

Appendix D- Biological Evaluation

I. INTRODUCTION

A. Purpose

The purpose of this evaluation is to review the proposed Forest Service action and all alternative actions for the Cayuga project in sufficient detail to determine if these actions may affect any species on the Regional Forester Sensitive Species (RFSS) list or their habitat. The Forest Service Manual (2672.4) requires a review of all Forest Service planned, funded, executed, or permitted programs and activities for potential effects on endangered, threatened, proposed, or sensitive species. The biological evaluation is the means of conducting the review and of documenting the findings for RFSS.

The Forest Service Manual (FSM 2670.15) defines sensitive species as “those plants and animal species identified by a Regional Forester for which population viability is a concern as evidenced by a) significant current or predicted downward trends in numbers and density” and “b) significant current or predicted downward trends in habitat capability that would reduce a species existing distribution.”

Sensitive species of native plant and animal species must receive special management emphasis to ensure their viability and to preclude trends toward endangerment that would result in the need for Federal listing. There must be no impacts to sensitive species without an analysis of the significance of adverse effects on the populations, its habitat and on the viability of the species as a whole (Forest Service Manual 2672.1)

The list of RFSS species evaluated was identified in cooperation with the USDI Fish and Wildlife Service, Wisconsin Department of Natural Resources, the state Natural Heritage Program, The Nature Conservancy, USDA Forest Service Eastern Region TES staff, and other species experts outside the agency.

See the 2002 Biological Evaluation Reference Document for more detailed information on species status, species considered, requirements, management guidelines, and bibliography used to complete this site specific Biological Evaluation.

B. Description of Project Area

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.

C. Project Description and Location

The Cayuga project area is located northwest of Glidden, Wisconsin, entirely within Ashland County. The project area is located within T43N, R2W, Sections 6-7, 16-20, and 29; T43N, R3W, Sections 1-18, and 23-24; 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.

Proposed project area activities include a variety of timber management, wildlife and fish habitat, recreation, transportation, and watershed improvement projects. The following is a summary of proposed activities (for a more detailed description of activities, see the Purpose and Need For Action, or the Description of Alternatives sections in the Environmental Impact Statement):

- A variety of timber harvest projects, including clearcutting, selection cutting, shelterwood harvest, and commercial thinning of both hardwoods and conifer.
- Conversion of aspen to other forest types by methods such as thinning, shelterwood harvest, and underplanting.
- Maintenance of existing upland openings.
- Treatment to reduce an infestation of leafy spurge.
- Road maintenance, road decommissioning, and temporary road construction.
- Habitat improvement activities in McCarthy Creek, a Class II trout stream.
- Watershed improvement through replacement of culverts and road drainage improvements.
- Relocation of a snowmobile trail.

II. SPECIES CONSIDERED

<i>Regional Forester Sensitive Species</i>					
<i>Species</i>	<i>Common Name</i>	<i>Status *</i>	<i>Known Occurrence **</i>	<i>Potential Habitat Y/N</i>	<i>Survey C-completed P-planned N-none</i>
<i>Martes americana</i>	American pine marten	G5,S3,SE	C	Y	C
<i>Accipiter gentilis</i>	Northern goshawk	G5,S2N,S2S3B,SC	C	Y	C
<i>Ammodramus leconteii</i>	LeConte’s sparrow	G4,S2B,SC	M	Y	C
<i>Bartramia longicauda</i>	Upland sandpiper	G5,S2B,SC	N	N	N
<i>Buteo lineatus</i>	Red-shouldered hawk	G5,S1N,S3S4B,ST	C	Y	C

<i>Catharus ustulatus</i>	Swainson's thrush	G5,S2B,SC	C	Y	C
<i>Chlidonia niger</i>	Black tern	G4,S3B,SC	M	Y	N
<i>Cygnus buccinator</i>	Trumpeter swan	G4,S1B,SE	C	Y	C
<i>Dendroica cerulea</i>	Cerulean warbler	G4,S2S3B,ST	M	Y	C
<i>Falciennis canadensis</i>	Spruce grouse	G5,S2B,S1S2N,ST	C	Y	C,P
<i>Oporornis agilis</i>	Connecticut warbler	G4,S3B,SC	C	Y	C
<i>Picoides arcticus</i>	Black-backed woodpecker	G5,S2B,SC	C	Y	C
<i>Tympanuchus phasianellus</i>	Sharp-tailed grouse	G4,S2,SC	N	N	N
<i>Clemmys insculpta</i>	Wood turtle	G4,S3,ST	N	N	N
<i>Acipenser fulvencens</i>	Lake sturgeon	G3,S3,SC	N	N	N
<i>Moxostoma valenciennesi</i>	Greater redhorse	G3,S2S3,ST	N	N	N
<i>Notropis nogenus</i>	Pugnose shiner	G3,S2S3,ST	N	N	N
<i>Venustaconsha ellipsiformis</i>	Ellipse mussel	G3G4,S2,ST	N	N	N
<i>Gomphus viridifrons</i>	Green-faced clubtail	G3,S3,SC	M	Y	N
<i>Incisalia henrici</i>	Henry's elfin butterfly	G5,S2,SC	M	Y	N
<i>Lycaeides idas nabokovi</i>	Northern blue butterfly	G5,S1,SE	N	N	N
<i>Oeneis chryxus</i>	Chryxus arctic	G5,S2,SC	N	N	N
<i>Ophiogomphus anomalus</i>	Extra-striped snaketail	G3,S1,SE	N	N	N
<i>Ophiogomphus howei</i>	Pygmy snaketail	G3,S3,ST	N	N	N
<i>Phyciodes batesii</i>	Tawny crescent spot	G4,S3,SC	N	N	N
<i>Pieris virginienensis</i>	West Virginia white	G4,S2,SC	N	N	N
<i>Stylurus scudderii</i>	Zebra clubtail	G3,G4,S3,SC	N	N	N

Plants					
<i>Amerorchis rotundifolia</i>	Small, round-leaved orchis	G5,S1,ST	N	N	N
<i>Arabis missouriensis var deamii</i>	Missouri rock cress	G4?QT3?Q,S3,SC	N	N	N
<i>Asplenium trichomanes-ramosum</i>	Green spleenwort	G4,S1,SE	N	N	N
<i>Astragalus alpinus</i>	Alpine milk vetch	G5,S1,SE	N	N	N
<i>Botrychium minganense</i>	Mingan's moonwort	G4,S2,SC	N	N	C
<i>Botrychium mormo</i>	Goblin fern	G3,S2,SE	N	N	C
<i>Botrychium oneidense</i>	Blunt-lobed grapefern	G4Q,S2,SC	M	Y	C
<i>Botrychium rugulosum</i>	St. Lawrence grapefern	G3,S2,SC	N	N	N
<i>Callitriche hermaphroditica</i>	Autumnal water-starwort	G5,S2,SC	N	N	N
<i>Calypso bulbosa</i>	Calypso orchid - Fairy slipper	G5,S2,ST	M	Y	C
<i>Carex assiniboinensis</i>	Stoloniferous sedge	G4G5,S2,SC	M	Y	C
<i>Carex backii</i>	Rocky mountain sedge	G4,S2,SC	N	N	N
<i>Carex crawei</i>	Crawe's sedge	G5,S2,SC	N	N	N
<i>Carex gynocrates</i>	Northern bog sedge	G5,S2,SC	N	N	N
<i>Carex livida v. radicaulis</i>	Livid sedge	G5,S2,SC	N	N	N
<i>Carex michauxiana</i>	Michaux's sedge	G5,S1,ST	N	N	N
<i>Carex sychnocephala</i>	Many-headed sedge	G4,S2,SC	N	N	N
<i>Carex vaginata</i>	Sheathed sedge	G5,S1,SC	N	N	N
<i>Ceratophyllum echinatum</i>	Prickly hornwort	G4,S2,SC	N	N	N
<i>Cynoglossum</i>	Northern wild	G5T4	N	N	C

<i>virginianum</i> <u>Var.</u> <i>boreale</i>	comfrey				
<i>Cypripedium</i> <i>arietinum</i>	Ram's head lady's slipper	G3,S1,ST	M	Y	C
<i>Diplazium</i> <i>pycnocarpon</i>	Glade fern	G5,S2,SC	N	N	N
<i>Dryopteris expansa</i>	Spreading woodfern	G5,S1,SC	M	Y	C
<i>Dryopteris filix-mas</i>	Male fern	G5,S1,SC	N	N	N
<i>Dryopteris fragrans</i>	Fragrant fern	G5T?,S2,SC	N	N	N
<i>Eleocharis olivacea</i>	Capitate spikerush	G5,S2,SC	N	N	N
<i>Eleocharis</i> <i>quinqueflora</i>	Few-flower spikerush	G5,S2,SC	N	N	N
<i>Epilobium palustre</i>	Marsh willow herb	G5,S2,SC	N	N	N
<i>Equisetum palustre</i>	Marsh horsetail	G5,S2,SC	N	N	N
<i>Eriophorum</i> <i>chamissonis</i>	Rusty cotton-grass	G5,S2,SC	N	N	N
<i>Geum macrophyllum</i> <u>Var.</u> <i>macrophyllum</i>	Large-leaved avens	G5T?,S1,SC	N	N	N
<i>Juglans cinerea</i>	Butternut	G3G4,S3,SC	N	N	N
<i>Juncus stygius</i>	Bog (moor) rush	G5,S1,SE	N	N	N
<i>Leucophysalis</i> <i>grandiflora</i>	Large-flowered ground cherry	G3?,S2,SC	N	N	N
<i>Littorella americana</i>	American shore-grass	G5,S2,SC	N	N	N
<i>Malaxis brachypoda</i>	White adder's mouth	G4Q,S2,SC	M	Y	C
<i>Medeola virginiana</i>	Indian cucumber-root	G5,S3,SC	N	N	N
<i>Moehringia</i> <i>macrophylla</i>	Large-leaved sandwort	G4,S1,SE	N	N	N
<i>Myriophyllum</i> <i>farwellii</i>	Farwell's water milfoil	G5,S2,SC	N	N	N
<i>Oryzopsis</i> <i>canadensis</i>	Canada mountain- ricegrass	G5,S1,SC	N	N	N
<i>Panax quinquefolius</i>	Ginseng	G4,S4,SC	M	Y	C

<i>Parnassia palustris</i>	Marsh grass-of-parnassus	G5,S1,ST	N	N	N
<i>Polemonium occidentale ssp. lacustre</i>	Western Jacob's ladder	G5?T1Q,S1,SE	N	N	N
<i>Polystichum braunii</i>	Braun's holly fern	G5,S2,ST	M	Y	C
<i>Potamogeton confervoides</i>	Algae-like pondweed	G3G4,S1,ST	N	N	N
<i>Potamogeton hillii</i>	Hill's pondweed	G3,S1,SC	N	N	N
<i>Pyrola minor</i>	Lesser wintergreen	G5,S1,SE	M	Y	C
<i>Ranunculus gmelinii</i> <i>Var. hookeri</i>	small yellow water crowfoot	G5TUQ,S1, SE	N	N	N
<i>Rhynchospora fusca</i>	Brown beakrush	G4G5,S2,SC	N	N	N
<i>Streptopus amplexifolius</i>	White mandarin	G5,SU,SC	N	N	N
<i>Tiarella cordifolia</i>	Foamflower	G5,S1,SE	N	N	N
<i>Ulmus americana</i>	American elm	G5?	N	N	N
<i>Vaccinium cespitosum</i>	Dwarf huckleberry	G5,S1,SE	N	N	N
<i>Valeriana uliginosa</i>	Marsh valerian	G4G5,S1,ST	N	N	N

Additional species considered: “Likely to Occur”

The Eastern Region of the Forest Service recently revised its Regional Forester Sensitive Species list, effective 2/29/2000. At the time of the updating, Forests were instructed to consider in project analyses only those species documented to occur within their respective Forest boundaries. Subsequently, additional direction was provided by the Office of Inspector General (OIG) to also consider those species that are “likely to occur”, even if they are not currently documented to occur, if those species are listed as Sensitive by other Forests. Taxa are considered likely to occur on the Chequamegon-Nicolet National Forest if their range includes the Chequamegon-Nicolet, their preferred habitat is present, and occurrences are known in the general vicinity of the Forest. This list currently includes the following species, considered in this BE.

Scientific name	Common name	Status*	Occurrence**	Potential Habitat	Survey activity
<i>Animal species</i>					

<i>Myotis septentrionalis</i>	Long-eared myotis	G4 S4	M	Y	N
<i>Pipistrellus subflavus</i>	Eastern pipistrelle	G5 S3S4	M	Y	N
<i>Plethobasus cyphus</i>	Bullhead mussel	G2G3 S1 SE	N	N	N
<i>Somatochlora forcipata</i>	Forcipate emerald	G5 S2S3	N	N	N
Plant species					
<i>Cardamine maxima</i>	Large toothwort	G5 S1 ST	N	N	N
<i>Carex lenticularis</i>	Shore sedge	G5 S1 ST	N	N	N
<i>Disporum hookeri</i>	Hooker's mandarin	G4G5	N	N	N
<i>Eleocharis engelmannii</i>	Engelmann's spike-rush	G4? S2	N	N	N
<i>Listera auriculata</i>	Auricled twayblade	G3 S1 SE	N	N	N
<i>Listera convallarioides</i>	Broad-leaved twayblade	G5 S1 ST	N	N	N
<i>Petasites sagittatus</i>	Arrow-leaved sweet colt's-foot	G5 S2 ST	N	N	N
<i>Platanthera flava</i> <u>Var.</u> <i>herbiola</i>	Pale-green orchid	G4T4Q S1 ST	N	N	N
<i>Poa paludigena</i>	Bog bluegrass	G3 S1 ST	M	Y	C
<i>Potamogeton pulcher</i>	Spotted pondweed	G5 S1 SE	M	Y	N
<i>Pterospora andromeda</i>	Giant pinedrops	G5 S1 SE	N	N	N
<i>Ranunculus lapponicus</i>	Lapland buttercup	G5 S1 SE	M	Y	C

* Status Codes

Global Element Rank:

G1 - Critically imperiled globally

G2 - Imperiled globally

G3 - Very rare and local throughout range

G4 - Apparently globally secure, rare in parts of range

G5 - Demonstrably secure globally, rare locally

State Element Rank:

S1 - Critically imperiled

S2 - Imperiled

S3 - Rare or uncommon

SA - Accidental

SH - Historical occurrence

S#B - Long-distance migrant, breeding status

S#N - Long-distance migrant, non-breeding status

State Status:

SE - State endangered

ST - State threatened

SC - State special concern

**** Categories:**

1. **C**onfirmed: Species has been observed within or near (within 0.25 miles) the proposed project area; a documented occurrence is on file for uncommon or rare species.
2. **P**robable: Habitat is suitable; species has been documented on the Forest but not necessarily within project/proposed project area. Likelihood of occurrence is high. (Consideration is given to transient species such as eastern timber wolf.)
3. **M**inimal: Some habitat exists, species may or may not have been documented on Forest. Likelihood of occurrence within the project area or proposed project area is low.
4. **N**one: Species may occur within region, but has no recent record of occurrence on the Great Divide Ranger District, and/or suitable habitat in the project area does not exist.

******* Scientific name may not be uniformly accepted.

SUMMARY: The following species are known to occur in the project area, or have the potential to occur (potential habitat exists within the project area), as shown on the preceding tables. They will be evaluated in more detail below.

Regional Forester Sensitive Species

Martes americana – American pine marten

Accipiter gentilis – Northern goshawk

Ammodramus leconteii – LeConte’s sparrow

Buteo lineatus – Red-shouldered hawk

Catharus ustulatus – Swainson’s thrush

Chlidonia niger – Black tern

Cygnus buccinator – Trumpeter swan

Dendroica cerulea – Cerulean warbler

Falcipectens canadensis – Spruce grouse

Oporornis agilis – Connecticut warbler

Picoides arcticus – Black-backed woodpecker

Gomphus viridifrons – Green-faced clubtail

Incisalia henrici – Henry’s elfin butterfly

Botrychium oneidense – Blunt-lobed grapefern

Calypso bulbosa – Calypso orchid (fairy slipper)

Carex assiniboinensis – Stoloniferous sedge

Cypripedium arietinum – Ram’s head lady’s-slipper

Dryopteris expansa – Spreading woodfern

Malaxis brachypoda – White adder’s mouth

Panax quinquefolius – Ginseng

Polystichum braunii – Braun’s holly fern

Pyrola minor – Lesser wintergreen

“Likely to occur” species

Myotis septentrionalis - Northern (long-eared) myotis

Pipistrellus subflavus - Eastern pipistrelle

Poa paludigena – Bog bluegrass

Potamogeton pulcher – Spotted pondweed

Ranunculus lapponicus – Lapland buttercup

III. SPECIES SURVEY RECORD

The following surveys within the project area have been completed:

Rare plant surveys in 1980 and 1981 by Stephen Solheim, Robbin Moran, William Alverson, Mark Jaunzems, and Donald Quintenz (under contract to Chequamegon National Forest). Surveys were Forest-wide, but included sites in the project area.

Field surveys were completed of the McCarthy Lake and Cedars RNA in 1986, in conjunction with preparation of the Establishment Record. A breeding bird survey and listing of vascular plants was completed.

Forest botany staff conducted sensitive plant surveys on approximately 3777 acres within the project area, during the 2001 field season. Ecological Land-type Phase maps were used to pre-screening potential habitat. Surveys were conducted on sites determined to have medium or high potential for listed plants, using an intuitive-controlled meander search method. Surveys were confined to areas potentially affected by project activities. One sensitive plant species was found, and an active goshawk nest was discovered during one of the surveys.

Songbird surveys were completed on approximately 1883 acres of potential habitat, during June of 2001. The surveys were completed by an experienced birder under contract to the Forest Service. Pre-screening of potential habitat was done using criteria established by Forest biologists, and included factors such as stand age, type, structure, patch size, and presence of within-stand or adjacent features. In addition to potential habitat, surveys were focused on stands proposed for harvest, or areas adjacent to proposed harvest areas. Surveys were conducted using a combination of a stand “walk-through” and 3-minute counts utilizing playback tapes. Identification of listed birds was by visual and/or audio confirmation.

Woodland hawk (northern goshawk, red-shouldered hawk) surveys were completed on approximately 2776 acres of potential habitat, in spring of 2001. The surveys were completed by a combination of Forest Service personnel and a private contractor. Pre-screening of potential habitat was done using criteria established by Forest biologists, and included factors such as stand age, type, structure, patch size, and presence of within-stand or adjacent features (such as conifer component or nearness to water). Surveys were conducted using a combination of a stand “walk-through” and a minimum of one extended stop with call playback for every 40 acres surveyed, and were limited to areas proposed for harvest activities.

Additional species-specific surveys conducted by the Wisconsin Department of Natural Resources (WDNR) or other agencies are listed as part of individual species discussions. The State Natural Heritage Program data, as well as district wildlife and TES records, were consulted for known species locations within the project area. The preparing biologist has visited the site, and conducted at a minimum a project area inspection for TES species and their habitat.

IV. STATUS OF SPECIES EVALUATED; POTENTIAL EFFECTS ON SPECIES

(Note: this section discusses status of species relative to project area primarily; for more detail on status of species Forest-wide and range-wide, see 2002 Biological Evaluation Reference Document, on file at Great Divide district offices)

Martes americana – American pine marten

Pine marten were recently reintroduced to the Chequamegon National Forest, starting in 1987. Three release sites were used, including one within the project area; the other two were nearby to the west. Since the release, marten have been slow to expand their population and range, and currently most marten on the

Chequamegon landbase are still found in the general area of the releases, in the northern portion of the Great Divide district. One way that marten populations are monitored is through yearly winter track surveys. The overall rate of marten detected per 100 miles of survey in 2002 was approximately half of the rate from 2001, but similar to previous years (Dhuey and Arrowood, 2002 – p. 181). Recent trapping and telemetry work has identified several marten home ranges that include the northern portion of the project area.

Some of the primary needs for this species appear to be well-developed structural features and habitat continuity. Marten lack a strong dispersal capability; this can be aggravated by fragmentation of suitable habitat (Jon Gilbert, from a presentation at the Wisconsin Chapter of the Wildlife Society winter conference, 3/1/2001). Structural features, including large woody debris, abundant fine debris, large cavity trees, and tip-ups are important for cover, protection from predators, and maternal den trees. Any activity or natural process that removes or alters these features can make areas unsuitable for marten use.

Alternative 1 would have no effect on marten or marten habitat since no action would occur. Alternatives 2-5 could have varying effects on marten and marten habitat due primarily to proposed clearcutting, and the resulting effects on forest structure. As mentioned above, structural features, including many common to mature and old growth forests, are an important component of marten habitat. Clearcutting reduces many of these habitat features within the treated stand, due to whole tree removal, loss of at least some of the cavity trees and snags, and potential for loss of large woody debris. Forest plan guidelines that specify retention of snags and cavity trees would help maintain some of these features, but the major change in overall structure would likely make the stands unsuitable for marten until the stands regenerate. Such treatments can also affect dispersal routes.

Alternative 3 would have the greatest effect since it involves the most clearcutting. Another feature of this alternative is the greater use of clearcutting in the band of forest north of FR 184 and east of County Highway GG that is dominated by mature hardwoods. This area is considered a potential dispersal route because of the relatively continuous mature hardwood forest (Jon Gilbert, pers. comm.) This is also the general area where several marten home ranges were mapped during recent telemetry work. Alternative 3 proposes the clearcut harvest of eight stands within this area, potentially affecting marten dispersal routes. Alternatives 2, 4, and 5 do not propose any clearcuts within this area.

The southern portion of the project area does not appear to have the same use by marten as the northern portion, as evidenced by track surveys and research related trapping success. Although the reasons for this lack of use are not known, habitat factors are suspected. The southern portion of the project area contains a higher proportion of aspen, including regenerating aspen, which can affect marten use and dispersal. Current work indicates a preference by marten for large unbroken tracts of mature northern hardwoods (Jon Gilbert, pers. comm.). The action alternatives, particularly Alternative 3, would perpetuate the fragmented condition of this portion of the project area, and possibly reduce the chances for marten dispersal in this area in the near future.

Other project area activities would not have noticeable effects on marten. Hardwood selection cutting is reported to have little effect, if suitable structural features are retained (SVE data; Wisconsin Pine Marten Recovery Plan – p. 26; John Gilbert- pers. comm.). Road decommissioning proposed in all action alternatives would eventually reduce open-road densities, possibly benefiting the species from reduced disturbance and accidental take.

Cumulative effects: Past management within and near the project area, combined with proposed activities and possible future activities, will likely maintain a fragmented condition, with a relatively high aspen component, in the southern portion of the project area. This would have the effect of making the area less suitable for marten use, and/or reducing the possibility of dispersal to other areas further south and east. The northern portion of the project area however (roughly the northern half of the project area, but especially north of FR 184) has been managed recently to stress interior hardwood forest; all of the alternatives except Alternative 3 would maintain this emphasis. This would provide an extensive area of continued marten habitat, and would maintain the area as a potential dispersal corridor to the east.

Determination: May impact individuals but not likely to cause a trend towards Federal listing or a loss of viability.

Myotis septentrionalis - Northern (long-eared) myotis

This species is nationally widespread but has irregular distribution. It is sparsely distributed in Wisconsin; possibly more abundant in the northern part of the state (Jackson, 1961 – p. 82). There have been no documented occurrences on the Chequamegon-Nicolet National Forest, but one was reported to the State Lab of Hygiene from the Minoqua area. This species has been found in mines in the Iron Mountain, MI area. Since they can easily travel 50-70 miles in seasonal movements, it is considered likely to occur at least on the Nicolet. Potential habitat for the northern myotis could be considered anywhere on the Chequamegon-Nicolet that contains mature forest types.

This species is generally associated with forested communities, especially older age riparian and bottomland forests. It possibly uses small gaps and openings for foraging. Snags and loose-barked trees are important for summer roosting, especially in close proximity to water. They change their roosting sites often, so they appear to need a large number of suitable roost trees (Foster and Kurta, 1999 – pp. 667, 668).

One of the major threats to this species is loss of hibernacula, such as from closure or disturbance of mine sites. There is the potential of threats from habitat disturbance, such as loss of roost trees due to logging. Suitable management would include maintaining forests that provide a large number of mature trees, snags, cavity trees, and loose-barked trees, especially in close proximity to water.

Alternative 1 would have no effect on northern myotis or their habitat since no action would occur. Alternatives 2-5 could have varying effects on northern myotis or their habitat due primarily to proposed clearcutting, and the resulting effects on forest structure. Clearcutting removes at least some of the cavity trees and snags in the harvest units. Forest plan guidelines that specify retention of snags and cavity trees would help maintain some of these features, but the major change in overall structure would likely make the stands unsuitable for this species until the stands regenerate. Alternative 3 would have the greatest effect since it involves the most clearcutting. Other project area activities would not have noticeable effects on northern myotis.

Cumulative effects: Past management within and near the project area, combined with proposed activities and possible future activities, will likely maintain a fragmented condition, with a relatively high aspen component, in the southern portion of the project area. This would have the effect of making the area less suitable for northern myotis. The northern portion of the project area (roughly the northern half of the project area, but especially north of FR 184) has been managed recently to stress interior hardwood forest; all of the alternatives except Alternative 3 would maintain this emphasis. This would provide an extensive area of continued northern myotis habitat.

Determination: May impact individuals but not likely to cause a trend towards Federal listing or a loss of viability.

Pipistrellus subflavus - Eastern pipistrelle

The Eastern pipistrelle is one of the most commonly encountered bat species in the Ohio River valley. It has been found in several mines in the Upper Peninsula of Michigan in small numbers (Unger and Kurta, 1998 – p. 425-429) and is likely present on the Chequamegon-Nicolet National Forest in low numbers. As of 1998 there were records of only 24 individuals in Michigan; however, their small size and habit of roosting individually probably result in undercounting (Unger and Kurta, 1998 - 429). In summer they are generally solitary except for small nursery groups.

Eastern pipistrelles migrate the shortest distance of all area bats, but would still be within migrating range of both the Nicolet and Chequamegon. They are thought to be very local, not moving more than 30 miles on a seasonal basis. They are at the northern edge of their range on the Chequamegon-Nicolet National Forest, and are more common in southwestern Wisconsin, where they occur regularly.

The Eastern pipistrelle prefers partly open country with large trees, or woodland edges. They avoid deep woods and open fields (NatureServe). The presence of snags and hollow trees is important. They prefer hibernacula with stable moisture and temperature conditions. The biggest threats are loss of hibernacula, due to closure of mines, and loss of individual bats during hibernation due to disturbance. Mines are important in providing suitable hibernation conditions. This species probably didn't occur in this area

historically except for occasional vagrants, because natural caves suitable as hibernacula for this species apparently do not exist in northern Wisconsin or upper Michigan (Unger and Kurta, 1998 – p. 433). Any activity that results in reduction of large snags and hollow trees could impact summer roosting habitat.

Alternative 1 would have no effect on Eastern pipistrelles or their habitat since no action would occur. Alternatives 2-5 could have varying effects on Eastern pipistrelles or their habitat due primarily to proposed clearcutting, and the resulting effects on forest structure. Clearcutting removes at least some of the cavity trees and snags in the harvest units. Forest plan guidelines that specify retention of snags and cavity trees would help maintain some of these features, but the major change in overall structure would likely make the stands unsuitable for Eastern pipistrelles until the stands regenerate. Alternative 3 would have the greatest effect since it involves the most clearcutting. Other project area activities would not have noticeable effects on Eastern pipistrelles.

Cumulative effects: Past management within and near the project area, combined with proposed activities and possible future activities, will likely maintain a fragmented condition in the southern portion of the project area. This would have little effect on Eastern pipistrelles, since they prefer partly open habitats.

Determination: May impact individuals but not likely to cause a trend towards Federal listing or a loss of viability.

Accipiter gentilis – Northern goshawk

There were no active goshawk territories known in the project area until recently. In the summer of 2001 a plant surveyor discovered an active goshawk nest in a stand of mixed hardwood/hemlock, close to a stand of mixed lowland conifers. When the nest was located, there was an adult with one fledgling nearby. Shortly after that the birds were seen by the contract bird surveyor. There is an old road adjacent to the nest; it is grown in and impassable by even four-wheel drive trucks, but it does get intermittent ATV use, probably during fall hunting seasons.

Important considerations for goshawk habitat include both nesting area and foraging area. The nest area for this purpose will be defined as the immediate area (of at least 20 acres) surrounding the active nest, and any unused alternate nest sites. There seems to be general agreement that goshawks select nest areas with mature, closed canopy forest cover, with at least some mature conifer component as thermal cover. In terms of basal area (BA), known active nest on the Chequamegon-Nicolet have generally been in stands with a BA of approximately 120 sq. ft/acre or greater (personal experience). Rosenfield et al., (1998 – p. 193) found the average BA of 37 nests studies was approximately 132. The recently found active nest in the project area is in a stand with a BA of 150 (1996 data). It should be noted that goshawk nesting has also been documented in a variety of other habitats, including pine plantations, aspen monotypes, and fragmented forestlands further south in Wisconsin (Rosenfield et al., 1998 – p. 192).

The foraging area for goshawks is essentially the same as their total home range. Regional studies have found this to vary substantially in size. Boal et al. (2001 – p. 42) found home ranges in Minnesota birds to vary from 471 to 16348 acres (females) and 2125 to 21184 acres (males). Doolittle (2001 – p. 28, 29) determined home ranges on the Bad River Indian Reservation and nearby lands, including a territory on the Great Divide district. He found home range to vary from 1542 to 9496 acres for female birds, with a range of 14923 acres for the one male bird radio-tagged.

It would seem logical that a successful foraging area would include a variety of forest types and ages, including regenerating stands, that could provide a variety of prey species. Personal experience in fact has involved a number of successful territories that included young and regenerating stands. Some studies have indicated however that goshawks might select foraging areas based on other factors besides or in addition to prey abundance. For example Boal et al. (2001 – p. 24) found that goshawks during the breeding season preferentially used old (greater than 50 years) early successional hardwoods (aspen, paper birch). In the southwestern U.S. Beier and Drennan (1997 – p. 564, 569, 570) goshawks appeared to select foraging sites based on forest structure rather than prey availability. Birds studied selected for higher canopy closure, greater tree density, and greater density of large trees compared to control sites. In territories that Doolittle studied, he found that 84% of relocation points (from radio-tracked birds) were found in protected buffer

areas, rather than in timber management areas (Doolittle, 2001 – p. 29). Mr. Doolittle felt that while birds will use clearcut areas, they prefer to stay under the forest canopy, and will generally just hunt the edges of regenerating stands, or the natural edges of features such as wetlands and river corridors (pers. comm.).

Alternative 1 would have no effect since no action would occur. Alternatives 2-5 include selection harvest of some hardwood stands adjacent to the nest area, including a stand within 250 feet of the nest. Alternative 3 includes selection harvest of the stand containing the nest. In addition, the woods road that goes past the nest is proposed for maintenance to allow timber hauling from nearby stands.

The activities as originally proposed would have detrimental effects on the territory, likely leading to abandonment of the nest. The greatest impacts would come from improvement of the woods road adjacent to the nest, and from the harvest of the stand containing the nest (Alternative 3). There would be direct effects if any of the activities within the territory occurred during the nesting or brood-rearing season, approximately mid-February to early August. There could also be indirect effects due to timber harvest within the territory. Most of the hardwood stands within the Compartment proposed for harvest are far enough from the nest to avoid adverse effects; however, harvest in the closest stands would potentially affect the quality of the nesting area habitat, by reducing canopy closure and potentially increasing the chance for predation. As noted above, nesting goshawks seem to prefer dense cover in the nesting area, with mature continuous canopy and mature conifer providing protection for foraging adults and for fledgling birds. Transitions between uplands and lowland conifer types are particularly important for protection and foraging.

The improvement of the road could also cause longer-term indirect effects, by increasing human use of the area, leading to increased disturbance during the nesting and brood-rearing season. Excess disturbance can cause birds to leave their nests long enough for eggs or young to be susceptible to exposure or predation.

A number of other stands were surveyed for goshawks, but no activity was noted. Most of the stands surveyed, although they met the current Forest criteria for potential habitat, were determined during field work to be low potential for nesting and foraging by goshawk, due to general stand structure and lack of conifer cover. There were some stands however that appeared to have moderate or high potential for goshawk use. Selection cutting activities as proposed in Alternatives 2-4 could have temporary effects on potential habitat, by opening up the canopy of these stands sufficiently to reduce cover and increase competition or predation from great horned owls or red-tailed hawks. Within a few years though the canopy would return to a closed condition, providing more secure conditions.

A conifer component is a very important aspect of potential habitat. None of the proposed selection harvests would involve removal of mature, long-lived conifer.

Clearcutting can reduce habitat quality at a landscape scale if it produces a highly fragmented condition. The majority of clearcutting proposed, with the exception of Alternative 3, would not result in substantial fragmentation of larger hardwood blocks in the project area. Some regenerating stands in the landscape can help provide a diversity of prey species important for fledgling and adult birds.

Due to the reasons described above, no long-term adverse effects are predicted for potential habitat.

Cumulative effects: There has been some disagreement over the status of the goshawk in northern Wisconsin. One study (Erdman et al., 1998 – pp. 14-17) expressed concern over falling productivity, with predation by fisher considered a major factor, accounting for most of the productivity loss of studied nest sites. Another study (Rosenfield et al., 1998 – p. 192) found goshawks nesting in a wide range of habitats, including more heavily fragmented forests to the south, with no evidence of range contraction as might be expected if the state's breeding population was decreasing.

There does seem to be general agreement that certain habitat characteristics are important, including conifer component (which provides cover especially in harsh spring weather), a fairly high degree of canopy closure, and protection of the actual nest site (to prevent abandonment through disturbance, and to avoid increasing the potential for predation).

Although one active territory was discovered during the 2001 season, many of the stands thought to have the highest potential for goshawk activity were found to be relatively low quality habitat, due to lack of species diversity (primarily lack of mature conifer component) and lack of structural features (Tom Doolittle, Bad River Band of Lake Superior Chippewa biologist and contract surveyor- pers. comm.). Much of the

hardwood forest within the project area, while considered silviculturally mature, is still a relatively young, recovering forest, with even-age structure, and lacking quality cover, nest sites, and foraging habitat. In time, these forests should grow to be better nesting habitat. Proposed hardwood management, together with future management, can have the effect of temporarily reducing habitat quality further; however, the increased growth and species diversity that can result from management should have a long-term effect of at least maintaining habitat quality, or improving it. Any known nest sites have been, and will continue to be protected from disturbance.

Portions of the project area have been heavily managed towards aspen. These same areas are also proposed for more clearcutting in this project. For this reason these areas may continue to be less than optimal habitat, due to the lower percentage of mature forest type, and the general fragmentation of habitat.

Determination: May impact individuals but not likely to cause a trend towards federal listing or loss of viability.

Ammodramus lecontei – LeConte’s sparrow

This species prefers open grassland, sedge meadow, and shallow marsh. It has not been recorded in the project area although potential habitat exists in some open wetlands. None of the proposed activities would impact these wetland habitats, therefore there would be no direct, indirect, or cumulative effects on this species.

Determination: No impact.

Buteo lineatus – Red-shouldered hawk

There is only one record of a red-shouldered hawk from recent years within the project area, seen during breeding bird surveys in 1986, during assessment of the McCarthy Lake area for potential RNA designation. Project related woodland hawk surveys included 1921 acres of stands considered potential habitat for this species; no activity was noted. Habitat needs for this species are somewhat similar to that for northern goshawk, with important features being continuous mature forest canopy, presence of conifer, open understory, and wetland interspersion. The availability of wetlands is particularly important for this species, with nests generally being found near water. Telemetry studies indicate red-shouldered hawks spend most of their time in forested landscapes associated with water, with small non-forest wetlands being primary foraging sites (Jacobs and Jacobs., 2002 – p. 21).

Tree size and structure appear to be more important factors for nest areas than stand age. Canopy closure appears to be a critical nest-site characteristic, with many studies recommending maintaining a canopy closure greater than 70% (Jacobs and Jacobs, 2002 – p. 17). Dijak et al. (1990 – p. 482) found that mean BA for successful red-shouldered nest was 111 sq. ft./acre, and mean canopy closure was approximately 90%, although in the study, both mean BA and canopy closure were higher for unsuccessful nests. It should be noted that even a selectively harvested stand with a BA of approximately 80 would have a canopy closure of around 90% (this is for a stand with an average stem diameter of 10-12 inches).

Potential threats to this species include habitat alterations, predation, competition, and disturbance. Timber cutting in particular can affect nesting habitat, if it removes suitable mature forest, or affects the quality of habitat by fragmentation of continuous forest. Clearcutting or heavy selection cutting can also increase the potential for predation by species such as raccoon or great horned owl, or competition and predation from species such as red-tailed hawk. A small amount of open area can be tolerated, and can help provide a diversity of prey (Jacobs and Jacobs, 2002 – p. 18).

Alternative 1 would have no effect on red-shouldered hawks or potential habitat since no activity would occur. Alternatives 2-5 would not have any direct effects since no red-shouldered hawks are known to inhabit the project area. These alternatives could have temporary indirect effects by selection cutting of stands considered potential habitat, due to reduction of canopy closure. Information provided as part of the Species Viability Evaluation for the Chippewa, Superior, and Chequamegon-Nicolet National Forest Plan Revisions (SVE data) indicates that reducing the canopy closure below 70% can be detrimental; typical selection cuts on the Forest do not reduce the canopy to this level. Clearcutting as proposed in Alternative 3

could fragment some larger areas of mature hardwood/lowland conifer mix, reducing the quality of these areas as potential habitat. Alternatives 2, 4, and 5 do not propose the same level of clearcutting, and therefore maintain some large continuous blocks of habitat, in particular north of FR 184, and northwest of Spillerberg Lake.

Cumulative effects: There are even fewer records of red-shouldered hawk activity on the Great Divide district than goshawk activity, with the reasons not fully known. This area is reaching the edge of the range for the bird, with known nest sites within the Forest dropping off from south to north, and more sites known from the Nicolet than the Chequamegon land base. SVE data suggests that a viable population is likely on the Nicolet, but not on the Chequamegon.

With this background, it is difficult to assess the cumulative effects of any project on the red-shouldered hawk. What can be said is that the quality of habitat from this project and other similar projects in the area will essentially maintain the necessary habitat requirements in the short-term, and possibly improve habitat over the long term, due to potential for reduction of aspen management in the northern portion of the project area, and gradual growth and maturing of the hardwood forests, with resulting improved structure.

Determination: No impact (compared to existing condition).

Catharus ustulatus – Swainson’s thrush

Swainson’s thrush has been documented from five different forest stands within the project area in the past 10 years, including observations made during the project-related surveys in 2001. Two of these locations are within stands proposed for hardwood selection cutting.

Indirect effects from all action alternatives would probably be minor. Swainson’s thrush is generally found in extensive areas of northern hardwood/conifer or lowland conifer. These forest types would not be heavily affected by clearcutting or other fragmentation. An exception is Alternative 3, which proposes a greater degree of clearcutting, including some clearcuts within larger hardwood blocks. A conifer understory within hardwood stands could be temporarily affected by selection cutting, but the long-term effect could be an improvement in understory development, due to greater light penetration.

There could be direct effects to Swainson’s thrush in the two stands proposed for selection cutting, if harvest took place during the nesting season, due to disturbance from tree felling and equipment use. Adult birds would probably not be affected in terms of mortality, but nests and/or nestlings could be lost.

Cumulative effects: There are two general habitat types favored by Swainson’s thrush, mature mixed hardwood/conifer, and mature lowland conifer. Lowland conifer escaped the massive disturbance that affected most upland areas at the turn of the century, and remains relatively unaltered, with natural features and species assemblages basically in place. The trend will likely continue for this type, providing secure nesting habitat for this species and others. The mature mixed hardwood/conifer type has typically been managed by selection harvest, and this is likely to remain the case for most stands of this type within the project area. This type of harvest has minimal long-term impacts to the forest compared to clearcutting, while encouraging increased growth of remaining trees, and encouraging growth of understory species. The cumulative effects of this project and other similar projects therefore include the potential for some short-term direct effects from disturbance, together with a long-term maintenance of suitable habitat for this species.

Determination: May impact individuals, but not likely to cause a trend towards Federal listing or a loss of viability.

Chlidonia niger – Black tern

This species is not known to inhabit the project area, and is not known from any other area within the Great Divide district. These birds prefer large areas of shallow protected water with abundant aquatic vegetation. The Day Lake area could be considered marginal potential habitat, because of some relatively isolated bays with interspersed vegetation. None of the proposed activities would affect water quality, recreation use, or vegetation on Day Lake, therefore there would be no direct, indirect, or cumulative effects on this species.

from project activities.

Determination: No impact

Cygnus buccinator – Trumpeter swan

There has been trumpeter swan activity within the project area since 1997. In that year, a total of six birds were released on district water bodies as part of a larger effort to reintroduce the swan to northern Wisconsin. That same year a pair relocated on their own from elsewhere in Wisconsin, to Chippewa Lake, just west of the project area. One of the release sites was on Iron River, north of McCarthy Lake. In 2001, a pair of birds nested on a large beaver pond on Edies Creek, a tributary of Iron River, and hatched 5 cygnets. Later in the summer the group of seven swans moved to the south and spent time along Iron River and in McCarthy Lake (Lowell Tesky, WDNR- pers. comm.).

Threats to area swans include any activity that could affect water quality or water levels in nesting areas; disturbance, from any activity within hearing or sight distance; or major changes to the landscape within sight distance, such as clearcutting of a riparian stand (from phone conversation with Pat Manthey, swan recovery coordinator, WDNR).

Alternative 1 would have no effect on trumpeter swans since no activity would occur. Alternatives 2-5 do not propose any activities that would have long-term impacts on water quality or water levels. Several of the watershed improvement proposals could have short-term effects on water quality due to replacement of culverts, but this would be reduced by mitigation measures; the long-term effect would be improved water quality.

There are several stands in Compartment 178 proposed for harvest that could result in disturbance near McCarthy Lake and the section of Iron River where swans have nested and raised young. These are stands 20 (hardwood stand proposed for thinning); 21 and 23 (red pine stands proposed for thinning); and 25 (mixed aspen/white spruce stand proposed for thinning to manage for white spruce). None of these harvests would result in major visual alterations, however they are close enough to result in disturbance if the harvest was done during the summer months.

Cumulative Effects: Recent activities and current proposals are aimed at improving the water quality of the Iron River watershed through reduction of erosion and sedimentation. Designation of the McCarthy Lakes and Cedars RNA has helped provide a remote, undisturbed nesting and brood raising area. There are some current harvest activities that could create disturbance near that area, but this can be easily mitigated. The large wetlands and beaver ponds further north in the Iron River watershed (located within a Forest Plan Revision inventoried potential wilderness area, or IPWA) will not have any activity as a result of this proposal or in the near future. None of the Iron River watershed is subject to beaver control or dam removal for trout habitat, which will help to maintain suitable nesting habitat. Cumulative effects therefore will result in a continuation of suitable habitat for swans.

Determination: May impact individuals but not likely to result in trend towards federal listing or loss of viability.

Dendroica cerulea – Cerulean warbler

This species has not been recorded within the project area or on the district in recent years. Approximately 1200 acres of potential harvest areas were considered potential habitat according to parameters discussed by Forest biologists, including stand type and age, patch size, site productivity, and basal area. Surveys were conducted in summer of 2001 on sites involved, but no cerulean warblers were recorded. Cerulean warblers have been documented within the Chequamegon and Nicolet land bases several times but they have probably never had more than a marginal presence here. The species does seem to have expanded its range northward somewhat (Islam, 2001; Robbins, 1991 – p. 501; SVE data).

Ceruleans are often associated with small canopy gaps, nesting in some of the larger trees in the forest, but near or next to canopy gaps. For this reason, they have even been termed a disturbance dependent species (Hunter et al., 2001 – pp. 444, 450). A study in southern Indiana found canopy gaps to be present in all 23

territories studied, with many territories having a history of logging activity (Islam, 2001). Threats to the species in breeding grounds include habitat loss and fragmentation, disturbance to nesting habitat, and possibly competition from black-throated green warbler. No details are known about threats from parasitism (SVE data).

It is unknown whether this species is even found within the project area; however, at least marginal potential habitat is available. The best habitat in terms of large patch size is probably in the northern tier of the project area, north of FR 184. Alternative 1 would have no impact on habitat since no activity would occur. Habitat could slowly improve with age, and if individual windthrow maintained some canopy gaps. Alternatives 2-5 would affect similar quantities of potential habitat, through selective logging of northern hardwoods. Since no birds are known to inhabit the area, direct effects are unlikely. There could be at least temporary effects on habitat from the selection cutting, due to changes in the forest structure and canopy. There could be improvements over the long term due to management.

Cumulative effects: Proposed management activities together with other similar northern hardwood management will likely maintain or possibly improve potential habitat for ceruleans, although it is questionable whether viable populations will ever exist on the Chequamegon, except for possibly in the southernmost portion (SVE data). Aspen management could have some negative effects from fragmentation of larger habitat patches, however likely management trends would maintain many larger habitat patches, both within the project area and elsewhere on the Forest.

Determination: No impact.

Falciennis canadensis – Spruce grouse

There have been scattered reports of this bird in the Great Divide district, however there are only three sites within the project area where they have been sighted in recent years. Populations in the project area are likely small and widely scattered, as is the case throughout northern Wisconsin, even in areas of suitable habitat. This species appears to require large blocks of dense conifer cover, including lowland black spruce and upland types such as balsam fir and jack pine. Stands with a well-developed mid-canopy layer are especially important (SVE data).

Threats to the species include fragmentation of habitat due to development or stand conversions, and accidental shooting. Although spruce grouse have been protected in the state since 1929, incidental hunting mortality could still be an important factor limiting population expansion (Gregg, 1994 – p. 7). Any expansion of road networks can increase accidental shooting by increasing public hunting use.

Alternative 1 would have no effect on spruce grouse since no activity would occur. Under Alternatives 2-5, a site where spruce grouse have been observed could be impacted by project activities. The general area of observation was at or near Compartment 178, Stand 25, a mixed white spruce/aspen stand that is proposed for thinning to encourage the spruce. Harvest of this stand could have at least temporary effects on any spruce grouse still occupying the site, due to disturbance from logging activity, and temporary loss of cover. In time, the amount of cover would increase again as the understory responded to increased sunlight, and the remaining spruce grew.

The construction of temporary roads could have short-term impacts if there was increased public use of the local area; these impacts would be reduced with the use of effective closures or decommissioning after the roads are no longer needed. Clearcutting balsam fir stands could impact potential spruce grouse habitat, however the long-term effect would be to help maintain a varied age class of an important upland habitat type. Over-mature balsam fir is more susceptible to windthrow and spruce budworm mortality, which would also reduce the quality of the stands for spruce grouse. The large areas of lowland conifer within the project area would be essentially unaffected by project activities, except for a small amount of disturbance from construction of temporary winter road corridors.

Cumulative effects: Two of the most critical items necessary for maintaining spruce grouse populations are providing large blocks of quality conifer habitat, and reducing accidental shooting. None of the proposed project area activities, or other foreseeable area activities, would involve a reduction of conifer type, either through conversion of conifer, or loss of lowland conifer areas. Typical balsam fir/aspen management involves clearcutting. This results in a temporary loss of habitat but has the advantage of maintaining the

type over the long term, in a variety of age classes. Project area activities combined with other foreseeable activities, would also have the effect of gradually reducing open road density, potentially reducing the loss of birds through accidental shooting.

Determination: May impact individuals, but not likely to cause a trend to federal listing or a loss of viability.

Oporornis agilis – Connecticut warbler

There have been observations of this species at several different breeding bird survey sites on the district. In addition, it was recorded in two locations during contracted bird surveys within the project area in 2001. Both locations were in Compartment 179, stand 1, on the edge of a large semi-open lowland spruce bog. It was not recorded in any of the upland stands surveyed. Connecticut warblers in general are described as utilizing a fairly wide variety of forest types, including lowland conifer, bogs, jack pine, aspen parklands, and moist deciduous forest. In northern Wisconsin, they are most often associated with lowland conifer and jack pine. There is a notable population centered in the jack pine belt in the northwest portion of the state. A well-developed shrub layer is considered by some to be the most important habitat feature for this bird (Kudell-Ekstrum, 2001 – p. 8).

Threats to this species, according to recent SVE work, include fire suppression, conversion of jack pine barrens, fragmentation, and habitat loss on wintering grounds. This species is a ground nester, which could make it more vulnerable to predation. Parasitism by cowbirds is listed as a concern, however there appears to be limited information on susceptibility to parasitism.

Alternative 1 would have no effect since no activity would occur. Alternatives 2-5 would not cause any direct effects on the known location since the lowland conifer site would not be affected; indirect effects at that site would be unlikely since the adjacent uplands are proposed for selection cutting only, rather than clearcutting. There could be direct effects if any Connecticut warblers were nesting in aspen stands proposed for clearcutting. As mentioned previously however, the species seems to be tied more to lowland conifer and jack pine habitat in this portion of the state. There are two jack pine stands proposed for clearcutting; however, those stands do not have the structure that appears to be favored by Connecticut warblers and were not surveyed as potential habitat. If there were additional populations in lowland conifer adjacent to aspen clearcuts, there could be indirect effects due to increased predation and/or parasitism.

Cumulative effects: One of the primary habitat types for this species (lowland conifer) is not generally affected by project activities anywhere on the district. The other primary habitat type (jack pine) is not found to any degree in or adjacent to the project area. The aspen stands proposed for harvest under this project, and in similar projects, could be considered potential habitat, but the harvest of this type was not identified as a viability concern by the SVE panel of experts. In general, although there could be some indirect effects from harvest, the cumulative effects of this project together with similar projects would involve maintenance of habitat quality and quantity.

Determination: May impact individuals, but not likely to cause a trend towards federal listing or a loss of viability.

Picoides arcticus – Black-backed woodpecker

There has been one recent observation of this species within the project area. Another recent observation was just outside the project area, immediately to the west of the Day Lake area. A black-backed woodpecker was also seen at the time of the McCarthy Lake and Cedars RNA evaluation. This species is typically found at low densities, although it may be common in large areas of suitable habitat. Since it depends on recently killed conifer, it is considered an irruptive species, and has the ability to quickly colonize any new areas of habitat. Habitat is generally provided by disturbance agents such as fire, beaver flooding, windthrow, and insect damage.

Threats to the species include any removal or salvage of dead and dying conifer, or activities that alter the disturbance regime, such as fire suppression. A reduction in areas of habitat can reduce the potential for interaction between colonies, or colonization of new areas.

Alternative 1 would not have any direct effects on the species since no action would occur. There could be some indirect benefits from this alternative since there would not be any project-related harvest of mature conifer, including balsam fir and jack pine. This would increase the possibility of mortality in these stands, resulting in creation of suitable habitat. Alternatives 2-5 would not involve any direct disturbance or removal of habitat, but they could affect potential habitat. Alternatives 2, 3, and 5 would involve removal of decadent jack pine in the stands surrounding the Day Lake campground. If left, these trees could provide foraging and nest sites for the black-backed woodpecker, although the dead and dying trees would be at a fairly low density. Dead trees have been removed in the past, singly and in small groups, for safety reasons in the campground. Alternatives 3, 4, and 5 would involve clearcutting of two jack pine stands near the Day Lake boat landing. These stands do not currently provide habitat, but could if allowed mature and degenerate. A nearby jack pine stand adjacent to Day Lake (stand 38) is not proposed for harvest under any alternative, and will provide dying jack pine as the stand continues to age and deteriorate. The clearcutting of mature balsam fir stands could likewise reduce potential habitat by regenerating balsam fir rather than allowing it to die (mature balsam fir that is attacked by spruce budworm can provide excellent black-backed woodpecker habitat).

Cumulative effects: Forest-wide fire suppression has reduced the potential for creation of suitable habitat for this species. Habitat is still created intermittently by beaver flooding, insect and disease, and windthrow. These factors will likely continue to create habitat in the future. Harvest of mature conifer stands has reduced the amount of habitat created by natural mortality; proposed activities would result in similar reductions within the project area. Some areas within the project area however are not proposed for harvest. There is another mature jack pine stand in the Day Lake area that is not proposed for harvest; this may provide dying jack pine in the future. There are a number of mature balsam fir stands that are not being proposed for harvest due to poor access or other concerns, especially in Alternatives 2, 4, and 5. There are not any plans to harvest areas of lowland conifer. None of the stands within the Iron River IPWA are proposed for harvest at this time. The Iron River IPWA contains many stands of mature and overmature balsam fir and mixed aspen/fir. In summary, although there are concerns over the quantity of large habitat patches suitable for this species, the proposed project will likely maintain current levels of habitat development, and will not result in direct loss of suitable habitat.

Determination: No impact.

Gomphus viridifrons – Green-faced clubtail

This species has not been observed within the project area, but it has been documented in nearby townships. This species appears to be much more abundant and common than once thought. It has been found in 41 locations on 26 streams in the northern half of Wisconsin with a small outlier population in the west-central part of the state. Wisconsin is on the western edge of the range of green-faced clubtail which is found all the way to the East Coast.

Green-faced clubtails like warm water, medium (>100'), fast streams with fairly clean gravel/sand substrate. It is found close to shore and in fast current areas of streams. It is not found in big rivers or trout streams. This species population does not appear to be vulnerable at this time.

Alternative 1 would have no direct effects since no action would occur. There could be indirect effects from no action if there was continued sedimentation from the road/stream crossings proposed for improvement under the other alternatives. Alternatives 2-4 could have short-term effects from implementation of the watershed improvement activities, since some sedimentation is normally involved with culvert replacement. The long-term effects of these alternatives however would be reduced sedimentation and erosion and improved water quality.

Cumulative effects: Other watershed improvement activities have occurred within the project area; additional sites in addition to the proposed projects may be implemented in the future as problems are identified. Therefore the long-term cumulative effects would be improved water quality and therefore improved habitat. Effects on water bodies due to activities such as timber harvest or road building are unlikely due to implementation of Best Management Practices.

Determination: May impact individuals but not likely to cause a trend to federal listing or a loss of

viability.

Incisalia henrici – Henry’s elfin butterfly

This species has not been observed within the project area, although there has been a lack of survey work Forest-wide that could identify butterfly populations. Although it is difficult to associate this species with particular habitat types, it has been found in bog areas, forest edges, clearings, brushy areas, and forest roads and trails. These are all habitat types that can be found within the project area.

Since this species is found in such a wide variety of open and semi-open habitats, it is unlikely that disturbance of forested areas would cause a direct loss of habitat. Any activities that affected host plant such as blueberry, wild plum, or mapleleaf viburnum could potentially affect the species. This can be a concern in large areas of barrens or bog areas managed by prescribed fire.

Project area activities are not expected to affect this species, since there would not be any reduction in areas of host plants, or alterations of barrens or bog areas. There is a potential for disturbance to any populations that might exist within the project area, due to timber harvest or road maintenance, but substantial direct, indirect, or cumulative effects on overall area populations or habitat quality are not expected.

Determination: May impact individuals but not likely to cause a trend to federal listing or a loss of viability.

Botrychium oneidense – Blunt-lobed grapefern

This species occurs in low, wet, shady woods and swamps including the edges of woodland ephemeral ponds. No plant locations were found in surveys of potential habitat, however a limited amount of suitable habitat does exist within the project area. The closest known site is 12 miles south of the project area.

Potential threats for this species include drought, fire, collecting, herbivory, and exotic earthworms. Timber harvest is also a potential threat although like many Botrychiums, it is associated with slight, well-healed past disturbance (SVE data).

Alternative 1 would have no effect since no activity would occur. Alternatives 2-5 could have potential effects due to timber harvesting and temporary road construction. Due to its habitat association, any population of this species within the project area would most likely be affected by hardwood selection cutting. This could be by disturbance from equipment use and tree removal, or by increased light levels following harvesting (this would be a temporary effect). There could also be potential effects from deer herbivory if feeding activity increased in harvested areas (also a temporary effect).

Cumulative effects: The rarity and lack of information for this species currently places limits on effective management. In general, however, the cumulative effects of this project in combination with other similar projects would be a continuation of current and recent conditions and would not represent a major change in potential threats or habitat quality.

Determination: No impact.

Calypso bulbosa – Calypso orchid; Cypripedium arietinum – Ram’s head lady’s-slipper; Maxaxis brachypoda – White adder’s mouth

These species are all found in similar habitat: primarily cool, shaded swamp conifer forest. The calypso orchid prefers slightly drier sites, such as drier islands within cedar stands, or close to the slightly raised areas surrounding cedar trunks. None of the species were found in surveys of potential habitat, although potential habitat does exist within the project area. Threats to these species include deer herbivory, ground disturbance, canopy removal, and collection.

Alternative 1 would have no effect since no activity would occur. The greatest threats from activities in Alternatives 2-5 are probably from deer herbivory and disturbance from construction of temporary roads through potential habitat. There are not any plans for timber harvest in areas that could harbor these plants.

Some of the proposed clearcuts, however, particularly in Alternative 3, would require temporary winter-use roads across lowland conifer swamps to access the stands. These roads would not involve any fill material, but they would require the clearing of a corridor, which would not be expected to recover for many years. This corridor could also act as a travel route for deer, further increasing the potential for deer herbivory adjacent to the clearcut stands.

Cumulative effects: The cumulative effects of any clearing or disturbance in lowland conifer stands should be minimal, since this habitat type is rarely directly affected by management activities. The cumulative effects of activities on deer populations and deer activity has been discussed in the Environmental Impact Statement under clearcutting effects, and Management Indicator Species summary. To summarize, project area management activities, combined with other similar activities, can have local effects on deer populations, including concentration of deer near areas of harvested areas and regeneration, however, overall populations are more heavily influenced by winter severity, hunting success, and baiting and feeding activity.

Determination: No impact.

Carex assiniboinensis – Stoloniferous sedge

This species occurs under shade in rich, mesic hardwood forest including floodplains. This species was not found in the project area during surveys of potential habitat; however, marginal habitat does exist in the project area. The closest known site is 15 miles northwest of the project area.

Threats to this species include logging and canopy removal, disturbance, and deer herbivory.

Alternative 1 would have no effect since no activity would occur. Alternatives 2-5 could have varying effects on this species if it occurred within the project area, primarily due to the varying amounts of hardwood selection cutting proposed. Summer harvest in stands containing the plant could directly affect the plant through disturbance from equipment use and tree removal. Harvest during any time of the year could have indirect effects on any plant sites due to the partial canopy removal, and increased light conditions, and potential for increased deer herbivory.

Cumulative effects: Although there could be direct and/or indirect effects on this plant species if it existed within the project area, there is only marginal potential for occurrence in the project area due to habitat considerations. The cumulative effect of this project and other similar projects is therefore a low potential for any adverse impacts.

Determination: No impact.

Dryopteris expansa – Spreading woodfern; Panax quinquefolius – Ginseng; Polystichum braunii – Braun’s holly fern

These species are all found under full shade of mixed northern hardwood forests. Ginseng is often found in forests dominated by sugar maple and basswood; spreading woodfern and Braun’s holly fern are often found in close proximity to exposed bedrock or talus and areas of high moisture content, such as seeps or running water. Moderately suitable habitat exists in the project area for ginseng. The project area contains a limited amount of suitable habitat for spreading woodfern and Braun’s holly fern. None of these species were found in the project area during surveys of potential habitat. Threats to these species include logging and canopy removal, disturbance, and in the case of ginseng, harvest of the plant itself, for the root.

Alternative 1 would have no effect since no activity would occur. Alternatives 2-5 could have varying effects on these species if they were to occur within the project area, primarily due to the varying amounts of hardwood selection cutting proposed. Summer harvest in stands containing the listed plants could directly affect the plants through disturbance from equipment use and tree removal. Harvest during any time of the year could have indirect effects on any plant sites due to the partial canopy removal, and increased light conditions, since all three species are believed to require full shade or close to full shade (SVE data indicates that ginseng needs >80% canopy closure). Any activity that increased the potential for introduction of exotic plants could also have a detrimental effect.

Cumulative effects: Although there could be direct and/or indirect effects on these plant species if they existed within the project area, there is only moderate potential for finding them due to habitat considerations. This project, combined with other similar projects, would have minor effects on the specific habitat required for spreading woodfern and Braun's holly fern. Due to the larger acreage of suitable habitat for ginseng, there could be more noticeable cumulative effects for this species. One of the primary concerns for ginseng though is harvesting, and that activity is not affected by the proposed activities.

Determination: No impact.

Poa paludigena – Bog bluegrass

Bog bluegrass is found growing in lowland swamp conifer and mixed conifer/black ash swamp, usually near springs or spring fed streams. Suitable habitat exists in the project area. This species was actively searched for during the summer of 2002 in stands that were also visited while searching for Calypso, ram's-head lady-slipper, and white adder's-mouth. No plants were found and there are no anticipated impacts to this species or its habitat.

Determination: No impact.

Potamogeton pulcher – Spotted pondweed

This aquatic plant is found in acidic lakes and ponds. It is mainly an eastern coastal plain species with highly scattered and isolated sites west to eastern Minnesota. In Wisconsin, it is known from a site near the Great Divide Ranger District's western boundary in Sawyer County. Suitable habitat exists in the project area. This habitat will not be impacted by planned activities and the project area lies approximately 15 miles east of this species nearest known site. Surveys are not called for and there are no anticipated impacts to this species or its habitat.

Determination: No impact.

Pyrola minor – Lesser wintergreen

This species grows in cool soils under boreal-like forest (balsam fir/white cedar/spruce), and at the edge of alder thickets. The project area contains suitable habitat for this species; however, none were found in surveys of potential habitat. There is not a lot of information about this species, but threats appear to be primarily loss of canopy due to logging or other disturbance and changes in hydrology.

Alternative 1 would have no effect on this species since no activity would occur. Alternatives 2-5 could have potential effects on any populations of this plant located within balsam fir stands proposed for clearcutting, due to ground disturbance and canopy removal. Other forest types considered suitable habitat are essentially lowland types and would not be directly affected by management activities. An exception would be the small amount of temporary road construction that could occur in lowland conifer areas, particularly in Alternative 3.

Cumulative effects: The cumulative effects of any clearing or disturbance in lowland conifer stands should be minimal, since this habitat type is rarely directly affected by management activities. The cumulative effects of harvest in balsam fir stands could be more noticeable, since this type is commonly managed by clearcutting. Many of the balsam fir stands in the project area that meet the definition of suitable habitat are being deferred from cutting due to concerns about access or hydrology issues, reducing the potential for effects to this species.

Determination: No impact.

Ranunculus lapponicus – Lapland buttercup

Lapland buttercup is found in cold white cedar swamps, often near springs or spring fed streams. In

Wisconsin, this boreal species has only been found in several sites in Douglas County west of the Forest boundary. Suitable habitat exists in the project area. This species was actively searched for during the summer of 2002 in stands that were also visited while searching for Calypso, ram's-head lady-slipper, and white adder's-mouth, but no plants were found.

Determination: No impact.

V. DETERMINATION OF EFFECTS SUMMARY

No impact

Ammodramus lecontei – LeConte's sparrow

Buteo lineatus – Red-shouldered hawk

Chlidonia niger – Black tern

Dendroica cerulea – Cerulean warbler

Picoides arcticus – Black-backed woodpecker

Botrychium oneidense – Blunt-lobed grapefern

Calypso bulbosa – Calypso orchid

Carex assiniboinensis – Stoloniferous sedge

Cypripedium arietinum – Ram's head lady's-slipper

Dryopteris expansa – Spreading woodfern

Malaxis brachypoda – White adder's mouth

Panax quinquefolius – Ginseng

Poa paludigena – Bog bluegrass

Polystichum braunii – Braun's holly fern

Potamogeton pulcher – Spotted pondweed

Pyrola minor – Lesser wintergreen

Ranunculus lapponicus – Lapland buttercup

May impact individuals but not likely to cause a trend to federal listing or loss of viability

Martes americana – American pine marten

Myotis septentrionalis - Northern (long-eared) myotis

Pipistrellus subflavus - Eastern pipistrelle

Accipiter gentilis – Northern goshawk

Catharus ustulatus – Swainson's thrush

Cygnus buccinator – Trumpeter swan

Falci pennis canadensis – Spruce grouse

Oporornis agilis – Connecticut warbler

Gomphus viridifrons – Green-faced clubtail

Incisalia henrici – Henry’s elfin butterfly

VI. RECOMMENDATIONS, MITIGATION

Northern goshawk:

Establish a 40-acre protection area surrounding the known nest site. No timber harvest or other major activities should occur in this area.

Discontinue plans for any improvement or maintenance of the existing woods road adjacent to the nest; this would follow guidance of draft Forest Plan standards, which call for closure of roads within 300 feet of a nest site.

Restrict harvest within ¼ mile (20 chains) of the nest to the period of August 1 to February 15, to prevent disturbance to nesting birds.

Based on: These are based on draft Forest Plan revision standards and guidelines, and on existing Nicolet standards and guidelines. Draft Forest Plan guidelines call for a minimum of a 20-acre protection area, however recent draft guidelines proposed for the Bad River Indian Reservation, based on extensive telemetry work at known nest sites, propose the larger area (Doolittle, 2001 – p. 29). This measure would maintain a high basal area at the nest site, which would provide more cover for adult birds and young, and reduce the potential for predation. This larger protection area would also help assure that any alternative nests near the primary nest would be protected.

We do not have substantial evidence from the Chequamegon landbase that this protection measure has worked in the past, since the 1986 Plan did not include specific standards and guidelines for goshawks. Standards and guidelines were included as part of the 1986 Nicolet Plan however, through cooperation between agency experts and goshawk researchers. Monitoring since then has indicated some success in application of these measures. Tom Erdman (pers. comm.) reports a number of sites he has monitored on the Nicolet where territories remained active following management, when protection measures were applied. Mr. Erdman also reports that there is a greater loss of nesting goshawks and territories on private, county, and state lands without protective measures, compared to Nicolet lands where protection measures are used. Mike Peczynski, Eagle River/Florence district biologist, has also documented a number of goshawk and red-shouldered territories on the northern half of the Nicolet that remained successful following management activities (Table 3, draft Northwest-Howell Biological Evaluation).

Reserve all long-lived conifers from cutting in stands adjacent to the nest area. Maintain conifer transition zones and/or areas of mixed hardwood/conifer near the nest area for foraging habitat.

Based on: Draft Forest Plan revision standards and guidelines. The need for a mature conifer component in nest areas is well established from regional research and observation. This measure would maintain thermal cover and foraging habitat.

Note: Specific stand locations affected by mitigation for northern goshawk can be found in the project file document “Threatened, Endangered, and Sensitive Species Mitigation for Cayuga Project”.

Trumpeter swan:

Utilize winter harvest only for Compartment 178, Stands 20, 21, 23, and 25, to avoid disturbance to nesting swans or groups of adults and cygnets.

Based on: Consultation with Patricia Manthey, WDNR trumpeter swan specialist.

Spruce grouse:

Survey Compartment 178, Stand 25 prior to sale layout to try to determine if any grouse or evidence of grouse are present; design the harvest unit to retain several pocket of dense mid-level conifer cover from 1/8 to 1/2 acre in size.

Based on: Consultation with Tom Doolittle, Bad River Band Reservation Biologist; to provide areas of cover within stand until spruce in rest of stand attain closed canopy.

Restrict the harvest within Stand 25 to winter only, to avoid disruption of the nesting season (this stand is also recommended for winter harvest to reduce impacts on trumpeter swan).

Based on: Spruce grouse are ground nesting birds; avoiding harvest during the nesting season will avoid direct impact on any nests that may be present.

Decommission or close all temporary roads to public motorized use following use for timber hauling, to reduce the chances for increased incidental hunting mortality.

Based on: Draft Forest Plan revision standards and guidelines. Impacts on spruce grouse from incidental shooting has been documented as one threat to populations; road closures are suggested as one way to reduce potential for mortality due to shooting (SVE report; Gregg, 1994).

Black-backed woodpecker:

Reserve mature live jack pine and snags within Compartment 124, Stands 53 and 56. Reserve trees should be left primarily in groups (3-5 groups per stand), to reduce the potential for windthrow. Location of reserve groups should consider visual impact due to location adjacent to boat landing road.

Based on: Draft Forest Plan revision standards and guidelines, SVE data; to provide future foraging habitat for black-backed woodpecker and other bark foragers.

Swainson's thrush:

Within Compartment 188, Stand 18, and Compartment 202, Stand 1, limit harvest activity to the period from August 1 to May 15.

Based on: Draft Forest Plan revision standards and guidelines; to avoid disturbance of nesting birds and/or loss of nests and young.

Calypso orchid, ram's head lady's-slipper, white adder's mouth:

Survey for sensitive plants in suitable habitat (mature lowland conifer) along proposed routes for temporary roads prior to any construction. Alter road location if necessary to protect any sensitive plant sites.

Based on: Need for protection by simple avoidance of any known plant sites.

VII. RECORD OF CONSULTATION

Note: Consultation with U.S. Fish and Wildlife Service is not required for analysis of impacts to Regional Forester Sensitive Species. Consultation listed below is with species experts outside the FWS.

Thomas Doolittle, Bad River Band of Lake Superior Chippewa, Reservation Biologist: northern goshawk, spruce grouse.

Jon Gilbert, Great Lakes Indian Fish and Wildlife Commission biologist: American pine marten.

Patricia Manthey, WDNR, Non-game wildlife specialist: trumpeter swan.

VIII. REFERENCES

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For additional sources used in preparation of the 2002 Biological Evaluation Reference Document, see that document, on file at Great Divide district offices.