APPENDIX J. WILDLIFE; REGIONAL FORESTER SENSTIIVE SPECIES

HEATHER VOLE

Table J.1a Status Rankings of Heather Vole[1]						
Common name/ *Scientific name*	NatureServe			USF&WS R3 GLE	State of Minnesota	Superior NF
	Global	National	(MN)			
Heather vole/ *Phenacomys ungava (formerly. P. intermedius)*	G5	NNR	S3	NR	SSC	RFSS
1. See Attachment A for a key to status rankings						

(1) Overview Adapted from Forest Plan Revision Biological Evaluation (FPR BE) (USDA Forest Service 2004), pg. 23 and 24:

The Superior is at the very southern edge of the species historical range that includes the forested regions of Canada and the western U.S. Mountains. Suitable ecological conditions likely had patchy distribution. It is known from a wide variety of vegetation conditions. Its habitat was likely perpetuated by disturbance such as fire. The amount of habitat has changed slightly from historical conditions. Fire suppression has likely had the biggest negative impact to habitat conditions from historical conditions. This is reflected in the large decrease in the amount of jack pine from historical conditions on both forests. Timber harvest potentially perpetuates habitat for this species, however an increase of aspen and a decrease of jack pine from historical conditions has likely reduced the amount of suitable habitat for the species. Population trends are unknown. Disturbance that replaces shrubs with grass can lead to intra-specific composition with meadow voles. Vegetative succession that closes the canopy and flood that encourages grass can make habitat unsuitable for the species. The species is vulnerable to predation.

(2) Monitoring Activities

Monitoring Question: To what extent is Forest management contributing to the conservation of sensitive species and moving toward short term (10-20 years) and long-term (100 years) objectives for their habitat conditions?

***Monitoring Driver(s): Objective.* FWD. O-WL-18. All sensitive species**. Maintain, protect, or improve habitat for sensitive species. Meeting this objective will involve two basic and complimentary strategies…: a. Landscape level (or coarse filter) management strategies: Addressing species' needs through integrated resource management at large landscape scales...b. Site-level (or fine filter) management strategies: Addressing species' needs by managing specifically for high quality potential habitat or known locations of sensitive species.

Table J.1b 2005 Monitoring Activities			
Applicable Monitoring Activity, Practice, Or Effect Measured	Methods	When Monitored	Location or Project Area
Landscape level Coarse filter	Key Analysis Indicators, GIS and CDS analyses	Fall 05	Forest-wide
Site level Fine filter	NHIS, Private researcher	Fall 05	Known sites

Landscape Level Monitoring

The FPR BE identifies MIH 8b as a Key Analysis Indicator for heather voles (Table 3, pg. 12 of FPR BE). This indicator alone does not reflect the actual quantity or quality of suitable heather vole habitat, but does provide an index. It is not expected that any significant trends in habitat changes will be able to

be surmised at increments of less than 5 years. However, for the purpose of this first Report under the new Forest Plan, an initial attempt will be made.

A GIS analysis of CDS stand data frozen in September of 2005 was conducted in the fall of 2005. The Forest-wide results are reflected in Table J.1c below. There is no MIH management direction provided at the Forest-wide scale. MIH management direction presented in the Forest Plan is by Landscape Ecosystem (LE).

Table J.1c Key Analysis Indicator for Heather Vole			
Forest Plan Revision Existing Condition (2004)[1]	**Current Condition (Sep 2005)[2]**	**Current Condition + Approved NEPA Decisions[2]**	**Projected or Expected Condition Decade 1[1]**
Indicator 1: MIH 8b Jack pine forest, mature +, in % of MIH 1			
5.0%	5.5%	5.3%	4.3%
1. Source Data: Land and Resource Management Plan, Ch. 2 Forest-wide Management Direction 2. Source Data: CDS frozen September 2005			

Site Level Monitoring

The NHIS database contains 4 known occurrences of this species on the SNF. Three of the 4 incidences were reported by Jannett and are included in the notes below.

Eighteen sites were monitored on the SNF as part of on-going small mammal population dynamics research (Jannett 2005a). Additionally, 2 sites were selected for an extended census effort, and 3 more sites were inventoried specifically for heather voles. Twelve heather voles were secured at 7 sites, 4 of these sites are new locations (Jannett 2005b). To date, Jannett has secured 52 individuals at 9 sites (Table J.1d). The only known detections of this species in the United States occur on the SNF.

Table J.1d Heather vole inventory data[1]						
	1994	**1995**	**1996**	**1997**	**1998**	**1999**
# of sites monitored	19	19	19	19	19	21
sites w/heather voles	0	2	1	0	0	0
# of new locations	0	2	0	0	0	0
	2000	**2001**	**2002**	**2003**	**2004**	**2005**
# of sites monitored	21	25	21	21	21	23
sites w/heather voles	2	3	1	3	3	6
# of new locations	0	3	0	0	0	4
1. These data come from a series of unpublished reports by Jannett, 1998-2005						

Small mammal surveys coordinated by the 1854 Authority have been conducted each fall since 2001 in an attempt to track trends in small mammal populations within the forested and transition zones of northern Minnesota. Nine of the trapping routes are conducted on the SNF. To date, no heather voles have been documented in this survey, either on the SNF or state-wide.

(3) Evaluation and Conclusions

Evaluation

Initial GIS analyses do show some small changes in the relative amount of MIH 8b Forest-wide with no clear increase or decrease. Since this species is relatively unknown on the Forest with only a few occurrences in the past decade, there can be no conclusions made as to population levels or trends.

Reliable habitat indicator trend data cannot be surmised in such a short period of time. While there is some initial population inventory data available through Jannett's work, there is currently no means of establishing population trends. Due to this lack of data, no conclusions can be made as to population and habitat relationships on the Forest. Effective implementation of Forest Plan Objectives, Standards and Guides would minimize impacts to this species that may result from management activities on the Forest.

(4) Opportunities to Improve Efficiency and Quality of Monitoring Effort.

Table J.1g Collaboration		
Collaborator/Partner	**Monitoring Activity**	**Accomplishment**
Dr. F.J. Jannett, Jr., private researcher	Heather vole inventory	Annual unpublished reports
Minnesota NHP	NHIS database	NHIS database

THREE-TOED WOODPECKER

Table J.2a Conservation Status Rankings of Three-toed Woodpecker[1]						
Common name/ *Scientific name*	**NatureServe**			**USF&WS R3 GLE**	**State of Minnesota**	**Superior NF**
	Global	**National**	**(MN)**			
Three-toed Woodpecker/ *Picoides dorsalis* Formerly *P. tridactylus*	G5	N5	SNRB, SNRN	NR	NR	RFSS
1. See Attachment A for a key to status rankings						

(1) Overview Adapted from Forest Plan Revision Biological Evaluation (FPR BE) (USDA Forest Service 2004), pg. 97:

The Three-toed woodpecker is a rare, permanent resident of extreme northern parts of Minnesota, and is slightly more common as a winter visitor to the northeastern and north-central regions of the state. This species is a rare breeding species in the state. Very few nests have been found in the state, mainly in Cook County. However, the species is likely a regular nesting species, but presumably in very low numbers and in very remote parts of the state.

This species prefers old-growth coniferous forests and recently disturbed areas associated with forest fire, wind, disease and insect outbreaks. The historical natural fire regime, insect outbreaks, disease, and abundant beaver would have provided a continuous mosaic of dying and dead trees for foraging of their chief prey, bark beetles. White cedar for winter thermal cover was also present on a small portion of the landscape. Habitat would have fluctuated greatly depending on weather influences on fire, insect cycles and human influences.

Three-toed woodpecker is a species of boreal and montane coniferous forests. It usually inhabits mature or old-growth coniferous stands with abundant insect-infected dead and dying trees. Even in predominately living forests, Three-toed woodpeckers forage mainly on dead and dying timber. In Region 9 they seem to nest mainly in spruce and balsam snags and mature trees. This dependence on insect-infected dead and dying timber frequently results in populations showing an association with forest disturbances such as fire, wind throw, floods, insect outbreaks and disease. In particular, three-toed woodpecker populations often show an increased abundance in early post-fire successional seres. Black spruce/tamarack stands are the vegetation community most likely to contain three-toed woodpeckers in

Minnesota. Studies have also found that they are more likely to occur in larger areas of virgin forest vs. smaller patches suggesting forest fragmentation may harm three-toed woodpeckers. In summary, Three-toed woodpeckers generally inhabit larger patches of recently burned or decadent old growth coniferous (primarily spruce) stands.

Threats facing this species include habitat loss, fire suppression, salvage logging, conifer conversion, beaver control and poor snag retention policies. Quality habitat on the Superior has been greatly reduced due to the above factors.

(2) Monitoring Activities

Monitoring Question: To what extent is Forest management contributing to the conservation of sensitive species and moving toward short term (10-20 years) and long-term (100 years) objectives for their habitat conditions?

Monitoring Driver(s): Objectives. **FWD. O-WL-18. All sensitive species**. Maintain, protect, or improve habitat for sensitive species. Meeting this objective will involve two basic and complimentary strategies…:a. Landscape level (or coarse filter) management strategies: Addressing species' needs through integrated resource management at large landscape scales. b. Site-level (or fine filter) management strategies: Addressing species' needs by managing specifically for high quality potential habitat or known locations of sensitive species.

O-WL-23. Three-toed woodpecker. Maintain or improve quality nesting and foraging habitat within the woodpecker's range, by managing toward the Landscape Ecosystem Vegetation Objectives for mature and older conifer forest. Consider the contribution of BWCAW to well-distributed habitat. Important characteristics within these older forests include trees large enough for nest cavities and current or future habitat to provide dead and dying flaky-barked trees for forage. In addition to tracts of mature and older conifer forest, retain large concentrations of flaky-barked conifer trees (especially jack pine, white spruce, black spruce, and tamarack) that have been damaged or killed by fire, insects, disease, flooding or other disturbances. Where conflicts exist between retaining large concentrations (for example, due to fire risk or insect outbreaks), prioritize maintenance of woodpecker habitat in areas and concentrations where conflicts can be minimized.

O-WL-24. Three-toed woodpecker. The amount and distribution of dead and dying trees should provide adequate representation of patterns and amounts that would result from natural disturbances (such as fire and flooding) and other ecological processes (such as insect and disease infestations and vegetation succession). If natural disturbances do not provide adequate habitat, it may be necessary to emulate natural disturbance through management ignited fire or other treatments.

Table J.2b 2005 Monitoring Activities			
Applicable Monitoring Activity, Practice, Or Effect Measured	**Methods**	**When Monitored**	**Location or Project Area**
Landscape level Coarse filter	Key Analysis Indicators, GIS & CDS analyses	Fall 05	Forest-wide
Site level Fine filer	Site-level surveys	Spring 05	Tomahawk

Landscape Level Monitoring

The FPR BE identifies MIH 9b, management ignited stand replacing fire opportunities, and MIH 12 as a Key Analysis Indicators for three-toed woodpecker (Table 3, pg. 13 of FPR BE). These indicators alone do not reflect the actual quantity or quality of suitable three-toed woodpecker habitat, but do provide an index. It is not expected that any significant trends in habitat changes will be able to be surmised at increments of less than 5 years. However, for the purpose of this first Report under the new Forest Plan, an initial attempt will be made. Currently, there are no established methods for tracking on

changes and trends in opportunities afforded by management ignited stand replacing fire opportunities. There is no MIH management direction provided at the Forest-wide scale. MIH management direction presented in the Forest Plan is by Landscape Ecosystem (LE). A GIS analysis of CDS stand data frozen in September of 2005 was conducted in the fall of 2005. The results are reflected in Table J.2c below.

Table J.2c Indicators for Three-toed Woodpecker			
Forest Plan Revision Existing Condition (ROD date-July 2004)[1]	Current Condition (Sep 2005)[2]	Current Condition + Approved NEPA Decisions	Projected or Expected Condition Decade 1[1]
Indicator 1: MIH 9b- Lowland black spruce/tamarack forest, mature+, in % of MIH 9			
84.7%	86.1%	85.2%	86.8%
Indicator 2: Management ignited stand replacing fire opportunities (in acres)			
			6,230[3]
Indicator 3: MIH 12- Upland interior forest habitat, mature+ (in acres (% of MIH 1))			
141,400 (14.7%)			132,953 (13.9%)
1. Source Data: Land and Resource Management Plan, Ch. 2 Forest-wide Management Direction 2. Source Data: CDS frozen September 20053. From FPR BE, pg. 99			

Site Level Monitoring

There are 8 North American Breeding Bird Survey (BBS) routes within SNF proclamation boundaries. BBS analysis identifies an important deficiency in data (very low abundance, very small sample size, or very imprecise) associated with this species and is therefore not presented here. It is likely BBS routes do not adequately sample the habitat associated with this species.

NHIS contains no data for three-toed woodpeckers on the Forest. NRRI's Breeding Bird Monitoring effort surveys 169 stands on the Superior. It has not detected three-toed woodpecker on the SNF; however timing and location of survey routes are such that this species is not adequately surveyed for. Surveys conducted in the Tomahawk mid-level analysis area did not detect this species.

(3) Evaluation and Conclusions.

Evaluation

Initial GIS analyses do show some small changes in the relative amount of three-toed woodpecker habitat indicators 1 and 3 with no clear increase or decrease. There is a lack of information as to this species population level and trend both locally and regionally.

Conclusion

Reliable habitat indicator trend data cannot be surmised in such a short period of time. There is currently no means of establishing population levels and trends. Due to this lack of data, no conclusions can be made as to population and habitat relationships on the Forest. Effective implementation of Forest Plan Objectives, Standards and Guides would minimize impacts to this species that may result from management activities on the Forest.

(4) Opportunities to Improve Efficiency and Quality of Monitoring Effort.

Table J.2d Collaboration		
Collaborator/Partner	Monitoring Activity	Accomplishment
Minnesota NHP	NHIS database	NHIS database

OLIVE-SIDED FLYCATCHER

Table J.3a Conservation Status Rankings of Olive-sided Flycatcher[1]						
Common name/ *Scientific name*	NatureServe			USF&WS R3 GLE	State of Minnesota	Superior NF
	Global	National	(MN)			
Olive-sided flycatcher/ *Contopus cooperii*	G4	N4B	SNRB	RCP	NR	RFSS
1. See Attachment A for a key to status rankings						

(1) Overview Adapted from Forest Plan Revision Biological Evaluation (FPR BE) (USDA Forest Service 2004), pg. 103:

Broad historical range with gaps between suitable habitat. Historical fire regimes in upland conifers created and maintained foraging habitat. Nesting habitat and wintering were not limiting.

Breeding habitat is subject to alteration through harvesting and reduction of fire. Fire is thought to be more important than harvesting for creating habitat. Live and dead snags are used for hunting perches.

Foraging habitat structure of live and dead snags is the most important component in the breeding range. Reduction in fire frequency may have a greater impact on foraging habitat and may not be outweighed by habitat created through harvesting. Range wide population decline includes the SNF. The causes of the decline are not well known and may include wintering habitat changes.

(2) Monitoring Activities

Monitoring Question: To what extent is Forest management contributing to the conservation of sensitive species and moving toward short term (10-20 years) and long-term (100 years) objectives for their habitat conditions?

Monitoring Driver(s): Objective. FWD. O-WL-18. All sensitive species. Maintain, protect, or improve habitat for sensitive species. Meeting this objective will involve two basic and complimentary strategies…: a. Landscape level (or coarse filter) management strategies: Addressing species' needs through integrated resource management at large landscape scales...
b. Site-level (or fine filter) management strategies: Addressing species' needs by managing specifically for high quality potential habitat or known locations of sensitive species.

Monitoring Driver(s): Objective. FWD. O-WL-25. Olive-sided flycatcher. Maintain, protect, or improve quality nesting and foraging habitat: variety of boreal forests (generally 10-20% canopy cover) including uplands, lowlands, edges, and beaver meadows with a preponderance of standing live or dead large trees used for perching and foraging, especially spruce or tamarack. High association with riparian and riverine areas.

Table J.3b 2005 Monitoring Activities			
Applicable Monitoring Activity	Methods	When Monitored	Location or Project Area
Landscape level Coarse filter	Key Analysis Indicators, GIS and CDS analyses	Fall 05	Forest-wide
Site level Fine filter	NRRI BBM, BBS, NHIS, Site-level surveys	Spring 05	Forest-wide

Landscape Level Monitoring

The Forest Plan Revision Biological Evaluation (FPR BE) (USDA Forest Service 2004) identifies MIH 5b, MIH 9b, and management ignited fire opportunities as a Key Analysis Indicators for olive-sided flycatcher (Table 3, pg. 114 of FPR BE). These indicators alone do not reflect the actual quantity or quality of suitable olive-sided flycatcher habitat, but do provide an index. It is not expected that any significant trends in habitat changes will be able to be surmised at increments of less than 5 years. However, for the purpose of this first Report under the new Forest Plan, an initial attempt will be made. Currently, there are no established methods for tracking on changes and trends in opportunities afforded by management ignited fire activities.

There is no MIH management direction provided at the Forest-wide scale. MIH management direction presented in the Forest Plan is by Landscape Ecosystem (LE) and can be found in MIS/MIH Wildlife Section of the full Report. A GIS analysis of CDS stand data frozen in September of 2005 was conducted in the fall of 2005. The results are reflected in Table J.3c below.

Table J.3c Indicators for Olive-sided Flycatcher			
Forest Plan Revision Existing Condition (ROD date-July 04)[1]	Current Condition (Sep 2005)[2]	Current Condition + Approved NEPA Decisions[2]	Projected or Expected Condition Decade 1[1]
Indicator 1: MIH 5b- Upland conifer forest, mature+, in % of MIH 1			
17.4%	21.0%	21.3%	18.6%
Indicator 2: MIH 9b-Lowland black spruce – tamarack forest, mature+, in % of MIH 9			
84.7%	86.1%	85.2%	86.8%
Indicator 3: Management Ignited Fire Opportunities			
1. Source Data: Land and Resource Management Plan, Ch. 2 Forest-wide Management Direction 2. Source Data: CDS frozen September 2005			

Site Level Monitoring

There are 8 North American Breeding Bird Survey (BBS) routes within SNF proclamation boundaries. Trend data for these individual routes are not available. BBS data that is available for this species are reflected in Table J.3d below.

Table J.3d North American Breeding Bird Survey (BBS) Trend Results for Olive-sided Flycatcher, in % / year (Sauer et al. 2005)			
Region	1966-2004	1966-1979	1980-2004
Minnesota[1]	-2.5	+1.0	-4.8
N. Spruce-Hardwoods[1,2]	-3.1	-3.3	-5.9
BBS-Wide	-3.5	-1.9	-3.5
1- BBS analysis identifies a deficiency in data (low abundance, small sample size, quite imprecise, or low P value) associated with this species in these regions. 2- The SNF falls within BBS strata 28, northern spruce hardwoods			

NHIS contains no data for olive-sided flycatcher on the Forest. NRRI's Breeding Bird Monitoring effort surveys 169 stands on the Superior. It has been detected in 37 stands on the SNF. However, detections are rare and irregular with only 1 detection in 20 of the stands during the period of 1991 thru 2005 (J.Lind, personal communication). Surveys conducted on the Whyte and Trail mid-level analysis areas did not detect this species. A detection of a nesting olive-sided flycatcher was reported on the Gunflint Ranger District (M.Grover, personal communication).

(3) Evaluation and Conclusions

Evaluation
Initial GIS analyses do show some a small increase in the habitat indicators for olive-sided flycatcher. There is a lack of population trend data locally. Regional indicators show a slight downward trend in this species population.

Conclusion
Reliable habitat indicator trend data cannot be surmised in such a short period of time. While there is some irregular population inventory data available through NRRI's BBM work, there is currently no means of establishing local population trends. Due to this lack of data, no conclusions can be made as to population and habitat relationships on the Forest. Effective implementation of Forest Plan Objectives, Standards and Guides would minimize impacts to this species that may result from management activities on the Forest.

(4) Opportunities to Improve Efficiency and Quality of Monitoring Effort.

Table J.3e Collaboration		
Collaborator/Partner	**Monitoring Activity**	**Accomplishment**
Minnesota NHP	NHIS database	NHIS Database
NRRI	Breeding Bird Monitoring	Annual Report

BLACK-THROATED BLUE WARBLER

Table J.4a Conservation Status Rankings of Black-throated Blue Warbler[1]						
Common name/ *Scientific name*	**NatureServe**			**USF&WS R3 GLE**	**State of Minnesota**	**Superior NF**
	Global	**National**	**(MN)**			
Black-throated blue warbler/ *Dendroica caerulescens*	G5	N5B	SNRB	RCP	NR	RFSS
1. See Attachment A for a key to status rankings						

(1) Overview Adapted from Forest Plan Revision Biological Evaluation (FPR BE) (USDA Forest Service 2004), pg. 105 and 109:

The Superior National Forest is known to have a consistently breeding population of black-throated blue warblers in the sugar maple dominated hardwood forests along the north shore of Lake Superior. However, they are also scattered throughout the Forest. The north shore population is considered to be a viable population. The status of the species elsewhere on the Superior is low numbers and status mostly unknown. As much of the eastern mixed hardwood forest matured over the past few decades, black-throated blue warbler populations increased, and through the 1990's, were either stable or increasing.

The SNF is at the western edge of this species' range. In this region, black-throated blue warblers appear to be vulnerable to habitat fragmentation due to logging, urbanization, and creation of edge. Suitable breeding habitat for the black-throated blue warbler appears to be mature deciduous or mixed deciduous/coniferous forest with dense understory development. In addition, black-throated blue warblers are found only in relatively large blocks of contiguous mature forest

Risk factors include timber harvest (including thinning and partial harvest), forest fragmentation, reduction of mature forest patch size, and cultured forests that remove structure. The salvage of patchy blow-down can negatively impact the species, although patch harvest for stand management may improve conditions.

(2) Monitoring Activities

Monitoring Question: To what extent is Forest management contributing to the conservation of sensitive species and moving toward short term (10-20 years) and long-term (100 years) objectives for their habitat conditions?

Monitoring Driver(s): Objective. FWD. O-WL-18. All sensitive species. Maintain, protect, or improve habitat for sensitive species. Meeting this objective will involve two basic and complimentary strategies…:

a. Landscape level (or coarse filter) management strategies: Addressing species' needs through integrated resource management at large landscape scales...

b. Site-level (or fine filter) management strategies: Addressing species' needs by managing specifically for high quality potential habitat or known locations of sensitive species.

Table J.4b 2005 Monitoring Activities			
Applicable Monitoring Activity, Practice, Or Effect Measured	**Methods**	**When Monitored**	**Location or Project Area**
Landscape level Coarse filter	Key Analysis Indicators, GIS and CDS analyses	Fall 05	Forest-wide
Site level Fine filer	BBS, NHIS, NRRI BBM, Site-level surveys	Spring 05	Forest-wide Trail, Whyte

Landscape Level Monitoring

The FPR BE identifies MIH1b and MIH 1b in patches of 2,500 acres or greater as a Key Analysis Indicators for black-throated blue warbler (Table 3, pg. 14 of FPR BE). These indicators alone do not reflect the actual quantity or quality of suitable black-throated blue warbler habitat, but do provide an index. It is not expected that any significant trends in habitat changes will be able to be surmised at increments of less than 5 years. However, for the purpose of this first Report under the new Forest Plan, an initial attempt will be made.

There is no MIH management direction provided at the Forest-wide scale. MIH management direction presented in the Forest Plan is by Landscape Ecosystem (LE). A GIS analysis of CDS stand data frozen in September of 2005 was conducted in the fall of 2005. The results are reflected in Table J.4c below.

Table J.4c Indicators for Black-throated Blue Warbler			
Forest Plan Revision Existing Condition (ROD date-July 2004)[1]	**Current Condition (Sep 2005)[2]**	**Current Condition + Approved NEPA Decisions[2]**	**Projected or Expected Condition Decade 1[1]**
Indicator 1: Large patches of MIH 1b-Upland forest, mature+, in patches ≥2,500 acres (in acres, (# of patches), (% of MIH 1)			
120,200ac (23) (12.5%)			
Indicator 2: MIH 1b- Upland forest, mature+, in % of MIH 1			
54.7%	58.2%	56.8%	48.2%
1. Source Data: Land and Resource Management Plan, Ch. 2 Forest-wide Management Direction 2. Source Data: CDS frozen September 2005			

Site Level Monitoring

There are 8 North American Breeding Bird Survey (BBS) routes within SNF proclamation boundaries. Trend data for these individual routes are not available. BBS data that is available for this species are reflected in Table J.4d below.

Table J4.d North American Breeding Bird Survey (BBS) Trend Results for Black-throated Blue Warbler, in % / year (Sauer et al. 2005)			
Region	**1966-2004**	**1966-1979**	**1980-2004**
Minnesota	*	*	*
N. Spruce-Hardwoods[1]	+1.7	-3.3	+2.4
BBS-Wide[2]	+1.0	-3.0	+1.8
*- BBS analysis identifies an important deficiency in data (very low abundance, very small sample size, or very imprecise) associated with this species in this region and is therefore not presented here. 1- The SNF falls within BBS strata 28, northern spruce hardwoods 2- BBS analysis identifies a deficiency in data (low abundance, small sample size, quite imprecise, or low P value) associated with this species in this region.			

The State of Minnesota NHIS database contains 48 occurrences of black-throated blue warbler on the SNF. Some of these overlap with BBS routes and NRRI BBM surveys locations. NRRI's Breeding Bird Monitoring effort surveys 169 stands on the Superior. It has been detected in 50 stands, however, many of the detections are rare with only 1 detection in 21 of the stands during the period of 1991 thru 2005 (J.Lind, personal communication). Surveys conducted on the Whyte and Trail mid-level analysis areas did not detect this species.

(3) Evaluation and Conclusions

Evaluation

Initial GIS analyses do show some a small increase in the habitat indicator MIH 1b for black-throated blue warbler. There is a lack of population trend data locally. Regional indicators show a slight upward trend in this species population.

Conclusion

Reliable habitat indicator trend data cannot be surmised in such a short period of time. While there is some irregular population inventory data available through NRRI's BBM work, there is currently no means of establishing local population trends. Due to this lack of data, no conclusions can be made as to population and habitat relationships on the Forest. Effective implementation of Forest Plan Objectives, Standards and Guides would minimize impacts to this species that may result from management activities on the Forest.

(4) Opportunities to Improve Efficiency and Quality of Monitoring Effort.

Table J.4e Collaboration		
Collaborator/Partner	**Monitoring Activity**	**Accomplishment**
Minnesota NHP	NHIS database	NHIS Database
NRRI	Breeding Bird Monitoring	Annual Report

G2.14 WILDLIFE; RFSS, CONNECTICUT WARBLER

Table J.5a Conservation Status Rankings of Connecticut warbler[1]						
Common name/ *Scientific name*	NatureServe			USF&WS R3 GLE	State of Minnesota	Superior NF
	Global	National	(MN)			
Connecticut warbler/ *Oporornis agilis*	G4	N3B	SNRB	RCP	NR	RFSS

(1) Overview Adapted from Forest Plan Revision Biological Evaluation (FPR BE) (USDA Forest Service 2004), pg. 123-124:

Little is known of the specific habitat needs and breeding biology of the Connecticut warbler, partly due to its secretive nature and habit of nesting in dense vegetation. This species has a naturally spotty distribution, even in suitable habitat. The SNF is at the southern edge of this species range and it is therefore relatively uncommon.

Habitat for Connecticut warblers was described as mature, short-needle conifers, usually single aged, either lowland conifer or jack pine with the key feature appearing to be an ericaceous shrub layer up to about three feet high. Habitat occurrences of Connecticut warbler on the Superior include primarily boreal bogs and jack pine. Mature lowland black spruce/tamarack provides the most common nesting and cover habitat for Connecticut warblers

Threats to Connecticut warbler populations are not fully understood but include loss of breeding habitat, loss of wintering habitat, nest predation and parasitism, collision with towers, and possibly habitat fragmentation.

(2) Monitoring Activities

Monitoring Question: To what extent is Forest management contributing to the conservation of sensitive species and moving toward short term (10-20 years) and long-term (100 years) objectives for their habitat conditions?
***Monitoring Driver(s): Objective.* FWD. O-WL-18. All sensitive species**. Maintain, protect, or improve habitat for sensitive species. Meeting this objective will involve two basic and complimentary strategies…: a. Landscape level (or coarse filter) management strategies: Addressing species' needs through integrated resource management at large landscape scales...
b. Site-level (or fine filter) management strategies: Addressing species' needs by managing specifically for high quality potential habitat or known locations of sensitive species.

Table J.5b 2005 Monitoring Activities			
Applicable Monitoring Activity, Practice, Or Effect Measured	Methods	When Monitored	Location or Project Area
Landscape level Coarse filter	Key Analysis Indicators, GIS and CDS analyses	Fall 05	Forest-wide
Site level Fine filter	NRRI BBM, BBS, NHIS, Site-level surveys	Spring 05	Forest-wide

Landscape Level Monitoring

The FPR BE identifies MIH 8b and MIH 9b as Key Analysis Indicators for Connecticut Warbler (Table 3, pg. 14 of FPR BE). These indicators alone do not reflect the actual quantity or quality of suitable

Connecticut Warbler habitat, but do provide an index. It is not expected that any significant trends in habitat changes will be able to be surmised at increments of less than 5 years. However, for the purpose of this first Report under the new Forest Plan, an initial attempt will be made.

There is no MIH management direction provided at the Forest-wide scale. MIH management direction presented in the Forest Plan is by Landscape Ecosystem (LE). A GIS analysis of CDS stand data frozen in September of 2005 was conducted in the fall of 2005. The results are reflected in Table J.5c below.

Table J.5c Indicators for Connecticut warbler			
Forest Plan Revision Existing Condition (ROD date-July 2004)[1]	Current Condition (Sep 2005)[2]	Current Condition + Approved NEPA Decisions[2]	Projected or Expected Condition Decade 1[1]
Indicator 1: MIH 9b-Lowland black spruce–tamarack forest, mature+, in % of MIH 9			
84.7%	86.1%	85.2%	86.8%
Indicator 2: MIH 8b- Jack pine forest, mature+, in % of MIH 1			
5.0%	5.5%	5.3%	4.3%
1. Source Data: Land and Resource Management Plan, Ch. 2 Forest-wide Management Direction 2. Source Data: CDS frozen September 2005			

Site Level Monitoring

There are 8 North American Breeding Bird Survey (BBS) routes within SNF proclamation boundaries. Trend data for these individual routes are not available. BBS data that is available for this species are reflected in Table J.5d below.

Table J.5d North American Breeding Bird Survey (BBS) Trend Results for Connecticut Warbler, in % / year (Sauer et al. 2005)			
Region	1966-2004	1966-1979	1980-2004
Minnesota[1]	+0.9	+4.4	+0.7
N. Spruce-Hardwoods[1,2]	-1.6	-0.9	-2.7
BBS-Wide[1]	-1.3	-5.8	-3.0
1- BBS analysis identifies a deficiency in data (low abundance, small sample size, quite imprecise, or low P value) associated with this species in these regions. 2- The SNF falls within BBS strata 28, northern spruce hardwoods.			

NHIS contains no data for this species. NRRI's Breeding Bird Monitoring effort surveys 169 stands on the Superior. It has been detected in 41 stands on the SNF during the period of 1991 thru 2005 (J.Lind, personal communication). However, there is no trend information for the SNF contained in their report (NRRI 2004). The report does list the trend for the Chippewa National Forest as significantly decreasing. Surveys conducted on the Whyte and Trail mid-level analysis areas did not detect this species.

(3) Evaluation and Conclusions

Evaluation
Initial GIS analyses do show some a small increase in the habitat indicators for Connecticut warbler. There is a lack of population trend data local to the Superior, but on the neighboring Chippewa National Forest the population trend is shown as significantly decreasing.

Conclusion
Reliable habitat indicator trend data cannot be surmised in such a short period of time. While there is some irregular population inventory data available through NRRI's BBM work, there is currently no local population trend information. Due to this lack of data, no conclusions can be made as to population and habitat relationships on the Forest. Effective implementation of Forest Plan Objectives, Standards and Guides would minimize impacts to this species that may result from management activities on the Forest.

(4) Opportunities to Improve Efficiency and Quality of Monitoring Effort.

Table J.5e Collaboration		
Collaborator/Partner	**Monitoring Activity**	**Accomplishment**
Minnesota NHP	NHIS database	NHIS Database
NRRI	Breeding Bird Monitoring	Annual Report

LECONTE'S SPARROW

Table J.6a Conservation Status Rankings of LeConte's Sparrow[1]						
Common name/ *Scientific name*	**NatureServe**			**USF&WS R3 GLE**	**State of Minnesota**	**Superior NF**
	Global	**National**	**(MN)**			
LeConte's sparrow/ *Ammodramus leconteii*	G4	N3B, N4N	SNRB	RCP	NR	RFSS
1. See Attachment A for a key to status rankings						

(1) Overview Adapted from Forest Plan Revision Biological Evaluation (FPR BE) (USDA Forest Service 2004), pg. 129:

The SNF is at the edge of the species breeding range where suitable habitat likely had patchy distribution. It is known from a wide variety of non-forest and wetland vegetation conditions. Its habitat was likely perpetuated by disturbance such as flood and fire. Historically there were likely fewer acres of habitat for the species than there is today.

The amount of habitat has changed slightly from historical conditions. Timber harvest likely has increased the amount of habitat. The population trend for this species is unknown, but it would appear to be stable in Minnesota. Local populations fluctuate dramatically depending on rainfall.

Amounts of upland open and lowland meadow habitat or potential habitat are expected to remain fairly constant on the Superior in the next 20 years. Because of the finite amount of ecological conditions suitable for this species, it would continue to face a viability risk.

(2) Monitoring Activities

Monitoring Question: To what extent is Forest management contributing to the conservation of sensitive species and moving toward short term (10-20 years) and long-term (100 years) objectives for their habitat conditions?
Monitoring Driver(s): Objective. **FWD. O-WL-18. All sensitive species**. Maintain, protect, or improve habitat for sensitive species. Meeting this objective will involve two basic and complimentary strategies…: a. Landscape level (or coarse filter) management strategies: Addressing species' needs through integrated resource management at large landscape scales...b. Site-level (or fine filter) management strategies: Addressing species' needs by managing specifically for high quality potential habitat or known locations of sensitive species.

Table J.6b 2005 Monitoring Activities			
Applicable Monitoring Activity, Practice, Or Effect Measured	**Methods**	**When Monitored**	**Location or Project Area**
Landscape level Coarse filter	Key Analysis Indicators, GIS and CDS analyses	Fall 05	Forest-wide
Site level Fine filer	BBS, NHIS, NRRI BBM, Site-level surveys	Spring 05	Forest-wide

Landscape Level Monitoring

The FPR BE identifies non-forested wetlands, MIH 1a, MIH 9a, MIH 11, management ignited fire opportunities, and road and trail construction as a Key Analysis Indicators for LeConte's sparrow (Table 3, pg. 14 of FPR BE). These indicators alone do not reflect the actual quantity or quality of suitable LeConte's sparrow habitat, but do provide an index. It is not expected that any significant trends in habitat changes will be able to be surmised at increments of less than 5 years. However, for the purpose of this first Report under the new Forest Plan, an initial attempt will be made. Currently, there are no established methods for tracking on changes and trends in opportunities afforded by management ignited fire activities, or for suitability of habitat due to road and trail construction.

There is no MIH management direction provided at the Forest-wide scale. MIH management direction presented in the Forest Plan is by Landscape Ecosystem (LE). A GIS analysis of CDS stand data frozen in September of 2005 was conducted in the fall of 2005. The results are reflected in Table J.6c below.

Table J.6c Indicators for LeConte's Sparrow			
Forest Plan Revision Existing Condition (ROD date-7/04)[1]	**Current Condition (Sep 2005)[2]**	**Current Condition + Approved NEPA Decisions[2]**	**Projected or Expected Condition Decade 1[1]**
Indicator 1: MIH 1a- Upland forest, young, in % of MIH 1			
13.2%	6.9%	9.3%	10.4%
Indicator 2: MIH 9a-Lowland black spruce–tamarack forest, young, in % of MIH 9			
3.4%	2.1%	2.9%	4.0%
Indicator 3: MIH 11- Management-induced edge (in mi/mi^2)			
Uplands– 2.10 Lowlands- 0.20			Uplands- 0.53 Lowlands- .08
1. Source Data: Land and Resource Management Plan, Ch. 2 Forest-wide Management Direction 2. Source Data: CDS frozen September 2005			

Site Level Monitoring

There are 8 North American Breeding Bird Survey (BBS) routes within SNF proclamation boundaries. Trend data for these individual routes are not available. BBS data that is available for this species are reflected in Table J.6d below.

Table J.6d North American Breeding Bird Survey (BBS) Trend Results for LeConte's Sparrow, in % / year (Sauer et al. 2005)			
Region	**1966-2004**	**1966-1979**	**1980-2004**
Minnesota[1]	+1.6	+5.0	-3.2
N. Spruce-Hardwoods[1,2]	+9.1	-5.7	+8.8
BBS-Wide[1]	-1.5	-0.5	-1.5
1- BBS analysis identifies a deficiency in data (low abundance, small sample size, quite imprecise, or low P value) associated with this species in these regions. 2- The SNF falls within BBS strata 28, northern spruce hardwoods.			

NHIS contains no data for this species. NRRI's Breeding Bird Monitoring effort surveys 169 stands on the Superior. It has not detected LeConte's sparrow on the SNF, however survey points are located primarily in forested areas not occupied by this species. Surveys conducted on the Whyte and Trail mid-level analysis areas did not detect this species.

(3) Evaluation and Conclusions

<u>Evaluation</u>
Initial GIS analyses do show a decrease in the habitat indicators for LeContes's sparrow. There is a lack of population trend data locally. Regional indicators show an increasing trend in this species population.

<u>Conclusion</u>

Reliable habitat indicator trend data cannot be surmised in such a short period of time. There is currently no means of establishing local population trends. Due to this lack of data, no conclusions can be made as to population and habitat relationships on the Forest. Effective implementation of Forest Plan Objectives, Standards and Guides would minimize impacts to this species that may result from management activities on the Forest.

(5) Opportunities to Improve Efficiency and Quality of Monitoring Effort.

Table J.6e Collaboration		
Collaborator/Partner	**Monitoring Activity**	**Accomplishment**
Minnesota NHP	NHIS database	NHIS Database
NRRI	Breeding Bird Monitoring	Annual Report

WOOD TURTLE

Table J.7a Conservation Status Rankings of Wood Turtle[1]						
Common name/ *Scientific name*	**NatureServe**			**USF&WS R3 GLE**	**State of Minnesota**	**Superior NF**
	Global	**National**	**(MN)**			
Wood turtle/ *Glyptemys insculpta* Formerly *Clemmys i.*	G4	N4	S2	NR	T	RFSS
1. See Attachment A for a key to status rankings						

(1) Overview Adapted from Forest Plan Revision Biological Evaluation (FPR BE) (USDA Forest Service 2004), pp. 135 and 136:

Historical population information about the wood turtle is very limited or unavailable. The population was probably larger than it is currently because of less habitat degradation due to recreational activities, road and trail building and illegal collection by humans. Populations of the wood turtle were less isolated historically due to less disturbance of habitat, roads and people. Historically the only habitat that existed on the National Forests is currently covered with water as it is underneath the Whiteface reservoir.

The wood turtle is currently present just south and west of the Superior National Forest along the St. Louis River and in the south end of the Superior National Forest along the Cloquet River . Populations are isolated and may travel 3 miles to find nesting sites. The likelihood of the wood turtle on the National Forests is minimal because of the lack of sandy soils and larger streams. The wood turtle is on the edge of its range on the Superior National Forest and any populations on the Forest would not exist without the populations outside the Forest.

(2) Monitoring Activities

Monitoring Question: To what extent is Forest management contributing to the conservation of sensitive species and moving toward short term (10-20 years) and long-term (100 years) objectives for their habitat conditions?

Monitoring Driver(s): Objectives. **FWD. O-WL-18. All sensitive species**. Maintain, protect, or improve habitat for sensitive species. Meeting this objective will involve two basic and complimentary strategies…: a. Landscape level (or coarse filter) management strategies: Addressing species' needs through integrated resource management at large landscape scales...

b. Site-level (or fine filter) management strategies: Addressing species' needs by managing specifically for high quality potential habitat or known locations of sensitive species.

O-WL-19. Wood turtle. In all known breeding locations maintain or restore high quality breeding habitat and protect nesting areas from predators and negative human impacts. High quality breeding habitat: open sandy areas adjacent to upland and lowland foraging habitats with shade and security over wood. Aquatic riverine habitat features log jams, down logs, wood debris.

Table J.7b 2005 Monitoring Activities			
Applicable Monitoring Activity, Practice, Or Effect Measured	**Methods**	**When Monitored**	**Location or Project Area**
Landscape level Coarse filter	Key Analysis Indicators		
Site level Fine filer	Site-level surveys		

Landscape Level Monitoring

The FPR BE identifies riparian disturbances and road and trail construction as a Key Analysis Indicators for the wood turtle (Table 3, pg. 12 of FPR BE). Currently, there are no established methods for tracking on changes and trends in of either of these indicators. These indicators alone do not reflect the actual quantity or quality of suitable wood turtle habitat, but do provide an index. It is not expected that any significant trends in habitat changes will be able to be surmised at increments of less than 5 years.

A GIS analysis of CDS stand data frozen in September of 2005 was conducted in the fall of 2005. The results are reflected in Table J.7c below.

Table J.7c Indicators for Wood Turtle			
Forest Plan Revision Existing Condition (ROD date-July 2004)[1]	**Current Condition (Sep 2005)[2]**	**Current Condition + Approved NEPA Decisions[2]**	**Projected or Expected Condition Decade 1[1]**
Indicator 1: Riparian disturbances			
~	~	~	~
Indicator 2: Road and trail construction			
~	~	~	~

Site Level Monitoring

NHIS data shows 11 occurrences of wood turtle on the Forest, all on the Laurentian District and primarily along the Cloquet River. Incidental observations in 2005 included a road killed turtle on Highway 2 along the Langley River and another observed along the St. Louis River near Seven Beavers Lake.

(3) Evaluation and Conclusions

Evaluation
There is alack of data with respect to habitat indicators for wood turtle. Population data is limited to scattered observations a project level surveys.

Conclusion
Reliable habitat indicator trend data cannot be surmised in such a short period of time. While there is some initial location data, there is currently no means of establishing population trends. Due to this lack of data, no conclusions can be made as to population and habitat relationships on the Forest. Effective implementation of Forest Plan Objectives, Standards and Guides would minimize impacts to this species that may result from management activities on the Forest.

(4) Opportunities to Improve Efficiency and Quality of Monitoring Effort.

Table J.7d Collaboration		
Collaborator/Partner	Monitoring Activity	Accomplishment
Minnesota NHP	NHIS database	NHIS database

NORTHERN GOSHAWK

Table J.8a Status Rankings of Northern Goshawk[1]						
Common name/ *Scientific name*	NatureServe			USF&WS R3 GLE	State of Minnesota	Superior NF
	Global	National	(MN)			
Northern goshawk *Accipiter gentilis*	G5	N4B, N4N	SNRB, SNRN	RCP	NR	MIS, RFSS
1. See Appendix A for a key to status rankings						

(1) Overview

The northern goshawk (*Accipiter gentilis*) (hereafter goshawk) is listed as both a Management Indicator Species (MIS) and a Regional Forester's Sensitive Species (RFSS) on the Superior National Forest (SNF). The National Forest Management Act (NFMA) states that "Population trends of the management indicator species will be monitored and relationships to habitat changes determined." (36 CFR 219.19 (6)). The Objectives, Standards and Guides for goshawk are identified on pages 2-31, 2-34 and 2-35 of the SNF Land and Resource Management Plan (Forest Plan) (USDA Forest Service 2004) and below.

When the SNF Risk Evaluation was done for this species in 1999, there were no known breeding areas on the Superior and population trend was listed as unknown. In June of 2002, the SNF issued a Monitoring Report and Initial Habitat Review (MRIHR) for the Northern Goshawk (USDA Forest Service 2002). This report provided a baseline for monitoring of goshawk populations and habitat within the SNF under the 1986 Forest Plan (USDA Forest Service 1986). At that time there were 6 known nest sites within the SNF. Habitat evaluations between the MRIHR (2002 data) and the 2003 M&E Report Addendum showed a decrease of 2% in suitable upland habitat for goshawk Forest-wide (outside the BWCAW). Habitat parameters for identifying suitable upland goshawk data have been updated in the 2004 Forest Plan are not comparable to data in the MRIHR or 2003 M&E Report Addendum. The

current Forest Plan provides a new baseline for which to monitor goshawk populations and habitat within the SNF. MN DNR Natural Heritage Information System (NHIS) Rare Features Database (RFD) data show 9 known breeding territories (MN DNR 2005) within SNF proclamation boundaries. It is important to note that not all breeding territories are active every year.

Kennedy and Anderson (2004) found that there is a lack of population data and information about goshawk-habitat relations, and existing data are few and have limited applicability to [Western Great Lakes] conservation and monitoring of the breeding goshawk population. Squires and Reynolds (1997) identified timber harvest as the principal threat to breeding populations.

The BBS analysis identifies an important deficiency in data (very low abundance, very small sample size, or very imprecise) associated with this species in Minnesota, BBS strata 28-northern spruce hardwoods (the SNF falls within this strata), and survey-wide and is therefore not presented here. NRRI's Breeding Bird Monitoring Report contains no information on northern goshawk as their survey is not designed to monitor this species. This species has been detected on an irregular basis during Christmas Bird Counts (CBC) conducted on the Isabella, Aurora and Two Harbors circles (National Audubon Society 2005).

Several studies of goshawk have been conducted in Minnesota and on the Superior since 1998. Table J.8b shows a compilation of data from 3 reports on breeding and reproductive success of goshawks in Minnesota.

Table J.8b Northern Goshawk Known Breeding Areas in Minnesota (from Boal et al 2001, Smithers 2002, and Solensky 2003)						
	1998	1999	2000	2001*	2002	2003
# of Breeding Areas Surveyed	15	22	31		38	53
# of Breeding Areas Occupied	15	19	21		17	34
# of Nests Found	15	16	15		17	24
Total Young Fledged	21	13[1]	14		16[2]	26[3]
*- No known surveys were conducted in 2001 1- Fledgling numbers not available for 3 nest sites. 2- For 2 nest sites, number fledged reported as ≥1. 3- For 7 nest sites, number fledged reported as ≥1						

In the spring of 2001, Andersen and Boal (2001) surveyed 683 km^2 of the Superior National Forest with protocol surveys. Goshawks were detected at 4 locations. This survey has not been duplicated since. Goshawk surveys have been conducted at the project level on the Forest resulting in new detections and nest locations.

(2) Monitoring Activities

Monitoring Question: What are the population trends of management indicator species?
Monitoring Driver(s): 36 CFR 219.19(a)(6). Population trends of the management indicator species will be monitored and relationships to habitat changes determined. This monitoring will be done in cooperation with state fish & wildlife agencies, to the extent practicable.

Monitoring Question: To what extent is Forest management contributing to the conservation of sensitive species and moving toward short term (10-20 years) and long-term (100 years) objectives for their habitat conditions?
Monitoring Driver(s): Objective. FWD. O-WL-18. All sensitive species. Maintain, protect, or improve habitat for sensitive species. Meeting this objective will involve two basic and complimentary strategies…: a. Landscape level (or coarse filter) management strategies: Addressing species' needs through integrated resource management at large landscape scales... b. Site-level (or fine filter)

management strategies: Addressing species' needs by managing specifically for high quality potential habitat or known locations of sensitive species.

Monitoring Question: To what extent is Forest management moving toward short term (10-15 years) and long-term (100 years) objectives for habitat conditions for management indicator species and species associated with management indicator habitats?

Monitoring Driver(s): Objective. FWD. O-WL-31. Northern goshawk. Provide habitat to provide for population goal minimum: 20-30 breeding pairs.

2005 Accomplishment

J.8c 2005 Monitoring Activities			
Applicable Monitoring Activity, Practice, Or Effect Measured	**Methods**	**When Monitored**	**Location or Project Area**
Population trends and habitat change relationships	Insufficient data		Forest-wide
Landscape level Coarse filter	Key Analysis Indicators, GIS and CDS analyses	Fall 05	Forest-wide
Site level Fine filter Breeding pairs	NHIS, XXXX survey methodology (citation) to survey mid-level project areas and known locations, and to follow up on responses to those surveys	Spring 05	Dunka Echo Trail Inga-South East Side Thinning Devil Trout Upper Temperance Whyte Known locations

A GIS analysis of CDS stand data frozen in September of 2005 was conducted in the fall of 2005.

Surveys were conducted on 7 mid-level and project areas, and 7 known breeding territories. There were 7 active territories and breeding activity was confirmed at several sites. No new nests were discovered. Six fledglings were reported.

Table J.8d Monitoring of Known Northern Goshawk Territories on the SNF (Crozier and Hamady 2005)						
	2000	**2001**	**2002**	**2003**	**2004**	**2005**
# of Territories Surveyed	2	5	7	10	18	20
# of Territories Occupied	2	4	4	8	13	14
# of Nests Found	2	4	4	5	10	10
Known # Young Fledged[1]	2	3	4+	3+	10	6
1. Follow up surveys to determine fledging could not always be accomplished due to manpower and funding constraints, nor could exact number of fledglings always be determined.						

(3) Evaluation and Conclusions. *Achievement of Desired Conditions & Objectives.*

Desired Conditions/Objectives

The Forest Plan Revision Biological Evaluation (FPR BE) (USDA Forest Service 2004) identifies MIH 1b, MIH 13 and Stand Complexity as Key Analysis Indicators for goshawk (Table 3, pg. 12 of FPR BE). The FPR BE and the FEIS also identify MIH 1b in stands >100 acres as a goshawk indicator. These indicators alone do not reflect the actual quantity or quality of suitable goshawk habitat, but do

provide an index. Currently, there are no established methods for tracking on changes and trends in stand complexity.

Table J.8e Indicators for Northern Goshawk					
	Forest Plan Revision Existing Condition (ROD date-July 2004)[1]	Current Condition (Sep 2005)	Difference Between FPR Existing Condition AND Current Condition	Trend[2]	FEIS Projected or Expected Condition Decade 1[1]
Indicator 1: Mature Forest Availability- MIH 1b (in percent of upland forest acres)					
SNF	55%	57%	+2%	M	48%
SNF+BWCAW	51%				47%
Indicator 2: Patch Size-100 acre or larger mature/older upland forest patches (in acres (# of patches))					
SNF	399,700 (911)				346,700 (834)
SNF+BWCAW	987,900 (1,257)				934,900 (1,180)
Indicator 2a: Large Patch Size-MIH 13 300 acres (in acres (number of patches))					
SNF	297,300 (298)				246,500 (248)
SNF+BWCAW	876,900 (469)				826,100 (419)
Indicator 3: Stand Complexity					
~	~	~	~	~	~
1. Source: FEIS, Tables WNG-1 page 3.3.6-4, WNG-3 page 3.3.6-6, and FSP-2 page 3.2-58. 2. + = increasing, - = decreasing, M = maintaining 3. O-WL-31					

There is no MIH management direction provided at the Forest-wide scale. MIH management direction presented in the Forest Plan is by Landscape Ecosystem (LE). Objectives listed below are for O-WL-31.

TableJ.8f Objectives for Northern Goshawk					
	Forest Plan Revision Existing Condition (ROD date-July 2004)[1]	Current Condition (Sep 2005)	Difference Between FPR Existing Condition AND Current Condition	Trend[2]	Forest Plan Objective Minimums Decade 1[4]
Objective 1: Habitat to support 20-30 breeding pairs minimum[3] (in % of upland forest acres)					
MIH 1b	55%	57%			20-30%
MIH 1 Young					7-10%
MIH 1 Sapling/pole		10%			7-10%
Objective 2: 20-30 breeding pairs minimum[3]					
SNF	6[5]	7	+1	+	20-30 minimum
1. Source: FEIS Table WNG-1 page 3.3.6-4, and Table FSP-2 page 3.2-58. 2. + = increasing, - = decreasing, M = maintaining 3. O-WL-31 4. 5.					

Evaluation

It is not expected that any significant trends in habitat changes will be able to be surmised at increments of less than 5 years. However, for the purpose of this first Report under the new Forest Plan, an initial attempt will be made as to Evaluation and Conclusion.

Indicators:

MIH 1b- GIS analysis shows a slight increase in the amount of this indicator Forest-wide. Although current data shows the Superior exceeds Decade 1 objectives, the amount of mature/old forest in MIH 1 is expected to decrease in decades 1 and 2 (FEIS p. 3.3.1-38). The amount of MIH 1b in the BWCAW is expected to remain relatively constant with the only changes taking place due to natural disturbances and/or succession.

MIH 1 Patches >100 acres-

MIH 13- GIS analysis shows a slight increase in the amount of this indicator Forest-wide. The amount of MIH 13 in the BWCAW is expected to remain relatively constant with the only changes taking place due to natural disturbances and/or succession.

Stand Complexity-

Objectives:

Habitat for 20-30 breeding pairs minimum-

Breeding Pairs- It is not expected that all known breeding areas will be able to be monitored annually due to man power and budgetary constraints. Therefore, the number of known breeding pairs per year will vary depending on how many known territories are surveyed and nests found and whether or not follow up surveys were able to be conducted. 2005 survey efforts showed an increase of known breeding pairs over those known in 2003.

Conclusion

Goshawk habitat indicators are slightly below Forest Plan Desired Condition. The number of known breeding pairs of goshawk on the Forest is well below the Objective minimum of 20-30. At this time it is unknown how the habitat indicators correlate with the number of breeding pairs of goshawk, either on the Forest or range-wide. Because so little is known about goshawk populations and habitat requirements and inter-relationships, there can be no conclusions as to population trends and relationships to habitat changes.

TAIGA ALPINE BUTTERFLY

Table J.9a Conservation Status Rankings of Taiga Alpine[1]						
Common name/ *Scientific name*	**NatureServe**			**USF&WS** **R3 GLE**	**State of** **Minnesota**	**Superior** **NF**
	Global	**National**	**(MN)**			
Taiga alpine/ *Erebia mancinus* *Formerly E. disa mancinus*	G5	N1	S3	NR	SSC	RFSS
1. See Attachment A for a key to status rankings						

(1) Overview Adapted from Forest Plan Revision Biological Evaluation (FPR BE) (USDA Forest Service 2004), pp. 169 and 170:

The Superior National Forest is at the extreme southern edge of the species' holarctic range in North America. Within much of its range the taiga alpine is described as common, but local. The species is associated with semi-open to well-forested black spruce-tamarack sphagnum bogs. The combination of environmental conditions (including climatic conditions) and low or isolated populations (probable result of species being at extreme south edge of range) suggests that suitable habitat on the Superior has likely always been widespread but patchy. No information is available on historical condition of taiga alpine populations.

Currently on the Superior National Forest there are four documented locations of taiga alpine. It is likely to occur widely within the large peatlands northwest of the Sand Lake, but the status of the species there and throughout much of the Superior is largely unknown due to lack of extensive searches.

Activities that decrease suitable habitat include timber harvest, management-ignited fire, or road construction and use in black spruce-tamarack forest or any other activity that may alter hydrologic conditions of wetland forests habitat. Changes due to timber harvest or fire are relatively long-term as forests take up to 60 years to become mature again. Road construction or hydrological changes can be either short-term (5-10 years) or long-term (greater than 10 years). Changes to potential suitable habitat within the BWCAW would result primarily from fire or blow down.

(2) Monitoring Activities

Monitoring Question: To what extent is Forest management contributing to the conservation of sensitive species and moving toward short term (10-20 years) and long-term (100 years) objectives for their habitat conditions?

Monitoring Driver(s): Objectives. FWD. O-WL-18. All sensitive species. Maintain, protect, or improve habitat for sensitive species. Meeting this objective will involve two basic and complimentary strategies…: a. Landscape level (or coarse filter) management strategies: Addressing species' needs through integrated resource management at large landscape scales... b. Site-level (or fine filter) management strategies: Addressing species' needs by managing specifically for high quality potential habitat or known locations of sensitive species.

O-WL-26. Sensitive butterflies. In all known breeding locations, maintain or restore high quality habitat for: … Taiga alpine: semi-open to well-forested lowland black spruce-tamarack.

Table J.9b 2005 Monitoring Activities			
Applicable Monitoring Activity, Practice, Or Effect Measured	**Methods**	**When Monitored**	**Location or Project Area**
Landscape level Coarse filter	Key Analysis Indicators, GIS & CDS analyses	Fall 2005	Forest-wide
Site level Fine filer	Site-level surveys, private butterfly groups	Summer 05	Devil-Trout, McNair

Landscape Level Monitoring

The FPR BE identifies MIH 9b as a Key Analysis Indicator for the taiga alpine (Table 3, pg. 16 of FPR BE). This indicator alone does not reflect the actual quantity or quality of suitable taiga alpine habitat, but does provide an index. It is not expected that any significant trends in habitat changes will be able to be surmised at increments of less than 5 years. However, for the purpose of this first Report under the new Forest Plan, an initial attempt will be made.

There is no MIH management direction provided at the Forest-wide scale. MIH management direction presented in the Forest Plan is by Landscape Ecosystem (LE). A GIS analysis of CDS stand data frozen in September of 2005 was conducted in the fall of 2005. The results are reflected in Table J.9c below.

Table J.9c Indicators for Taiga Alpine			
Forest Plan Revision Existing Condition (ROD date-July 2004)[1]	**Current Condition (Sep 2005)[2]**	**Current Condition + Approved NEPA Decisions[2]**	**Projected or Expected Condition Decade 1[1]**
Indicator 1: MIH 9b, Lowland black spruce-tamarack forest, mature+, in % of MIH 9			
84.7%	86.1%	85.2%	86.8%
1. Source Data: Land and Resource Management Plan, Ch. 2 Forest-wide Management Direction 2. Source Data: CDS frozen September 2005			

Site Level Monitoring

NHIS data shows no occurrences of taiga alpine on the Forest. Surveys conducted in the Devil Trout mid-level analysis area and the McNair butterfly site on the Laurentian District in 2005 did not document any occurrences for this species.

(3) Evaluation and Conclusions

Evaluation
Initial GIS analyses do show a small change in the relative amount of MIH 9b Forest-wide with no clear increase or decrease. Since this species has not been detected on the Forest and other population data is lacking, there can be no conclusions made as to population levels or trends.

Conclusion
Reliable habitat indicator trend data cannot be surmised in such a short period of time. There is a lack of population data for this species. Due to this lack of data, no conclusions can be made as to population and habitat relationships on the Forest. Effective implementation of Forest Plan Objectives, Standards and Guides would minimize impacts to this species that may result from management activities on the Forest.

(4) Opportunities to Improve Efficiency and Quality of Monitoring Effort.

Table J.9d Collaboration		
Collaborator/Partner	**Monitoring Activity**	**Accomplishment**
Minnesota NHP	NHIS database	NHIS database

RED-DISKED ALPINE BUTTERFLY

Table J.10a Conservation Status Rankings of Red-disked Alpine[1]						
Common name/ *Scientific name*	**NatureServe**			**USF&WS R3 GLE**	**State of Minnesota**	**Superior NF**
	Global	**National**	**(MN)**			
Red-disked alpine/ *Erebia discoidalis*	G5	N4N5	S4	NR	NR	RFSS
1. See Attachment A for a key to status rankings						

(1) Overview Adapted from Forest Plan Revision Biological Evaluation (FPR BE) (USDA Forest Service 2004), pg. 173:

The Superior National Forest is near the southern edge of the species' holarctic range in North America. Throughout much of its range the species is quite widespread, although uncommon and intensely local. The species is associated with a fairly wide variety of habitats from large sphagnum bogs with abundant cotton-grass, grassy meadows, spruce bogs, and sedge marshes to a wide variety of open upland and wetland habitats. The combination of environmental conditions (including climatic conditions) and low or isolated populations (probable result of species being at south edge of range) suggests that suitable habitat on the Superior has likely always been widespread but patchy. No information is available on historical condition of red-disked alpine populations. Currently on the Superior National Forest there are seven documented locations of red-disked alpine. It is likely that there are additional locations, but the status of the species and its habitat relationships at the edge of it range in Minnesota are still unknown. The known locations are associated with small to fairly large, open ericaceous or sphagnum-dominated bogs with abundant cotton grass and scattered spruce or tamarack as well as semi-open young to mature black spruce forests. These habitats have probably

not changed much from historical times, although direct and indirect positive and negative impacts due to a limited amount of timber harvest and road or trail building and indirect impacts from timber harvesting probably occurred. At one site, red-disked alpines were observed flying in a narrow open boggy right-of-way corridor bordered by dense black spruce forest. Construction of the corridor appears to have created the favorable habitat. Activities that both decrease and increase suitable habitat include timber harvest, management-ignited fire, or road construction and use in black spruce-tamarack forest or any other activity that may alter hydrologic conditions of wetland forests habitat.

(2) Monitoring Activities

Monitoring Question: To what extent is Forest management contributing to the conservation of sensitive species and moving toward short term (10-20 years) and long-term (100 years) objectives for their habitat conditions?

Monitoring Driver(s): Objectives. FWD. O-WL-18. All sensitive species. Maintain, protect, or improve habitat for sensitive species. Meeting this objective will involve two basic and complimentary strategies…:a. Landscape level (or coarse filter) management strategies: Addressing species' needs through integrated resource management at large landscape scales... b.Site-level (or fine filter) management strategies: Addressing species' needs by managing specifically for high quality potential habitat or known locations of sensitive species.

Table J.10b 2005 Monitoring Activities			
Applicable Monitoring Activity, Practice	**Methods**	**When Monitored**	**Location or Project Area**
Landscape level Coarse filter	Key Analysis Indicators, GIS & CDS analyses	Fall 2005	Forest-wide
Site level Fine filer	Site-level surveys, private butterfly groups	Summer 05	Devil-Trout, McNair

Landscape Level Monitoring

The FPR BE identifies MIH 9b and non-forest wetland as a Key Analysis Indicators for the Red-disked alpine (Table 3, pg. 16 of FPR BE). These indicators alone do not reflect the actual quantity or quality of suitable Red-disked alpine habitat, but do provide an index. It is not expected that any significant trends in habitat changes will be able to be surmised at increments of less than 5 years. However, for the purpose of this first Report under the new Forest Plan, an initial attempt will be made. Currently, there are no established methods for tracking on changes and trends in non-forest wetlands.

There is no MIH management direction provided at the Forest-wide scale. MIH management direction presented in the Forest Plan is by Landscape Ecosystem (LE). A GIS analysis of CDS stand data frozen in September of 2005 was conducted in the fall of 2005. The results are reflected in Table J.10c below.

Table J.10c Indicators for Red-disked Alpine			
Forest Plan Existing Condition (ROD date-7/04)[1]	**Current Condition (Sep 2005)[2]**	**Current Condition + Approved NEPA Decisions[2]**	**Projected or Expected Condition Decade 1[1]**
Indicator 1: MIH 9b, Lowland black spruce-tamarack forest, mature+, in % of MIH 9			
84.7%	86.1%	85.2%	86.8%
1. Source Data: Land and Resource Management Plan, Ch. 2 Forest-wide Management Direction 2. Source Data: CDS frozen September 2005			

Site Level Monitoring

NHIS data shows no occurrences of red-disked alpine on the Forest. Surveys conducted in the Devil Trout mid-level analysis area and the McNair butterfly site on the Laurentian District in 2005 did not document any occurrences for this species.

(3) Evaluation and Conclusions

Evaluation
Initial GIS analyses do show a small change in the relative amount of MIH 9b Forest-wide with no clear increase or decrease. Since this species has not been detected on the Forest and other population data is lacking, there can be no conclusions made as to population levels or trends.

Conclusion
Reliable habitat indicator trend data cannot be surmised in such a short period of time. There is a lack of population data for this species. Due to this lack of data, no conclusions can be made as to population and habitat relationships on the Forest. Effective implementation of Forest Plan Objectives, Standards and Guides would minimize impacts to this species that may result from management activities on the Forest.

(4) Opportunities to Improve Efficiency and Quality of Monitoring Effort.

Table J.10d Collaboration		
Collaborator/Partner	**Monitoring Activity**	**Accomplishment**
Minnesota NHP	NHIS database	NHIS database

NABAKOV'S NORTHERN BLUE BUTTERFLY

Table J.11a Conservation Status Rankings of Nabakov's Northern Blue[1]						
Common name/ *Scientific name*	**NatureServe**			**USF&WS R3 GLE**	**State of Minnesota**	**Superior NF**
	Global	**National**	**(MN)**			
Nabakov's northern blue/ *Plebejus idas nabakovi* *Formerly Lycaeides i.n.*	G5TU[2]	N1N3	S3	NR	SSC	RFSS
1. See Attachment A for a key to status rankings 2. TU indicates that the infra-specific taxon of *nabakovi* is un-rankable globally. NatureServe ratings for species *Plebejus idas* is G5 N5 SNR.						

(1) Overview Adapted from Forest Plan Revision Biological Evaluation (FPR BE) (USDA Forest Service 2004), pg. 176:

On the Superior National Forest, Nabokov's northern blue butterfly is at the southern edge of its holarctic range in North America. The species is associated with its exclusive larval host plant dwarf bilberry (*Vaccinium cespitosum*) in cool, well-drained sandy areas under coniferous forests, especially jack pine of the Vermilion Moraine (narrow band that extends through western Cook and central St. Louis Counties). The combination of environmental conditions (including climatic and soil conditions) and low or isolated populations suggests that suitable habitat on the Superior has been most likely isolated and of very low abundance. Past wildfires in jack pine stands on shallow soils may have maintained habitat by keeping stands open enough to allow dwarf bilberry, to thrive at different times and in different patches across the landscape. Adults could have dispersed occasionally to colonize new patches of habitat. There is no information on the historical population status of this species. Past

vegetation management such as logging has decreased the overall amount of jack pine forest and landscape fire suppression has probably increased the amount of older jack pine in areas of suitable habitat in the BWCAW. This would represent a decrease in suitable habitat for this butterfly from historical times. However, outside the BWCAW, timber harvest in conifer stands also might have maintained or increased locally the amount of suitable habitat for northern blue. For example, timber harvest in the vicinity of the Lima Mountain populations north of Grand Marais could have helped to sustain the populations by maintaining patches of dwarf bilberry and preventing the encroachment of woody plants and dense vegetation. Currently on the Superior National Forest there are eight documented locations of northern blue butterfly. These sites may represent a significant proportion of the population of this species in Minnesota Not all young jack pine on the Superior National Forest would be suitable for this species because of patchy distribution of bilberry or lack of required soils and climate characteristics. The species also is known to occur in other upland conifer forests, and in some cases in inclusions in aspen forest. However, young jack pine can indicate likely general trends to northern blue's habitat over time. Uncertainty remains until further surveying and study of population status and habitat relationships is conducted.

(2) Monitoring Activities

Monitoring Question: To what extent is Forest management contributing to the conservation of sensitive species and moving toward short term (10-20 years) and long-term (100 years) objectives for their habitat conditions?

Monitoring Driver(s): Objectives. FWD. O-WL-18. All sensitive species. Maintain, protect, or improve habitat for sensitive species. Meeting this objective will involve two basic and complimentary strategies…: a. Landscape level (or coarse filter) management strategies: Addressing species' needs through integrated resource management at large landscape scales... b. Site-level (or fine filter) management strategies: Addressing species' needs by managing specifically for high quality potential habitat or known locations of sensitive species.

O-WL-27. Nabokov's northern blue. In eight known breeding locations, maintain or restore high quality habitat: well-drained sandy gravelly areas under fairly open coniferous forests, especially jack pine of the Vermilion Moraine. Associated with its exclusive larval host dwarf bilberry.

Table J.11b 2005 Monitoring Activities			
Applicable Monitoring Activity, Practice, Or Effect Measured	**Methods**	**When Monitored**	**Location or Project Area**
Landscape level Coarse filter	Key Analysis Indicators, GIS & CDS analyses	Fall 2005	Forest-wide
Site level Fine filer	Site-level surveys, private butterfly groups	Summer 05	Devil-Trout, Trail, McNair

Landscape Level Monitoring

The FPR BE identifies MIH 8a as a Key Analysis Indicator for the Nabakov's northern blue (Table 3, pg. 16 of FPR BE (typographical error in this table, MIH 6a should read MIH 8a, see page 176 of FPR BE)). This indicator alone does not reflect the actual quantity or quality of suitable Nabakov's northern blue habitat, but does provide an index. It is not expected that any significant trends in habitat changes will be able to be surmised at increments of less than 5 years. However, for the purpose of this first Report under the new Forest Plan, an initial attempt will be made.

There is no MIH management direction provided at the Forest-wide scale. MIH management direction presented in the Forest Plan is by Landscape Ecosystem (LE). A GIS analysis of CDS stand data frozen in September of 2005 was conducted in the fall of 2005. The results are reflected in Table J.11c below.

J.11c Indicators for Nabakov's Northern Blue			
Forest Plan Existing Condition (ROD date- July 2004)[1]	Current Condition (Sep 2005)[2]	Current Condition + Approved NEPA Decisions[2]	Projected or Expected Condition Decade 1[1]
Indicator 1: MIH 8a, Jack pine forest, young, in % of MIH 1			
1.0%	0.6%	1.0%	3.6%
1. Source Data: Land and Resource Management Plan, Ch. 2 Forest-wide Management Direction 2. Source Data: CDS frozen September 2005			

Site Level Monitoring

NHIS data shows 9 occurrences of Nabakov's northern blue on the Forest. Surveys in the Devil-Trout mid-level analysis area yielded 2 new occurrences of Nabakov's northern blue. There were no detections in the Trail mid-level analysis area. Surveys in the McNair butterfly area detected 21 individuals.

(3) Evaluation and Conclusions

Evaluation
Initial GIS analyses do show a small change in the relative amount of MIH 8a Forest-wide with no clear increase or decrease. There are a few know occurrences of this species on the Forest, but there can be no conclusions made as to population levels or trends.

Conclusion
Reliable habitat indicator trend data cannot be surmised in such a short period of time. While there is some initial population inventory data available, there is currently no means of establishing population trends. Due to this lack of data, no conclusions can be made as to population and habitat relationships on the Forest. Effective implementation of Forest Plan Objectives, Standards and Guides would minimize impacts to this species that may result from management activities on the Forest.

(4) Opportunities to Improve Efficiency and Quality of Monitoring Effort.

Table J.11d Collaboration		
Collaborator/Partner	Monitoring Activity	Accomplishment
Minnesota NHP	NHIS database	NHIS database

JUTTA ARCTIC BUTTERFLY

Table J.12a Conservation Status Rankings of Jutta Arctic[1]						
Common name/ *Scientific name*	NatureServe			USF&WS R3 GLE	State of Minnesota	Superior NF
	Global	National	(MN)			
Jutta arctic/ *Oenis jutta ascerta*	G5T4[2]	N2N3	S4	NR	NR	RFSS
1. See Attachment A for a key to status rankings 2. T4 indicates that the infra-specific taxon of *ascerta* is apparently secure globally.						

(1) Overview Adapted from Forest Plan Revision Biological Evaluation (FPR BE) (USDA Forest Service 2004), pp. 170 and 179:

The Superior National Forest is near the southern edge of the species' holarctic range in North America (it is also found further south to Pine and Aitken Counties). The species is associated with semi-open to well-forested black spruce-tamarack bogs as well as bog openings, edges and adjacent trails or roads The combination of environmental conditions (including climatic conditions) and low or isolated populations suggests that suitable habitat on the Superior has likely always been widespread but patchy. No information is available on historical condition of jutta arctic populations. The amount of suitable habitat probably has decreased slightly from historical conditions on the Superior as a result of timber harvest in lowland black spruce forest habitat over the last century. Currently on the Superior National Forest there are at least seven documented locations of jutta arctic. However, the species is likely more common than records indicate. Because of the similarity in habitat use between the jutta arctic and the taiga alpine, the indicator of effects (MIH 9b – lowland black spruce-tamarack mature and older forest) and analysis for the taiga alpine serves also for the jutta arctic. [From taiga alpine:] Activities that decrease suitable habitat include timber harvest, management-ignited fire, or road construction and use in black spruce-tamarack forest or any other activity that may alter hydrologic conditions of wetland forests habitat. Changes due to timber harvest or fire are relatively long-term as forests take up to 60 years to become mature again. Road construction or hydrological changes can be either short-term (5-10 years) or long-term (greater than 10 years). Changes to potential suitable habitat within the BWCAW would result primarily from fire or blowdown.

(2) Monitoring Activities

Monitoring Question: To what extent is Forest management contributing to the conservation of sensitive species and moving toward short term (10-20 years) and long-term (100 years) objectives for their habitat conditions?

Monitoring Driver(s): Objectives. FWD. O-WL-18. All sensitive species. Maintain, protect, or improve habitat for sensitive species. Meeting this objective will involve two basic and complimentary strategies…: a. Landscape level (or coarse filter) management strategies: Addressing species' needs through integrated resource management at large landscape scales... b. Site-level (or fine filter) management strategies: Addressing species' needs by managing specifically for high quality potential habitat or known locations of sensitive species.

O-WL-26. Sensitive butterflies. In all known breeding locations, maintain or restore high quality habitat for: … Jutta arctic: moderately forested black spruce bogs with sedges, bog forest openings, and edges/

Table J.12b 2005 Monitoring Activities			
Applicable Monitoring Activity, Practice, Or Effect Measured	**Methods**	**When Monitored**	**Location or Project Area**
Landscape level Coarse filter	Key Analysis Indicators, GIS & CDS analyses	Fall 2005	Forest-wide
Site level Fine filer	Site-level surveys, private butterfly groups	Summer 05	Devil-Trout, Trail, McNair

Landscape Level Monitoring

The FPR BE identifies MIH 9b and non-forest wetland as a Key Analysis Indicators for the Jutta arctic (Table 3, pg. 16 of FPR BE). These indicators alone do not reflect the actual quantity or quality of suitable Jutta arctic habitat, but do provide an index. It is not expected that any significant trends in habitat changes will be able to be surmised at increments of less than 5 years. However, for the purpose of this first Report under the new Forest Plan, an initial attempt will be made. Currently, there are no established methods for tracking on changes and trends in non-forest wetlands.

There is no MIH management direction provided at the Forest-wide scale. MIH management direction presented in the Forest Plan is by Landscape Ecosystem (LE). A GIS analysis of CDS stand data frozen in September of 2005 was conducted in the fall of 2005. The results are reflected in Table J12c below.

Table J.12c Indicators for Jutta arctic			
Forest Plan Existing Condition (ROD date-July 2004)[1]	Current Condition (Sep 2005)[2]	Current Condition + Approved NEPA Decisions[2]	Projected or Expected Condition Decade 1[1]
Indicator 1: MIH 9b, Lowland black spruce-tamarack forest, mature+, in % of MIH 9			
84.7%	86.1%	85.2%	86.8%
1. Source Data: Land and Resource Management Plan, Ch. 2 Forest-wide Management Direction 2. Source Data: CDS frozen September 2005			

Site Level Monitoring

NHIS data shows no occurrences of jutta arctic on the Forest. Surveys conducted in the Devil Trout mid-level analysis area and the McNair butterfly site on the Laurentian District in 2005 did not document any occurrences for this species.

(3) Evaluation and Conclusions

Evaluation
Initial GIS analyses do show a small change in the relative amount of MIH 9b Forest-wide with no clear increase or decrease. Since this species has not been detected on the Forest and other population data is lacking, there can be no conclusions made as to population levels or trends.

Conclusion
Reliable habitat indicator trend data cannot be surmised in such a short period of time. There is a lack of population data for this species. Due to this lack of data, no conclusions can be made as to population and habitat relationships on the Forest. Effective implementation of Forest Plan Objectives, Standards and Guides would minimize impacts to this species that may result from management activities on the Forest.

(4) Opportunities to Improve Efficiency and Quality of Monitoring Effort.

Table J.12d Collaboration		
Collaborator/Partner	Monitoring Activity	Accomplishment
Minnesota NHP	NHIS database	NHIS database

FREIJA'S GRIZZLED SKIPPER BUTTERFLY

Table J.13a Conservation Status Rankings of Freija's Grizzled Skipper[1]						
Common name/ *Scientific name*	NatureServe			USF&WS R3 GLE	State of Minnesota	Superior NF
	Global	National	(MN)			
Freija's grizzled skipper/ *Pygus centaurae freija*	G5T4T5	NU	S3	NR	SSC	RFSS
1. See Attachment A for a key to status rankings 2. T4T5 indicates that the infra-specific taxon of *freija* is apparently secure to secure globally.						

(1) Overview Adapted from Forest Plan Revision Biological Evaluation (FPR BE) (USDA Forest Service 2004), pp. 182 and 183:

The Superior National Forest is at the extreme southern edge of the species' holarctic range in North America. Within much of its range the Freija's grizzled skipper is described as common, but local. The

species is associated with open upland grassy habitats. The combination of environmental conditions (including climatic conditions) and very low or isolated populations (probable result of species being at extreme south edge of range) suggests that suitable habitat on the Superior has likely always been very isolated and patchy. No information is available on historical condition of Frieja's grizzled skipper populations. The one sighting of this butterfly on the Forest is also the only know location in the lower 48 States. The habitat needs for this insect in Minnesota, therefore, are not well understood. The occurrence at the McNair site is similar to habitats described for the species in other parts of its range: upland acidic meadow. This habitat has probably not changed significantly from historical conditions. Indirect impacts to potentially suitable habitat could occur from ATV use (trampling), and vegetation management (timber and fire management activities may directly and indirectly negatively or positively impact potential habitat by either creating or removing suitable habitat).

(2) Monitoring Activities

Monitoring Question: To what extent is Forest management contributing to the conservation of sensitive species and moving toward short term (10-20 years) and long-term (100 years) objectives for their habitat conditions?

Monitoring Driver(s): Objectives. FWD. O-WL-18. All sensitive species. Maintain, protect, or improve habitat for sensitive species. Meeting this objective will involve two basic and complimentary strategies…: a. Landscape level (or coarse filter) management strategies: Addressing species' needs through integrated resource management at large landscape scales... b. Site-level (or fine filter) management strategies: Addressing species' needs by managing specifically for high quality potential habitat or known locations of sensitive species.

O-WL-26. Sensitive butterflies. In all known breeding locations, maintain or restore high quality habitat for: … Jutta arctic: moderately forested black spruce bogs with sedges, bog forest openings, and edges/

Table J.13b 2005 Monitoring Activities			
Applicable Monitoring Activity, Practice, Or Effect Measured	**Methods**	**When Monitored**	**Location or Project Area**
Landscape level Coarse filter	Key Analysis Indicators, GIS & CDS analyses	Fall 2005	Forest-wide
Site level Fine filer	Site-level surveys, private butterfly groups	Summer 05	McNair

Landscape Level Monitoring

The FPR BE identifies non-forest as a Key Analysis Indicators for the Freija's grizzled skipper (Table 3, pg. 16 of FPR BE). This indicator alone does not reflect the actual quantity or quality of suitable Freija's grizzled skipper habitat, but does provide an index. Currently, there is no established method for tracking on changes and trends in non-forest. It is not expected that any significant trends in habitat changes will be able to be surmised at increments of less than 5 years.   There is no MIH management direction provided at the Forest-wide scale. MIH management direction presented in the Forest Plan is by Landscape Ecosystem (LE) and can be found in Section XX of this Report. A GIS analysis of CDS stand data frozen in September of 2005 was conducted in the fall of 2005. The results are reflected in Table j.13c below.

Table J.13c Indicators for Freija's grizzled skipper			
Forest Plan Condition (ROD date-July 2004)[1]	**Current Condition (Sep 2005)[2]**	**Current Condition + Approved NEPA Decisions[2]**	**Projected or Expected Condition Decade 1[1]**
Indicator 1: Non-forest.			
~	~	~	~

Site Level Monitoring

NHIS data shows no occurrences of Freija's grizzled skipper on the Forest. Surveys conducted in the McNair butterfly site on the Laurentian District in 2005 did not document any occurrences for this species.

(3) Evaluation and Conclusions

Evaluation

No habitat indicator is available for this species on the Forest. Since this species has not been detected on the Forest and other population data is lacking, there can be no conclusions made as to population levels or trends.

Conclusion

Reliable habitat indicator trend data cannot be surmised in such a short period of time. There is a lack of population data for this species. Due to this lack of data, no conclusions can be made as to population and habitat relationships on the Forest. Effective implementation of Forest Plan Objectives, Standards and Guides would minimize impacts to this species that may result from management activities on the Forest.

(4) Opportunities to Improve Efficiency and Quality of Monitoring Effort.

Table J.13d Collaboration		
Collaborator/Partner	**Monitoring Activity**	**Accomplishment**
Minnesota NHP	NHIS database	NHIS database

TIGER BEETLE

Table J.14a Conservation Status Rankings of Tiger Beetle[1]						
Common name/ *Scientific name*	**NatureServe**			**USF&WS R3 GLE**	**State of Minnesota**	**Superior NF**
	Global	**National**	**(MN)**			
Laurentian Tiger beetle/ *Cicindella denikei*	G3G4	NNR	S2	NR	T	RFSS
1. See Attachment A for a key to status rankings						

(1) Overview Adapted from Forest Plan Revision Biological Evaluation (FPR BE) (USDA Forest Service 2004), pg. 188:

Habitat for the tiger beetle was likely fairly widespread in its range on the Superior. Fires probably helped create and maintain natural openings. This species of tiger beetle is a regional endemic reported only from Northwest Ontario, extreme Southeast Manitoba, and extreme northern Minnesota. Its Minnesota habitat includes sandy, rocky openings, gravel pits, timber sale roads, or other areas with reduced ground cover, but adjacent vegetation to provide shade (shuttles in and out of sun to control body temperature). The species prefers soils with a very specific variety of consolidated, but not compacted, coarse sand, mixed with gravel and sometimes silt and/or larger stones and rocks.

Prior to 2000, this tiger beetle was known to occur at three sites on the Superior National Forest. Recent surveys have confirmed at least 17 sites on the forest, and there are other highly probable sites, including several more unconfirmed sites in the BWCAW.

Current native habitat may have been reduced on the Superior from fire suppression and natural succession, but has also been created through management activities such as logging (may have both beneficial and negative impacts), road building, and gravel extraction under some circumstances.

Larval habitat of open sandy, gravelly substrate is critical. This stage of habitat is most susceptible to environmental disturbance, as adults can probably disperse to new habitats if disturbance occurs. Activities that may negatively impact larval habitat include gravel excavation, soil compaction by heavy machinery, vehicles, or RMVs (recreational motor vehicles), and alteration of soil moisture, vegetation, and sun exposure.   Vegetation succession results in abandonment or dispersal from formerly suitable habitats. Activities that would most commonly cause these changes would include gravel excavation, logging, management-ignited fire, road or trail building and vegetation succession. These same activities, under some circumstances, may also provide new habitats in all alternatives. Road building may be facilitating the spread the species.

(2) Monitoring Activities

Monitoring Question: To what extent is Forest management contributing to the conservation of sensitive species and moving toward short term (10-20 years) and long-term (100 years) objectives for their habitat conditions?

Monitoring Driver(s): Objectives. FWD. O-WL-18. All sensitive species. Maintain, protect, or improve habitat for sensitive species. Meeting this objective will involve two basic and complimentary strategies…: a. Landscape level (or coarse filter) management strategies: Addressing species' needs through integrated resource management at large landscape scales...b. Site-level (or fine filter) management strategies: Addressing species' needs by managing specifically for high quality potential habitat or known locations of sensitive species.

Table J.14b 2005 Monitoring Activities			
Applicable Monitoring Activity, Practice, Or Effect Measured	Methods	When Monitored	Location or Project Area
Landscape level Coarse filter	Key Analysis Indicators		
Site level Fine filer	Site-level surveys	Summer 2005	Trail

Landscape Level Monitoring

The FPR BE identifies forest openings and roads, trails and gravel pits as a Key Analysis Indicators for the tiger beetle (Table 3, pg. 17 of FPR BE). These indicators alone do not reflect the actual quantity or quality of suitable tiger beetle habitat, but do provide an index. Currently, there are no established methods for tracking on changes and trends in of either of these indicators. It is not expected that any significant trends in habitat changes will be able to be surmised at increments of less than 5 years.

There is no MIH management direction provided at the Forest-wide scale. MIH management direction presented in the Forest Plan is by Landscape Ecosystem (LE) and can be found in Section XX of this Report. A GIS analysis of CDS stand data frozen in September of 2005 was conducted in the fall of 2005. The results are reflected in Table J.14c below.

Site Level Monitoring

NHIS data shows 53 occurrences of Laurentian tiger beetle on the Forest. Surveys conducted in the Trail mid-level analysis area in 2005 yielded an additional location for this species.

Evaluation
No habitat indicator is available for this species on the Forest. Although there is some population inventory data available, there can be no conclusions made as to population levels or trends.

Conclusion
Reliable habitat indicator trend data cannot be surmised in such a short period of time. There is a lack of local population data for this species. Due to this lack of data, no conclusions can be made as to population and habitat relationships on the Forest. Effective implementation of Forest Plan Objectives,

(4) Improve Efficiency and Quality of Monitoring Effort.

Table J.14c Collaboration		
Collaborator/Partner	**Monitoring Activity**	**Accomplishment**
Minnesota NHP	NHIS database	NHIS database

PEREGRINE FALCON

Table J.15a Conservation Status Rankings of Peregrine Falcon[1]						
Common name/ *Scientific name*	**NatureServe**			**USF&WS R3 GLE**	**State of Minnesota**	**Superior NF**
	Global	**National**	**(MN)**			
Peregrine falcon/ *Falco peregrinus*	G4	N4B, N4N	S2B	RCP	T	RFSS
1. See Attachment A for a key to status rankings						

(1) Overview Adapted from Forest Plan Revision Biological Evaluation (FPR BE) (USDA Forest Service 2004), pg. 51 and 52:

In Minnesota, this species historically was represented by 30 to 40 breeding pairs, which occurred along the Mississippi River, St. Croix River, North Shore of Lake Superior, and the BWCAW. The species was extirpated from the state in the early 1960's by DDT poisoning. For peregrine falcon, nesting habitat is considered the limiting factor for the species. Cliff and ledge habitat on the Superior was historically frequently isolated and of very low abundance.

Successful peregrine falcon reintroduction began in Minnesota in 1982 and it was removed from the endangered species list in 1999. Currently two nesting sites can be found on the Forest on North

Table J.15b Indicators for Peregrine Falcon			
Forest Plan Existing Condition (ROD date- July 2004)[1]	**Current Condition (Sep 2005)[2]**	**Difference Between FPR Existing Condition AND Current Condition**	**Projected or Expected Condition Decade 1[1]**
Indicator 1: Forest openings			
~	~	~	~
Indicator 2: Roads, trail and gravel pits			
~	~	~	~

Shore cliffs. The population of peregrine falcons in the state seems to be slowly increasing. However, it is still at lower levels than prior to its extirpation.

There are few management-related threats to the rocky cliffs that peregrine falcons use for nesting, and sensitive species objectives, standards, and guidelines would prevent any management-related impacts from occurring. Foraging habitat typically consists of open areas (for example, over open water) where the peregrine falcon engages in high-speed aerial pursuit of its largely avian prey; such habitat would probably exist at levels similar to historical levels, as would prey availability.

(2) Monitoring Activities

Monitoring Question: To what extent is Forest management contributing to the conservation of sensitive species and moving toward short term (10-20 years) and long-term (100 years) objectives for their habitat conditions?

***Monitoring Driver(s): Objective.* FWD. O-WL-18. All sensitive species**. Maintain, protect, or improve habitat for sensitive species. Meeting this objective will involve two basic and complimentary strategies…: a. Landscape level (or coarse filter) management strategies: Addressing species' needs through integrated resource management at large landscape scales...
b. Site-level (or fine filter) management strategies: Addressing species' needs by managing specifically for high quality potential habitat or known locations of sensitive species.

Table J.15c 2005 Monitoring Activities			
Applicable Monitoring Activity, Practice, Or Effect Measured	**Methods**	**When Monitored**	**Location or Project Area**
Landscape level Coarse filter	Key Analysis Indicators, GIS and CDS analyses		Forest-wide
Site level Fine filter	Midwest Peregrine Falcon Restoration	Spring 05	Known sites

Landscape Level Monitoring

The FPR BE identifies non-forest nesting habitat as a Key Analysis Indicator for peregrine falcon (Table 3, pg. 12 of FPR BE). This indicator alone does not reflect the actual quantity or quality of suitable peregrine falcon habitat, but does provide an index. It is not expected that any significant trends in habitat changes will be able to be surmised at increments of less than 5 years. Currently, there are no established methods for tracking on amount, changes or trends in peregrine falcon non-forested nesting habitat.

Site Level Monitoring

Peregrine falcon is designated as a Threatened Species under State of Minnesota rules, and the NHIS contains 5 occurrences for it within SNF proclamation boundaries, only one of which is currently active. BBS analysis identifies an important deficiency in data (very low abundance, very small sample size, or very imprecise) associated with this species and is therefore not presented here. It is likely BBS routes do not adequately sample the habitat associated with this species. NRRI's Breeding Bird Monitoring effort surveys 169 stands on the Superior. It has not detected peregrine falcon on the SNF, however survey points are located primarily in forested areas not occupied by this species. The Midwest Peregrine Falcon Restoration project actively monitors and maintains records on peregrine falcons in the state and region. Local results of this effort are noted in Table J.15d and Table J.15e below.

Table J.15d Peregrine Falcon Population Growth & Productivity in the Midwest (Tordoff etal., 05)							
Year	Territorial Pairs	Nesting Pairs	Young Fledged	Year	Territorial Pairs	Nesting Pairs	Young Fledged
1981-86	4	2	0	1996	77	58	127
1987	6	4	3	1997	90	69	167
1988	13	8	16	1998	99	84	205
1989	16	12	22	1999	107	89	214
1990	23	16	33	2000	129	101	243
1991	30	22	36	2001	133	119	290
1992	37	32	68	2002	144	128	284
1993	53	43	87	2003	163	144	352
1994	62	51	116	2004	171	153	376
1995	67	53	118	2005	197	169	421

Table J.15e Peregrine Falcon Population Growth and Productivity in Minnesota (Tordoff et al., 2005)					
Year	Territorial Pairs	Young Fledged	Year	Territorial Pairs	Young Fledged
1995	17	41	2001	29	69
1996	20	27	2002	32	60
1997	22	51	2003	36	67
1998	24	52	2004	38	84
1999	28	54	2005	43	83
2000	33	56			

Currently there are neither known active peregrine falcon nests nor nest protection zones on lands administrated by the Superior. It is likely peregrine's do forage within the SNF.

(3) Evaluation and Conclusions

Evaluation
There are currently no established methods for tracking on availability or trends of the indicator non-forested nesting habitat for peregrine falcons. Numbers of territorial pairs regionally continue to increase. There are no known nesting sites on the SNF, however, nesting sites proximate to Forest boundaries along Lake Superior continue to be occupied and productive.

Conclusion
Methods need to be developed in order to be able to reliably track non-forest nesting habitat for peregrine falcons. Monitoring as conducted by the Midwest Peregrine Falcon Restoration is an effective method of monitoring this population's level and trends regionally, but there is a lack of information on local trends. Due to this lack of habitat indicator and local population trend data, no conclusions can be made as to population and habitat relationships on the Forest. Effective implementation of Forest Plan Objectives, Standards and Guides would minimize impacts to this species that may result from management activities on the Forest.

(5) Opportunities to Improve Efficiency and Quality of Monitoring Effort.

Table J.15f Collaboration		
Collaborator/Partner	Monitoring Activity	Accomplishment
Minnesota NHP	NHIS database	NHIS database

SHARP-TAILED GROUSE

Table J.16a Conservation Status Rankings of Sharp-tailed Grouse[1]						
Common name/ *Scientific name*	NatureServe			USF&WS R3 GLE	State of Minnesota	Superior NF
	Global	National	(MN)			
Sharp-tailed grouse/ *Tympanuchus phasianellus*	G4	N4	SNR	NR	NR	RFSS
1. See Attachment A for a key to status rankings						

(1) Overview Adapted from Forest Plan Revision Biological Evaluation (FPR BE) (USDA Forest Service 2004), pg. 53:

Fire suppression, forest succession following turn-of-the-century disturbances, and farm abandonment has resulted in population reductions and likely elimination of some sharp-tailed grouse populations. On the Superior, sharp-tailed grouse are very rare with reports of individuals, though no leks, on National Forest land near the northwest border of the Virginia Unit of the proclamation boundary. Range-wide the population has decreased from historical levels. It is believed that no source population exists within the Superior, and suitable habitat is limited. Changes in numbers may reflect both a longer-term decline resulting from changes in habitat quality and periodic declines associated with population cycles. Today much of the remaining habitat occurs in wetter areas, where less change to habitat characteristics has occurred. Human activity including hunting and disturbance at leks, vegetative succession, fire suppression, road construction or other development within habitat patches, excessive grazing, ditching of peatland, and increased predation at leks and nest sites are the major factor effecting this species.

(2) Monitoring Activities

Monitoring Question: To what extent is Forest management contributing to the conservation of sensitive species and moving toward short term (10-20 years) and long-term (100 years) objectives for their habitat conditions?

Monitoring Driver(s): Objectives. FWD. O-WL-18. All sensitive species. Maintain, protect, or improve habitat for sensitive species. Meeting this objective will involve two basic and complimentary strategies…: a. Landscape level (or coarse filter) management strategies: Addressing species' needs through integrated resource management at large landscape scales...

b. Site-level (or fine filter) management strategies: Addressing species' needs by managing specifically for high quality potential habitat or known locations of sensitive species.

Table J.16b 2005 Monitoring Activities			
Applicable Monitoring Activity, Practice, Or Effect Measured	Methods	When Monitored	Location or Project Area
Landscape level Coarse filter	Key Analysis Indicators, GIS and CDS analyses		Forest-wide
Site level Fine filter	MN DNR, Site-level surveys		

Landscape Level Monitoring

The FPR BE identifies large patches of temporary non-forested uplands, and management-ignited fire opportunities as a Key Analysis Indicators for the sharp-tailed grouse (Table 3, pg. 12 of FPR BE). These indicators alone do not reflect the actual quantity or quality of suitable sharp-tailed grouse habitat, but do provide an index. It is not expected that any significant trends in habitat changes will be able to be surmised at increments of less than 5 years. Currently, there are no established

methods for tracking on amount, changes or trends for either of these indicators. A GIS analysis of CDS stand data frozen in September of 2005 was conducted in the fall of 2005. The results are reflected in Table J.16c below.

Table J.16c Indicators for Sharp-tailed Grouse			
Forest Plan Existing Condition (ROD date-July 2004)[1]	Current Condition (Sep 2005)[2]	Current Condition + Approved NEPA Decisions[2]	Projected or Expected Condition Decade 1[1]
Indicator 1: Large patches of temporary non-forested uplands			
~	~	~	~
Indicator 2: Management-ignited fire opportunities			
~	~	~	~
1.Source Data: Land and Resource Management Plan, Ch. 2 Forest-wide Management Direction 2.CDS frozen 9/05			

Site Level Monitoring

There are 8 North American Breeding Bird Survey (BBS) routes within SNF proclamation boundaries. Trend data for these individual routes are not available. BBS data that is available for this species are reflected in Table J.16d below.

Table J.16d North American Breeding Bird Survey (BBS) Trend Results for Sharp-tailed Grouse, in % / year (Sauer et al. 2005)			
Region	1966-2004	1966-1979	1980-2004
Minnesota	*	*	*
N. Spruce-Hdwoods[1]	*	*	*
BBS-Wide[2]	-0.7	-3.3	-1.1
*- BBS analysis identifies an important deficiency in data (very low abundance, very small sample size, or very imprecise) associated with this species and is therefore not presented here. 1- The SNF falls within BBS strata 28, northern spruce hardwoods 2- BBS analysis identifies a deficiency in data (low abundance, small sample size, quite imprecise, or low P value) associated with this species in this region.			

NHIS contains no occurrences of sharp-tailed grouse on the Forest. NRRI's Breeding Bird Monitoring effort surveys 169 stands on the Superior. It has not detected sharp-tailed grouse on the SNF; however timing and location of survey routes are such that this species is not adequately surveyed for. The MNDNR considers the sharp-tailed grouse a game bird and has an established hunting season.

The MNDNR has monitored population indices on sharp-tailed dancing grounds since at least 1977. However, data reporting has been inconsistent from year to year and therefore only data that is comparable is presented below.

Table J.16e MN Sharp-tailed Grouse Indices, East-central Range[1], 1995-2004 (MNDNR 1995-2004[2])				
Year	# of Leks Surveyed	% Occupied	Males/Active Lek	Tot Males on Comparable Leks[3] (% change)
1995	146	51	5.4	-4
1996	127	67	6.4	+15
1997	162	52	7.5	+4
1998	131	80	10.0	+20
1999	147	71	10.1	+19
2000	168	77	9.4	+5
2001	160	94	6.9	-43
2002	168	56	6.6	-10
2003	149	58	7.3	+10
2004	143	66	8.3	+15
2005[4]	100		7.6	+1
1- The east-central range includes a portion of the Laurentian Ranger District. 2- These data were taken from annual unpublished reports put out by the MNDNR entitled "Minnesota Grouse and Hares". 3- Leks surveyed both current and previous year 4- MNDNR biologists began using new sharp-tailed management area boundaries and reporting in 2005 and not all data is comparable to previous years' and therefore may not be shown.				

(3) Evaluation and Conclusions

Evaluation
There are currently no established methods for tracking on availability or trends of the indicators for sharp-tailed grouse. There are no sharp-tailed management areas and no known leks on the SNF. Population indices produced by the MN DNR do not show any clear population trend data, likely due to the cyclic nature of the species as well as varying levels of hunter harvest.

Conclusion
Methods need to be developed in order to be able to reliably track on the habitat indicators for sharp-tailed grouse. While MN DNR data provide an index to population levels in any given year, the fact that population levels are cyclic and there is an established hunting season do not allow for any conclusions as to population trends. Due to this lack of habitat indicator and population trend data, no conclusions can be made as to population and habitat relationships on the Forest. Effective implementation of Forest Plan Objectives, Standards and Guides would minimize impacts to this species that may result from management activities on the Forest.

(4) Opportunities to Improve Efficiency and Quality of Monitoring Effort.

Table J.16f Collaboration		
Collaborator/Partner	**Monitoring Activity**	**Accomplishment**
Minnesota NHP	NHIS database	NHIS database

YELLOW RAIL

Table J.17a Conservation Status Rankings of Yellow Rail[1]						
Common name/ *Scientific name*	**NatureServe**			**USF&WS R3 GLE**	**State of Minnesota**	**Superior NF**
	Global	**National**	**(MN)**			
Yellow rail/ *Coturnicops noveboracensis*	G4	N3B, N4N	S3B	RCP	SSC	RFSS
1. See Attachment A for a key to status rankings						

(1) Overview Adapted from Forest Plan Revision Biological Evaluation (FPR BE) (USDA Forest Service 2004), pg. 63-65:

In Minnesota, yellow rail are widespread, but never common, throughout the northern regions of the state in wet meadows bordering large lakes and rivers, rich fens on extensive northern peatlands, wet prairies, and wet hayfields.   Historical distribution within the SNF is unknown, but it appears that the Superior offers comparatively little suitable habitat. The amount and distribution of habitat has probably not changed much from historical conditions.

Yellow rail habitat includes sedge or grass-dominated wetlands, particularly rich fens with narrow-leaved sedge, wet meadows with wide-leaved sedges and grasses, and water depths between 1 to 10 inches, especially during the breeding season. Habitat is usually sparsely populated, even in large areas of suitable habitat because water depths vary within the wetland. This species has likely persisted as small sub-populations or rare, local endemic since the historical period. The population trend for this species is believed to be decreasing range-wide. Habitat loss is a major threat to this

species. Wetland succession affects habitat quality for the yellow rail, and is often influenced by human activities that purposely or inadvertently alter the water table. These activities include wetland draining and filling for development and road and trail construction, alterations in hydrology due to reservoir management, and a lack of natural disturbance, including suppression of wildfire and elimination of periodic flooding.

(2) Monitoring Activities

Monitoring Question: To what extent is Forest management contributing to the conservation of sensitive species and moving toward short term (10-20 years) and long-term (100 years) objectives for their habitat conditions?

Monitoring Driver(s): Objective. FWD. O-WL-18. All sensitive species. Maintain, protect, or improve habitat for sensitive species. Meeting this objective will involve two basic and complimentary strategies…: a. Landscape level (or coarse filter) management strategies: Addressing species' needs through integrated resource management at large landscape scales... b. Site-level (or fine filter) management strategies: Addressing species' needs by managing specifically for high quality potential habitat or known locations of sensitive species.

Table J.17b 2005 Monitoring Activities			
Applicable Monitoring Activity, Practice, Or Effect Measured	**Methods**	**When Monitored**	**Location or Project Area**
Landscape level Coarse filter	Key Analysis Indicators, GIS and CDS analyses		Forest-wide
Site level Fine filter	Site level surveys	Spring 05	Whyte

Landscape Level Monitoring

The FPR BE identifies non-forested wetlands as a Key Analysis Indicator for yellow rail (Table 3, pg. 12 of FPR BE). This indicator alone does not reflect the actual quantity or quality of suitable yellow rail habitat, but does provide an index. It is not expected that any significant trends in habitat changes will be able to be surmised at increments of less than 5 years. Currently, there are no established methods for tracking on amounts, changes or trends in non-forested wetlands. A GIS analysis of CDS stand data frozen in September of 2005 was conducted in the fall of 2005. The results are reflected in Table J.17c below.

Table J.17c Indicators for Yellow Rail			
Forest Plan Existing Condition (ROD date-July 2004)[1]	**Current Condition (Sep 2005)[2]**	**Current Condition + Approved NEPA Decisions[2]**	**Projected or Expected Condition Decade 1[1]**
Indicator 1: Non-forest wetlands			
~	~	~	~
1. Source Data: Land and Resource Management Plan, Ch. 2 Forest-wide Management Direction 2. Source Data: CDS frozen September 2005			

Site Level Monitoring

BBS analysis identifies an important deficiency in data (very low abundance, very small sample size, or very imprecise) associated with this species and is therefore not presented here. It is likely BBS routes do not adequately sample the habitat associated with this species.

NHIS contains only 1 occurrence for yellow rail on the Superior. NRRI's Breeding Bird Monitoring effort surveys 169 stands on the Superior. It has not detected yellow rail on the SNF, however survey points are located primarily in forested areas not occupied by this species. Surveys conducted on the Whyte mid-level analysis area did not detect this species.

(3) Evaluation and Conclusions

Evaluation
There is a lack of information on the availability and trends of the indicator non-forested wetlands for yellow rail. There is only one previously known occurrence of yellow rail on the SNF and there is no available local population trend data.

Conclusion
Methods need to be developed in order to be able to reliably track on the habitat indicator non-forest wetlands. There are currently no established methods to determine local yellow rail population levels or trends. Due to this lack of habitat indicator and population data, no conclusions can be made as to population and habitat relationships on the Forest. Effective implementation of Forest Plan Objectives, Standards and Guides would minimize impacts to this species that may result from management activities on the Forest.

(4) Opportunities to Improve Efficiency and Quality of Monitoring Effort.

Table J.17d Collaboration		
Collaborator/Partner	**Monitoring Activity**	**Accomplishment**
Minnesota NHP	NHIS database	NHIS database

WILSON'S PHALAROPE

Table J.18a Conservation Status Rankings of Wilson's Phalarope[1]						
Common name/ *Scientific name*	**NatureServe**			**USF&WS R3 GLE**	**State of Minnesota**	**Superior NF**
	Global	**National**	**(MN)**			
Wilson's Phalarope/ *Phalaropus tricolor*	G5	N5B	S2B	RCP	T	RFSS
1. See Attachment A for a key to status rankings						

(1) Overview Adapted from Forest Plan Revision Biological Evaluation (FPR BE) (USDA Forest Service 2004), pg. 66 and 67:

Wilson's phalarope in the United States is primarily associated with wetlands found in open grassland ecosystems, and in Minnesota, it was historically most abundant in the prairie region of the state. Although suitable open wet meadow habitat for this species appears to be of low abundance and patchily distributed on the SNF, the fact that the Forest is at or beyond the periphery of the species' range in the state means that its habitat has probably historically been scarce and highly isolated on the Superior. The current amount and distribution of suitable ecological conditions is still roughly similar to historical conditions. Past wetland drainage and lowland roads construction may have caused a decrease in suitable habitat for Wilson's phalarope, but such impacts probably only affected a fraction of the total suitable habitat available. It is expected that the distribution and abundance of suitable habitat will be sufficient for the continued persistence of Wilson's phalarope. Existing habitat and occurrence of the species will likely not change.

(2) Monitoring Activities

Monitoring Question: To what extent is Forest management contributing to the conservation of sensitive species and moving toward short term (10-20 years) and long-term (100 years) objectives for their habitat conditions?

Monitoring Driver(s): Objective. FWD. O-WL-18. All sensitive species. Maintain, protect, or improve habitat for sensitive species. Meeting this objective will involve two basic and complimentary strategies…: a. Landscape level (or coarse filter) management strategies: Addressing species' needs through integrated resource management at large landscape scales... b. Site-level (or fine filter) management strategies: Addressing species' needs by managing specifically for high quality potential habitat or known locations of sensitive species.

Table J.18b 2005 Monitoring Activities			
Applicable Monitoring Activity, Practice, Or Effect Measured	**Methods**	**When Monitored**	**Location or Project Area**
Landscape level Coarse filter	Key Analysis Indicators, GIS and CDS analyses		Forest-wide
Site level Fine filter	Site level surveys	Spring 05	Whyte

Landscape Level Monitoring

The FPR BE identifies non-forested wetlands as a Key Analysis Indicator for Wilson's phalarope (Table 3, pg. 12 of FPR BE). This indicator alone does not reflect the actual quantity or quality of suitable Wilson's phalarope habitat, but does provide an index. It is not expected that any significant trends in habitat changes will be able to be surmised at increments of less than 5 years. Currently, there are no established methods for tracking on changes and trends in non-forested wetlands. A GIS analysis of CDS stand data frozen in September of 2005 was conducted in the fall of 2005. The results are reflected in Table J.18c below.

Table J.18c Indicators for Yellow Rail			
Forest Plan Existing Condition (ROD date-July 2004)[1]	**Current Condition (Sep 2005)[2]**	**Current Condition + Approved NEPA Decisions[2]**	**Projected or Expected Condition Decade 1[1]**
Indicator 1: Non-forest wetlands			
~	~	~	~
1. Source Data: Land and Resource Management Plan, Ch. 2 Forest-wide Management Direction 2. CDS frozen 9/05			

Site Level Monitoring

There are 8 North American Breeding Bird Survey (BBS) routes within SNF proclamation boundaries. Trend data for these individual routes are not available. BBS data that is available for this species are reflected in Table J.18d below.

Table J.18d North American Breeding Bird Survey (BBS) Trend Results for Wilson's Phalarope, in % / year (Sauer et al. 2005)			
Region	**1966-2004**	**1966-1979**	**1980-2004**
Minnesota	*	*	*
N. Spruce-Hardwoods[1]	*	*	*
BBS-wide[2]	0.8	-4.9	1.9
*- BBS analysis identifies an important deficiency in data (very low abundance, very small sample size, or very imprecise) associated with this species in these regions and is therefore not presented here. 1- The SNF falls within BBS strata 28, northern spruce hardwoods 2- BBS analysis identifies a deficiency in data (low abundance, small sample size, quite imprecise, or low P value) associated with this species in this region.			

NHIS contains no occurrences for Wilson's phalarope on the Superior. NRRI's Breeding Bird Monitoring effort surveys 169 stands on the Superior. It has not detected Wilson's phalarope on the SNF;

however survey points are located primarily in forested areas not occupied by this species. Surveys conducted on the Whyte mid-level analysis area did not detect this species.

(3) Evaluation and Conclusions

Evaluation
There is a lack of information on the availability and trends of the indicator non-forested wetlands for Wilson's phalarope. There are no previously known occurrences of this species on the SNF and there is no available local population trend data.

Conclusion
Methods need to be developed in order to be able to reliably track on the habitat indicator non-forest wetlands as well as to determine Wilson's phalarope population levels and trends. Due to this lack of habitat indicator and population data, no conclusions can be made as to population and habitat relationships on the Forest. Effective implementation of Forest Plan Objectives, Standards and Guides would minimize impacts to this species that may result from management activities on the Forest.

(4) Opportunities to Improve Efficiency and Quality of Monitoring Effort.

Table J.18e Collaboration		
Collaborator/Partner	**Monitoring Activity**	**Accomplishment**
Minnesota NHP	NHIS database	NHIS database

G2.7 WILDLIFE; RFSS, BLACK TERN

Table J.19a Conservation Status Rankings of Black Tern[1]						
Common name/ *Scientific name*	**NatureServe**			**USF&WS R3 GLE**	**State of Minnesota**	**Superior NF**
	Global	**National**	**(MN)**			
Black Tern/ *Chlidonias niger*	G4	N4B	SNRB	RCP	NR	RFSS
1. See Attachment A for a key to status rankings						

(1) Overview Adapted from Forest Plan Revision Biological Evaluation (FPR BE) (USDA Forest Service 2004), pg. 74-76:

There is no information available on specific populations, but this species was probably never very abundant within the SNF. The Superior is on the edge of this species breeding range. Suitable habitat distribution was likely similar to current conditions and is described as a patchy distribution. There is a patchy distribution of breeding populations within the planning area. Habitat loss has likely contributed to population decline range-wide. Declines in muskrat populations (muskrat activity provides nesting habitat) have also been cited as a contributor. Dams also affect the hydrologic regime of connected streams and wetlands. More recently, reduction in the wetland loss rate most likely has resulted in some localized increases in black tern populations, and a reduced range wide population decline.

The greatest threat appears to be loss of habitat due to reduced muskrat numbers (note: loss of muskrat numbers may be coincident with tern decline). Conditions on wintering grounds (specifically food resource) may also be a significant factor. Other threats to this species include water quality and

human disturbance of nesting areas. Loss of wetland habitat due to the development and filling of wetland habitats and water level fluctuations due to reservoir management are perhaps the most serious threat to black tern.

Suitable habitat is present, however, external factors, such as additional boat accesses on other ownerships, reservoir management, high levels of private development, and associated wetland alterations (on public and private lands) are likely to impact the species. Although these activities may impact individuals or their habitat, they are not likely to cause a trend toward federal listing.

(2) Monitoring Activities

Monitoring Question: To what extent is Forest management contributing to the conservation of sensitive species and moving toward short term (10-20 years) and long-term (100 years) objectives for their habitat conditions?

Monitoring Driver(s): Objective. **FWD. O-WL-18. All sensitive species**. Maintain, protect, or improve habitat for sensitive species. Meeting this objective will involve two basic and complimentary strategies…: a. Landscape level (or coarse filter) management strategies: Addressing species' needs through integrated resource management at large landscape scales... b. Site-level (or fine filter) management strategies: Addressing species' needs by managing specifically for high quality potential habitat or known locations of sensitive species.

Monitoring Driver(s): Objective. **FWD. O-WL-22. Black tern**. In all known breeding locations maintain or restore high quality nesting habitat: marshes or shallow rivers or lakes with suitable balance of open water and emergent vegetation.

Table J.19b 2005 Monitoring Activities			
Applicable Monitoring Activity, Practice, Or Effect Measured	**Methods**	**When Monitored**	**Location or Project Area**
Landscape level Coarse filter	Key Analysis Indicators, GIS and CDS analyses		Forest-wide
Site level Fine filter	Site level surveys	Spring 05	Whyte

Landscape Level Monitoring

The FPR BE identifies non-forested wetland marshes and wet meadows, road and trail construction, and water access improvements as a Key Analysis Indicators for Black Tern (Table 3, pg. 13 of FPR BE). These indicators alone do not reflect the actual quantity or quality of suitable black tern habitat, but do provide an index. It is not expected that any significant trends in habitat changes will be able to be surmised at increments of less than 5 years. Currently, there are no established methods for tracking on amount, changes, or trends for any of the black tern indicators. A GIS analysis of CDS stand data frozen in September of 2005 was conducted in the fall of 2005. The results are reflected in Table J.19c   below.

Table J.19c Indicators for Black Tern			
Forest Plan Existing Condition (ROD date- July 2004)[1]	**Current Condition (Sep 2005)[2]**	**Current Condition + Approved NEPA Decisions**	**Projected or Expected Condition Decade 1[1]**
Indicator 1: Non-forest wetland marshes and wet meadows			
~	~	~	~
Indicator 2: Road and trail construction			
~	~	~	~
Indicator 3: Water access improvements			
~	~	~	~

Site Level Monitoring

There are 8 North American Breeding Bird Survey (BBS) routes within SNF proclamation boundaries. Trend data for these individual routes are not available. BBS data that is available for this species are reflected in Table J.19d below.

Table J.19d North American Breeding Bird Survey (BBS) Trend Results for Black Tern, in % / year (Sauer et al. 2005)			
Region	1966-2004	1966-1979	1980-2004
Minnesota	-3.9	-3.6	-7.1
N. Spruce-Hardwoods[1,2]	-9.7	-12.1	-6.3
BBS-wide[1]	-1.5	-7.7	+1.7
1- BBS analysis identifies a deficiency in data (low abundance, small sample size, quite imprecise, or low P value) associated with this species in this region. 2- The SNF falls within BBS strata 28, northern spruce hardwoods			

NHIS contains no data for black tern on the Forest. NRRI's Breeding Bird Monitoring effort surveys 169 stands on the Superior. It has not detected black tern on the SNF, however survey points are located primarily in forested areas not occupied by this species. There is one previously known nest site on the Forest located in 1989. Monitoring of this sight the subsequent 6 years did not locate any nests. Adults have been observed at 2 additional sites within the Forest since then, but no nests have been found. Surveys conducted on the Whyte mid-level analysis area did not detect this species.

(3) Evaluation and Conclusions.

Evaluation
There is a lack of information on the availability and trends for the habitat indicators for black tern on the Forest. There is no available local population level or trend data.

Conclusions
Methods need to be developed in order to be able to reliably track on the habitat indicators for black tern. There are currently no established methods to determine local black tern population levels or trends. Due to this lack of habitat indicator and population data, no conclusions can be made as to population and habitat relationships on the Forest. Effective implementation of Forest Plan Objectives, Standards and Guides would minimize impacts to this species that may result from management activities on the Forest.

(4) Opportunities to Improve Efficiency and Quality of Monitoring Effort.

Table J.19e Collaboration		
Collaborator/Partner	Monitoring Activity	Accomplishment
Minnesota NHP	NHIS database	NHIS database

GREAT GRAY OWL

Table J.20a Conservation Status Rankings of Great Gray Owl[1]						
Common name/ *Scientific name*	**NatureServe**			**USF&WS R3 GLE**	**State of Minnesota**	**Superior NF**
	Global	**National**	**Sub-national (MN)**			
Great gray owl/ *Strix nebulosa*	G5	N4	SNR	NR	NR	RFSS
1. See Attachment A for a key to status rankings						

(1) Overview Adapted from Forest Plan Revision Biological Evaluation (FPR BE) (USDA Forest Service 2004), pp. 76 and 77:

The Superior is located in the southern edge of the species historical range, where populations were unevenly distributed, and irregularly from year to year. No information is available on estimated historical population levels. This species has likely always been a relatively rare nesting bird in Minnesota and at least partially dependant on vagaries of meadow vole and lemming populations.

Current range is probably still the same as the historical range. Within the State of Minnesota, the primary breeding habitat of the species is coniferous lowland black spruce and tamarack peatlands, black ash wetlands, and coniferous uplands. Minimum habitat requirements are not well understood, but availability of suitable nesting sites, many hunting perches (30/ac or more), the availability of abundant prey, and coniferous vegetation appear to be important. In the SNF, nesting habitat consist of a wide variety of dense coniferous and hardwood forest, especially pine, spruce, black ash, basswood, tamaracks, paper birch and aspen. This species forages in open areas with scattered trees, including bogs, selective and clear cut logged areas with residual perches, natural meadows and open forest within 1-3 km of the nest sites. Great gray owls tend to avoid dense jack pine and black spruce, open treeless areas, and habitats with a dense shrub layer for nesting and foraging. Limiting factors include availability of suitable nest sites, foraging habitat, and prey abundance. Historically, great gray owl distribution was likely limited by the same factors that presently limit the population, the availability of suitable nest sites and prey abundance.

Suitable habitat consist of 30-300 acres patches of dense, mature and old aged aspen and mixed conifer stands that are adjacent or within 1-3 km of open to park like areas suitable for foraging. Nest sites utilized are typically stick nest of other raptors, such as goshawk, or ravens, and broken toped snags of large diameter trees. Interior forest is preferred for its reduced potential for avian and mammalian predators on young. Current habitat conditions on the Superior may be affecting the species ability to find suitable nest sites. Down wood is an important component of both foraging and nesting habitat. Great gray owls are a species which require open areas for foraging, and forest fragmentation is seemingly a necessary landscape feature. However, in fragmented landscapes the amount of edge available may not be as important as the amount of forested area available for nesting. It is likely that they are much rarer today than in pre-settlement times due to the reduction in conifer vegetation of the state and an increase of illegal killing. However, clear-cuts can create foraging habitat in dense forest in previously unoccupied areas. It should be noted that timber harvest is not at odds with the preservation of the great gray owl. Some logging may even enhance habitat by opening up dense stands. Population trends for the species are impossible to detect because of a lack of suitable monitoring program for the species. Winter invasions, suggests highs in the population cycle; however, the causes and source populations for these invasions is unclear.

(2) Monitoring Activities

Monitoring Question: To what extent is Forest management contributing to the conservation of sensitive species and moving toward short term (10-20 years) and long-term (100 years) objectives for their habitat conditions?

***Monitoring Driver(s): Objectives.* FWD. O-WL-18. All sensitive species**. Maintain, protect, or improve habitat for sensitive species. Meeting this objective will involve two basic and complimentary strategies…: a. Landscape level (or coarse filter) management strategies: Addressing species' needs through integrated resource management at large landscape scales...
b. Site-level (or fine filter) management strategies: Addressing species' needs by managing specifically for high quality potential habitat or known locations of sensitive species.
O-WL-21. Great gray owl. In known or potential good breeding habitat, maintain or restore high quality habitat conditions: Mature (>50 years old), dense, upland forest nesting habitat within ½ to 1½ miles of areas with a sufficient network of lowland conifer forest, bog, and non-forest foraging habitat.

Table J.20b 2005 Monitoring Activities			
Applicable Monitoring Activity, Practice, Or Effect Measured	**Methods**	**When Monitored**	**Location or Project Area**
Landscape level Coarse filter	Key Analysis Indicators, GIS & CDS analyses	Fall 05	Forest-wide
Site level Fine filer	NHIS, Site-level surveys	Spring 05	Dunka, Whyte, LAU survey routes

Landscape Level Monitoring

The FPR BE identifies MIH 4b and 5b as a Key Analysis Indicators for great gray owl nesting habitat, and MIH 5a and 9a as a Key Analysis Indicators for great gray owl foraging habitat (Table 3, pg. 13 of FPR BE). These indicators alone do not reflect the actual quantity or quality of suitable great gray owl habitat, but do provide an index. It is not expected that any significant trends in habitat changes will be able to be surmised at increments of less than 5 years. However, for the purpose of this first Report under the new Forest Plan, an initial attempt will be made.

There is no MIH management direction provided at the Forest-wide scale. MIH management direction presented in the Forest Plan is by Landscape Ecosystem (LE) and can be found in the MIS/MIH Section of the full M&E Report write-up. A GIS analysis of CDS stand data frozen in September of 2005 was conducted in the fall of 2005. The results are reflected in Table J.20c below.

Table J.20c Indicators for Great Gray Owl			
Forest Plan Existing Condition (ROD date- July 2004)[1]	**Current Condition (Sep 2005)[2]**	**Current Condition + Approved NEPA Decisions[2]**	**Projected or Expected Condition Decade 1[1]**
Indicator 1, Nesting: MIH 4b- Aspen-birch and mixed aspen-conifer forest, mature+, in % of MIH 1			
33.8%	33.4%	32.5%	25.9%
Indicator 2, Nesting: MIH 5b, Upland conifer forest, mature+, in % of MIH 1			
17.4%	21.0%	20.3%	18.6%
Indicator 3, Foraging: MIH 5a, Upland conifer forest, young, in % of MIH 1			
6.9%	2.7%	3.9%	4.6%
Indicator 4, Foraging: MIH 9a, Lowland back spruce-tamarack forest, young, in % of MIH 9			
3.4%	2.1%	2.9%	4.0%
1. Source Data: Land and Resource Management Plan, Ch. 2 Forest-wide Management Direction 2. Source Data: CDS frozen September 2005			

Site Level Monitoring

There are 8 North American Breeding Bird Survey (BBS) routes within SNF proclamation boundaries. BBS does not contain any data associated with great gray owls. It is likely BBS routes do not adequately sample the habitat associated with this species. NHIS contains only 1 nesting occurrence of great gray owls on the Forest. NRRI's Breeding Bird Monitoring effort surveys 169 stands on the Superior. It has not detected great gray owl on the SNF; however timing and location of survey routes are such that this species is not adequately surveyed for. Surveys conducted in the Whyte mid-level analysis area and along survey routes on the Laurentian Ranger District did not detect this species. Surveys conducted in the Dunka mid-level analysis area yielded one response, but nesting could not be determined.

(3) Evaluation and Conclusions.

Evaluation
Initial GIS analyses do show some small changes in the relative amount of great gray owl nesting habitat indicators with no clear increase or decrease. The relative amount of foraging habitat indicators shows a decrease, but is expected to increase by the end of Decade 1. There is a lack of information as to this species population level and trend both locally and regionally.

Conclusion
Reliable habitat indicator trend data cannot be surmised in such a short period of time. There is currently no means of establishing population levels and trends. Due to this lack of data, no conclusions can be made as to population and habitat relationships on the Forest. Effective implementation of Forest Plan Objectives, Standards and Guides would minimize impacts to this species that may result from management activities on the Forest.

(4) Opportunities to Improve Efficiency and Quality of Monitoring Effort.

Table J.20d Collaboration		
Collaborator/Partner	Monitoring Activity	Accomplishment
Minnesota NHP	NHIS database	NHIS database

BOREAL OWL

Table J.21a Conservation Status Rankings of Boreal Owl[1]						
Common name/ *Scientific name*	NatureServe			USF&WS R3 GLE	State of Minnesota	Superior NF
	Global	National	(MN)			
Boreal owl/ *Aegolius funereus*	G5	N4	SNRB,SNRN	NR	NR	RFSS
1. See Attachment A for a key to status rankings						

(1) Overview Adapted from Forest Plan Revision Biological Evaluation (FPR BE) (USDA Forest Service 2004), pg. 87:

The range of the boreal owl follows the extent of the boreal forest including much of Canada, the northern states and portions of the Rocky Mountains. Although we have very little information on the historical distribution of boreal owls in the Great Lakes Region, it is likely that their range included the

boreal forest throughout MN and WI and covered a larger area than it does today. It is likely that the range and the population of boreal owls has decreased since historical times due to a reduction and fragmentation of boreal forest habitats as well as a loss of long-lived cavity tree species such as white pine. The population in Minnesota is part of a larger Canadian population and may not be viable by itself at present. Population trends are difficult to detect given normal large population fluctuations and low precision of survey estimates. As with other northern owl species, populations are cyclical and tied to the abundance of prey (small mammals) in an area. Extensive harvest of mature lowland conifer and upland forest has led to habitat loss for this species. Limiting factors may include the right combination of nesting and foraging/roosting habitat, and possibly the distribution of these habitats and cavity trees. Fragmentation has been implicated in the isolation of boreal forest lowlands. Recent research efforts in northern MN point to the importance of upland nesting habitat adjacent to large blocks of lowland conifers used for foraging. Cavity trees are generally older aspen however other tree species may be used.

(2) Monitoring Activities

Monitoring Question: To what extent is Forest management contributing to the conservation of sensitive species and moving toward short term (10-20 years) and long-term (100 years) objectives for their habitat conditions?

Monitoring Driver(s): Objectives. **FWD. O-WL-18. All sensitive species**. Maintain, protect, or improve habitat for sensitive species. Meeting this objective will involve two basic and complimentary strategies…: a. Landscape level (or coarse filter) management strategies: Addressing species' needs through integrated resource management at large landscape scales... b. Site-level (or fine filter) management strategies: Addressing species' needs by managing specifically for high quality potential habitat or known locations of sensitive species.

O-WL-20. Boreal owl. In known or good potential breeding habitat within the normal expected range of the boreal owl on the NFS land, maintain or restore quality habitat conditions: suitable nesting habitat adjacent to or within ½ mile of foraging and roosting habitat. Nesting habitat is generally provided by upland aspen and aspen-conifer mix forest >60 years old with large diameter (>12") trees suitable for nest cavities. Foraging and roosting habitat is provided by lowland black spruce and tamarack forest predominantly >80 years old in stands >40 acres or where a complex of smaller lowland stands are within 1,000 feet of one another and are >40 acres. Individual territories (640-2,400 acres) typically have a combined area of greater than 500 acres of lowland black spruce/tamarack forest.

Table J.21b 2005 Monitoring Activities			
Applicable Monitoring Activity, Practice, Or Effect Measured	**Methods**	**When Monitored**	**Location or Project Area**
Landscape level Coarse filter	Key Analysis Indicators, GIS & CDS	Fall 05	Forest-wide
Site level Fine filer	NHIS, Site-level surveys, private researchers	Spring 05	Dunka, Whyte, other survey routes, nest boxes

Landscape Level Monitoring
The FPR BE identifies MIH 4b and 5b as a Key Analysis Indicators for boreal owl nesting habitat, and MIH 9b and MIH9b in patches 100 acres or greater as a Key Analysis Indicators for boreal owl foraging habitat (Table 3, pg. 13 of FPR BE). These indicators alone do not reflect the actual quantity or quality of suitable boreal owl habitat, but do provide an index. It is not expected that any significant trends in habitat changes will be able to be surmised at increments of less than 5 years. However, for the purpose of this first Report under the new Forest Plan, an initial attempt will be made. There is no MIH management direction provided at the Forest-wide scale. MIH management direction presented in the Forest Plan is by

Landscape Ecosystem (LE). A GIS analysis of CDS stand data frozen in September of 2005 was conducted in the fall of 2005. The results are reflected in Table J.21c below.

Table J.21c Indicators for Boreal Owl			
Forest Plan Existing Condition (ROD 7/04)[1]	Current Condition (Sep 2005)[2]	Current Condition + Approved NEPA Decisions[2]	Projected or Expected Condition Decade 1[1]
Indicator 1, Nesting: MIH 4b- Aspen-birch and mixed aspen-conifer forest, mature+, in % of MIH 1			
33.8%	33.4%	32.5%	25.9%
Indicator 2, Nesting: MIH 5b, Upland conifer forest, mature+, in % of MIH 1			
17.4%	21.0%	20.3%	18.6%
Indicator 3, Foraging: MIH 9b, Lowland black spruce-tamarack forest, mature+, in acres % of MIH 9			
84.7%	86.1%	85.2%	86.8%
Indicator 4, Foraging: MIH 9b patches, Lowland back spruce-tamarack forest, mature+, in patches ≥100 acres (in acres (# of patches))			
~	~	~	~
1. Source Data: Land & Resource Management Plan, Ch.2 Forest-wide Management Direction2. Source Data: CDS frozen 9/05			

Site Level Monitoring

There are 8 North American Breeding Bird Survey (BBS) routes within SNF proclamation boundaries. BBS does not contain any data associated with boreal owls. It is likely BBS routes do not adequately sample the habitat associated with this species.

NHIS contains 12 nesting occurrences of boreal owl on the Forest. NRRI's Breeding Bird Monitoring effort surveys 169 stands on the Superior. It has not detected boreal owl on the SNF; however timing and location of survey routes are such that this species is not adequately surveyed for. Surveys conducted in the Whyte and Dunka mid-level analysis area and along survey routes on the Laurentian Ranger District yielded 4 responses, but no nesting was confirmed. Surveys conducted by a private researcher (Lane) in the Gunflint and Tofte Districts detected 1 singing male but no further breeding activity. Monitoring of nest boxes near Isabella showed no boxes were used by boreal owls.

(3) Evaluation and Conclusions.

Evaluation
Initial GIS analyses do show some small changes in the relative amount of boreal owl nesting habitat indicators and foraging habitat indicator MIH 9b with no clear increase or decrease. The relative amount of the foraging habitat indicator MIH 9b patches. There is a lack of information as to this species population level and trend both locally and regionally.

Conclusion
Reliable habitat indicator trend data cannot be surmised in such a short period of time. There is currently no means of establishing population levels and trends. Due to this lack of data, no conclusions can be made as to population and habitat relationships on the Forest. Effective implementation of Forest Plan Objectives, Standards and Guides would minimize impacts to this species that may result from management activities on the Forest.

(4) Opportunities to Improve Efficiency and Quality of Monitoring Effort.

Table J.21d Collaboration		
Collaborator/Partner	Monitoring Activity	Accomplishment
Minnesota NHP	NHIS database	NHIS database