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Forest
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Region



Hiawatha
National
Forest

Biological Assessment Including RFSS Evaluation For the Single Track Motorcycle Trail EA

Rapid River/Manistique Ranger District

July 31, 2008

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INTRODUCTION

The purpose of this biological assessment (BA) is to document the effects of management activities identified in the Single Track Motorcycle Trail Environmental Assessment (EA). In order to accomplish this, this document is separated into three main sections. This section (section 1) discusses potential effects on federally proposed, candidate, threatened or endangered species, and designated critical habitat. Section 2 focuses on the potential effects the Single Track Motorcycle Trail project could have on Regional Forester Sensitive Species (RFSS). Finally, section 3 is a table that summarizes effects determinations for each species analyzed in this document.

I. FEDERALLY LISTED SPECIES

This BA was prepared in compliance with the requirements of Forest Service Manual (FSM) Directives sections 2670.31, 2670.5(3), and 2672.4, the Endangered Species Act of 1973 as amended, and the National Forest Management Act of 1976.

A letter from United States Department of Interior Fish and Wildlife Service (USFWS) Field Supervisor (Czarnecki June 29, 2006) confirms the species and critical habitat that should be considered for projects conducted on the Hiawatha National Forest. However, as of March 12, 2007, the gray wolf (in the Great Lakes region) was delisted and as of August 8, 2007, the bald eagle has been delisted. Both are analyzed as an RFSS.

Surveys were conducted for Hine's emerald dragonfly in the project area during July 2006. Habitat appearing to be potential based on forest type and soil mapping was field checked and found not to be suitable for Hine's emerald dragonfly (Ross 2006). Because of this, no effects to Hine's emerald dragonfly are expected and no analysis is needed.

Approximately 200 acres of suitable Kirtland's warbler (KW) habitat present adjacent to the trail in C-94 was surveyed during the official census period in June 2006, 2007 and 2008. No KW were found to be present. It is not known why this habitat is not occupied; a possibility is the habitat is not continuous with other jack pine forest types or open pine barren systems.

The project area does not contain habitat for the Great Lakes Piping Plover and this species will not be analyzed.

Fauna

- Canada lynx - *Lynx canadensis* (threatened)
- Kirtland's warbler - *Dendroica kirtlandii* (endangered)

Flora

- American Hart's tongue fern – *Asplenium scolopendrium var americanum* (threatened)
- Pitcher's thistle – *Cirsium pitcheri* (threatened)
- Lakeside daisy – *Hymenoxys herbacea* (threatened)
- Dwarf lake iris – *Iris lacustris* (threatened)
- Houghton's goldenrod – *Solidago houghtonii* (threatened)

Analysis of the project on Federally listed Threatened and Endangered species will result in the following determinations:

- No Effect- where no effect is expected
- Not Likely to Adversely affect- where effects are expected to be beneficial, insignificant (unmeasurable), or discountable (extremely unlikely).
- Likely to Adversely Affect – where effects are expected to be adverse or detrimental.

A. CONSULTATION WITH USDI FISH AND WILDLIFE SERVICE

The Forest Service is initiating informal consultation with the USFWS seeking concurrence with the determinations of effects in this BA. We concluded the proposed activities (Alternative 2) are *Not Likely to Adversely Affect where the effects are expected to be discountable* for Canada lynx and *Not Likely to Adversely Affect where the effects are expected to be discountable* on Kirtland's warbler.

The proposed activities would have “No Effect” on piping plover and Hine's emerald dragonfly, American hart's tongue fern, pitcher's thistle, lakeside daisy, dwarf lake iris, and Houghton's goldenrod because no habitat is present. In addition for federally listed flora and fauna species these species have no critical habitat in the project area therefore they will not be analyzed further in this BA. This document was submitted to the USFWS East Lansing Field Office to document the analysis.

In addition to consultation for Canada lynx and Kirtland's warbler requested for this project, programmatic consultation was recently undertaken for Forest Plan revision. The history of this consultation is documented in the Programmatic Biological Assessment (BA) for the revision of the Forest Plan (USDA 2006a, p. 2) and associated Programmatic Biological Opinion (BO) (USDI 2006). The relevance of program-level consultation to this project includes those agreements between the Forest Service and the USFWS reached on defining elements of species' ecology and biology, risk factors and general effects, analysis parameters, monitoring, and management direction in the revised Forest Plan. This BA provides more specific information on how relevant information in the program-level BA is incorporated. Additionally, other factors relevant to this project not discussed in detail in program-level consultation will be discussed in detail in this BA. It is critical to note that this project-level BA is closely connected to and can only be viewed in concert with both the programmatic BA and BO.

Consultation specific to the Single Track Motorcycle Trail project is documented in the project file. It includes all correspondence between the Forest Service and United States Fish and Wildlife Service.

B. PROPOSED ACTION

The proposed single track motorcycle trail lies entirely within Delta County. The legal description is T41N R19W, Sections 9, 10, 14, 15, 16, 21, 22 and 23.

A 26 mile single track trail system would be constructed. All trail construction would use hand tools. No heavy equipment would be needed. The trail tread would be constructed to MDNR trail standards. The trail would be cleared to 24 inches width at ground level, and 40 inch width from handlebar height to 8 feet above the ground. The actual “footprint” of the trail tread will be approximately 12 inches.

The trail system would consist of 4 loop systems of varying lengths and requiring different skills. Off highway vehicles such as 3 and 4 wheelers and other MATVs (such as Kawasaki Mules and John Deere Gators) greater than 50” will be allowed to share those portions of the single track trail system that are located on maintenance level 2 roads (that are already open to them), however these ORVs will not be allowed on the motorcycle trail. Mountain bikes, hikers and horses would be permitted on the trail.

There would be 2 parking lots constructed for use, with each lot accommodating 10 vehicles. Two smaller lots are recommended instead of one larger parking lot, to disperse use on the trail system.

Table 1. Comparison of Alternatives by Proposed Action

Proposed Actions	Alt. 1 No Action	Alt. 2 Proposed Action	Addressed in 2006 Forest Plan BA (Yes/No)
Construction of single track motorcycle trail	0 miles	26. 63 miles	A 26 mile single track motorcycle trail was not specifically addressed in the Forest Plan. A total 75 miles of OHV trail was addressed however. By definition in the Forest Plan glossary, OHV’s include motorcycles.
Construction of two parking areas	No additional	2 parking areas	Yes

Table 2. Comparison of Alternatives by Transportation Management Activity.

Proposed Actions	Alt 1 (No Action)	Alt 2 (Proposed Action)	Addressed in 2006 Forest Plan BA (Yes/No)
Maintenance	0 miles	0 miles	Yes
Decommission	0 miles	0 miles	Yes
Decommission after use	0 miles	0 miles	Yes
New system road construction	0 miles	0 miles	Yes
Temporary road construction	0 miles	0 miles	Yes
Reconstruction	0 miles	0 miles	Yes
Add unclassified roads to National Forest system	0 miles	0 miles	Yes
Construct permanent log landing (< 300 feet long)	0 landings	0 landings	Yes
Construct temporary log landing (< 300 feet long)	0 landings	0 landings	Yes
Close road	0 miles	0 miles	Yes
Number of new road closure structures	0 structures	0 structures	Yes
Reinforce existing road closures	0 structures	0 structures	Yes
Replace existing culvert	0 culverts	Create French drains	Yes
Rehabilitate drainage crossing	0 crossings	3 crossings	Yes
Obtain a right-of-way	0 miles	0 miles	Yes
Develop, use, and rehabilitate small borrow pits for more efficient road construction and maintenance	0 pits	0 pits	Yes

C. AFFECTED ENVIRONMENT

This section describes the proposed affected environment for each federally threatened and endangered species with habitat or presence in the project area using indicators that were discussed in the Biological Assessment and U.S. Fish and Wildlife Service Biological Opinion for the 2006 Forest Plan revision.

Table 3. Affected Environment for Canada Lynx within the Single Track Motorcycle Trail Project Area

Habitat Components- Canada Lynx	Existing Acres (approximate)
Acres of hare habitat	2,758 ac
Acres of squirrel habitat	1,756 ac
Acres of denning habitat in patches > 5 acres	1,463 ac
Acres of Connective Habitat	4,152 ac
Compacted route density (mi per sq.mile). * Compaction information for the LTA, outside of the HNF boundary, is limited. Therefore, to minimize speculation, these calculations only include route density for the portion of the LTA located within the HNF boundary.	1.85 mi/sq mi in both Nahma Grade and Isabella Remnant Moraine LTA's

Table 4. Kirtland’s Warbler Affected Environment within the Single Track Motorcycle Trail Project Area

Kirtland’s warbler	Existing Acres (approximate)
Acres of jack pine of all size classes	472 acres
Acres of suitable KW breeding habitat	196 acres

D. ENVIRONMENTAL BASELINE

CANADA LYNX

Species Ecology. The species ecology, including species description, life history, habitat, distribution, status, and threats are described under the “Status of the Species” section for Canada lynx in the HNF Programmatic BO (USDI 2006). To date, the Programmatic BO provides an accurate accounting of the species ecology range-wide and on the HNF.

Factors Affecting the Species. Pages 170-173 in the HNF Programmatic BO (USDI 2006) address the factors, including lynx habitat (vegetation composition and structure), disturbance from human activities and competition from other carnivores. To date, the BO provides an accurate evaluation of these factors on the HNF, however the effects of a single track motorcycle trail was not specifically analyzed in the effects. Disturbance from dispersed recreation was addressed in relation to effects on Canada lynx from noise, movement and light. Activities that occur within the action area that affect or influence these factors are described in Tables 6 and 7.

Species Status within the Action Area. Pages 163-166 and page 170 in the HNF Programmatic BO (USDI 2006) address the status of Canada lynx at various scales, including on the HNF. To date, the status of the species on the HNF has not changed.

Winter track surveys were conducted by a wildlife biologist and biological technician on 4/13/07 and 4/16/07. Surveys targeted wolf, lynx, marten and fisher tracks. No lynx tracks have been found within this project area or on the west unit of the Hiawatha. However, as Table 3 indicates, the project area provides potential lynx habitat.

KIRTLAND’S WARBLER (KW)

Species Ecology. The species ecology, including species description, life history, habitat, distribution, status, and threats are described under the “Status of the Species” section for KW in the HNF Programmatic BO (USDI 2006). To date, the Programmatic BO provides an accurate accounting of the species ecology range-wide and on the HNF.

Factors Affecting the Species. Pages 193-194 in the HNF Programmatic BO (USDI 2006) address the three factors applicable to KW in the project area, including presence of breeding habitat, disturbance from human activities and nest parasitism by the brown-headed cowbird. To date, the BO provides an accurate evaluation of these factors on the HNF. Features and activities that occur within the action area that affect or influence these factors are described in Tables 9 and 10.

Species Status within the Action Area. Pages 186-192 in the HNF Programmatic BO (USDI 2006) address the status of KW range-wide and on the HNF, respectively. To date, the status of the species has not changed.

Kirtland’s warbler breeding census surveys took place in 2006, 2007 and 2008 in suitable habitat in the Single Track Motorcycle Trail project area. No Kirtland’s warblers were identified during these surveys. The project area is approximately 13 miles east and 4 miles north of the Whitefish Delta KW management area. The Single Track Motorcycle Trail project area does not contain a large amount of jack pine habitat and does not contain MAs 4.4 or 4.2, which are Forest Plan for KW management emphasis areas. Based on this information, it is believed that Kirtland’s Warblers do not currently occupy the action area.

E. ENVIRONMENTAL CONSEQUENCES

Fauna:

The majority of management activities would take place within the Nahma Lowlands and Isabella Remnant Moraine LTA’s. There was a very small amount of the Steuben Outwash Moraine LTA (less than approximately 40 acres) in the project area but was small enough to not run separate queries for this LTA. LTA’s are drawn to delineate ecological boundaries that classify the unique habitat characteristics that an area provides for wildlife populations on and off HNF land. The LTA is used as an area to determine effects to Canada lynx. Areas used to determine effects to the other species in this document can be found at the end of this document.

The wildlife analysis includes use by hikers, mountain bikers, and horseback riders. These uses disturb wildlife through physical presence and motion. Motorized use includes noise, dust, exhaust and light that cause effects to wildlife.

This analysis uses estimated use for the proposed trail. Trail use is expected to be highest on the weekends especially during May and June. Weekly club rides would generate between 4-15 riders each week. Events that may attract additional riders, if proposed, would be under a special use permit where additional analysis would be conducted. It is thought this route would not be included in Six Days of Michigan rides because of its length and proximity away from other trails (A. Okonek personal communication with Lewis Schuler).

Cumulative effects result from adding the effects past and future projects to direct and indirect effects of this proposed project. The timeframe for cumulative effects for wildlife species is a period of 25 years, 15 years in the past and 10 years in the future. Activities longer than 15 years ago will not have measurable effects; stands will have regenerated to a point that effects of the timber treatment on overstory density and age-classes will approximate that of stands that were not treated. Activities more than 10 years into the future are not reliably predictable. Timber management plans, utility company operation plans, county and state land plans are 5-10 year plans and the forest plan is for a minimum of 10 years. Sales in past recent decisions have not all been sold. Projects could occur as long as five years after sale closure (i.e. K-V funding).

Cumulative effects components consist of utility line corridors, invasive species occurrence, illegal and legal OHV use, dispersed recreation, road maintenance and past quarry activities. Sixty stands in the 3,660 acre four compartment area have been treated by timber management treatments in the past 15 years. Of these, thirteen stands previously treated overlap with stands proposed for the motorcycle trail. The stands with overlap cover approximately 297 acres and timber treatments consisting of strip clearcut, stand clearcut, single tree selection, sanitation cut, shelterwood, shelterwood final removal, commercial thinning, permanent land clearing and fill-in planting.

Stands with thinning and single tree selection have long-term effects since the canopy would close in after 5-10 years after treatment. Clearcutting, shelterwood final removal cuts and permanent land clearing would have long-term effects that last up to 15 years up to a timeframe of timber management rotation. Short-term effects are those taking place between 0-5 years.

In Alternative 1, existing OHV use, legal and illegal use would continue to occur. This alternative would not add to motorized disturbance of wildlife other than the increase in ATV use that has been seen across the forest on an annual basis. Early successional habitat creation would depend on natural disturbance events such as wildfire, which has been effectively suppressed, and windthrow. No foreseeable future aspen/birch treatments are known. More snag/den habitat and woody debris would develop over the majority of the area with no foreseeable future timber treatments other than thinning in two red pine stands in the Coolaw Pine sale. Maintenance of existing roads would occur on a regular maintenance schedule.

In the Proposed Action, legal and illegal ORV use would continue to occur in the project area and increases in both types of use are expected with the trail drawing larger numbers of riders to

the area. Maintenance of existing roads would occur on a regular maintenance schedule. The future known timber treatment is the same as in Alternative 1.

A four compartment area (C-93, 94, 115 and 116) boundary was chosen as the direct and indirect effects boundary to show a difference to existing habitat for RFSS species. This serves as ecological boundary, which includes much of the surrounding landscape where impacts could occur.

Species with suitable habitat or known occurrences in the project will be analyzed in this BA.

CANADA LYNX

Aspects of the Biological Assessment for the Forest Plan discussed dispersed recreation effects on Canada lynx and the effect of noise, movement and light. Although it did not discuss recreation on designated trails, aspects of disturbance discussed in association with dispersed recreation applies to the motorcycle trail. Use on designated trails is more consistent whereas dispersed recreation does not have constant use in the same location. Also the configuration of the trail with the many switchbacks will concentrate use in localized areas. The BA for Canada lynx for the Forest Plan stated with the amount of habitat available on the Forest, the number of lynx that may be subject to any added stress, displacement, mortality or other harm is likely to be low. Because there are no known lynx on the west unit and one occurrence in 2004 on the east unit, it is highly unlikely lynx would be directly impacted by the motorcycle trail. The effect to lynx would be reduced suitability of habitat that would occur from human disturbance. Effects to den sites is thought to be low probability because there are no den sites known on the Hiawatha National Forest. There has been no evidence of breeding in the Upper Peninsula. The chance of a den in proximity to the proposed motorcycle trail would be low (personal communication Piehler, 2007).

Acres in Table 9 in the Wildlife Section of the EA are a generalization to attempt to quantify the number of acres of habitat with reduced habitat quality. The project file documents rationale for using the “wildlife effects area” which is ¼ mile on both sides of the proposed trail.

Connectivity would be less in the Proposed Action than Alternative 1 due primarily to the effects of noise reducing the suitability of this habitat. An important aspect of connective habitat for lynx is areas that allow them to hide or find cover. The proposed action does not change that aspect of the habitat, rather the remoteness of the habitat. The high road densities in the existing condition create a condition that is not highly suitable to lynx. The addition of the trail in the Proposed Action adds to the existing human disturbance. Lynx prefer seclusion from human activities and habitat that may be suitable in Alternative 1 may not be suitable in the Proposed Action from a decrease quality of habitat from noise and human presence.

Although the proposed motorcycle trail crosses or parallel roads 27 times and utility corridors 6 times, snowmobiles may use existing portions of roads or utility lines, it is unlikely snowmobiles would attempt to use new portions of the trail due to the many twists and turns. The trail is not expected to increase the amount of compacted snow in the project area, it is anticipated there would be no difference to snow compaction between Alternatives 1 and 2. An increase in coyotes, a competitor of lynx, is not expected in the Proposed Action.

Table 5. Indicators of Canada Lynx Habitat

Canada lynx	Alt. 1	Alt. 2		
Acres of hare habitat	2,758 ac	1,220 ac		
Acres of squirrel habitat	1,756 ac	768 ac		
Acres of denning habitat in patches > 5 acres	1,463 ac	667 ac		
Acres of Connective Habitat	4,152 ac	1,979 ac		
Compacted route density (mi per sq.mile). * Compaction information for the LTA, outside of the HNF boundary, is limited. Therefore, to minimize speculation, these calculations only include route density for the portion of the LTA located within the HNF boundary.	Nahma Lowlands LTA: 1.85 mi/sq. mi.			
	Isabella Remnant Moraine LTA: 1.85 mi/sq. mi.			
<p><i>Data source:</i> Northwoods database (Benyus et. al. 1992) query of habitat in Compartments 93, 94, 115 and 116 applied to the ¼ wildlife effects area, analysis run in GIS by Henderson 2007. Compacted route density was determined through a GIS exercise using the snow compaction layer.</p> <p>Connective habitat is defined as portions of unsuited lands, riparian corridors, Wilderness areas, Research Natural Areas (RNAs), candidate Research Natural Areas (cRNAs) and Wild and Scenic river corridors, and stands designated as old growth.</p>				

Table 6. Forest Plan Standards and Guidelines Applicable to Canada Lynx Management.

Forest Plan Guideline or Standard	Alt. in Compliance	Management Activity	Notes/Specifics
S-2600: Protect known TE populations	NA	NA	No information showing that lynx are present.
GL-2600: Structural guidelines implemented for reserve trees/snags	Yes	Vegetation Management	No clearing of snags or deadfall would occur. Logs would be cut wide enough to allow the passage of a motorcycle.
GL-2600: Survey prior to implementing management	Yes	Wildlife TES Monitoring	Project surveys in 2006 and combined HNF/MDNR annual track survey routes on the West Unit of the Hiawatha National Forest.
GL-2600: Maintain habitat connectivity to allow for lynx dispersal	Yes	Vegetation Management	About 1,980 acres of quality connectivity will be maintained within project area (Henderson 2007). No loss of forested habitat will occur but the quality of the habitat could be reduced from human disturbance. No literature was found on effects of dirtbikes on lynx habitat but is assumed when the project area is being used by motocross riders, it would decrease the quality of connective habitat due to human disturbance.
GL-2600: After natural disturbance >20 acres retain minimum of 10% of the area on NFS	NA	Vegetation Management	Guideline would be applied if a salvage situation would occur in the project area.
GL-2600: If adding designated trails for winter activities in lynx habitat minimize impacts	NA	NA	The trail will not allow snowmobile use. There is a potential snowmobilers could use portions of the motorcycle trail that are along existing roads but it is not expected snowmobiles would ride on the newly created trail segments.
GL-2600: In lynx habitat reduce compacted route density if >2 miles per	Yes	Recreation Management Transportation	See Table 3 Densities are 1.85mile/sq.mile.

Forest Plan Guideline or Standard	Alt. in Compliance	Management Activity	Notes/Specifics
square mile (at the LTA scale) w/closures, decommissioning		Management	
GL-2600: Maintain denning habitat in patches > 5 acres comprising at least 10 percent of lynx habitat on project area	NA	Vegetation Management	No vegetation management is proposed.
GL-2600: Closure orders may be used to protect known TE breeding areas, nests and denning sites	NA	NA	There are no known breeding areas.
GL-2600: Give deference to listed species where there are conflicts with unlisted species	NA	NA	There are no known conflicts.
GL-2200: Grazing should not occur	NA	NA	No grazing is proposed in any of the alternatives.

This table presents those standards and guidelines that are both directly applicable to the species and most appropriately monitored at the project-level. Numerous other standards and guidelines in the Forest Plan are not discussed here because they are either only loosely connected to the species and/or are better tracked during periodic programmatic monitoring at the Forestwide level.

Table 7. Project Effects of Management Activities on Canada Lynx (Alternative 2- Proposed Action)

Management Activity	Exposure	Response	Determination
Recreation Management- trails – construction, operation and maintenance And -recreational facilities and parking lots.	Direct and indirect exposure	Denning and foraging habitat will lose quality due to human disturbance both physical presence in the project area and dirt bike noise. Winter access from snowmobiles is likely on segments of the trail that parallel existing roads or utility corridors. Snowmobile use on new sections of the trail is not expected due to the many twists and turns of the trail. Snow compaction is not expected to increase in the project area. The largest effect on lynx habitat would be during the months the motorcycle trail is used (May-October). Increased access to the project area through the development of the motorcycle trail may increase trapping activities in the area which could negatively affect a dispersing lynx. It is an unlikely indirect effect because lynx would likely avoid setting up a territory in the project area in Alternative 2.	While potential loss of habitat quality is possible, NLAA is given because there are no lynx known to be present on the west unit of the HNF.
	Direct and Indirect exposure	Increases in the trail density may lead to a loss of remote habitat and reduce habitat suitability.	NLAA
	Direct and indirect exposure	The Proposed Action will reduce the amount of suitable lynx habitat based on the assumption that 50dB of noise would be enough to change behavior of wildlife species (US Department of Transportation, 2004), see Table 9 in the Wildlife Section of the EA. Physical disturbance would result from human presence and motorized use.	NLAA resulting from decrease in habitat suitability.
	Direct and indirect exposure	It is unlikely coyotes will increase from the proposed action, enhanced competitor movement is not expected to occur.	NLAA

Direct and Indirect Effects

This section identifies and analyzes the direct and indirect effects of the action, interrelated and interdependent actions, and the cumulative effects of other actions in the area. This includes documenting project compliance with standards and guidelines in the Forest Plan and effects on the species.

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Alternative 1 (No Action)

Under Alternative 1 the physical characteristics of stands will improve as denning habitat for lynx. Areas with juxtaposition of denning and foraging habitat will move over time. Lynx have large home ranges and move their territories as changes to denning and foraging habitat become available on a landscape scale. Home ranges of lynx are much larger than the project area. The project area would not make up the entire home range of an individual lynx. Road densities are high and ORV use occurs causing some disruption to habitat. Snow compaction occurs along the roads and utility corridors in the project area affecting habitat connectivity and reducing the quality of habitat.

Alternative 2 (Proposed Action)

Under this alternative, disturbance to habitat would occur reducing suitable habitat for Canada lynx (see Summary of TES Wildlife Effects Determinations for Species with Occupied and Unoccupied Habitat in the project EA). Lynx habitat will lose suitability during the months the trail is used, approximately April-October of each year. A portion of the motorcycle trail goes through a patch of lynx denning habitat. Patches of denning habitat with large diameter dead and down, rootwads and hanging trees are not common in the project area. Physically this stand will continue to provide desired denning and foraging structure (lynx would use the tipped over trees during hunting) but with the placement of the trail and disturbance associated with its use, the denning patch would most likely not be used. With the Sturgeon River on the western boundary, the area may serve as a potential habitat corridor for lynx, however, none are known to occur or are at such low numbers they are not detectable.

Cumulative Effects

The total size of the cumulative effects area for Canada lynx is approximately 53,580 acres within the cumulative effects boundary. There have been no confirmed lynx observations within the cumulative effects boundary or on the West Unit of the Hiawatha NF. Past, present, and future forest management activities have occurred and are expected to occur on HNF land within the cumulative effects area. See Cumulative Effects Area, Timeframe and Management Actions used for this species at the end of this document.

Over the past 15 years, HNF management projects have resulted in the creation of about 7,600 acres of early successional habitat within the cumulative effects boundary. Future timber sale

Coolaw Pine will not create additional foraging habitat due the project will thin red pine stands. 14.2 % of the cumulative effects area has been treated by timber management.

Timber management changes the juxtaposition of denning and foraging habitat across the forest overtime. Foraging habitat will increase through timber management and forest plan goals protect denning habitat patches (pages 2-18 and 2-19 2006 Forest Plan). The trail added to existing dispersed recreation, ORV use, snowmobiling, construction of roads, road maintenance and quarrying of limestone, cumulatively lead to negative impacts to Canada lynx habitat due to increased recreational access and human presence within the cumulative effects area.

Determination

At this time, the best available information indicates that there are likely a very low number of lynx present on the HNF. Specifically within the action area, lynx are either extremely unlikely to be present or are present in so few numbers that they cannot be detected.

Based on the current population information within the project area and west unit of the Hiawatha National Forest measurable impacts to lynx are not expected to occur from the proposed management activities in this BA. The determination for both Alternatives 1 and 2 is *Not Likely to Adversely Affect where the effects are expected to be discountable.*

KIRTLAND’S WARBLER

Although approximately 200 acres of jack pine regeneration occurs within the project area suitable for Kirtland’s warbler (KW) nesting habitat, this habitat is not occupied. These acres of suitable habitat are not included in the 6,700 acres of breeding habitat in the appropriate size class referred to as K2 habitat (page 2-19 2006 Forest Plan).

The following table presents those standards and guidelines that are both directly applicable to the species and most appropriately monitored at the project-level. Numerous other standards and guidelines in the Forest Plan are not discussed here because they are either only loosely connected to the species and/or are better tracked during periodic programmatic monitoring at the Forest-wide level.

Table 8. Comparison of Kirtland’s warbler habitat.

Kirtland’s warbler	Alt. 1	Alt. 2
Acres of jack pine of all size classes	472 ac	No change
Acres of suitable KW breeding habitat	196 ac	No change
<i>Data source: compartment records for C-93, 94, 115 and 116.</i>		

Table 9. Forest Plan Standards and Guidelines Applicable to Kirtland's Warbler Management.

Forest Plan Guideline or Standard	Alts. in Compliance	Management Activity	Notes/Specifics
S-2600: Implement federal recovery plan	NA	NA	No occurrence has been found during 2006 and 2007 surveys conducted during the official census period.
S-2600: Protect known TE populations			The project area is not in a KW management area nor a Management Area (MA) with emphasis on Kirtland's warbler.
GL-2600: Maximum size of temporary openings for areas managed for KW should not exceed 1,100 acres - temporary opening guideline may be exceeded by harvesting adjacent blocks after the appropriate stocking density (determined with USFWS) is achieved and after the third-year stocking review	NA	NA	There is no timber management proposed.
GL-2600: Closure orders may be used to protect known TE nest sites	NA	NA	Special closure could be implemented if KW are found during the breeding season page 12-17, Chapter 2 Hiawatha Forest Plan 2006).
GL-2600: In areas managed for KW, strive to regenerate jack pine stands with the appropriate stem density and openings in consultation with USFWS	NA	NA	No timber management is proposed.
GL-2600: Pre-commercial thinning or release of jack pine should not occur in areas managed for Kirtland's warbler prior to vegetation before or during suitable period unless activity maintains or enhances KW as determined with USFWS	NA	NA	No vegetative management is proposed.
GL-2600: Structural guidelines implemented for reserve trees/snags	NA	NA	No vegetative management is proposed.
GL-2600: Survey prior to implementing management	Yes	Yes	Kirtland's warbler census conducted on an annual basis.
GL-2600: Give deference to listed species where there are conflicts with unlisted species	NA	NA	There are no known conflicts.

Table 10. Project Effects of Management Activities for Kirtland's Warbler (Alternative 2 –Proposed Action) (USDI 2006 - Appendix I).

Management Activity	Exposure	Response	Determination
Recreation Management- Trails (construction, operation and maintenance)	Direct and Indirect	No measurable response expected due to Standards and Guidelines (S&G's) allow seasonal closure of an area.	NLAA
Recreation Management- Recreational facilities/parking lots	Indirect	No measurable response expected due to S&G	NLAA

For additional discussion and detail regarding these effects, see the programmatic documents BA/BO (Kirtland's warbler section) (USDA 2005 and USDI 2006).

Threats identified in the Forest Plan Biological Assessment (USDA 2005) and Biological Opinion (USDI 2006) is first limited nesting habitat and second parasitism by brown-headed cowbirds.

Direct and Indirect Effects

This section identifies and analyzes the direct and indirect effects of the action, interrelated and interdependent actions, and the cumulative effects of other actions in the area. This includes documenting project compliance with standards and guidelines in the Forest Plan and effects on the species.

Alternative 1 (No Action)

The project area is heavily roaded and contains two utility corridors, one a gas line and the other a powerline. These activities have fragmented stands and create a condition where brown-headed cowbirds find suitable habitat. This species competes with Kirtland's warbler. No additional edge effect is expected in this alternative.

Under Alternative 1 (No Action), natural succession would continue to occur, no timber management other than red pine thinning in the Coolaw Pine sale is in the foreseeable future. There is little jack pine in this area for regenerating for Kirtland's warbler. There are limited opportunities to increase the amount of jack pine in the project area.

Alternative 2 (Proposed Action)

The trail will increase fragmentation of some stands and not others depending on the existing condition of the overstory. Some stands are openings and the trail follows roads in some cases. Overall the amount of edge created from the 26 mile trail could produce suitable conditions for edge species such as the brown-headed cowbird to increase in the project area.

As in Alternative 1, no timber treatment is proposed with the action alternative and no changes to habitat are anticipated except that through succession. The project area has little jack pine and little ability to increase the amount of jack pine.

Under this proposed action, disturbance from the trail may reduce the suitability of the existing habitat. If the area is found to be occupied KW from conducting annual surveys during the breeding season, a special closure order may be placed to reduce disturbance to nesting KW's (see the Mitigation section). Because protection measures exist in the Forest plan for protection of this species, if KW inhabit the area, they will be protected. The determination for Kirtland's warbler is "No Effect".

Cumulative Effects

Components of cumulative effects and Past, Present and Future Activities that may have an effect on Kirtland's warbler or its habitat is timber management including deferred management and timber stand improvement (TSI).

Some stands within the cumulative effects area had release work completed where red pine is released from volunteer jack pine seedlings Mixed stands with suitable stocking densities have been found to provide suitable habitat for Kirtland's warbler. These types of stands will be evaluated prior to release work is conducted in the future.

Jack pine acres have also been reduced by past timber treatments where jack pine was

converted to red pine or aspen.

The cumulative effects area for KW is the project area and the mapped area titled Whitefish Delta KW Management Area which includes the Stockyard area where nesting occurred from 1995 to 2004, covering approximately 3,560 acres. The project area lies between the Whitefish Delta and Eight Mile KW Management Areas.

The Kirtland's warbler is dependant on a specific age class of jack pine; the availability of suitable habitat is limiting for this species. Areas larger than 40 acres are considered suitable to attract and hold KW, although larger acreages tend to have higher numbers of KW and are used for longer periods of time. Recent jack pine budworm timber management projects have created approximately 390 acres of jack pine due to recent outbreaks of jack pine budworm that will be providing habitat in the next 5-6 years in the cumulative effects area. A portion of these stands have been designated to be managed for KW management and it is assumed they will be successful in holding breeding pairs.

The Whitefish Delta area, including the Stonington Peninsula and the extension of this area to the north of U.S. Highway 2 along Co. Rd. 509 has provided one of the core areas of occupied habitat on the west unit of the Hiawatha National Forest. The Stockyard habitat is currently out of a suitable condition. Future proposed jack pine regeneration in this cumulative effects area in the foreseeable future consists of 492 acres.

The proposed single track motorcycle trail project area is in an area that has not had historical or current occurrences of KW. As KW numbers increase in the Upper Peninsula, these potential areas not previously occupied by KW may become occupied. Disturbance in this area may cause the habitat to lose quality and not be suitable for nesting. The suitable habitat in the motorcycle trail area is a small patch compared to the large landscape of jack pine of the Whitefish Delta Landtype Association and is less attractive to KW than larger areas with large complexes of jack pine mixed with open land. The decrease of quality of the acres of habitat from the proposed action is not expected to negatively affect nesting opportunities for KW in the cumulative effects area.

Determination

Alternative 1 is "*Not Likely to Adversely Affect where the effects are expected to be insignificant*" because limited habitat is present and no KW are known to occur. If annual Kirtland's warbler surveys locate a Kirtland's warbler nesting within the project area, the U.S. Fish and Wildlife Service will need to be consulted for recommendations for use along this section of trail. The Proposed Action is *Not Likely to Adversely Affect Kirtland's warbler where the effects are expected to be discountable*.

II. REGION 9 SENSITIVE SPECIES

The purpose of this section of the BA is to document the likely effects the proposed management activities (Tables 1-2) may have on Regional Forest Sensitive Species (RFSS). A wide variety of federal legislative actions, including the National Forest Management Act, and the National Environmental Policy Act define national policy to preserve and protect Forest Service regionally listed sensitive species when managing public lands. To meet the intent of such legislation, biological assessments or evaluations are required as part of the environmental analysis for all planned, funded, or permitted federal activities.

The FSM requires the Forest Service to address the viability of RFSS to avoid any impacts that may cause a trend towards listing (USDA 1990). For RFSS, a determination is made as to whether the action would likely have “no impact,” “beneficial impact,” “may impact individuals but not likely cause a trend to federal listing or loss of viability,” or “likely to result in a trend to federal listing or loss of viability.”

This BA provides the deciding official information necessary to make an informed decision regarding the potential risks and benefits posed by the project to RFSS animals and their habitat.

A. IDENTIFICATION OF RFSS

Using data obtained from review of background information, field surveys, and habitat requirements, the RFSS list was screened to identify species with potential to occupy the project area. The species were placed into one of the three groups listed below.

- Without suitable habitat; species whose presence has not been documented and which do not have suitable habitat in the project area, or animal species not present and whose known range does not extend into the project area.
- Unoccupied habitat; species whose presence has not been reported but which have suitable habitat in the project area and ranges that extend into the Upper Peninsula region.
- Occupied habitat; species whose presence has been reported in the general project area.

Fauna

This phase of the analysis resulted in identification of five animal RFSS with occupied habitat within the Single Track Motorcycle Trail Project Area. In addition, twelve were identified as having unoccupied habitat, within the project area (Table 11). These species are addressed in this section of the BA.

The Single Track Motorcycle Trail project would have no effect and no impact on RFSS without suitable habitat in the project area.

Table 11. Fauna Regional Forester Sensitive Species of the Hiawatha National Forest

Scientific Name	Common Name	Documented in Project Area?	Habitat in Project Area?
<i>Accipiter gentiles</i>	Northern goshawk	No	Yes
<i>Ammodramus leconteii</i>	Le Conte's sparrow	No	No
<i>Asio flammeus</i>	Short-eared owl	No	No
<i>Haliaeetus leucocephalus</i>	Bald Eagle	No	Yes
<i>Buteo lineatus</i>	Red-shouldered hawk	Yes	Yes
<i>Canis lupus</i>	Gray wolf	Yes	Yes
<i>Chlidonias niger</i>	Black tern	No	No
<i>Coturnicops noveboracensis</i>	Yellow rail	No	No
<i>Cygnus buccinator</i>	Trumpeter swan	No	No
<i>Dendroica discolor</i>	Prairie warbler	No	No
<i>Dendroica kirtlandii</i>	Kirtland's warbler	No	Yes
<i>Falco peregrinus anatum</i>	American Peregrine falcon	No	No
<i>Gavia immer</i>	Common loon	No	No
<i>Lanius ludovicianus migrans</i>	Loggerhead shrike	No	No
<i>Nycticorax nycticorax</i>	Black-crowned night heron	No	No
<i>Oporornis agilis</i>	Connecticut warbler	Yes	Yes
<i>Picoides arcticus</i>	Black-backed woodpecker	Yes	Yes
<i>Sterna caspia</i>	Caspian tern	No	No
<i>Sterna hirundo</i>	Common tern	No	No
<i>Tympanuchus phasianellus</i>	Sharp-tailed grouse	No	Yes
<i>Emydoidea blandingii</i>	Blanding's turtle	No	Yes
<i>Catinella exile</i>	Pleistocene catinella	No	Yes
<i>Euconulus alderi</i>	Land snail	No	Yes
<i>Planogyra asteriscus</i>	Eastern flat-whorl	No	Yes
<i>Vallonia gracilicosta albula</i>	Multi-rib vallonia	No	No
<i>Vertigo bollesiana</i>	Delicate vertigo	No	Yes
<i>Vertigo morsei</i>	Six whorl vertigo	No	Yes
<i>Vertigo paradoxa</i>	Mystery vertigo	No	Yes
<i>Somatochlora hineana</i>	Hine's emerald dragonfly	No	No
<i>Hylogomphus viridifrons</i>	Green-faced clubtail	No	No
<i>Lycaeides idas nabokovi</i>	Northern blue butterfly	No	No
<i>Somatochlora incurvata</i>	Warpaint emerald dragonfly	Yes	Yes
<i>Trimerotropis huroniana</i>	Lake Huron locust	No	No
<i>Williamsonia fletcheri</i>	Ebony boghaunter	No	Yes
<i>Williamsonia linteri</i>	Ringed boghaunter	No	Yes

*Species further addressed in the BA are listed in **bold**.

Flora

The HNF has 76 RFSS plant species. Many of these plant species are inherently uncommon because of limited suitable habitat; they are at their end of range or are relict species from previous climatic conditions. Species having unoccupied suitable habitat were determined using

past field surveys in the project area, Michigan Natural Features Inventory (MNFI) plant community types¹, HNF ecological landtype classifications (ELT), and LTAs.

The following Michigan Natural Feature Inventory habitats found in the analysis area: Dry Northern Forest, Dry Mesic Northern Forest, Mesic Northern Forest, Alvar and Wooded Dune and Swale complex (Kost et al 2007). Habitat was determined by examining stand typing and ELTP types for stands in the project area.

Species with suitable unoccupied habitat present in the project area are analyzed for effects in this document.

Nineteen RFSS plant species were identified as having suitable unoccupied habitat present within the project area (Table 12). Species with suitable unoccupied habitat present in the project area are analyzed for effects in this document.

Table 12. Habitat presence of flora Regional Forester Sensitive Species of the Hiawatha National Forest in the Single Track Motorcycle Trail EA project area.

Scientific Name	Common Name	Documented in Project Area?	Habitat in Botanical Affected Environment?
Vascular Plants			
<i>Adlumia fungosa</i>	Climbing fumitory	No	No
<i>Amerorchis rotundifolia</i>	Round-leaved orchis	No	No
<i>Amoracia lacustris</i>	Lake cress	No	No
<i>Asplenium rhizophyllum</i>	Walking fern	No	No
<i>Asplenium trichomanes ramosum</i>	Green spleenwort	No	No
<i>Astragalus canadensis</i>	Canadian milk-vetch	No	Yes
<i>Astragalus neglectus</i>	Cooper's milk-vetch	No	Yes
<i>Beckmannia syzigachne</i>	American sloughgrass	No	No
<i>Botrychium campestre</i>	Prairie moonwort	No	Yes
<i>Botrychium michiganense</i> (= <i>hesperium</i>)	Western moonwort	No	Yes
<i>Botrychium mormo</i>	Goblin moonwort	No	No
<i>Botrychium oneidense</i>	Blunt-lobed grapefern	No	Yes
<i>Botrychium pallidum</i>	Pale moonwort	No	Yes
<i>Botrychium rugulosum</i>	Ternate grape fern	No	Yes
<i>Botrychium spathulatum</i>	Spathulate moonwort	No	Yes
<i>Callitriche hermaphroditica</i>	Autumnal water-starwort	No	No
<i>Calypso bulbosa</i>	Calypso orchid	No	No
<i>Carex concinna</i>	Beauty sedge	No	No
<i>Carex heleonastes</i>	Hudson Bay sedge	No	No
<i>Carex novae-angliae</i>	New England sedge	No	No
<i>Carex richardsonii</i>	Richardson sedge ²	No	No

¹ Descriptions of MNFI plant community types are found within the project file and are also available from Michigan State University website, under Michigan Natural Features Inventory, plant community type descriptions.

Scientific Name	Common Name	Documented in Project Area?	Habitat in Botanical Affected Environment?
<i>Carex scirpoidea</i>	Bulrush sedge	No	No
<i>Carex wiedandii</i>	Wiegand's sedge	No	Yes
<i>Crataegus douglasii</i>	Douglas's hawthorn	No	No
<i>Cryptogramma stelleri</i>	Slender cliff brake fern	No	No
<i>Cynoglossum virginianum</i> var. boreale	Northern wild comfrey	No	Yes
<i>Cypripedium arietinum</i>	Ram's head lady slipper	No	Yes
<i>Cystopteris laurentiana</i>	Laurentian bladder fern	No	No
<i>Drosera anglica</i>	English sundew	No	No
<i>Dryopteris expansa</i>	Expanded wood fern	No	No
<i>Dryopteris filix-mas</i>	Male fern	No	No
<i>Eleocharis compressa</i>	Flattened spike-rush	No	No
<i>Elymus glaucus</i>	Blue wild-rye	No	No
<i>Empetrum nigrum</i>	Black crowberry	No	No
<i>Erigeron hyssopifolius</i>	Hyssop-leaved fleabane	No	No
<i>Galium brevipes</i>	Northern three-lobed bedstraw	No	No
<i>Galium kamtschaticum</i>	Northern wild licorice	No	No
<i>Gymnocarpium robertianum</i>	Limestone oak fern	No	No
<i>Helianthus mollis</i>	Downy sunflower	No	Yes
<i>Huperzia selago</i>	Fir clubmoss	No	Yes
<i>Juglans cinerea</i>	Butternut	No	Yes
<i>Juncus stygius</i>	Moor rush	No	No
<i>Juncus vaseyi</i>	Vasey's rush	No	Yes
<i>Leymus mollis</i>	Dune grass	No	No
<i>Listera auriculata</i>	Auricle twayblade	No	No
<i>Littorella uniflora</i>	American shoregrass	No	No
<i>Luzula parviflora</i>	Small flowered wood rush	No	No
<i>Lycopodiella margueritae</i>	Northern prostrate club moss	No	No
<i>Malaxis brachypoda</i>	White adder's mouth	No	Yes
<i>Muhlenbergia richardsonis</i>	Mat muhly	No	No
<i>Myriophyllum alterniflorum</i>	Alternate leaved water milfoil	No	No
<i>Omalotheca sylvatica</i> (= <i>Gnaphalium sylvaticum</i>)	Woodland cudweed	No	No
<i>Petasites sagittatus</i>	Sweet-coltsfoot	No	No
<i>Pinguicula vulgaris</i>	Butterwort	No	No
<i>Piptatherum canadensis</i> (= <i>Oryzopsis canadensis</i>)	Canada rice-grass	No	Yes
<i>Potamogeton confervoides</i>	Algal pondweed	No	No
<i>Pterospora andromeda</i>	Pine drops	No	Yes
<i>Ranunculus lapponicus</i>	Lapland buttercup	No	No
<i>Rubus acaulis</i>	Dwarf raspberry	No	No
<i>Salix pellita</i>	Satiny willow	No	No

Scientific Name	Common Name	Documented in Project Area?	Habitat in Botanical Affected Environment?
<i>Scirpus (=Schoenoplectus) torreyi</i>	Torrey's bulrush	No	No
<i>Senecio (=Packera) indecorus</i>	Ragwort	No	No
<i>Sporobolus heterolepis</i>	Prairie dropseed	No	Yes
<i>Stellaria longipes</i>	Stichwort	No	No
<i>Tanacetum huronense</i>	Lake Huron tansy	No	No
<i>Thalictrum venulosum</i> v. <i>confine</i>	Veiny meadow rue	No	No
<i>Vaccinium cespitosum</i>	Dwarf bilberry	No	Yes
Non-Vascular		No	No
<i>Caloplaca parvula</i>	Lichen	No	No
<i>Cetraria (=athiana) aurescens</i>	Yellow ribbon lichen	No	No
<i>Frullania selwyniana</i>	Liverwort	No	No
<i>Menegazzia terebrata</i>	Port-hole lichen	No	No
<i>Pohlia lescuriana</i>	Spongy gourd moss	No	No
<i>Ramalina farinacea</i>	Dotted line lichen	No	No
<i>Schistostega pennata</i>	Luminous moss	No	No
<i>Stereocaulon condensatum</i>	Foam lichen	No	No
<i>Tetradontium brownianum</i>	Little Georgia moss	No	No

*Species further addressed in the BA are listed in **bold**

B. SURVEYS

The project file contains maps/records of the following surveys:

1. Woodland raptor surveys in proposed motorcycle construction area.

Funding was not available to survey the entire area for raptors. Because of this priority stands were identified using forest type and year of origin of known northern goshawk nests with observations of incubating adults or young in the nest to identify stands in which successful nesting occurred. In addition to this, a GIS ranking method to determine high, medium and low priority forest types developed on the east unit of the Hiawatha NF was used along with a CDS (combined data system) query. The result of the query was checked against a GIS map of the trail and those stands ½ mile from the proposed trail were surveyed (see the project file).

 - Surveys for forest raptors were conducted during on 3/29/07, 4/2/07, 4/3/07 and 4/24/07. Surveys were conducted by a wildlife technician experienced in call/response surveys for forest raptors and followed the HNF Woodland Raptor Inventory Protocol (USFS 2002 as amended). These surveys are intended to target northern goshawk, red-shouldered hawk and red-tailed hawk. Additional information on raptor occurrences was obtained through Michigan Natural Features Inventory data and the West Unit Raptor Database.
 - Aerial photo identification and ground checking of potential suitable habitat was conducted in 2007 (Flory 2007) immediately north of the project area with no new nests located.
 - Leaf-off surveys were conducted by an experienced birding volunteer on January 15, 22, 27, 28 and February 1 and 7, 2008. Two stick nests previously unrecorded were located.
 - Historic nest checks were made the week of May 12, 2008 and June 10, 2008 by a contractor which included nests in the project area and the two new nests found during leaf-off surveys. The nest known as Manistique #3 was active with 2 red-shouldered hawk chicks. This nest is more than ½ mile from the closest portion of the proposed motorcycle trail.
2. Kirtland's warbler survey in 2006, 2007 and 2008.
 - Approximately 200 acres of suitable Kirtland's warbler (KW) was surveyed during the Kirtland's warbler Census in 2006, 2007 and 2008 (see the Federally Listed Species Section). A black-backed woodpecker cavity tree was located during KW surveys.
3. Winter track survey routes in representative stands and over the majority of the roads in 2007.
 - Winter track surveys were conducted by a wildlife biologist and biological technician on 4/13/07 and 4/16/07. Surveys targeted wolf, lynx, marten and fisher tracks however, all tracks are recorded. Coyote, deer, bobcat, weasel, snowshoe hare and red squirrel were recorded. Ruffed grouse tracks were also observed.

4. Dragonfly surveys in 2006
 - Approximately 164 acres of habitat was surveyed within the project area in 2006 (Ross 2006) specifically for incurvate emerald dragonfly and Hine's emerald as mentioned in the Federally Listed Species Section. An occurrence of incurvate emerald dragonfly was located.
5. Bald Eagle Monitoring 2004-2007
 - Each year, the MDNR conducts aerial surveys and monitoring throughout the Upper Peninsula (UP). Recent surveys (2004-2007) have not shown any known nest sites within the project area.
6. Breeding Bird Census Route
 - The Isabella route of the North American Breeding Bird Census (NABBC) has been run semi-annually since 1966 and transects the project area. A new breeding bird route was begun in 2006, the Gooseneck route, and was run also in 2007 and 2008.
7. Snail Surveys
 - A sample of duff was collected from an alvar opening and looked at with a binocular microscope for the evidence of snails. No snail shells or parts of snail shells were found.
8. Rare plant surveys in 2006 and 2007.
 - Surveys were conducted by experienced Forest Service botanists over almost the entire proposed trail. A few areas were likely missed between two different teams surveying in 2006 and 2007. The Natural Resource Information System (NRIS, USDA 2008) database and Michigan Natural Features Inventory (MNFI, Michigan State University Extension 2008) were also consulted for known plant occurrences. No RFSS plants were detected during surveys.

C. DESIGN CRITERIA

In addition to the standards and guidelines found in the Forest Plan (which would be implemented) there are additional design criteria that would apply to the Proposed Action. Effects are disclosed under the assumption that these criteria would be implemented. If additional RFSS locations are identified, design criteria would be applied at that time. The design criteria measures are intended to mitigate potential negative effects on these species.

D. RECOMMENDATIONS FOR AVOIDING, MINIMIZING EFFECTS OR CONSERVATION MEASURES

Northern goshawk and Red-shouldered hawk

The following mitigation measures are to protect woodland raptors on the Regional Foresters Sensitive Species List for the Hiawatha National Forest. The following measures apply to any northern goshawk or red-shouldered hawk nest that may be constructed in the project area (considered the motorcycle trail and ½ mile on either side of the motorcycle trail). These measures also apply to use of the trail during the periods of March 1-August 31.

Mitigation measures: *Conduct broadcast calling of woodland raptors on a yearly basis ½ mile of each side of the entire motorcycle trail. Implement Forest-wide Policy for Implementing Northern Goshawk and Red-shouldered Hawk Territory Protection Measures if a nest is found (Piehler 2006).*

Nest Area

- Defined as a 30-acre area around goshawk and red-shouldered hawk nests. The nest is typically the center of a circular area approximately 1320 feet across (660-foot radius from the nest).
- No trail construction or trail use will be permitted within this area, regardless of nest status during the nesting season.
- Actions related to motorcycle trail use and use of existing roads would only be permitted outside the nesting season (March 1 to August 31).
- Forest service local roads within 960 feet of the nest may be seasonally (March 1 to August 31) restricted or closed. Minimal human presence will be permitted during the same period. If an active nest is located, no use on the trail segment will be allowed during the seasonal restriction.
- A historic nest no longer intact will be considered “retired”. Retired nests will not be buffered. Additionally, if no other nests are known within the 30-acre nest buffer or in the 400-500 acre PFA, the territory will be considered abandoned. Seasonal restrictions are not implemented in abandoned territories.

Post-Fledging Area (PFA)

- Defined as a 400-acre to 500-acre forested area, typically the center of a circular area, approximately one mile in diameter (1/2 mile radius from the nest). This area should contain a mosaic of vegetative structural stages in small patches.
- All trail use activity (also road construction or recreation area development etc.) within the PFA will only be permitted outside the nesting season (March 1 through August 31).
- If a nest is inactive one year, the seasonal restriction in the post-fledging areas (PFA) for goshawk and red-shouldered hawk territories would not need to be implemented if the nest and territory are verified by a HNF biologist as inactive for any current year. This suspension of seasonal restrictions in the PFA will be preceded by a survey of historic and alternate nests, and after a search for new nests within the territory. Suspended seasonal restrictions will be documented in the project record with an official memo to the District Ranger. Occupation of the nest will be determined annually.
- If adults are not present within a territory by June 1, the nest or nests associated with that specific territory can be defined as “inactive” for that year. Suspended seasonal restrictions can be applied to inactive territories. The nest would remain in the inactive status until March 1. Current survey information would then be required to determine the status of the territory for the subsequent nesting period.

Kirtland’s warbler

The following mitigation is for Kirtland’s warbler if they are located within the project area during the breeding season. Surveys for Kirtland’s warbler will be conducted during the official census period. If Kirtland’s warblers are found, consultation with U.S. Fish and Wildlife Service would need to occur.

Mitigation measure: Implementation of a special closure order as directed in Chapter 2 of the 2006 Forest Plan “ For all threatened and endangered species, special closure orders may be used to protect known breeding areas, nests and denning sites (page 12-17, Chapter 2 Hiawatha Forest Plan 2006).

Gray Wolf

The following mitigation would be implemented if a gray wolf den is located in the project area. The Forest Service will communicate with the Michigan Department of Natural Resources on locations of gray wolves on the Forest.

Mitigation measures: Protect known den site with a seasonal restriction during active denning. Minimizing disturbance near known active den sites is an action listed in the Draft Michigan Wolf Management Plan compiled by the Michigan Department of Natural Resources (MDNR, 2007).

Bald Eagle

If a bald eagle nest is placed within 1/4 mile from the motorcycle trail, the following mitigation would be implemented.

Mitigation measure: Do not operate off-road vehicles or motorcycles within 330 feet of the nest throughout the breeding season (USDI, 2007). This includes time from courtship and nest building through the fledging of young from March 1- August 15th. This mitigation was taken from the guidelines for Category D (Off-road vehicle use) and Category F (non-motorized recreation and human entry) and the Chronology of Typical Reproductive Activities of Bald Eagles in the United States in the National Bald Eagle Management Guidelines (USDI, 2007).

E. EFFECTS OVERVIEW

Fauna

Compartments 93, 94, 115 and 116 are used as the indirect and direct effects analysis area unless otherwise specified. The cumulative effects area differs for each species considered in this document and the cumulative effects components for each species is described in Table 17 at the end of this document.

Research papers addressing noise and effects to wildlife were reviewed (see project file) papers) to assist in determining the wildlife effects area; the area in which noise disturbance is expected to decrease habitat suitability. This “wildlife effects area” was determined to be 1/4 mile on each side of the proposed motorcycle trail. This distance is based on species in the project area with published ranges of disturbance and averaged for all species. Averaging the distance rather than assigning an effects area for individual species was needed because limited information is available and different species of wildlife have different ranges in which they can hear sound and different frequencies of sound. For the majority of the species this technique will approximate changes to habitat quality in the comparison of alternatives.

See the Environmental Consequences section for a description of the cumulative effects timeframe. Short-term effects are those taking place between 0-5 years or during the implementation period and long-term effects are those lasting between 5-15 years.

Flora

The geographic area for the direct, indirect and cumulative effects is the footprint of the trail plus ten feet on either side, totaling 64.5 acres. Ten feet was chosen based on the assumption that continued maintenance of the trail would effect both light penetration and potential noxious weed invasion into that area.

The time frame for short-term effects ranges from 0-5 years or during the implementation period and for long-term the time frame ranges from 5-15 years. After this timeframe, succession would continue to take place and continue to change habitats, but predictions on forest composition and habitat availability become increasingly speculative.

Measurement Indicators:

This BA must arrive at a finding of effects for species population viability, and must be one of the following determinations for RFSS:

- No impact
- Beneficial impacts
- May impact individuals but it is not likely to cause a trend to federal listing or loss of viability
- Likely to result in a trend to federal listing or loss of viability

F. ANALYSIS OF REGIONAL FORESTER SENSITIVE SPECIES

Fauna Effects Analysis:

NORTHERN GOSHAWK

The Western Great Lakes Region is at the southern extent of the current breeding range of northern goshawks. The range has been expanding southward (West, 1998). In this region, goshawk nesting activity follows the cyclic oscillations of the snowshoe hare and the ruffed grouse populations (Erdman et al 1998, West 1988). Postupalsky noted after thirty years of monitoring raptors in Michigan the “high” years appear to occur in the later part of the decade and the “low” in the early part of the decade. The cyclic populations do not seem to be as great as those in Canada. While actual numbers of prey are important, it has been argued that because goshawk morphology and behavior are adapted for hunting in moderately dense, mature forests, prey availability (as determined by the occurrence of favorable vegetation structure where prey are present above a low threshold) is more important than prey density in habitat selection (Beier and Drennan 1997).

The northern goshawk inhabits large stands of boreal and northern hardwood forests having a dense overstory and a relatively open understory (Postupalusky 1991). In Michigan, nests are most often constructed in deciduous trees and less often in pine. On the Hiawatha NF, maple, yellow birch and American beech are the most frequently used trees for nesting (Gibson 2003). Forest types northern goshawk have nested on the west unit of the Hiawatha NF is hardwoods with a yellow birch component, mixed hardwoods, red maple (dry site) and red pine (one occurrence).

Snags, downed logs, openings, large trees, and the interspersed of vegetational structural stages (grasses to old forests) are critical for prey species used by the goshawk. Prey species include

birds (including larger songbirds), red squirrels, snowshoe hare and ruffed grouse. Important components of goshawk foraging habitat are mixed stands, relatively clear understories, tall trees providing perches, and a canopy closure between 60-89% (Higgelke and MacLeod 2000). Important components of goshawk nesting habitat are deciduous dominated stands, large trees with forked structure and canopy closure of at least 40% but preferably > 80% (Higgelke and MacLeod 2000).

The primary threat to northern goshawks in Michigan is habitat alteration and loss due to timber harvest, road construction and residential development. The goshawk is impacted directly by alteration of suitable nesting structure around the nest site and disturbance during the nesting season and indirectly, by influencing the distribution and abundance of prey species (Cooper, 1999b).

Because goshawks are secretive, on the edge of their range in the Western Great Lakes, potentially cyclic due to prey numbers, and occur in naturally low densities, it is challenging to obtain long-term trend data on the goshawk (West 1998). It is difficult to determine population status of northern goshawk in terms of density and abundance because 1) territories are widely dispersed; 2) the population fluctuates approximately 50% between population highs and lows and 3) territories being occupied on average 3.9 years (West 1998).

According to the Northwoods database description of northern goshawk habitat, the project area contains approximately 2,564 acres of suitable goshawk habitat (Benyus et al 1992). The project area contains approx. 30% northern hardwoods and 19% upland mixed forests.

An area containing three known northern goshawk nests along with a ½ mile buffer around the nests was removed from the proposed action prior to the proposed action being scoped. Two of the three nests are thought to be alternate nests.

Nest surveys conducted during the leaf-off season in January and February 2008, located two additional nests within the project area. On a check the week of June 9, 2008, these nests were determined to be inactive (Flory 2008).

Direct and Indirect Effects Alternative 1 (No Action)

Currently raptor monitoring occurs in historic nesting areas in the project area and will continue. Aerial photo identification and ground checking of potential suitable habitat outside of historic locations with inactive territories in 2007 (Flory 2007). No change to habitat is anticipated through timber management.

Direct and Indirect Effects Alternative 2 (Proposed Action)

Approximately 26 miles of motorcycle trail will be constructed in an approximate 5 square mile area. Applying the wildlife effects area to the existing habitat, reduces the amount of suitable habitat within the project area for northern goshawk and would cause disturbance to approximately 1,350 acres (Benyus et al, 2002). Negative effects could occur to northern goshawk if they constructed a nest and began nesting prior to motorcycle use in the spring. It is expected the trail will receive little use in the month of during nest territory establishment. Once the snow melts the trail will begin to be used in May (personal communication Okonek).

Potential negative effects are reduced nesting success from an adult being flushed from a nest. Eggs being incubated could be left for a period of time that would reduce hatching success. Disturbance after hatching when the young require brooding to maintain their body temperatures could also lead to reduced fitness or death of the young. A pair may move to another area with suboptimal nesting habitat and not be as successful as they would otherwise. If a nest were not placed during the early spring before motorcycle use, it is likely northern goshawk would not place nests from noise disturbance and over time would use areas outside of the motorcycle trail area.

If this alternative is chosen, surveys will be required on an annual basis for a period of five years for the detection of raptors. Standard HNF nest protection measures (Piehler 2006) are in the *Recommendations for Avoiding, Minimizing Effects or Conservation Measures* section and apply to all existing and future northern goshawk nests within the project area. These surveys should take place both pre-planning and after project implementation to determine if negative results occur.

Approximately 1,350 acres or approximately 2.5% of the project area would have reduced quality over the long-term from motorcycle use of the trail if the proposed action is implemented.

Cumulative Effects

There are fifteen stands proposed for trail construction in which timber management has occurred in the past ten years. Those stands with past thinning treatments continue to provide habitat for northern goshawk and regenerating stands provide habitat for hare and ruffed grouse, prey species of northern goshawk.

Use of the trail would tend to make these stands less suitable for nesting due to disturbance from Noise, see Table 9 in the Wildlife Section of the EA.

Components of cumulative effects and Past, Present and Future Activities that may have an effect on Northern goshawk or its habitat include timber management including deferred management, road construction, closure and obliteration and OHV use both legal and illegal. The cumulative effects area contains areas that are naturally fragmented such as the wooded dune and swale complex. It also contains areas of northern hardwoods.

The cumulative effects area includes an approximate 7,293 acre area which includes the project area, past 10 Mile, and the future timber sale Coolaw Pine. Past, present and future timber management in the cumulative effects timeframe will treat approximately 14% of the cumulative effects area. Timber management can have both positive and negative effects. A positive effect may be that some prey species may benefit from some canopy opening due to the development of a herbaceous layer. Increases in small mammals may improve goshawk hunting in stands adjacent to treated stands. A negative effect would be loss of potential nest trees and making the stand attractive to nest competitors.

Within the cumulative effects area roads would be maintained and additional roads may be constructed to access areas previously not managed. Timber management and road construction could cause disturbance to nesting Northern goshawks.

In the Proposed Action, noise disturbance would make the habitat less likely to be occupied from motorcycle use. Territories could be established prior to the motorcycle trail use in the spring causing negative effects to nesting when trail use begins in the spring. The effect of noise on red-shouldered hawks would be additive to effects from timber management overstory removal and clearcut treatments. Timber management is expected to continue to occur at approximate 15 year entry intervals in the cumulative effects area. The cumulative effects area would continue to have suitable areas for Northern goshawk nesting. Timber management treatments of clearcut and overstory removal may improve habitat for nest competitors and would change spatially and temporally over time as stands again mature and new stands are treated.

Determination

The Determination for the No Action Alternative is *No Impacts* due to protection of existing nests. The Determination for the Proposed Action is *May Impact Individuals but is not likely to cause a trend to federal listing or loss of viability*. Suitable habitat in the project area will need to be surveyed on a yearly basis to detect any new northern goshawk nests. If new nests are located within ½ mile of the trail, they will be protected with a seasonal closure.

RED SHOULDERED-HAWK

The Upper Peninsula of Michigan is at the northern edge of the red-shouldered breeding range (Jacobs and Jacobs 2002). Red-shouldered hawks are uncommon but widespread on the Hiawatha National Forest.

The majority of the nests in Michigan occur in relatively mature deciduous or mixed forests that have wetland habitats nearby or wetlands interspersed with forest. Postupalsky (1980) recorded habitat associated with three Upper Peninsula red-shouldered hawk nests. In each case nests were placed in northern hardwoods with closed canopies and generally open understories (Cooper 1999a; TNC 1999). Nest trees included yellow birch, aspen and sugar maple approximately 18 inches in diameter. Of eighteen red-shouldered hawk nests on the west side of the Hiawatha NF, eight are in beech, five in red maple, four in yellow birch and one in paper birch.

Nests are typically near wetland habitat, usually within 1/8 mile of a wetland. Snakes, frogs, crayfish, larger insects, small rodents and birds are prey species, terrestrial prey items are also taken (Cooper 1999a).

Hardwoods make up 30% of the project area, 2% mature lowland hardwoods and 18% closed canopy lowland coniferous and mixed stands. According to the Northwoods database description of red-shouldered hawk habitat (Benyus et. al 1992) there are approximately 1,851 acres of suitable red-shouldered hawk habitat in the project area. The project area provides good habitat for red-shouldered hawks with its wooded dune and swale topography. There are no historic nest sites within the project area. An area with two known red-shouldered hawk nests was removed from the proposed action prior to finalizing the proposed action for scoping. The trail proposed for this area was dropped providing protection to these nesting territories.

Surveys during June 2008 found no active red-shouldered hawk nest within the project area and an active nest with two young north of the proposed motorcycle trail. This nest is greater than ½

mile from the proposed motorcycle trail.

Direct and Indirect Effects Alternative 1 (No Action)

No timber management is proposed in this alternative. Succession will lead to larger diameter trees for raptor nesting. Human access will continue to occur. ATV use will continue and will increase at the same rate it is increasing in other parts of the Forest. Historic nest monitoring will continue.

Direct and Indirect Effects Alternative 2 (Proposed Action)

Approximately 26 miles of motorcycle trail will be constructed into an approximate 5 square mile area. Use of the trail by motorcycles has the potential to reduce the amount of suitable habitat within the project area for red-shouldered hawk and would cause disturbance to approximately 620 acres considered suitable for red-shouldered hawks based on the wildlife effects area applied to suitable habitat for red-shouldered hawk in the project area (Benyus 1992). Negative effects could occur to red-shouldered hawk if they constructed a nest and began nesting prior to motorcycle use in the spring. It is expected the trail will receive little use in the month of April during nest territory establishment. Once the snow melts the trail will begin to be used in May through August during the breeding season (personal communication Okonek). Potential negative effects are reduced nesting success from an adult being flushed from a nest. Eggs being incubated could be left for a period of time that would reduce hatching success. Disturbance after hatching when the young require brooding to maintain their body temperatures could also lead to reduced fitness or death of the young. A pair may move to another area with suboptimal nesting habitat and not be as successful as they would otherwise. If a nest were not placed during the early spring before motorcycle use, it is likely red-shouldered hawk would not place nests from noise disturbance and over time would use areas outside of the motorcycle trail area.

There is the potential that early spring nesting could occur prior to the motorcycle trail being used in May (prior to snowmelt). Negative effects could occur to red-shouldered hawks if they constructed a nest and began nesting prior to motorcycle use. Potential negative effects are reduce nesting success from an adult being flushed from a nest. Eggs being incubated could be left for a period of time that would reduce hatching success. Disturbance soon after hatching when the young require brooding to maintain their temperature could also lead to reduced fitness or death of the young. A pair may move to another area with suboptimal nesting habitat and not be as successful as they would otherwise.

If this alternative is chosen, surveys will be required on an annual basis for a period of five years for the detection of raptors. Standard HNF nest protection measures (Piehler 2006) are in the *Recommendations for Avoiding, Minimizing Effects or Conservation Measures* section and apply to all existing and future northern goshawk nests within the project area. These surveys should take place both pre-planning and after project implementation to determine if negative results occur.

Cumulative Effects

Components of cumulative effects and Past, Present and Future Activities that may have an

effect on red-shouldered hawk or its habitat include timber management including deferred management, road construction, closure and obliteration and OHV use both legal and illegal. The cumulative effects area contains areas that are naturally fragmented such as the wooded dune and swale complex.

The cumulative effects area includes an approximate 7,293 acre area which includes the project area, past 10 Mile, and the future timber sale Coolaw Pine. Past, present and future timber management in the cumulative effects timeframe will treat approximately 14% of the cumulative effects area. Timber management can have both positive and negative effects. A positive effect may be that some prey species may benefit from some canopy opening due to the development of a herbaceous layer. Increases in small mammals may improve goshawk hunting in stands adjacent to treated stands. A negative effect would be loss of potential nest trees and making the stand attractive to nest competitors.

The cumulative effects area contains 2 known red-shouldered hawk territories and two other suspected nest territories based on surveys completed for NEPA analysis in the Ten Mile Pine, Coolaw Pine sale area and the proposed motorcycle trail.

Within the cumulative effects area roads would be maintained and additional roads may be constructed to access areas previously not managed. Timber management and road construction would cause disturbance to nesting red-shouldered hawks and may temporarily open stands making them attractive to nest competitors such as great-horned owl and red-tailed hawks.

Unlike timber management where stands re-grow and can be improved to create large diameter trees for nesting, approximately 620 acres or approximately 1% of the project area would have reduced quality over the long-term from implementing the proposed action.

Determination

The Determination for the No Action Alternative is *No Impacts* due to protection of existing nests. The Determination for Alternative 2 is *May Impact Individuals but is not likely to cause a trend to federal listing or loss of viability*. Suitable habitat in the project area will need to be surveyed on a yearly basis to detect any new red-shouldered hawk nests have been detected. If new nests are located within ½ mile of the trail, they will be protected with a seasonal closure.

BLACK-BACKED WOODPECKER

The black-backed woodpecker occurs locally across the Upper Peninsula and parts of the northern Lower Peninsula. It occupies open and closed black spruce-tamarack bogs, northern white cedar swamps, mixed forests with eastern hemlock, jack-pine plains and conifer clearcuts where disturbance (insect outbreak, fire) provide areas with a large number of dead trees (Evers 1991).

Bark-boring beetle larvae provide 75 percent of the woodpeckers diet. They also consume other insects and spiders. Nesting cavities are drilled in dead or live conifers, with spruce and pine trees being preferred. Foraging sometimes occurs far from its nesting territory (SVE 2002a). Most nests overlook openings such as lakes, peatlands, clearcuts and roads. This species quickly inhabits areas where wildfire or disease events create stands with large numbers of snags, these

woodpeckers move between areas with large disturbances. Dead standing and dead and downed logs are used for foraging. Stands with lesser numbers of snags are used in the interim. In fourteen years of Breeding Bird Census on the West Unit of the Forest, fourteen black-backed woodpeckers were observed on six transects. Recent jack pine budworm outbreaks has increased the number of locations with known occurrence on the west unit of the Hiawatha NF. The stands black-backed woodpeckers have been observed in are over-mature jack pine with current jack pine budworm outbreaks. The stands have a large amount of dead standing trees and are interspersed with openings.

Using the definition of habitat provided by the Northwoods database, the project area contains approximately 2,510 acres of suitable habitat (Benyus et al 1992). A cavity tree of a black-backed woodpecker was found during Kirtland's warbler surveys along FR 2741 approximately 1/8 mile from the proposed trail. It is not known how recently the cavity was used for nesting. It is likely black-backed nesting also occurs along locations along the proposed trail but was not observed.

Direct and Indirect Effects Alternative 1 (No Action)

No timber management is proposed. Pine stands will grow and develop mature trees that may become infected with beetles in the future. ATV use occurs in the project area on Forest roads. The road that is immediately adjacent to the black-backed woodpecker cavity tree is open to all vehicles. Some disturbance during the nesting season is expected however this road receives little use and disturbance to the nest is very low.

Direct and Indirect Effects Alternative 2 (Proposed Action)

No timber activity is proposed in the action alternative. No structural changes to black-backed woodpecker would occur other than those through natural succession and insect and disease outbreaks will occur. The majority of the use along the motorcycle trail will occur during the breeding season. Disturbance in the ¼ mile "wildlife effects area" would affect suitable habitat on approximately 950 acres (Benyus et al., 1992). The length of time of disturbance from noise along the trail would be for a longer period of time than from a vehicle on the road because of the twists and turns of the trail would concentrate use in the area although occurring from a greater distance than from the road. Research published on disturbance to nesting birds has recorded disturbance at 50 meters to songbirds and at a distance of 300-400 meters for woodland breeding birds (USDT, 2004).

Neither of the parking lots will be constructed in this area so increased traffic will not occur near the known cavity tree.

Cumulative Effects

The cumulative effects area consists of Compartments 93, 94, 115 and 116, an approximate 3,650 acre area. Components of cumulative effects and Past, Present and Future Activities that may have an effect on black-backed woodpecker or its habitat are fire suppression, maintenance of wetlands and reduction of disease in forested stands.

Black-backed woodpeckers typically move across the landscape as suitable nesting habitat is

available. Large scale disturbances creating large amounts of snags attract this species. There are no foreseeable large scale disturbances occurring within the cumulative effects area. Salvage sales have occurred in the cumulative effects area in the past likely reducing the amount of nesting and foraging habitat for black-backed woodpeckers. The future Coolaw Pine will thin approximately 200 acres of red pine in the future. The majority of the stands used by black-backed woodpeckers is jack pine and not red pine.

Past management of the area has converted some jack pine stands to red pine or aspen. Red pine thinning will occur in the near future. Guidelines in the Forest Plan exist to protect black-backed nesting habitat. The Forest Plan allows for the retention of 10 acre buffers around cavity trees in timber sale areas. There are no seasonal restrictions for protection of black-backed woodpeckers from human disturbance.

Determination

Neither Alternative 1 nor 2 proposes timber treatment of the area although treatment will likely occur in the future. The determination for Alternative 1 is *No Impacts*. Effects from Alternative 2 *May impact individuals but is not likely to cause a trend to federal listing or loss of viability* because nesting habitat would lose quality from noise created by use of motorcycle trail.

BALD EAGLE.

The nearest bald eagle nest is approximately 1 ½ miles from the project area. No nesting territories occur in the project area.

Nesting bald eagles are associated with lakes, rivers and shorelines (USFWS 1983). Eagles are loyal to their nesting areas, returning to use the same nest year after year. Fish are the major component of eagles diet, but they will also consume waterfowl, other birds, mammals up to the size of a large rabbit and carrion. In the winter eagles move to areas of ice-free water (Brewer and McPeck 1991).

Bald eagles are sensitive to human intrusion, especially early in the nesting season. Timber management within 1,500-foot radius of a nest site significantly disturbs bald eagles and can lead to reproductive failures (Evers, 1997). The Forest Plan contains standards and guidelines to protect bald eagle nests. Although the bald eagle was delisted on August 8, 2007, it is on the Hiawatha National Forests RFSS list for a period of five years after delisting.

Direct and Indirect Effects Alternative 1 (No Action)

Threats to bald eagle include human activity and disturbance from recreation activities. Disturbance in this alternative includes ATV use and traffic on Forest roads and FH-13. Carrion along these roads may be used by foraging eagles. Vehicle noise can cause disturbance to foraging eagles (see the decibel reading of traffic in the Recreation Section of the Single Track Motorcycle Trail EA).

Direct and Indirect Effects Alternative 2 (Proposed Action)

Increased vehicle traffic would occur along FH-13 and FR 2231 in this alternative. Use of the motorcycle trail will add to the existing human disturbance and may cause eagles to perch or

forage in other locations. There is a potential early nesting activities could establish a nesting territory near the trail prior to use in the spring. Nesting activities start as early as March 1st. Depending on the distance of the nest to the trail, negative effects could occur. Disturbance can cause a variety of effects from flushing birds off their nests allowing eggs to be preyed upon or not incubated properly. Birds may attempt to defend their nests rather than tending to young. Unattended egg or young are subject to predation or become vulnerable to weather (USDI 2007). Interference in foraging would negatively affect young.

Cumulative Effects

The area between FR 2226 and the Sturgeon River south to U.S. Highway 2 is the cumulative effects area for bald eagle, an approximate 10,880 acre area. This area was chosen because it includes the Sturgeon River, two historic territories of bald eagles and MA 4.5 emphasizing long-lived conifers beneficial to bald eagle.

Components of cumulative effects and Past, Present and Future Activities that may have an effect on bald eagle or its habitat are: snowmobiling, road construction, closure and obliteration, dispersed recreation, recreation at a designated trail or recreation area, timber management and OHV use, legal and illegal. Recreation use of the Forest is expected to increase.

Disturbance from the motorcycle trail will add to human disturbance from use of forest roads, timber management and dispersed recreation. The construction of this designated trail will increase human disturbance and concentrate use. Design of the trail will concentrate use in a 5 square mile area and in localized areas such as where two trail segments are nearby. Trail segments in proximity to one another and roads and utility corridors may create a situation where trail riders cross over to other trail segments running mini loops increasing disturbance.

Determination

Because the Sturgeon River is approximately ½ mile from the nearest portion of the trail. The noise created by motorcycles will not have a negative effect on eagles foraging along the river. Increased vehicle use along FH-13 and FR 2231 from riders of the trail may increase disturbance. Motorcycle club rides will concentrate use of along the trail and the length of disturbance in specific locations along the trail. Eagles would likely forage in less disturbed areas during these times. The determination for Alternative 1 is *No Impacts* because no bald eagle nests are in the project area, Alternative 2 has a determination of *“May impact individuals but is not likely to cause a trend to federal listing or loss of viability”*.

GRAY WOLF

The Great Lakes Distinct Population Segment of gray wolf was delisted on March 12, 2007. Gray wolves have increased in number in the Upper Peninsula in recent years through natural immigration and reproduction (Michigan Gray Wolf Recovery Team 1997). The Michigan Department of Natural Resources estimates the wolf population at approximately 509 individuals in 2006. (DNR, 2007). The project area is inhabited by gray wolves.

Gray wolves occupy many vegetative community types. White-tailed deer are consumed most often and moose are taken especially when deer numbers drop to less than two per square mile. The wolf is a social species and requires a large home range. The minimum area requirement for

a wolf pack varies from 30-260 square miles. The mean territory size of wolf packs typical in the northern Great Lakes region is 42-100 square miles. Winter pack size usually averages four to eight animals. An individual wolf may travel more than 50 miles searching for other individuals and new habitat (Fuller undated).

Gray wolf habitat can be characterized by areas of low human occupancy, low levels of human-wolf interaction, and large areas with an adequate prey base to support a pack. Low road densities, less than one per square mile, are important to the long-term survival of the wolf due to factors such as traffic mortality, accidental and intentional shooting and disturbance (Thiel 1985, Mech et al 1988). More recent studies showed established wolf populations can exist in areas with road densities somewhat higher than 1 mile per square mile but states road density likely remains the best indicator of potential wolf habitat in Michigan (Fuller undated). These studies were conducted on roads that equate to Maintenance level 3-5 roads on the Forest. Both legal and illegal ATV use occurs in the project area.

Although road densities are high in the project area, two packs of wolves tracked by the DNR may use the project area for a portion or part of their home range (2006 pack information). The existing suitable habitat to gray wolves is approximately 5,406 acres (Benyus et.al 1992).

Because of habitat in the project area being occupied and recent federal delisting, the outline to determine effects to wolves from the forest plan is included in this analysis.

Table 13. Gray Wolf Habitat Indicators - Alternative 1 and 2 Comparison

Gray wolf	Alternative 1 (No Action)	Alternative 2 (Proposed Action)
Acres of young aspen-birch	814 acres, this includes all young upland deciduous stands.	No timber treatment planned, no change
Acres of northern white cedar	82 acres	No timber treatment planned, no change
Miles of groomed designated trails and routes	4.4 miles	No change, the motorcycle trail would not be a groomed trail.
Miles of unplowed forest roads open to snowmobiles that are not groomed or part of the designated trail system	26.3 miles (2.92 miles/sq mile)	Potential increase although the motorcycle trail will not be suitable for use by snowmobiles.

There are no known den sites within the project area (personal communication MDNR). This project area is within a forested landscape. The Biological Assessment (August 19, 2005) for the Forest Plan analysis on gray wolf included the effect of light, movement and human disturbance from OHV's and scattered spatial pattern of human activities (pages 39 and 51). Noise specifically from motorcycles (94-96 dB industry standard) was not addressed at Plan Revision. To address this, literature was consulted. Negative effects for species that occur in the project area showed effects from noise can be measured for up to ¼ mile from the disturbance.

Direct and Indirect Effects Alternative 1 (No Action)

Currently there are 26.3 miles of open roads in the project area or 2.92 miles per square mile.

No new access to the project area would be created. Recreational activities (hunting, horseback riding, hiking, dispersed camping, snowmobiling, four-wheel-driving and ATV riding) would continue experiencing the same rate of increased recreation as the remainder of the Hiawatha NF. There would be no change in the number of miles of trail and road available for use.

There would be no change to human access. All roads currently being maintained by the Forest Service would still be maintained. Open road densities would remain the same. No road decommissioning or new road construction would occur with this alternative. No timber management is proposed.

Direct and Indirect Effects Alternative 2 (Proposed Action)

The motorcycle trail would concentrate use in an approximate 5 square mile area. Use by wolves may change with the action alternative, potentially changing stands used for home range to less disturbed areas.

Wolves do not use the same den site on a yearly basis. Dens are dug in March and pups born in middle April to late April when the proposed trail would just begin to be used. Negative effects could occur if a den is placed near the motorcycle during the non-use season when use occurs. Effects would be short-term, during the approximate 3 week before the pups emerge from the den to approximately 9 weeks of age when the young are moved to a rendezvous site (MDNR, 2007). Disturbance may negatively affect hunting success of the adults if hunting activities occur near the motorcycle trail during use of the trail having negative effects on the pups. There is no mitigation known to mitigate these risks. Previous years dens may be discovered by keeping in contact with Michigan Department of Natural Resources biologists.

The amount of prey available to wolves in the project area may change. Disturbance from motorcycles may reduce the numbers of white-tailed deer in the project area. It is unlikely deer will become habituated to the noise because of irregular trail use.

The number of acres of suitable habitat available to wolves would decrease by approximately 2,520 acres because of effects from noise from the motorcycle trail. This estimate is from applying a ¼ mile “wildlife effects area” to the suitable habitat in the existing condition (Benyus et. al. 1992). Because of recent federal de-listing and varying human tolerance of wolves, the creation of the trail may increase poaching of wolves, although this species is still protected by the State of Michigan as a State threatened species.

Cumulative Effects

Due the great distances this species travels, the cumulative effects area contains all four compartments with proposed single track trail construction (C-93, 94, 115 and 116) plus the adjacent past project areas: 10 Mile, Camp 11, Ogontz, Ramsey and Bishop and future project sale Coolaw Pine an approximate 53,580 acre area. This area was chosen because it is within the travel distance of gray wolf.

Components of cumulative effects and Past, Present and Future Activities that may have an effect on gray wolf or its habitat are maintenance of wetlands, Utility corridors, Invasive weed species, Snowmobiling, Off Highway Vehicle (OHV) use (includes legal and illegal), Road construction, reconstruction, closure and obliteration, Best Management Practices (BMPs) and

recreation at a designated trail or recreation area.

Roads open to ATV's and the Big Bay de Noc Snowmobile Trail occur within the cumulative effects area and would continue in the future as would timber management and road construction and reconstruction activities.

Concentrated use along this designated trail would add to the disturbance to wolves caused by human presence and forest management. Wolves may adjust their home ranges with the implementation of Alternative 2 to avoid disturbance during times of use April-October.

Determination

Although the project area has a high road density, wolves are present. The amount of current human disturbance does not deter territories being set up within the project area. Because the project area is occupied, the determination for Alternative 1 is *No Impacts*. The determination for Alternative 2 is *May Impact Individuals but is not likely to cause a trend to federal listing or loss of viability*. Although mitigation used can offset effects at den areas, there is a chance a den could be constructed during the early spring prior to trail use. Reduced habitat quality from the proposed motorcycle trail may cause disturbance and changes to habitat use within the project area and may negatively affect wolves.

CONNECTICUT WARBLER

Although widespread in the Upper Peninsula, the Connecticut warbler occupies only a small fraction of available habitat and sometimes forms loose “colonies” (Binford, 1991). Connecticut warblers have been found to inhabit a diversity of Forest types in Region 9. This species is most often found in association with ericaceous species of ground cover. Callog (1994) listed the existence of a well-developed understory as the most important habitat characteristic for this warbler. The majority of the habitat this species was found in across the Upper Great Lakes region and Canada is black spruce. This warbler does not seem to be limited by openings (Binford 1991) and has previously been found nesting along wetland edges near aspen.

The Connecticut warbler is secretive in behavior (Pitocchelli et al 1997). Connecticut warblers nest on the ground (Callog 1994) in a small hollow, on a moss mound in a bog, in grasses or weeds, or at the base of a shrub (Nature Serve 2004). Connecticut warbler have been recorded nesting in both wetland habitats and in open areas, along edges of poplar. In wet habitats they choose hummocks of sphagnum moss for nesting (Callog, 1994). The sizes of bogs where Connecticut warblers have been observed are described as relatively small, 100 acres in size or less (USDA 2002).

Over fourteen years of Breeding Bird Census routes on the Hiawatha National Forest there have been five observations recorded on the Forest. Connecticut warblers have been recorded in wet riparian areas alder/willow/ black spruce mix; young jack pine with high water table (boggy areas with pole sized jack pine overstory, open understory) (USDA 2002). It will be assumed for this analysis that the five records on the Hiawatha represent the habitat types Connecticut warbler will most likely be found. The four compartment area contains approximately 1,733 acres of Connecticut warbler habitat (Benyus et al 1992).

The Isabella route is within the project area. An annual census has been conducted on this route almost yearly since 1966. There have been increases in the number of Connecticut warblers on this trail since 1994 (Sauer et al 2007). It is not known whether this is because of a difference in abilities of the surveyor or from an increase on the trail. Continuation of breeding bird surveys on the West Unit will assist in better defining habitat for this warbler and to locate any colonies that may be present.

Direct and Indirect Effects Alternative 1 (No Action)

Available habitat for Connecticut warbler would go unchanged with this alternative. There will be no direct or indirect effects to Connecticut warbler, no road construction or timber management is proposed.

Direct and Indirect Effects Alternative 2 (Proposed Action)

Noise from motorcycles may disturb nesting or pre-nesting Connecticut warblers. Effects could range from birds leaving the area because of noise disturbance, disruption of nesting or foraging activities. The trail will not have constant and predictable use by motorcycles which will not allow animals from becoming accustomed to the noise. The motorcycle trail will have its highest use during the breeding season. Noise is expected to reduce the quality of habitat for Connecticut warblers by approximately 994 acres based on habitat definitions in (Benyus, 1992).

Disturbance can cause a variety of effects from flushing birds off their nests allowing eggs to be preyed upon or not incubated properly. Birds may attempt to defend their nests rather than tending to young. Unattended egg or young are subject to predation or become vulnerable to weather (USDI 2007). Interference in foraging would negatively affect young. Nest abandonment could occur. Re-nesting is often in less suitable habitat. Productivity may be lower due to the birds having to find territories after other birds have established their territories. It is unknown if the second nest, if attempted, would be anymore or less successful than the original nest but the second nest may not be in as high of quality habitat as the original territory. Finding a territory may be difficult and breeding may not occur that year. In addition to this, there are many factors affecting nesting success including weather conditions, presence of disease (West Nile) and which other bird species are nesting in adjacent territories.

Cumulative Effects

The cumulative effects area for Connecticut warbler is the project area Compartments 93, 94, 115 and 116. Components of cumulative effects and Past, Present and Future Activities that may have an effect on Connecticut warbler or its habitat are maintenance of wetlands and timber management.

The majority of the treatments in the cumulative effects area would occur in forest types other than swamp conifer and black spruce but road construction activities are likely to occur across areas that provide suitable habitat for this warbler. Changes to the understory component would most effect this species. Timber treatment would not change the microclimate to the extent ericaceous vegetation would change. Best Management Practices work to maintain the hydrology of the area. Road construction could cause greater effects to this species in localized areas where a road may be constructed where a nest is located.

There are no cumulative effects from Alternative 1 because there are no indirect or

direct effects. In Alternative 2, increased development of a shrub layer would not be at a scale large enough to be a benefit to Connecticut warblers. Additionally in Alternative 2, increased noise in the project area may negatively affect nesting success or individuals over the long-term from the designated motorcycle trail.

Determination

The No Action alternative has *No Impacts* to Connecticut warbler. The Action Alternative May Impact *May impact individuals but is not likely to cause a trend to federal listing or loss of viability.*

SHARP-TAILED GROUSE

Sharp-tailed grouse are a Forest MIS species as well as a Regional Forester Sensitive Species. This grouse is found associated with large permanent and temporary openings at least 16 hectares in size up to 136 hectares in size. Both open grass and forbs with a shrub component is needed (Corace et al 2002). Leks or dancing grounds have low sparse vegetation and may be on a ridge or knoll. While the project area contains large openings, the approximate 350 acres of suitable habitat is not in a contiguous opening and without larger amounts of open land adjacent there is low probability this area will be used by sharp-tailed grouse as a dancing ground. The area is no longer designated as a sharp-tailed grouse management area.

Direct and Indirect Effects Alternative 1 (No Action)

Opening maintenance would occur but not on a regular schedule. The existing openings would remain open in the long-term due to the rocky soils that deter tree growth in these openings. It is unlikely a lek will be established in this area.

Direct and Indirect Effects Alternative 2 (Proposed Action)

The proposed trail does not go across large opening land and will not directly affect the suitability of the openings to sharp-tailed grouse. Noise from motorcycles may reduce the suitability of existing habitat from noise disturbance; however, no sharp-tailed grouse are known to occur in the project area.

Cumulative Effects

Because there are no effects there are no cumulative effects to sharp-tailed grouse.

Determination

A determination of *No Impacts* is given for Alternative 1 and Alternative 2.

DRAGONFLIES

Incurvate emerald dragonfly (*Gomphus quadricolor*), Ebony Boghaunter dragonfly (*Williamsonia fletcheri*) and Ringed boghaunter dragonfly (*Williamsonia linteri*)

Due to similarity in habitat needs, specifically stands containing sphagnum moss, the ebony boghaunter and ringed boghaunter dragonflies will be combined with the analysis for incurvate emerald dragonfly.

The ebony boghaunter inhabits both bogs and fens. Sphagnum moss is an important component, eggs are laid on sphagnum moss and the larvae are thought to live within the moss rather than in open water (Nature Serve 2005). The ringed boghaunter inhabits bogs and sedge meadows containing sphagnum moss. Eggs are deposited in water and the immatures stay in shallow water pools. Adults stay near breeding habitat foraging near the ground in open woods (NatureServe 2007).

The Incurvate emerald dragonfly is one of the rarest North American dragonflies. Its distribution includes four states in the United States, Pennsylvania, Maine, Wisconsin and Michigan. This species is only present in the Upper Peninsula of Michigan (Lee 1999). From dragonfly surveys conducted in 2002, 2003 and 2006 on the west unit of the Forest, it appears this dragonfly is more abundant on the west unit of the Hiawatha NF compared to the east unit but additional surveys are needed.

Incurvate emerald dragonflies breed in very small puddles and trickles of water (Steffens 2001), eggs are laid in open pools and this species has been reported ovipositioning on pools created by human footprints through sphagnum moss. Steffens (2001) reported the larval stage is probably more vulnerable to threats than adults. Little is known about the larval stages of this dragonfly, threats are thought to be a disruption of hydrology of wetlands and the physical disruption, destruction or removal of peat, the larval habitat. Off-road vehicle use can alter the surface hydrology of the habitat. Nymphs likely require two years to reach maturity (Sjogren 2002). This species has been observed swarming in the evening along gravel roads in forested areas and feeding along two-track roads (Sjogren 2002). Road construction activities and loss of habitat are also threats to this species. Paved two-laned or larger roads adjacent to wetlands or traversing wetlands can negatively affect dragonflies through mortality from vehicle traffic (Riffell 1999).

Incurvate emerald dragonflies transform into adults in vegetation along the edge of the water or sphagnum moss they occupy as nymphs (Sjogren 2002). In general dragonflies, after emergence leave the wetland and go to nearby terrestrial habitats where they forage and find shelter (Riffell 1999). Sometime they sun themselves on roadways. During the breeding season activity between wetland and upland areas increase.

The project area was surveyed for the presence of Warpaint emerald dragonfly in July 2006 and it was found to be present. The survey window for the boghaunters is earlier due to these species having an earlier flight. They are suspected of being present but no survey data to confirm presence or absence is available.

The project area contains approximately 172 acres of Incurvate emerald dragonfly habitat. Sixty acres are wetland bog and 112 acres semi-open lowland conifer based on Benyus et al. (1992), which contains stands with black spruce and sphagnum moss ground cover.

Direct and Indirect Effects Alternative 1 (No Action)

No road construction activities or harvest would occur and no change will occur to black spruce bogs or fens are proposed in this alternative. There is a possibility some individuals may be killed on higher maintenance level roads adjacent to suitable wetland habitat where vehicle speed reach 35 mph or above (personal communication with Mark O'Brien 2005). Higher level maintenance roads such as FR 2231 have higher vehicle use and allow for higher vehicle speeds (approximately 35 mph) which could cause occasional dragonfly deaths but most would be able

to maneuver out of the way of approaching vehicles.

Direct and Indirect Effects Alternative 2 (Proposed Action)

Trail construction and parking lot construction are planned, no new roads will be constructed and no existing roads are proposed to be closed. Segments of the trail will avoid wetland areas and will not cross suitable habitat for the three dragonfly species being considered. A rare case of traffic mortality may occur as stated in Alternative 1.

Motorcycle and ATV use in addition to hiking, mountain bike riding and horseback riding is expected to have no effects on the dragonflies since they can maneuver out of the way.

Cumulative Effects:

The cumulative effects area consists of Compartments 93, 94, 115 and 116. Components of cumulative effects and Past, Present and Future Activities that may have an effect on these dragonflies or their habitat are maintenance of wetlands, dragonfly surveys, timber management, Best Management Practices and road construction, closure and obliteration.

Harvest in wetland areas would use Best Management Practices, winter cutting restrictions and 150 foot buffer in where there are documented occurrences. These methods of implementation would protect the majority of the Incurvate emerald dragonfly, ebony boghaunter and ringed boghaunter habitat.

Some roads may be reconstructed or constructed in the future stands with components of dragonfly habitat or in stands adjacent to suitable habitat. Best Management practices would assist in the protection of hydrology in areas of suitable habitat for these species.

Determination

A determination of *May impact individuals but is not likely to cause a trend to federal listing or loss of viability* but is not likely to cause a trend to federal listing or loss of viability is given for both the No Action Alternative and Action Alternatives. Road mortality is possible in both of the alternatives. Traffic levels are expected to be higher in Alternative 2 than Alternative 1.

SNAILS

Catinella exile, Euconulas alderi, Vertigo morsei, Vertigo bollesiana, Vertigo paradoxa, Planogyra asteriscus

The discussion for these snails is combined, all species have a potential of occurring within the project area due to the limestone influence of the area and the presence of alvar grassland resulting from the influence of flat expanses of calcareous limestone bedrock (Albert, 2006).

The following discussion is based on habitat preferences of the known occurrences of these snail species. Snail population demography for the project area and the Forest is not known. Areas on the Forest within the Niagara Escarpment were surveyed in the late 1990's. Samples were collected from one location in the project area (see the project file for methods used). Life history information and population status are not known for any of these snails.

Table 14. Habitat descriptions for RFSS snails with potential habitat in the Single Track Motorcycle Trail Project Area

Species	Habitat Attributes
<i>Catinella exile</i>	Found in association with limestone bedrock with seepage areas, shallow pools, and a ground cover dominated by various <i>Carex spp.</i> ; and in association with cobble beach with <i>Carex</i> turf in open marl flats (Nekola 1998b). <i>Catinella exile</i> has also been found at a fen in the Upper Peninsula (Nekola 1998b).
<i>Vertigo bollesiana</i>	Found in leaf litter on wooded hillsides and in marshes (M. Hoggarth, personal communication 2001). In the Upper Peninsula of Michigan all sites discovered have been associated with carbonate cliffs, igneous outcrops and lakeshore ledge habitat (Sjogren 2000). Site specific habitat most frequently was north-northwest exposed limestone outcrops with dense growth of <i>Thuja occidentalis</i> , <i>Tsuga canadensis</i> and <i>Acer saccharum</i> and occasionally <i>Betula lutea</i> (Nekola 1998b).
<i>Planogyra asteriscus</i>	Limestone outcrops; dry upland hemlock forest over shallow limestone adjacent to cobble beach; low moist north-facing limestone with water seepage present; sandy upland woods on steep west-facing bank with seepages and rich undisturbed swamp (USDA 2006b).
<i>Euconulus alderi</i>	In the Upper Peninsula of Michigan this species has been found most often in tamarack-sedge wetland communities where it was found consistently co-occurring with <i>Vertigo elatior</i> and <i>Vertigo nylanderi</i> . Located at ten sites in the Upper Peninsula including 2 fens, 1 cobble beach, 3 tamarack-sedge wetlands, and 3 white cedar wetlands (Nekola 1998).
<i>Vertigo paradoxa</i>	In the eastern Upper Peninsula of Michigan this species was most often found in association with carbonate outcrops and near Lake Superior from basalt outcrops (Nekola 1998b). Overstory vegetation most often associated with limestone cliffs sites with occurrences of this species are, but not limited to: <i>Thuja occidentalis</i> , <i>Acer saccharum</i> , <i>Tsuga canadensis</i> and either <i>Betula lutea</i> or <i>B. papyrifera</i> and occasionally <i>Pinus strobus</i> . Ground cover included <i>Carex spp.</i> , and ferns, <i>Cryptogramma stelleri</i> and <i>Polystichum braunii</i> (Nekola 1998b).
<i>Vertigo morsei</i>	In wet areas in association with margins of ponds and marshes (M. Hoggarth, personal communication 2001), Upper Midwest calcareous wetlands (Sjogren 2000). Since 1986, 5 occurrences have been found in calcareous fen habitat in Wisconsin and Iowa (Nekola and Frest 1996, Nekola 1998b). In Mackinac County this species was found by Nekola (1998b) at calcareous fens with organic-rich soil overlaying marl.

Additional information on habitat preferences and habitats these species are known to be present on the Forest can be found in the Conservation Assessments for *Euconulus alderi*, *Catinella exile*, *Vertigo morsei*, *Vertigo bollesiana*, *Vertigo paradoxa* (see the Project file).

Compartment exams do not collect information as detailed as would be needed to determine the number of acres of suitable habitat is present for the RFSS snail species. Soil survey records show a limestone component and areas with bedrock near the surface. These areas have potential to be suitable habitat for the RFSS snail species.

Threats to these snails include forest clearing, quarrying activities, ATV use, microhabitat changes from road construction or any activity that blocks waterflow (USDA Forest Service Eastern Region 2003a, 2003b, 2003c, 2003d, 2003e, and 2003f).

Direct and Indirect Effects Alternative 1 (No Action)

This alternative does not propose timber management. Maintenance of existing roads may occur on a maintenance schedule. No new road construction or recreation trail development would occur. There is no stone quarrying within the project area. This alternative would not have a negative effect on this species.

Direct and Indirect Effects Alternative 2 (Proposed Action)

Limestone rock is near the surface where the trail parallels FR 2470 on both east and west sides and on the west side of FR 2756. There are small microsites where limestone bedrock is closer to the surface than other locations along the trail. If one or more of these snail species are present negative effects can occur. Wetlands will not be crossed by the motorcycle trail and the trail is south of the grassy alvar in Compartment 94. If present the trail may restrict movement of snails due to a change in microhabitat and the trail forming a physical barrier to dispersal.

Fragmentation caused by this trail may negatively affect snail dispersal. Species with low dispersal capabilities such as the Regional Forester Sensitive snail species could become isolated because the trail microclimate could act as a barrier to movement. The trail will be designed to accommodate 40” in width at handlebar height. The proposed trail is in an area with illegal ORV use and as proposed crosses roads 27 times and utility corridors 6 times. These crossings could allow ATV’s to access the trail which may widen the trail over time.

Cumulative Effects

Components of cumulative effects and Past, Present and Future Activities that may have an effect on these snails or their habitat include timber management (includes deferred maintenance), maintenance of wetlands (*Euconulus alderi* and *Catinella exile*), road construction, closure and obliteration, OHV use (includes legal and illegal).

The Project area is the cumulative effects area for these land snails due to their small distance dispersal abilities. Timber management would occur within the project area in the future. Treatment of stands may change the microclimate of the stands or equipment operation may crush individuals, if present and if timber management activities occur during the summer rather than when there is a snowpack. Road construction may occur in stands with suitable conditions although construction across wetland areas is usually avoided. State Best Management Practices for soils and water are adhered to.

Determination

A determination of *No Impacts* has been given for the No Action Alternative and *May Impact Individuals but is not likely to cause a trend to federal listing or loss of viability* for the Action Alternative for all of the snail species.

BLANDING’S TURTLE

Blanding’s turtles are often found in shallow waters of marshes, ponds, bogs and swamps. Habitat requirements may vary with the season. Ideal habitat includes shallow areas of slow-moving water with soft organic substrate and aquatic vegetation. Recent study suggests the best habitat for this turtle may be stream corridors associated with wetlands which allow travel between adjacent wetlands (Southwell 2002). The project area contains approximately 80 acres of habitat for Blanding’s turtle.

Blanding’s have an activity range of approximately 1 square mile (Southwell 2002) and in breeding season can travel up to 1.5 miles to find a suitable nesting site (NatureServe Explorer 2002a). Blanding’s turtles feed in both terrestrial and aquatic habitats, although they prefer feeding in the water. Females leave the wetlands to excavate nests in upland, open, sandy areas (SVE 2002b). Eggs are laid in June and hatchlings emerge in late August or September (Harding, 1990). Predation rates can be heavy, 17 to 100 percent and in some Blanding’s turtles reproduction does not begin until 20 years of age (Southwell 2002). They are most often seen wandering overland in the spring and fall (Harding, 1990). Overwintering occurs in the mud of deeper bodies of water or under terrestrial debris (Southwell 2002).

For this document, occurrence of this species in the project area is based on Michigan Natural Features Inventory database query and Forest Plan SVE data. Although none have been recorded in the project area, it is possible Blanding’s turtles are present especially in areas near the Sturgeon River. No turtle surveys were conducted.

Direct and Indirect Effects Alternative 1 (No Action)

The project area contains 26.3 miles of maintenance level 2-5 roads, over the project area totaling 2.92 miles per square mile. There is a potential a turtle could be hit while crossing a road in the project area while moving between upland and lowland habitats.

Direct and Indirect Effects Alternative 2 (Proposed Action)

The proposed motorcycle trail will avoid going through wetland areas, although in some locations the trails are near the edge of wetlands where Blanding’s turtles may be present. There is a risk the exposed sandy trail adjacent to wetlands could be used as a nesting area by turtles. Possible young of year could be impacted or salamanders traveling under leaf litter between wetlands could be being impacted.

The construction of the trail will increase the amount of vehicle traffic to this area. There is a potential a turtle could be hit while crossing a road in the project area while moving between upland and lowland habitats although the risk of this is low.

Cumulative Effects

Components of cumulative effects and Past, Present and Future Activities that may have an effect on Blanding’s turtle or its habitat include, effect on Maintenance of wetlands, Road construction, closure and obliteration, OHV use (includes legal and illegal) and use of wetland Best Management Practices.

Determination

Both the No Action and Action Alternative have the ability to impact individual Blanding’s

turtles: *May Impact Individuals but is not likely to cause a trend to federal listing or loss of viability.*

Flora Effects Analysis

Management Direction for all Alternatives:

- Under all alternatives, RFSS plant element occurrences (EO) found during project implementation will be protected by design criteria measures applied prior to project implementation.
- The Forest Plan (USDA 2006a) provides NNIS standards and guidelines (page 2-22). These occurrences will be treated through the HNF NNIP Control Project (USDA 2007).

Although no RFSS plants were found in the project area, unoccupied suitable habitat was analyzed. This suitable unoccupied habitat represents a small amount of the project area in most cases. The number of acres of unoccupied suitable habitat ranges from as little as 0.5 acres to a high of 18.06 acres (see table 15). The botanical effects analysis area was determined to be the footprint of the trail plus ten feet on either side, totaling 64.5 acres. Ten feet was chosen based on the assumption that continued maintenance of the trail would effect both light penetration and potential noxious weed invasion into that area. Habitat definitions were derived for plant species using ELT and seral class. These definitions were based on MNFI habitat classifications (Kost et al 2007), and were determined in conjunction with the Forest Landscape Ecologist (Gries Pers. Comm.)

Analysis was conducted by lumping species into ecological groups or niches. This streamlined approach strives to reduce redundancy in analysis where effects are likely to be similar. The analysis will focus on ecological guilds. To better analyze the effects on specific habitat requirements of the rare plants, plant-habitat groupings or “guilds” were developed to analyze the large number of diverse rare plant species, and to describe the range of environments required by rare plant taxa. The term “guild” is used in ecology to mean a group of species that use similar resources in a similar way (Root 1967). Species may be grouped by their specific edaphic (soil), moisture, or canopy closure requirements. For example, a group of plants adapted to riparian forests could be said to comprise a riparian guild. The first natural break for species on the Hiawatha National Forest is whether species are late or early seral species.

Early successional species capitalize on open habitats, while late successional species tend to thrive in shaded habitats. The next break for species on the HNF concerns their affinity for moisture. Riparian plants are tied to a high level of available moisture and can be impacted dramatically by changes in hydrological regime. Upland plants are tied to drier conditions. Plants within the Shade/late seral habitat guild are blunt-lobed moonwort (*Botrychium oneidense*), northern wild comfrey (*Cynoglossum virginianum* var. *boreale*), butternut (*Juglans cinerea*), white adder’s mouth (*Malaxis brachypoda*), and pine drops (*Pterospora andromeda*). Plants within the Open/early seral habitat guild are Canadian milk-vetch (*Astragalus canadensis*), Cooper’s milk-vetch (*Astragalus neglectus*), prairie moonwort (*Botrychium campestre*), western moonwort (*Botrychium michiganense* (= *hesperium*)), pale moonwort (*Botrychium pallidum*), ternate grape fern (*Botrychium rugulosum*), spathulate moonwort (*Botrychium spathulatum*), Wiegand’s sedge (*Carex wiegandii*), downy sunflower (*Helianthus mollis*), fir clubmoss (*Huperzia selago*), Vasey’s rush (*Juncus vaseyi*), Canada rice-grass (*Piptatherum canadensis*

(=*Oryzopsis canadensis*)), prairie dropseed (*Sporobolus heterolepis*) and dwarf bilberry (*Vaccinium cespitosum*).

Cumulative effects analysis methods were based on treatments that occurred in the past 14 years (1994 and later) on stands within the project area. A timeframe of fifteen years was examined, but the last activity was in 1994. However, many stands were treated multiple times and not all stands were treated 100% each time. Treatments from two timber sales, Ten Mile Pine and Moss Lake Tower, included strip clearcut, stand clearcut, singletree selection, sanitation cut, shelterwood, shelterwood final removal, commercial thinning, permanent land clearing and fill-in planting. Few, if any, stands were completely within the project area defined for the botany cumulative effects evaluation.

Therefore, it was assumed that each treatment encompassed the same proportion of the stand within the project area as the entire stand. For instance, if a stand was 100 acres and a treatment was done on 50 acres of that stand, 50% of the stand was treated. If 10 acres of the stand was in the project area, it was assumed that 50% of that area was treated or 5 acres.

Overlapping treatments within stands were not double counted as acres treated. Rather, the treatment that covered the most area of the stand was used to represent the portion of the stand that was treated. For example, if 30, 40, and 50 acres of a 100 acre stand were treated at different times, only the 50 acre treatment was used in the final summary. However, so as not to totally disregard the information about the other treatments, the number of treatments that occurred in that stand was tallied.

Finally, for each species in the project area, the acres of habitat that had been treated in the past 15 years was calculated based on the above assumptions. Habitat is defined as those stands that meet the appropriate definitions in 2007 and may or may not have been appropriate habitat when the treatments occurred. The best available science was considered for this analysis. Effects determinations and analysis are tiered to the Biological Evaluation completed for the Hiawatha National Forest Plan (USDA 2006c, pages 442-444, 448-454, 459-467, 487-489, 496-499, 545-547, 558-561, 573-576, 582-585, 595-598, 612-614, 625-628). This peer-reviewed document considered current literature and utilized the peer reviewed Species Viability Evaluation database.

Direct and Indirect Effects Alternative 1 (No Action)

Custodial management and protection such as fire suppression, resource surveys, road and trail maintenance, and control of non-native invasive species (NNIS) would continue. This alternative would maintain the project area in its present condition until the next proposed entry period. It is anticipated that there would be no direct and indirect effects from this alternative. Additionally, no botanical outstandingly remarkable values for the Sturgeon River Wild and Scenic River will be affected by the project.

In the short-term, 0-5 years, existing native vegetation conditions would not appreciably change from current conditions. The existing ground flora layer structure and composition would remain much the same as it is today.

In the long-term, 5-15 years, there would be effects occurring on rare plant habitat within early seral habitat from forest succession moving stands into more late seral conditions. Forest succession in conjunction with a lack of suitable disturbance such as minor scraping of the soil or fire suppression efforts could impact RFSS such as Canadian milk-vetch (*Astragalus canadensis*), Cooper's milk-vetch (*Astragalus neglectus*), prairie moonwort (*Botrychium campestre*), western moonwort (*Botrychium michiganense* (= *hesperium*)), pale moonwort (*Botrychium pallidum*), ternate grape fern (*Botrychium rugulosum*), spathulate moonwort (*Botrychium spathulatum*), Wiegand's sedge (*Carex wiegandii*), downy sunflower (*Helianthus mollis*), fir clubmoss (*Huperzia selago*), Vasey's rush (*Juncus vaseyi*), Canada rice-grass (*Piptatherum canadensis* (= *Oryzopsis canadensis*)), prairie dropseed (*Sporobolus heterolepis*) and dwarf bilberry (*Vaccinium cespitosum*). However, the amount of unoccupied suitable habitat is extremely limited for these species and impacts to the species from this succession are not expected.

Over the long-term, forest succession would provide more dead and down material, resulting in increased soil nutrients for some rare plants to utilize, particularly those that favor later seral conditions.

Under this alternative, road use would not change. Therefore, in the short and long-term, NNIS impacts on rare plant habitats would continue to be moderate due to their continued spread despite management control efforts. The Forest Plan (USDA 2006a) provides NNIS standards and guidelines (page 2-22). These occurrences will be treated through the HNF NNIP Control Project (USDA 2007).

Cumulative Effects

Cumulative effects are expected to be minimal to all species as a result of the no action alternative due to the small amount of unoccupied suitable habitat in the project area. Ongoing activities being considered are continuing dispersed recreation (hunting, hiking, fishing and skiing), OHV use, road maintenance, and noxious weed treatments. Dispersed recreation throughout the area is likely to have effects that are small in magnitude and short in duration. The main effect to botanical species is the possibility of weed spread through these activities.

OHV can also result in increased chance of noxious weed invasion. Un-regulated OHV impacts are anticipated to continue well into the future. OHV impacts include erosion of steep sandy slopes, dislodging vegetation, compaction and displacement of soils in wetland areas and transferring NNIP. Although the Revised Forest Plan provides OHV direction such as prohibitions on cross country travel, continued un-regulated OHV use in the project area would likely continue despite efforts to stop it.

Road maintenance can result in an increase of disturbed ground that can be colonized by noxious weeds. However, timing of activities such as mowing can control some noxious weeds. Ongoing noxious weed treatments will reduce the spread of noxious weeds through the project area. While noxious weed treatment activities could have negative short term effects, long-term effects should be positive for RFSS plant habitat.

Determination

For all RFSS considered in this BE (Table 12), a determination of “no impact” was made.

 X No Impact to: *Astragalus canadensis*, *Astragalus neglectus*, *Botrychium campestre*, *Botrychium michiganense* (= *hesperium*), *Botrychium oneidense*, *Botrychium pallidum*, *Botrychium rugulosum*, *Botrychium spathulatum*, *Carex wiegandii*, *Cynoglossum virginianum* var. *boreale*, *Dryopteris expansa*, *Helianthus mollis*, *Juglans cinerea*, *Juncus vaseyi*, *Huperzia selago*, *Malaxis brachypoda*, *Piptatherum canadensis* (= *Oryzopsis canadensis*), *Pterospora andromeda*, *Ranunculus lapponicus*, *Sporobolus heterolepis* and *Vaccinium cespitosum*. No known occurrences are within the project area, and alterations to unoccupied suitable habitat through succession are expected to be negligible.

Direct and Indirect Effects Alternative 2 (Proposed Action)

Direct effects occur when sensitive plants are physically impacted by activities associated with management activities. For this alternative, direct effects would result from trail construction (including tree felling) and trail use (denuding vegetation). These activities can physically break, crush or uproot sensitive plants by driving over them, by covering them, or by falling trees on them. Direct impacts to sensitive plants can physically damage the sensitive plant or the habitats where they grow. When too much of an individual plant is damaged, that plant may experience altered growth and development, and reduced or eliminated seed-set and reproduction. If the disturbance is severe, it can kill sensitive plants.

These impacts to individual plants can reduce the growth and development, population size, and potentially the viability of a sensitive plant species across the landscape. For annual plant species, the timing of impacts is critical. Management actions that take place after annuals have set seed have much less impact than management actions performed prior to seed-set.

Trail building and trail use can indirectly impact sensitive plants by causing changes in vegetation composition and successional pathways of that vegetation, or changing local hydrologic patterns in sensitive plant habitat. Some of these changes may result from shifts in hydrologic, solar, and soil characteristics of their habitat. Indirect effects can also occur from noxious weed invasion.

Some indirect effects, such as noxious weed invasion, potentially impact all plant habitats, although different habitats may be invaded by different species of noxious weeds. In riparian areas or wet meadows, Canada thistle (*Cirsium arvense*) and reed canary grass (*Phalaris arundinaceae*) may invade habitats to form monocultures and can lead to increased erosion (Lyons 1998). Reed canary grass has been found to be detrimental to both rare plants (Lesica 1997) and more common taxa (Barnes 1999). Upland areas may be invaded by a host of noxious weeds such as the knapweeds (*Centaurea* spp.) or wild parsnip (*Pastinaca sativa*). These noxious weeds can lead to habitat changes that are detrimental to native plant species including rare botanical species. Invasive species have been identified as the second greatest threat to rare species after habitat destruction (Wilcove et al 1998). Noxious weeds, once established, could indirectly impact sensitive plant species through allelopathy (the production and release of plant compounds that inhibit the growth of other plants) (Ridenour and Calloway 2001, Bais et al

2003, Inderjit et al 2008), changing the fire regime (Brooks et al 2004), or direct competition for nutrients, light, or water (Mack et al 2000). Subsequent weed control efforts such as hand-pulling, mowing, or herbicide application could also negatively impact sensitive plants.

The project does not directly affect known populations of RFSS. However, suitable unoccupied habitat does exist for nineteen species. While surveys were conducted over nearly the entire project area, it is possible to miss species in surveys due to dormancy periods and other factors. For this reason, the effects of the project on suitable unoccupied habitat were analyzed. Effects are expected to be minimal, because of the lack of any known populations and the small amount of area, 64.5 acres, affected by the project.

Suitable unoccupied habitat exceeded 10%, or more than 6.5 acres, in only four of nineteen species (see Table 15). In plants with less than 10% of habitat in the project area, direct and indirect effects are assumed to be negligible, because the amount of habitat affected in the project area is small. Effects to these species are similar to those discussed in the general effects analysis. Species with greater than 10% habitat are discussed in further detail. Effects would be the permanent loss of habitat in the small footprint of the trail. Additionally, these species could be affected by a change in light penetration into the area adjacent to the trail. New disturbance in the analysis area could result in noxious weed invasion. These indirect effects would include the possibility of plants being out-competed by weeds. Species could also be affected by microsite changes, typically drying out of sites, caused by alteration in hydrology due to trail construction.

Effects to all species caused by noxious weed invasion would be mitigated through continued treatment of NNIS in the project area. Effects to the alvar habitat would be mitigated by small alterations in the trail location to avoid impacting this habitat. Trail layout would be done to avoid open areas with prairie species such as blazing star. No leeks were identified during the plant surveys of the trail. The trail is not expected to have an effect on gathering of edibles since the number of acres is so small. No botanical outstandingly remarkable values for the Sturgeon River Wild and Scenic River will be affected by the project.

The proposed action could increase the amount of unoccupied suitable habitat for Canada rice-grass (*Piptatherum canadensis* (= *Oryzopsis canadensis*)) due to the species affinity to disturbance (USDA 2006c). This disturbance would result in the seed bed being prepared for colonization and increased light penetration to the habitat. The small overall area affected is likely to have a beneficial effect on butternut (*Juglans cinerea*). Conservation recommendations for this species include mimicking natural disturbance processes such as gap phase conditions resulting in increased sunlight (Ostry et al 1994 in USDA 2003). The narrow band of increased sunlight penetration as a result of project implementation should provide similar conditions.

Ternate grape fern (*Botrychium rugulosum*) is found in wet micro sites in dry upland forests and is commonly found in very disturbed areas such as grazed pastures (Wagner and Wagner 1982). Within forests, the preference of ternate grape fern towards forest openings suggests that it may require periodic disturbance regimes that create these canopy gaps (NatureServe 2001). A species like ternate grape fern that often occupies open areas with a regular disturbance regime may have a metapopulation structure where local populations are founded then become extinct as succession proceeds toward a closed-canopy forest (Menges and Gawler 1986, Parsons and

Browne 1982). Effects to this species would be minimal because the project was designed to avoid wet sites. Wiegand's sedge (*Carex wiegandii*) is found in wet areas such as cedar swamp. Effects are expected to be minimal to this species due to the project design criteria to avoid wet sites.

Cumulative Effects

Past and current activities have altered sensitive plant populations and their habitats. The effects of past activities are built into this analysis in that they are largely responsible for the existing landscape. It is unclear if all of the sensitive species included in this analysis have always been rare or were once more common but currently rare due to past land use practices (USDA 2006c). Very little is known about population dynamics and metapopulations (a population of populations) of sensitive species, such as how long individuals live, how long colonies persist, how often new colonies are formed, and how long seeds persist in the seed bank. A thorough understanding of species population dynamics and metapopulations would be necessary in order to accurately assess the cumulative impacts of past, present, and future projects on a species. This cumulative effects analysis is based on the best available science known regarding species distribution, ecology, and life history.

Current management direction is designed to eliminate or reduce possible negative cumulative impacts by protecting sensitive plant species from direct and indirect impacts. The following discussion provides an explanation of why this type of management is effective in reducing cumulative impacts to sensitive plants.

MacDonald (2000) reports that a critical step in cumulative effects analysis is to compare the current condition of the resource (in this case sensitive plants) and the projected changes due to management activities (in this case trail construction) with the natural variability in the resources and processes of concern. This is difficult for sensitive plants since long-term data are often lacking and many sensitive plant habitats have a long history of disturbance (i.e. an undisturbed reference is often lacking). For some species, particularly those which do not tolerate disturbance or are found under dense canopy conditions, minimizing on-site changes to sensitive plants is an effective way of reducing cumulative impacts. "If the largest effect of a given action is local and immediate, then these are the spatial and temporal scales at which the effect would be easiest to detect. If one can minimize the adverse effects at this local scale, it follows that there would be a greatly reduced potential for larger-scale effects" (MacDonald, 2000).

For other species, particularly those which are disturbance tolerant or fire-followers, minimizing on-site changes could be detrimental. These species tolerate or benefit from on-site changes which result in opening the stand, reducing the potential for catastrophic fire, and increasing light reception in the understory. Thus, the response of sensitive plant species to the management activities is species-dependent.

Past and present forest management activities have caused changes in plant community structure and composition across the forests. Management activities that have cumulatively impacted sensitive plant occurrences on the forest include: timber harvest, recreational use, road construction, and noxious weed infestation. These cumulative impacts have altered the present landscape to various degrees. However, cumulative, direct and indirect effects can be minimized

by following Forest Service standards and guidelines and by implementing mitigation measures to monitor or offset impacts to sensitive plants species. With these protective measures in place, cumulative effects are less likely to be adverse. Only cumulative effects that overlap the spatial and temporal boundaries of the project are considered in this analysis.

Future foreseeable actions are discussed specifically in relation to the Proposed Action and its alternatives. The timeframe for determining cumulative effects depends on the length of time that lingering effects of the past action will continue to affect the species in question. This will vary widely between species because some rare plants require and tolerate disturbances that would harm others. In an effort to be most inclusive, a generalized timeframe of fifteen years was used to analyze cumulative impacts. This timeframe was chosen based on professional experience, and the assumption that most effects to rare plant habitat are abated in that time period. Past actions that occurred in the area of each sensitive plant occurrence are included in this evaluation if information is available. Where site-specific information is lacking, the general discussion of cumulative effects addresses the effects of disturbances likely to have occurred.

Several species had no past activities on unoccupied suitable habitat. These include Canadian milk-vetch (*Astragalus canadensis*), Cooper's milk-vetch (*Astragalus neglectus*), blunt-lobed moonwort (*Botrychium oneidense*), pale moonwort (*Botrychium pallidum*), spatulate moonwort (*Botrychium spathulatum* northern wild comfrey (*Cynoglossum virginianum* var. *boreale*), downy sunflower (*Helianthus mollis*), fir clubmoss (*Huperzia selago*), Vasey's rush (*Juncus vaseyi*), and prairie dropseed (*Sporobolus heterolepis*). Dispersed recreationist my effects all these species by moving through populations, whether by foot or by vehicles. These effects would be minimal, and by nature are hard to predict where they may occur. Any effects are expected to be small in duration and magnitude. Effects from road maintenance would be small because the road prism does not represent stable unoccupied suitable habitat for RFSS.

The remaining species have greater amounts of past activities previously occurring. These activities range from 14.6 percent of unoccupied suitable habitat affected to a high of 41.6. (See table 15). Cumulative effects to species with less than ten percent unoccupied suitable habitat are assumed to be minimized by relative minimal direct and indirect effects from the project. Only four species had greater than ten percent unoccupied suitable habitat. Two, butternut (*Juglans cinerea*) and Canada rice-grass (*Piptatherum canadensis* (= *Oryzopsis canadensis*)), likely benefit from some minor disturbance as discussed in the previous section. Due to this reason cumulative effects are likely to be minimal. Cumulative effects are likewise expected to be reduced for Wiegand's sedge (*Carex wiegandii*) and ternate grape fern (*Botrychium rugulosum*). Both are found in moist areas that would be protected by project design in past timber sales.

Determination

X May impact individuals but not likely to cause a trend toward federal listing or loss of viability to: *Astragalus canadensis*, *Astragalus neglectus*, *Botrychium campestre*, *Botrychium michiganense* (= *hesperium*), *Botrychium oneidense*, *Botrychium pallidum*, *Botrychium rugulosum*, *Botrychium spathulatum*, *Carex wiegandii*, *Cynoglossum virginianum* var. *boreale*, *Dryopteris expansa*, *Helianthus mollis*, *Juglans cinerea*, *Juncus vaseyi*, *Huperzia selago*, *Malaxis brachypoda*, *Piptatherum canadensis* (= *Oryzopsis canadensis*), *Pterospora andromeda*,

Ranunculus lapponicus, *Sporobolus heterolepis* and *Vaccinium cespitosum*. Although no known occurrences are within the project area, undiscovered occurrences of sensitive plants may exist in the project area. For this reason the aforementioned plant species may be impacted. The project area has been surveyed for sensitive species, and such impacts are expected to be minimal.

Table 15. Unoccupied suitable habitat in project area with analysis of timber activities within it in the last fifteen years.

Species	Total acres unoccupied suitable habitat (USH) in analysis area	% of USH in project area	# of USH acres affected last fifteen years	% of USH in project affected in last 15 years
Canadian milk-vetch	4.82	7.5	0	0.0
Cooper's milk-vetch	4.82	7.5	0	0.0
Prairie moonwort	2.5	3.9	1.04	41.6
Western moonwort	2.5	3.9	1.04	41.6
Blunt-lobed grapefern	2.2	3.4	0	0.0
Pale moonwort	0.5	0.7	0	0.0
Ternate grapefern	16.5	25.6	6.74	40.8
Spathulate moonwort	0.5	0.7	0	0.0
Wiegand's sedge	18.06	28.0	6.02	33.3
Northern wild comfrey	2.8	4.3	0	0.0
Downy sunflower	2.5	3.9	0	0.0
Fir clubmoss	4.8	7.5	0	0.0
Butternut	8.2	12.7	2.43	29.7
Vasey's rush	2.0	3.2	0	0.0
White adder's mouth	5.6	8.7	0.82	14.6
Canada rice-grass	16.5	25.6	6.74	40.8
Pine drops	3.1	4.8	0.96	31.0
Prairie dropseed	4.8	7.5	0	0.0
Dwarf bilberry	5.5	8.6	1.55	28.0

III. SUMMARY OF DETERMINATION OF EFFECTS

Table 16. Summary of TES Determinations for the Single Track Motorcycle Trail Project.³

Species	Status	Habitat (H) or Species Present (S)	Alt 1 No Action	Alt 2 Proposed Action
Fauna:				
Canada lynx	T	H	NLAA	NLAA
Hine's emerald dragonfly	E	-	NE	NE
Kirtland's warbler	E	H	NLAA	NLAA
Piping plover	E	-	NE	NE
Northern goshawk	R9	H	NI	MINLTF
Bald Eagle	R9	H	NI	MINLTF
Gray wolf	R9	S	NI	MINLTF
Red-shouldered hawk	R9	S	NI	MINLTF
Connecticut warbler	R9	S	NI	MINLTF
Black-backed woodpecker	R9	S	NI	MINLTF
Sharp-tailed grouse	R9	H	NI	NI
Blanding's turtle	R9	H	MINLTF	MINLTF
Warpaint emerald dragonfly	R9	S	MINLTF	MINLTF
Ebony boghaunter	R9	H	MINLTF	MINLTF
Ringed boghaunter	R9	H	MINLTF	MINLTF
Pleistocene catinella snail	R9	H	NI	MINLTF
Land snail	R9	H	NI	MINLTF
Eastern flat-whorl snail	R9	H	NI	MINLTF
Multi-rib vallonia snail	R9	H	NI	MINLTF
Delicate vertigo snail	R9	H	NI	MINLTF
Six whorl vertigo snail	R9	H	NI	MINLTF
Mystery vertigo snail	R9	H	NI	MINLTF
Flora:				
American Hart's tongue fern	T	-	NE	NE
Pitcher's thistle	T	-	NE	NE
Lakeside daisy	T	-	NE	NE
Dwarf lake iris	T	-	NE	NE
Houghton's goldenrod	T	-	NE	NE
Canadian milk-vetch	R9	H	NI	MINLTF
Cooper's milk-vetch	R9	H	NI	MINLTF
Prairie moonwort	R9	H	NI	MINLTF
Western moonwort	R9	H	NI	MINLTF
Blunt-lobed grapefern	R9	H	NI	MINLTF
Pale moonwort	R9	H	NI	MINLTF
Ternate grapefern	R9	H	NI	MINLTF

³ - indicates there is no habitat in the project area

Spathulate moonwort	R9	H	NI	MINLTF
Wiegand’s sedge	R9	H	NI	MINLTF
Northern wild comfrey	R9	H	NI	MINLTF
Downy sunflower	R9	H	NI	MINLTF
Fir clubmoss	R9	H	NI	MINLTF
Butternut	R9	H	NI	MINLTF
Vasey’s rush	R9	H	NI	MINLTF
White adder’s mouth	R9	H	NI	MINLTF
Canada rice-grass	R9	H	NI	MINLTF
Pine drops	R9	H	NI	MINLTF
Prairie dropseed	R9	H	NI	MINLTF
Dwarf bilberry	R9	H	NI	MINLTF

NI = No Impacts, NE= No Effects, MINLTF = May Impact Individuals
 Not Likely to cause a trend to federal listing or loss of viability. NLAA = Not Likely to Adversely Affect

Table 17. Cumulative Effects Area, Timeframe and Management Actions used for Wildlife Analysis in the Single Track Motorcycle Trail Project Biological Assessment and Environmental Assessment

Species	Cumulative Effects Area (Spatial, temporal and rationale)	Actions that were analyzed in the EA and BE analysis (past, present, reasonably foreseeable future)
Gray wolf	<p>Due the large home range of this species, the cumulative effects area contains all four compartments with proposed single track trail construction (C-93, 94, 115 and 116) plus the adjacent past project areas: 10 Mile, Camp 11, Ogontz, Ramsey and Bishop and future project sale Coolaw Pine because these are within the travel distance of gray wolf. This area totals approximately 53,580 acres.</p> <p>The timeframe for cumulative effects for gray wolf is a period of 15 years, 10 years in the past and 5 years in the future. Activities longer than 10 years ago would not have measurable effects; stands would have regenerated to a point that the stands would be forested stands. Activities more than 5 years into the future are not reliably predictable. Timber management plans, utility company operation plans, county and state land plans are 5-10 year plans and the forest plan is for a minimum of</p>	<ul style="list-style-type: none"> • Maintenance of wetlands • Utility corridors • Invasive weed species • Snowmobiling • Off Highway Vehicle (OHV) use includes legal and illegal • Road construction, reconstruction, closure and obliteration • Best Management Practices (BMP’s) • Dispersed recreation • Recreation at a designated trail or recreation area. • Recreation at a designated trail or recreation area.

	10 years. Sales in past recent decisions have not all been sold. Projects could occur as long as five years after sale closure (i.e. K-V funding).	
Black-backed woodpecker	The cumulative effects area consists of Compartments 93, 94, 115 and 116, approximately 3,660 acres. Timeframe: The cumulative effects timeframe is a period of 9 years, five years in the past and 4 years into the future. This timeframe was chosen because black-backed woodpeckers colonize areas for no longer than five years after insect outbreak or wildfire and future budworm infected stands would begin their decline in a period of three to four years after infestation. Areas currently infected by budworm would be harvested in the next four years.	<ul style="list-style-type: none"> • Fire suppression • Maintenance of wetlands • Reduction of disease in forested stands
Connecticut warbler	The cumulative effects area consists of Compartments 93, 94, 115 and 116, and the Ten Mile Pine and Moss Lake Tower timber sales. This area covers 7,180 acres. This area was chosen because it includes stands that overlap in treatment. The timeframe is the past 15 years which includes the last entry and five years in the future because actions longer than five years away are not readily predictable.	<ul style="list-style-type: none"> • Maintenance of wetlands • Timber management
Sharp-tailed grouse	Because there are no direct and indirect effects to sharp-tailed grouse there are no cumulative effects.	
Blanding's turtle	The cumulative effects area consists of the Compartments 93, 94, 115 and 116 this area includes the Sturgeon River. The timeframe for cumulative effects is six years in the past; the amount of time it takes for treated stands to become revegetated (shaded) after treatment. Five years in the future was chosen because treatment areas are not known more than five years in advance.	<ul style="list-style-type: none"> • Maintenance of wetlands • Road construction, closure and obliteration • OHV use includes legal and illegal • Best Management Practices

<p>Incurvate emerald dragonfly</p> <p>Ebony boghaunter dragonfly</p> <p>Ringed boghaunter dragonfly</p>	<p>The cumulative effects area consists of Compartments 93, 94, 115 and 116, approximately 3,660 acres in size.</p> <p>Timeframe: Same as described for gray wolf.</p>	<ul style="list-style-type: none"> • Maintenance of wetlands (incurvate emerald) • Dragonfly surveys • Timber management • Best Management Practices • Road construction, closure and obliteration
<p>Bald eagle</p>	<p>The cumulative effects area for bald eagle is the area between FR 2226 and the Sturgeon River south to U.S. Highway 2. This area was chosen because it includes a river and two historic territories of bald eagles and Management Area 4.5 emphasizing long-lived conifers beneficial to bald eagle. The area is approximately 10,880 acres.</p> <p>Timeframe: The cumulative effects timeframe is nine years in the future because activities associated with current planned timber sales would be implemented in this timeframe as would the work associated with this project. The past timeframe is fifteen years because previously treated stands would be forested.</p>	<ul style="list-style-type: none"> • Snowmobiling • Road construction, closure and obliteration • Dispersed recreation • Recreation at a designated trail or recreation area. • Timber management • OHV use includes legal and illegal • Activities on private land including sale of private land.
<p>Canada lynx</p>	<p>The Forest Plan BA and Biological Opinion from USFWS provides a method for analyzing the effects to Canada lynx.</p> <p>The cumulative effects area contains all four compartments with proposed single track trail construction (C-93, 94, 115 and 116) plus the adjacent past project areas: 10 Mile, Camp 11, Ogontz, Ramsey and Bishop and future project sale Coolaw Pine (approximately 53,580 acres) because these are within a distance that is comparable to a home range.</p> <p>The cumulative effects timeframe is five years in the future and 5 years in the past. This timeframe was chosen because stands treated become suitable again to snowshoe hare,</p>	<ul style="list-style-type: none"> • Winter track surveys • Private land timber management and subdivision includes paper company lands • Land exchange • Utility corridors • Timber management (includes deferred management) • Snowmobiling • Bough cutting • OHV use includes legal and illegal • Road construction, reconstruction, • Road closure and obliteration • Dispersed recreation • Recreation at a designated trail or recreation area.

	<p>the main prey species of Canada lynx, within 5 years of treatment. Activities more than 5 years into the future are not reliably predictable. Timber management plans, utility company operation plans, county and state land plans are 5-10 year plans and the forest plan is for a minimum of 10 years. Sales in past recent decisions have not all been sold. Projects could occur as long as five years after sale closure (i.e. K-V funding).</p>	
<p>Land snails <i>E. alderi</i> <i>C. exile</i> <i>P. asteriscus</i> <i>V. morsei</i> <i>V. bollesiana</i> <i>V. paradoxa</i></p>	<p>Due to the habitat specific occurrence of these snail species and low potential of these land snails traveling large distances, the cumulative effects area consists of C-93, 94, 115 and 116 (approximately 3,660 acres). Timeframe for cumulative effects is 6 years in the past and five years in the future. Vegetative treatments opening the overstory would begin to be revegetated within a period of six years and the stand would again be shaded and retain moisture.</p>	<ul style="list-style-type: none"> • BMP's • Timber management (includes deferred management) • Maintenance of wetlands (<i>Euconulus alderi</i> and <i>Catinella exile</i>) • Road construction, closure and obliteration • OHV use includes legal and illegal
<p>Northern goshawk</p>	<p>The cumulative effects area consists of Compartments 93, 94, 115 and 116, and the Ten Mile Pine and Moss Lake Tower timber sales. This area covers 7,180 acres. This area was chosen because it includes stands that overlap in treatment.. The timeframe for cumulative effects is a period of 15 years, 10 years in the past and 5 years in the future. Activities longer than 10 years ago would not have measurable effects; stands would have regenerated to a point that the stands would be forested stands. Activities more than 5 years into the future are not reliably predictable. Timber management plans, utility company operation plans, county and state land plans are 5-10 year plans and the forest plan is for a minimum of 10 years. Sales in past recent decisions have not all been sold. Projects</p>	<ul style="list-style-type: none"> • Monitoring of raptor nests • Timber management includes deferred management • Road construction, closure and obliteration • OHV use includes legal and illegal use

	could occur as long as five years after sale closure (i.e. K-V funding).	
Red-shouldered hawk	The cumulative effects area and timeframe for red-shouldered hawk is the same as that described above for the northern goshawk. The rationale for this spatial and temporal timeframe is the same that listed for northern goshawk.	<ul style="list-style-type: none"> • Monitoring of raptor nests • Timber management includes deferred management • Road construction, closure and obliteration • OHV use includes legal and illegal use
Prairie warbler	Due to similarity in habitat requirements of Kirtland's warbler and prairie warbler, the cumulative effects area and timeframe is the same as that described for Kirtland's warbler.	<ul style="list-style-type: none"> • Timber management includes deferred management •
Kirtland's warbler	Because this species is tied to very specific habitat conditions, the cumulative effects area includes the Whitefish Delta KW Management area and the project area (approximately 7,220 acres). The cumulative effects timeframe for KW is 16 years in the past (1992) to 6 years into the future. Habitat created longer ago than 16 years is declining in suitability for KW and would start going out of a suitable condition. Jack pine treatments conducted in 2002 are just coming into a suitable condition for KW. Regenerated habitat would become suitable habitat within six years.	<ul style="list-style-type: none"> • Timber management includes deferred management and timber stand improvement (TSI). • OHV use includes legal and illegal use • Future jack pine regeneration (Stockyard Stewardship project)

Note: this table includes only those Regional Forester Sensitive Species or Management Indicator Species with an occurrence or suitable habitat within the project area.

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