.

Uneven-aged hardwood management would be implemented on approximately **2,448 acres** of northern hardwood stands through selection harvesting to develop multi-aged stands and favor shade-tolerant species like sugar maple.

The shelterwood system would be used to regenerate approximately **490 acres**. Shelterwood seed cutting is proposed on about **437 acres** to provide conditions favorable for natural or artificial regeneration. Under planting of conifers would follow on some of these sites, while natural seeding of hardwoods or conifers would be encouraged on other sites. The residual trees would provide shade needed for the establishment of the new stand. On two sites, totaling about **53 acres**, the overstory trees remaining from a previous shelterwood seed cut would be removed to provide optimal growing conditions for the recently established saplings.

Approximately **1,010 acres** of mature and over-mature aspen stands would be clearcut and regenerated to aspen, relying on root-sprouting to quickly reforest these sites.

About **147** acres of post harvest treatments would occur. These treatments may include mechanical site prep for regeneration, hand planting, and plantation seedling release and protection.

3.2 Road Management

Under Alternative 5, approximately **14.0 miles** of new temporary roads would be constructed for the harvest and removal of timber. Native soils would be used for the driving surface. Minor drainage improvements would be made where needed. All temporary roads constructed would be decommissioned following timber harvesting to limit motorized access.

Road maintenance work, specifically needed for this project, would be performed on approximately **23.1 miles** of existing roads needed to access timber sale areas. In many cases only portions of these roads may need actual maintenance work, such as minor surface blading or spot gravelling in low spots of the roadbed. In some cases the road maintenance would include the entire length of road needed to access the timber harvest area.

A Transportation Analysis (referred to as the roads analysis hereafter) was completed for the Cayuga Project Area in February 2002. Under Alternative 5 approximately **11.4 miles** of existing system and non-system roads would be decommissioned within the project area.

In order to protect the unique values and resources within the McCarthy Lake and Cedars RNA, a short spur off FR 1333 would be closed. Information regarding the closure would be posted at the closure to notify the public.

3.3 Recreation Site Management

Under this alternative, approximately **25 acres** of jack pine and red pine within Day Lake Campground on the Jack Pine and Heron Circle Loops would be thinned to address safety concerns. In addition, approximately **113 acres** of red pine in the Paper Birch, Red Pine, Blueberry, and Musky Bay Loops would be thinned to improve air movement and screening between campsites. Harvest activities would be restricted to winter only. (These stands are included in the total acres of conifer thinnings identified earlier in this section.)

3.4 Visual Quality Management

Along County Highway GG there are approximately **258 acres** of mature and declining aspen stands. These stands would be treated with shelterwood cuts (**181 acres**) or thinnings (**77 acres**), to begin conversion of these stands to longer-lived species. Most of these stands would be converted to northern hardwoods, while some would be converted to conifers, according to site characteristics. (These stands are included in the total acres of shelterwood cuts and thinnings listed earlier in this section.)

To improve the aesthetics along the shorelines of Day Lake, East Twin Lake, and Spillerberg Lake, some declining aspen and birch stands would be gradually converted to white pine by various methods:

- About **14 acres** of aspen on the west shore of Day Lake would receive a shelterwood seed cut to stimulate existing white pine seedlings.
- One aspen stand (about **15 acres**) at East Twin Lake would receive a shelterwood cut followed by under planting of white pine. (These stands are included in the total acres of shelterwood cuts listed earlier in this section.)
- Three shoreline stands at Day Lake and Spillerberg Lake, totaling about **53 acres**, would be under planted to white pine without disturbing the existing over story.

3.5 Control of Noxious weeds

A biological control (flea beetle) (*Aphthona species*) would be released to control three small patches of Leafy Spurge (*Euphorbia esula*) that together total less than **1 acre** .

3.6 Fisheries and Wildlife Habitat Maintenance and Improvement

Approximately **35 acres** of aspen would be converted to conifers within 300 feet of Brush and McCarthy Creeks. The conversion from aspen to species less palatable to beaver would be achieved through a combination of partial cutting to remove the aspen and under planting of white pine or white spruce. (These stands are included in the total acres of aspen thinnings identified earlier in this section.)

Brush bundles would be constructed and placed along approximately **1,000 feet** of McCarthy Creek to help narrow and deepen the stream channel and reduce the impacts of sediment. Removal of fine debris and tag alder would be conducted by hand cutting along approximately **1.5 miles** of McCarthy Creek to improve the flow of the stream, reduce accumulated sediment deposits, promote grass cover, and stabilize the streambanks.

Restoration of approximately **85 acres** of upland openings to a grass/forbs/shrub condition would be accomplished through hand cutting, mowing, or burning of encroaching woody vegetation depending on the characteristics of each site. Periodic maintenance and monitoring of each opening would occur.

3.7 Watershed Restoration

Under this alternative, existing culverts at **6 sites** would be replaced with culverts of larger diameter and greater length. These culverts would be installed at or slightly below streambed elevation to improve water quality and fish passage. These sites would include an unnamed tributary of Clam Lake at FR 195, an unnamed tributary to East Twin Lake at FR 195, an unnamed tributary to Brush Creek at FR 183, an unnamed tributary to Squaw Creek at FR 354, Brush Creek at FR 354, and an unnamed tributary on County Highway GG (see map in Appendix A). In-stream work within Brush Creek and its tributaries would be completed before September 15th or after April 15th to protect trout spawning areas.

The unnamed tributary to the Bad River at FR 355 would also be restored. This would involve removing the twin corregated metal culverts and approximately 100 feet of FR 355 on either side of the stream. The road fill would be removed down to floodplain elevation for the approximate width of the floodplain. The stream channel bed and banks would be restored to a natural state.

3.8 Trail Management

A parking facility for snowmobile trail users would be constructed on the south side of FR 1296. The parking lot would be approximately **1 acre** in size. In addition, relocation of approximately **.4 miles** of Snowmobile Trail 8 along a segment of County Highway GG (north) and FR 1296 to address safety concerns due to increased traffic would also be done.

4. SPECIES CONSIDERED AND SPECIES EVALUATED

The list of species considered was developed in cooperation with FWS, and Wisconsin Department of Natural Resources (endangered species specialists and the Natural Heritage Program).

The FWS letter dated June 5, 2001 stated that "A review of information in our files indicates that the following federally-listed threatened or endangered species and critical habitat occur in Ashland County":

- Haliaeetus leucocephalus – Bald eagle
- Canis lupus – Gray wolf
- Lynx canadensis – Canada lynx (potential habitat)
- Charadrius melodus – Piping plover (species location and critical habitat)

No additional federally listed species were identified from the project area using the Natural Heritage database.

Habitat for the piping plover is relatively large sandy beaches with sparse vegetation. This type of habitat does not exist within the project area. In Wisconsin, the piping plover has only been documented recently from beach areas in the Chequamegon Bay area (Wisconsin Breeding Bird Atlas - species map). No breeding however has been documented in the last few years (NatureServe, WDNR Endangered Resources species reports). Since habitat does not occur in the project area, and there is no documented breeding within or near the project area, this species will not be evaluated further. **The remaining three species listed above (bald eagle, gray wolf, Canada lynx) will be evaluated further in this document.**

5. ENVIRONMENTAL BASELINE FOR SPECIES EVALUATED

5.1 BALD EAGLE – *Haliaeetus leucocephalus*

5.1.1 Species status

Federal- Threatened
State- Special Concern
TNC Rank- G4, S2N, S3B (for explanation of TNC ranks see Appendix A)

5.1.2 Life History

The bald eagle is a large, long-lived bird of prey restricted in distribution to North America. Nesting bald eagles are associated almost exclusively with lakes, rivers, or sea coasts. Fish are the major item in their diet, although they will also feed on waterfowl and other birds, mammals, garbage, and carrion (Niemi and Hanowski, 1992 - species account).

Adult eagles tend to use the same breeding area and often the same nest every year. Nests are located in large, supracanopy trees, generally white or red pine, or sometimes in large hardwood trees. Successful pairs usually raise one or two young, or occasionally three. Reproductive maturity generally begins at age 5, but can begin as early as 4 years. Pair bonds are commonly thought to last for life, although lost mates will be replaced. Normal territory size in the lake states

is 247 to 494 acres, according to Species Viability Evaluation (SVE) data developed for Forest Plan revision. Territory radius around active nests studied in Minnesota averaged 0.6 kilometers (NatureServe).

Many bald eagles from interior Canada and northern United States migrate south for winter, although some birds may stay on or near the breeding grounds throughout the year, depending on prey availability and weather conditions. Large congregations of birds may result in winter where there is readily available food in conjunction with suitable night roost sites (information summarized above is from Northern States Bald Eagle Recovery Plan, 1983 - pp. 3-5, except where otherwise indicated).

5.1.3 Distribution and trends

Bald eagles are found only in North America, but are widely distributed throughout the continent. The lake states (Minnesota, Wisconsin, and Michigan) have the highest population of nesting bald eagles in the lower 48 states. In Wisconsin, breeding has been confirmed throughout the majority of the state, except in several southeastern counties. It is by far most common in the northern tier of counties, especially the northcentral and northwestern parts of the state (Wisconsin Breeding Bird Atlas - species map). It is found on both the Chequamegon and Nicolet landbases, in somewhat similar numbers, and in all districts of the Forest.

The population in the U.S. has been increasing, and expanding in range, due to protection and active management, as well as through enhanced reproduction after a ban on DDT use. In the lower 48 states, the breeding population has doubled every 6-7 years since the late 1970's (NatureServe). In Wisconsin, the number of breeding pairs has increased from 108 in 1973, to 770 in 2000. Population trends on the Forest have followed state and national trends as the number of occupied territories has more than doubled between 1975 and 1999, from 27 to 64.

5.1.4 Habitat associations

Bald eagles nest in diverse types of mature forest habitats, generally close to water where large conifer trees are available for nest construction, and an adequate supply of fish can be found. Additional large perch trees are another important habitat consideration. SVE data states that forest stands used for nesting and perching are typically mature to overmature with uneven-age structure, canopy gaps, and supercanopy trees. Because of the importance of structure and food resource rather than actual forest type, it is difficult to list habitat association by Forest Service vegetation cover types.

5.1.5 Limiting factors, management concerns

Human disturbance of the immediate nest site is a primary concern. Disturbance can be in the form of human presence, activities such as motor vehicle use (including boats) or logging or construction activity, or even intentional shooting. There seems to be individual variation in the amount of disturbance that eagles can tolerate. There have been a number of successful territories in northern Wisconsin in recent years where nests are located adjacent to features such as lake homes, campgrounds, and highways.

Shooting and accidental capture in leg-hold traps account for nearly 40% of the injuries to bald eagles admitted to the Raptor Center at the University of Minnesota, and nearly 35% of eagles tested had elevated blood lead levels (Neimi and Hanowski, 1992 - species account).

Another concern is loss of nesting and perching trees, either through intentional removal or by natural disturbance. In some areas, forest conditions and herbivory are preventing an adequate supply of regeneration of species like white pine. Fisheries management that substantially changes the fish species composition or population can be a concern (such as rough fish removal).

5.1.6 Forest Plan protection measures

Forest Plan protection measures are based on direction found in the 1983 Northern States Bald Eagle Recovery Plan and include the following:

- Prohibit all land uses within 330 feet of eagle nests. Activities necessary to protect the nest are permitted.
- Prohibit significant landscape changes such as clearcutting, land clearing, and construction activities between 330 and 660 feet of an eagle nest. Permitted activities during the period of October 1 to February 14 include thinning, pruning, opening restoration, etc.
- Land management activities are permitted in a 660 to 1320-foot zone from an eagle nest, during the non-nesting season (October 1 to February 14).
- Reserve potential nest trees within ¼ mile of each active or potentially active eagle nest.
- No new roads or motorized trails will be located within 1320 feet of an eagle nest.

5.1.7 Monitoring data

Surveys are conducted yearly on the Forest to monitor all known eagle territories. Two flights are conducted each year, by personnel from the WDNR. A spring occupancy survey is done around mid-April, to determine whether territories have returning adult birds, and whether they are incubating. A productivity survey is done around mid June, to determine whether nesting has been successful, and if so, to count young in the nest. From time to time, areas of potential habitat are

searched by air to locate any nests not previously known. In addition, new nests are found and reported from time to time, both by agency personnel and by the public. Since most eagle nests are within sight of large water bodies, it is unlikely that new nests would go unseen for any length of time. Any newly discovered nests are immediately added to the survey schedule.

Since there are no known nests, there are not any regular survey flights in the project area. Areas of potential habitat are visited regularly however, and any new eagle activity would be reported.

5.2 GRAY WOLF – *Canis lupus*

5.2.1 Species status

Federal- Threatened (as of April 1, 2003)
State- Threatened
TNC Rank- G4, S2

5.2.2 Life History

Gray wolves are the largest of the wild dogs (NatureServe). One of the more notable features of wolf biology is social system of "packs" that generally consists of a dominant breeding pair, current year's pups, and surviving offspring from the previous year. Unrelated wolves may also sometimes become members. Pack size varies with location and prey base, but in Wisconsin it ranges from 2-10 wolves. Average yearly Wisconsin pack size has ranged from 2.6 to 5.2 animals since 1979 (unpublished data from A. Wydeven, 2003). Pack territory size ranges from 20-160 square miles, averaging 70 square miles in Wisconsin. Territories rarely overlap, and are defended against other wolves.

Generally only the dominant pair in a pack will breed. Pups are born in early to mid April, and kept at a den site for 6-8 weeks. By early summer they are moved to a rendezvous site, where they stay while adults hunt for food. Packs may utilize several rendezvous sites over the summer. Yearling wolves eventually disperse from their natal packs to seek a mate and form their own territory.
The predominant prey of gray wolves is ungulate species, generally deer in Wisconsin. Other prey items include beaver, snowshoe hare, and other small mammals. Generally wolves are not instrumental in causing prey declines, although effects can vary with other circumstances (NatureServe). Some wolves have killed domestic livestock in recent years in Wisconsin (information summarized above is from 1999 Wisconsin Wolf Management Plan - pp. 8-15, except where otherwise noted).

5.2.3 Distribution and trends

The gray wolf was formerly found throughout North America and much of Mexico. Today it is found in about 85% of its original Canadian range, throughout Alaska, and in the lower 48 states in the northwestern Great Lakes region, northern Rockies, and the Cascade Mountains of Washington. Recently there have also been reports of wolves in North Dakota (NatureServe).

In Wisconsin, the wolf was originally found throughout the state (prior to European settlement). It was eliminated from southern Wisconsin by the 1880's, and believed extirpated from the state by the 1950's. Beginning in 1974/1975, wolves started recolonizing the state from the population in Minnesota, and gradually spread east and south in the state. Today they are found throughout the northern tiers of counties, as well as in the central forest region (Wydeven et al., 2003 - p. 13).

Wolves are found today on both the Chequamegon and Nicolet, although numbers are highest in the northern portion of the Chequamegon landbase. Pack activity is limited in the Medford unit of Park Falls/Medford district, and several packs have only recently been established on the northern portion of the Nicolet. There are no known packs in the southern portion of the Nicolet (Wydeven et al., 2003 - p. 13).

Trend information for much of North America is sparse, but the status of the northern Rockies population is improving, with recovery in the Greater Yellowstone Ecosystem progressing faster than predicted. Recent occurrences in North Dakota are thought to be due to an expanding population in Minnesota (NatureServe). In Wisconsin, wolf populations remained fairly stable for a period of about 15 years following recolonization. Starting in the early 1990's, number started to increase substantially, growing from approximately 40 wolves in 1993, to approximately 197 wolves in 1999 (Wisconsin Wolf Management Plan, 1999 - p. 10). A recent monitoring report estimated the statewide population at 309-325 wolves, outside of Indian reservations, as of spring 2002 (Wydeven et al., 2003 - p. 1). The same report (pp. 4-7) indicated an estimated number of pack/individuals from National Forest lands: Chequamegon- 17/88; Nicolet- 2/5; Great Divide district- 9/46. Packs listed for National Forest lands include those with only a portion of the pack territory within the Forest boundary.

5.2.4 Habitat associations

Wolves are adaptable and can survive on large landscapes with adequate prey populations and low rates of human persecution (Wisconsin Wolf Management Plan - p. 13). Forest type is not critical as long as there are adequate prey and low road densities; any native forest type can support wolves at various densities (SVE data). NatureServe lists no particular habitat preference for wolves.

5.2.5 Limiting factors, management concerns

As long as there is adequate prey available, the primary threat to wolves is through human persecution. There can be direct impacts from illegal shooting or trapping, as well as impacts from disturbance of den and rendezvous sites. The chance for persecution is greater in areas where there are higher levels of motorized vehicle access. Studies cited in the Wolf Management Plan (p. 22) suggest that wolves exist primarily in areas with less than, or up to, one mile of open improved road per square mile of land area. In this case, "improved" road corresponds to Forest Service traffic service level A, B, and C roads, but would not include D level roads (A. Wydeven, pers. comm.). The Management Plan (p. 22) states that "The expanding wolf population in the Lake States, however, has shown increased tolerance for slightly higher road densities in recent years." The Management Plan also states that while wilderness areas can provide refuge areas, experience in Wisconsin and other areas have shown that managed forests with adequate access can provide suitable wolf habitat.

Disease can also cause mortality, with canine distemper, canine parvovirus, Lyme disease, and blastomycosis being observed in Wisconsin wolves. Mange has been observed frequently, and has been diagnosed as the primary cause of death for at least nine wolves in a 5-6 year period (Wisconsin Wolf Management Plan - p. 13). Timber management in itself does not affect wolves; young age forests resulting from clearcutting in fact can benefit wolves by providing higher prey densities (SVE data). Habitat can be lost through major changes such as agriculture, urbanization, or intensive recreation development (Wisconsin Wolf Management Plan - pp. 13, 15).

5.2.6 Forest Plan protection measures

Current Chequamegon standards for wolves address road densities in the following way: Certain Management Areas (listed on p. IV-82 of the Plan) are to be maintained at or below their existing open road density; if wolf packs become established outside of those Management Areas, the future density of open roads is to be limited in that area as well.

There are additional protection measures currently being used on the Forest, based on management guidelines in the Wisconsin Wolf Management Plan. These additional measures are also proposed as standards and guidelines in the revised Forest Plan, as follows:

- Protect wolf den and rendezvous sites by utilizing the following direction contained in the "Wisconsin Wolf Management Plan" (1999): (1) Protect wolf den sites (verified by wildlife biologists) and key rendezvous sites as determined by surveys, that have been used within the last two years; (2) Utilize a year-round restriction on land use activities (including tree harvest and road construction) within 330 feet of a wolf den or rendezvous site (human uses of the area will be passively discouraged, and existing

trails and logging roads will be closed or rerouted); and (3) within ½ mile of a wolf den or rendezvous site, land use activities such as tree harvest, road construction and maintenance, and mineral exploration and extraction will be prohibited between March 1 and July 31. New road and trail construction will not be permitted within this zone. Roads and trails under Forest Service jurisdiction will be closed on a case-by-case basis. **(Standard)**

- Within active wolf territories, the density of roads open to public vehicles should not exceed the existing road densities within these areas. This requirement also applies within areas that have a Wisconsin Department of Natural Resources Probability Index of 50 or above, and applies to permanent roads that require routine maintenance and are accessible year-round by two-wheeled drive vehicles (Forest Service Traffic Service Level A, B, C, and possibly some D roads). See "Recovery Plan for the Eastern Timber Wolf," 1992, and the "Wisconsin Wolf Management Plan," 1999. **(Guideline)**
- Roads should not be upgraded beyond existing Traffic Service Levels within active wolf territories (or areas with a probability index over 50). **(Guideline)**

5.2.7 Monitoring data

Wolves are monitored in Wisconsin by a combination of winter track surveys, summer howling surveys, and radio-tracking of collared wolves. All areas in Wisconsin of known wolf activity or with potential habitat are monitored. The project area is primarily within the territory range of the Brush Creek pack. The radio signal was lost from this pack in March of 2002, but the pack is still being monitored by track surveys (Wydeven et al., 2002 - p. 7). Two other packs, Hellhole Creek and Torch River, are close to the project area and might occupy the edges from time to time. These packs both have radio-collared animals. The most recent pack locations for these three packs are available as part of the project record.

5.3 CANADA LYNX – *Lynx canadensis*

5.3.1 Species status

Federal- Threatened (as of April 24, 2000)
State- Special Concern
TNC Rank- G5, SA

5.3.2 Life History

The Canada lynx is the only lynx in North America. It is a rare forest-dwelling cat of northern latitudes, similar to the bobcat in appearance, but with longer legs, large well-furred paws, and long tufts on the ears. It is highly adapted to hunting snowshoe hare, its primary prey, in the deep snow typical throughout its range. It will also prey on other small mammals and birds, especially when hare are scarce. The association between lynx and snowshoe hare is considered a classic predator-prey relationship (Biological Assessment, 1999 - p. 24). In much of North America, lynx populations are known to fluctuate with the approximate 10-year abundance cycle of hare. It has been reported that cycles are not demonstrated for lynx populations at the southern fringe of their range (NatureServe), although in areas where southern hares exhibit cyclic populations, lynx may be cyclic as well (Biological Assessment, 1999 - p. 24).

Lynx are usually solitary and nocturnal (NatureServe). They seem to prefer to move through continuous forest, using the highest terrain available, such as ridges and saddles; cover is important to lynx when searching for food (Biological Opinion, 2000 - p. 11). They sometimes disperse over long distances during periods of prey scarcity, traveling distances from several hundred kilometers (NatureServe) up to 1000 kilometers (Biological Assessement, 1999 - p. 24). While periodic dispersal of animals into southern areas may temporarily boost populations, habitats of southern areas must still be adequate to support recruitment and survival; immigration pulses from the north are believed to be incapable of sustaining southern lynx populations (Biological Assessment, 1999 - p. 24).

5.3.3 Distribution and trends

The Canada lynx has a large range in North America. There have been declines in some populations, but it is apparently widespread and relatively abundant in much of the historic range (NatureServe). In the contiguous United States, it occurs almost exclusively in southern extensions of the boreal forest habitat types, including the Cascade Mountains, the northern Rocky Mountains, the western Great Lakes area, and northeastern United States (Biological Assessment, 1999 - p. 23). Historic records document occurrence in 24 states (Conservation Assessment and Strategy, 2000 - p. 35). In the contiguous United States, the overall range and population has been substantially reduced compared to historic levels (NatureServe).

There has been a small population of lynx documented in the past several years in Minnesota, particularly in the Superior National Forest, including successful breeding (Ed Lindquist, pers. comm.; FWS R6 website). Individual lynx have been reported intermittently in recent years in northern Wisconsin, including on the Chequamegon-Nicolet Forest, based on track sightings (A. Wydeven, pers. comm).

5.3.4 Habitat associations

The Canada lynx generally occurs in boreal and montane regions dominated by coniferous or mixed forest with thick understory. Denning habitat has been described as mature or old growth stands with a high density of logs (NatureServe), although the Biological Opinion (2000 - p. 11) states that the age of a stand does not seem as important for quality denning habitat as the amount of downed woody debris. Historic lynx records from the Great Lakes States occur predominantly in boreal, coniferous, and mixed types dominated by pine, balsam fir, black spruce, white spruce, northern white cedar, tamarack, aspen, paper birch, conifer bogs, and shrub swamps (Conservation Assessment and Strategy, 2000 - p. 6).

Development of Lynx Analysis Units for the Chequamegon-Nicolet (a key step in the lynx Conservation Assessment and Strategy) defined both foraging and denning habitat in terms of specific forest types and ages. For more detail on this process and the forest types considered, see Weiland, 2002.

5.3.5 Limiting factors, management concerns

Management concerns include habitat alterations that can result in loss of denning habitat, loss of prey habitat, or changes that can give a competitive advantage to species such as bobcat and coyote. Fragmentation, due to forest management, agriculture, recreation development, and roads, can affect dispersal patterns, as well as directly remove habitat. Road and trail construction can allow increased human access, resulting in mortality due to illegal or incidental shooting or trapping. Increased access during winter can result in displacement, incidental mortality, and increased competition (NatureServe).

The Canada Lynx Conservation Assessment and Strategy (2000 - pp. 16-34) describes risk factors under the general headings of (1) factors affecting lynx productivity; (2) factors affecting lynx mortality; (3) factor affecting lynx movements; and (4) other large-scale risk factors. For more detail refer to that document.

5.3.6 Forest Plan protection measures

The existing Chequamegon Forest Plan includes the lynx in a Forest-wide standard involving road densities: “Maintain miles of road open to motorized public use at or below existing density to control any conflicts between humans and gray wolves, lynx, or bobcat in the following Management Areas:” (the listed Management Areas do not include any portion of the Cayuga Project Area).

5.3.7 Monitoring data

There are several different monitoring efforts that use winter tracking to determine presence and trends of large mammals, including the lynx:

- Winter survey transects were established in all northern counties of Wisconsin in 1977, by the WDNR. Two routes of 10 miles were selected in each county; each of these routes is run each year, in fresh snow, generally by DNR personnel. One of the Ashland County routes is within the project area.
- Carnivore survey blocks have been established by the DNR, in northern and central forest counties. These were established primarily to monitor wolf populations, but other large carnivore tracks are recorded as well. These survey blocks are run each year by DNR or other agency personnel, and in some cases by volunteer trackers. The project area is included within one of these survey blocks.
- Two transects are run on the Great Divide district to monitor marten in and near the reintroduction area for that species. One of these routes goes through the middle of the project area. Data for other species is recorded as well.

Survey blocks specifically for lynx were established on the Forest as part of the National Lynx Detection Protocol. One of these blocks was on the Great Divide district, although not within the project area. A block consisted of a grid of 25 sites, each with 5 survey stations. Survey stations involved a scent pad and suspended pie pan (to attract animals), and a hair snare to collect hair samples of animals that rub against them. DNA sampling was used to identify any species that left hair samples. These surveys were conducted from 1999-2001 and resulted in no confirmed lynx hair samples from the Forest (Weiland, 2002 - p. 5).

There has been some long term furbearer research and monitoring work in the northern portion of the district, including the project area. This work has been focused on marten, fisher, and bobcat, and more recently on marten specifically. The research has involved almost daily field work during winter months for the past 10 years, including a large portion of the project area. Personnel involved are highly skilled at track identification, and would report any lynx track observations to the DNR, Forest Service, or both (John Wright, pers. comm.). No lynx tracks have been observed during that entire time period.

6. PROJECT AREA INFORMATION; EFFECTS OF PROPOSED ACTIVITIES

6.1 BALD EAGLE

6.1.1 Distribution; habitat availability

There are no records of eagle activity in the project area in recent years. There is some potential for nesting in the southwest portion of the project area, centered around East Twin, West Twin, and Day Lakes. These lakes would provide a suitable foraging area, with a relatively low level of human disturbance. There are some potential nesting and perching trees available in this area, although there is not an overabundance of supracanopy trees. The rest of the project area is lacking in habitat primarily due to the limited foraging base.

6.1.2 Effects of proposed management on habitat

There would not be any project related direct effects to eagle habitat. There are no plans to harvest mature or supracanopy white pine, therefore there would be no loss of potential nesting or perching trees. There is a possibility that individual white pine could be cut for temporary road construction or as hazard trees in Day Lake Campground, but that would only involve smaller trees. Even subcanopy white pine are routinely reserved from cutting in timber sale areas. There could be long term benefits from project implementation, due to planned underplanting and release of white pine in several areas, including stands near Day Lake.

There would be no project related changes in recreational use associated with the lakes in the project area. There would not be any permanent road construction that would lead to greater motorized use near the lakes.

There would not be any changes to the forage base in project area lakes due to project activities.

6.1.3 Effects of proposed management on population

There would be no project related effects on eagle populations, because currently there are no active territories within the project area. If eagles were to inhabit the project area at some time during implementation, there would be the potential for disturbance of nesting birds due to planned timber harvest near area lakes. This would be mitigated by use of standard nest protection measures, including seasonal restrictions (see Section 5.1.5).

6.1.4 Cumulative effects

The cumulative effects analysis area for bald eagle is East and West Twin and Day Lakes, and upland areas within ½ mile of those lakes. This is the only area within the project area that has high potential for eagle nesting.

There are no substantial past, present, or future activities on other ownerships to consider, since there are no large blocks of non-federal land in the area of East and West Twin and Day Lakes.

Past federal activities that could potentially affect eagle habitat include timber harvest in the Day Lake area. This has consisted primarily of red pine thinning in and near the campground, and removal of high-risk jack pine by single tree removal and by clearcutting. No supracanopy white pine were cut during these activities. Another recent activity involved the stocking of suckers into Day Lake. This was done to improve the food source for muskellunge, but could also have the effect of improving forage for eagles over the long term.

Present activities in addition to the Cayuga project are limited to maintenance of recreation facilities, and occasional removal of hazard trees in the campgrounds at Day Lake and East Twin. There are no additional activities planned in the foreseeable future, since the Cayuga project covers the majority of the cumulative effects analysis area; no additional large projects will be planned in that area for a number of years.

Based on predicted direct and indirect effects, combined with other past, present, and future activities, there are no cumulative effects predicted for the bald eagle from project implementation.

6.1.5 Determination

No Effect.

6.2 GRAY WOLF

6.2.1 Distribution; habitat availability

The Brush Creek pack is the primary wolf pack occupying the project area. As of spring 2002, this pack was believed to contain 7 wolves, including possibly 3-4 pups from 2001 (Wydeven et al., 2002 - p. 7). The pack did contain a radio-collared male, but the signal was lost in March 2002. Most of the radio locations from winter 2002 were in the eastern portion of the project area. Winter monitoring data from 2003 is not yet available as of this writing.

The Hellhole Creek pack occupies an area to the west of the project area, but may sometimes range to the east into the project area, including a common area with

the Brush Creek pack, depending on variations in pack activity (J. Wiedenhoeft, pers. comm.). This pack had 5-6 wolves as of spring 2002, including 1-3 pups from 2001. Breeding was not detected at that time. An adult female from this pack was trapped and radio-collared in June 2002 (Wydeven et al., 2003 - p.5).

The Torch River pack occupies an area to the south of the project area, but could range into the southern fringe of the project area. This pack had 5 wolves as of spring 2002, including a radio-collared male and 1-3 pups. One pup, possibly from this pack, was killed by a vehicle on Highway 77 in summer of 2002 (Wydeven et al., 2003 - p. 7).

Virtually the entire project area is suitable wolf habitat, based on factors such as ownership, cover type, road density, and human population (Mladenoff et al., 1995), as well as recent pack distribution. There may be areas from time to time that are not occupied by wolves, but that can be due to the territorial nature of packs and the maintenance of buffer areas between packs.

6.2.2 Effects of proposed management on habitat

There would not be any project related effects on wolf habitat in terms of changes in cover type. As stated in Section 5.2.4, wolves do not show any clear preference for cover type, other than for general forested areas. Any forest management that increases prey densities (clearcutting can improve habitat for prey items such as white-tailed deer, snowshoe hare, and beaver) can have the indirect effect of benefiting wolves.

Temporary road construction as proposed (Alternative 5 would involve eventual construction of 14.0 miles of road) could have short term effects on wolf habitat by increasing public motor vehicle use of the project area. As described in Section 5.2.5, wolves can be impacted from higher road densities due to public persecution. The temporary roads would not all be available for use at the same time however, due to varying project needs and construction times for the roads. Additionally, the temporary roads would be decommissioned after use, and would not be available permanently for public vehicle use.

Alternative 5 would also involve the decommissioning of 11.4 miles of existing road. As a result, the long term effect of Alternative 5 would be a reduction of open road density, from approximately 2.80 miles per square mile of land area, to 2.58 miles per square mile.

6.2.3 Effects of proposed management on population

As discussed previously, the primary threat to wolves is through human persecution, both from illegal shooting or trapping, and from disturbance of den or rendezvous sites. As a result, the construction of temporary roads could result in short-term impacts to wolves in the project area if human use of the area

increased. Long term substantial impacts are not predicted however for the following reasons:

- Wolves have apparently been thriving in the project area, and in the district as a whole, under existing levels of road densities and use.
- The temporary roads would be built only as needed, and decommissioned after use. It is likely that not all 14 miles of temporary roads would be available for use at any one time. Standards now used for decommissioning roads involve more than simply berming or gating, and have been effective in preventing future motor vehicle use.
- Road densities of "improved roads" in the project area are currently within the standards suggested by the Wisconsin Wolf Management Plan (density of TSL A, B, and C roads is at 0.97 within the project area).
- The long term result of Alternative 5 implementation would be a decrease of overall open road density, due to planned decommissioning of some existing roads.

There is also potential for disturbance of wolf packs through additional use of the project area that could result from timber sale activity. This would occur primarily if den or rendezvous sites were located near or within timber sale areas. There is a relatively low chance of this occurring, due to the extensive size of pack territories in relation to the project area (the typical pack territory size of 70 square miles for Wisconsin would likely result in no more than one den site and up to several rendezvous sites within the entire project area). Protective measures as described in section 5.2.6 would reduce or eliminate disturbance to den and rendezvous sites, but only if the sites were identified before activities took place. It should be noted that one of the most critical time periods for wolves would be the spring denning season. Much of this period coincides with "spring breakup", when logging and trucking is halted to avoid soil and road damage.

6.2.4 Cumulative effects

The cumulative effects analysis area for wolves will be the entire area currently covered by the three wolf packs described above in Section 6.2.1, since all three packs may currently use the project area, and could also be affected by activities outside of the project area. This roughly corresponds to the northeastern 1/3 of the Great Divide district.

Activities on other ownerships in this area that could affect wolves have included recreational development, and road construction associated with timber harvest on large blocks of industrial forest land. We do not have figures of harvest activity or road construction on private lands, but it is known from conversations with forest management personnel that there has been recent activity on two large blocks, those owned by USX and subsidiaries, and by Wiskhert Corporation. The USX block of land does not utilize many road closures, however public motor vehicle use of the area is limited somewhat by the quality of the roads; many are

built for travel in frozen ground conditions only (L. Lindholm, company forester, pers. comm.). The Wiskhert block is largely closed to public motor vehicle use.

Recreational development on private lands in the analysis area is typical of other areas in northern Wisconsin, and has involved a combination of lake front development, and development of more isolated, forested blocks of land for seasonal and permanent use.

Other past and present activities on federal land in the cumulative effects analysis area include a wide range of typical management activities, including timber harvest, road construction (primarily temporary roads), wildlife and fish habitat improvement, and maintenance of existing facilities. The only major future activity that can be predicted with any certainty is another multi-resource management project similar to the Cayuga Project. A project boundary has not been delineated yet, but it would potentially involve an area west of the Cayuga project, in the northcentral and northwestern portion of the district. It would likely include at least some of the territory of the Hellhole Creek pack.

Given the predicted direct and indirect effects, combined with other past, present, and future activities, no substantial cumulative effects are predicted for wolves from project implementation. Past federal activities have been in compliance with current Plan direction. This direction includes limits on road densities in areas of known pack activity. The upcoming project area, which could include the Hellhole Creek pack, would either follow current Plan direction or Plan revision direction (depending on time of approval of the Plan revision). As described in Section 5.2.6, the Plan revision direction would also require limitations in road density within active pack territories. In addition, there is national direction (Forest Service Transportation Policy, published in Federal Register 1/12/2001) that requires a science-based analysis of Forest transportation systems. This process was used in the Cayuga project area (Cayuga Roads Analysis, 2001, available as part of Cayuga planning record) to determine which roads were no longer necessary, and should be decommissioned. A similar process will be used in upcoming project analyses, and would likely result in additional road decommissioning.

Pack activity within the cumulative effects analysis area has increased in the past 10 years and now appears to be at a stable level. In 1992, most of the analysis area did not have pack activity (Mladenoff et al., 1995 - p. 285). By 1999, three packs were established in the analysis area (Wydeven et al., 1999 - p. 12). These are likely the same packs that are found today, although there are some differences in locations due to the dynamic nature of pack territories. This activity has been maintained with existing levels of road densities and recreational use. As stated before, road densities will not increase within the project area, and are not likely to increase within the cumulative effects analysis area.

6.2.5 Determination

No effect.

6.3 CANADA LYNX

6.3.1 Distribution; habitat availability

There have been no known lynx observations or track sightings within the project area within the past 10 years, in spite of numerous monitoring efforts that could potentially locate lynx sign (see Section 5.3.7). Wisconsin Natural Heritage Inventory data does not list any lynx occurrences for Ashland County. There are two possible lynx track sightings from within the district in recent years, but neither of them is from the project area (Wydeven, pers. comm.).

The lynx habitat analysis completed for the Chequamegon-Nicolet in 2000 (Weiland, 2002) included an analysis unit on the Great Divide district that included most of the project area. Within that analysis unit, it was determined that there were 11,981 acres that met age and forest type requirements for both denning and foraging habitat. There were an additional 15,232 acres that met age and type requirements for denning or foraging habitat, but not both (Weiland, 2002 - p. 16).

Further review and analysis however considered landscape level habitat continuity, history of snow depth and snow crusting, population densities of competitors (bobcat in particular), and results of survey and monitoring efforts. The results of this study, together with consultation with FWS, concluded that the Chequamegon-Nicolet does not contain suitable lynx habitat.

This conclusion is supported by the Biological Opinion on the effects of National Forest Land and Resource Management Plans and Bureau of Land Management Land Use Plans on Canada Lynx (Biological Opinion, 2000 - pp. 4, 17, 18). The Biological Opinion states that:

- The historical and current status of lynx in the Great Lakes Region is uncertain.
- Population dynamics in the Great Lakes appear to have been driven by immigration, rather than showing patterns of a resident population.
- Northeastern Minnesota is considered most likely to support a resident population, but records of lynx from Wisconsin and Michigan were most likely transient, dispersing animals.
- Much of this area is considered marginal habitat for lynx because it is a transitional forest type at the edge of snowshoe hare range, with hare densities that may not be sufficient to support lynx reproduction.
- Snow depths within appropriate habitat that allow a competitive advantage for lynx only occur in limited areas in northeastern Minnesota, extreme northern Wisconsin, and Michigan's Upper Peninsula.

- As a result of local consultations, the Chequamegon-Nicolet National Forest is found to lack sufficient or adequate lynx habitat and lacks evidence that resident lynx were present or that lynx occurred persistently over time.

6.3.2 Effects of proposed management

It has been determined that the project area does not contain lynx or lynx habitat, therefore there would be no direct, indirect, or cumulative effects from project implementation.

6.3.3 Determination

No effect.

7. ADDITIONAL RECOMMENDATIONS OR MITIGATION

None are required other than the standard protection measures listed by species in Section 5.

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Appendix A

TNC (The Nature Conservancy) ranking definitions:

G (Global) or T (trinomial or subspecies) ranks

1 - critically imperiled globally
2 - imperiled globally
3 - very rare and local throughout range
4 - apparently globally secure, rare in parts of range
5 - demonstrably secure globally, rare locally

S (State) ranks

1 - critically imperiled
2 - imperiled
3 - rare or uncommon
SA - accidental
S#B - long-distance migrant, breeding status
S#N - long-distance migrant, non-breeding status