

## Appendix H Summary of Effects to Lynx from Devil Trout Biological Assessment

A Biological Assessment was prepared for the Devil Trout Project that considered effects to threatened and endangered species. The following is a summary of potential effects to lynx.

The Forest Service is a partner in an ongoing lynx research project in northern Minnesota. Canada lynx have been tracked, trapped and collared. Three lynx have been located in the project area with radio telemetry. Most of the project area provides potential habitat which may or may not be occupied. All habitats are well distributed across the analysis area. Lynx Analysis Units (LAUs) are the smallest landscape scale analysis units upon which direct, indirect, and cumulative effects analyses for lynx will be performed. LAUs encompass lynx habitat on all ownerships using specific criteria to identify appropriate vegetation and environmental conditions. Management at LAU scale allows blocks of quality lynx habitat to be maintained within each LAU, thereby maintaining a good distribution of lynx habitat at scales appropriate for lynx conservation.

Table H.1 provides a list of all Lynx analysis units (LAUs) that overlap the Devil Trout project area. No activities are planned in LAUs 36 and 37; therefore those two LAUs will not be further analyzed. LAUs that will be affected by this project are SNF 38-41

*Table H.1 Acres and Percent of each Lynx Analysis Units (LAU) within the Devil Trout Project Area DTPA).*

<b>LAU</b>	<b>Gross Acres*</b>	<b>Acres of LAU in Project Area **</b>	<b>% of LAU in Project area</b>	<b>DTPA Alt. 3 Acres***</b>	<b>% of LAU Affected</b>
SNF36	25127	61	0.2	0	0
SNF37	27835	2060	7.4	0	0
SNF38	40213	32390	80.5	1985	4.9
SNF39	27367	2816	10.3	304	1.1
SNF40	28206	7606	27.0	202	0.7
SNF41	37578	3528	9.4	217	0.6

*Data source:*  
**\*\***Data source: CDS data: Feb. 7, 2006, ArcMap: lau-dt\_bnd\_clip.shp.  
**\*\*\***Alternative 3 is analyzed because it affects the most acres, CDS data: Feb. 7, 2006, ArcMap.  
*Other Footnotes:*  
**\***Gross acres include land and water on all ownerships within the LAUs  
**\*\***Acres of LAU in the project area include National Forest System lands. No activities are planned in LAUs 36 and 37, therefore those two LAUs will not be analyzed.

The following indicators were chosen to analyze direct and indirect effects of the actions and the cumulative effects of other actions in the project area and lynx analysis units:

**Forest Plan BA Indicator**

- 1a. Snowshoe hare habitat acres
- 1b. Percent of unsuitable habitat on NFS land
- 2. Acres of red squirrel habitat
- 3. Denning habitat in patches > 5 acres

**Other Indicators**

- 10. Lynx hare habitat currently in an unsuitable and suitable condition on all ownerships
- 11. Cumulative change to unsuitable condition on NFS lands in 10 years.
- 12. Road and snow-compacted trail density
- 13. Changes in temporary roads from the current mileage and road decommissioning

**Existing Conditions and Effects**

National Forest System existing condition data is CDS as of Feb. 21, 2006 and includes activities scheduled to take place as a result of signed decisions including Kadunce EA, Behind the Ridge EA and Northern Lights EA.

**Lynx Habitat – Forest Condition Indicators**

*Table H.2 Indicators 1-2: Lynx Habitat – Forest Condition*

		Existing Condition *		Acres and Percent of Habitat in 2015					
				Alternative 1 (no action)		Alternative 2 (proposed action)		Alternative 3	
Indicators		Acres	%	Acres	%	Acres	%	Acres	%
<b>1a. Snowshoe hare habitat**</b>									
Lynx Analysis Units	SNF38	15592	63.1%	13738	55.6%	13677	55.3%	13612	55.0%
	SNF39	12479	79.3%	10658	67.8%	10658	67.8%	10658	67.8%
	SNF40	17618	79.6%	16187	73.1%	16201	73.2%	16187	73.1%
	SNF41	21255	70.9%	15894	53.0%	15894	53.0%	15894	53.0%
<b>1b. Young Habitat Unsuitable for Snowshoe Hare^</b>									
Lynx Analysis Units	SNF38	1092	4.4%	0	0.0%	465	1.9%	1482	6.0%
	SNF39	424	2.7%	0	0.0%	304	1.9%	304	1.9%
	SNF40	344	1.6%	0	0.0%	143	0.6%	143	0.6%
	SNF41	7	0.0%	0	0.0%	130	0.4%	130	0.4%
<b>2. Red Squirrel Habitat**</b>									
Lynx Analysis Units	SNF38	5366	21.7%	6099	24.7%	5900	23.9%	6051	24.5%
	SNF39	4096	26.0%	4532	28.8%	4532	28.8%	4532	28.8%
	SNF40	6230	28.1%	6624	29.9%	6624	29.9%	6624	29.9%
	SNF41	9793	32.7%	10664	35.6%	10664	35.6%	10664	35.6%

*Table H.2 Indicators 1-2: Lynx Habitat – Forest Condition*

Indicators	Existing Condition <sup>*</sup>		Acres and Percent of Habitat in 2015						
			Alternative 1 (no action)		Alternative 2 (proposed action)		Alternative 3		
	Acres	%	Acres	%	Acres	%	Acres	%	
<b>National Forest System lynx habitat in 2006<sup>#</sup></b>									
Lynx Analysis Units	SNF38	24728							
	SNF39	15728							
	SNF40	22137							
	SNF41	29985							

*Data Source:* \* Existing Condition based on February 2006 frozen CDS data and includes past and proposed NFS actions within each LAU. Alternatives 2 and 3 data determined through ArcMap.

*Other Footnotes:* \*\* Data estimates for 2014 used 2006 data, the proposed actions, and a successional model. ^ Unsuitable habitat calculations assume that the current unsuitable habitat will grow into suitable habitat prior to 2010 and that Forest Service actions would take place between 2010 and 2014, resulting in all the treated habitat being unsuitable in 2014. # Total National Forest System lynx habitat acreage is assumed to be the same in 2006 and 2014 and is used for the percentage calculations.

*Table H.3 Indicator 3: Denning Habitat*

Lynx Analysis Units	Existing Condition			Acres of habitat patches (>5 ac) removed and % of habitat remaining					
	Forested Lynx Habitat	Denning habitat in patches		Alternative 1 (no action)		Alternative 2		Alternative 3	
		Acres	Acres	%	Acres	%	Acres	%	Acres
SNF38	23234	11291	48.6%	0	48.6%	787	45.2%	1341	42.8%
SNF39	14471	7179	49.6%	0	49.6%	304	47.5%	305	47.5%
SNF40	21411	13034	60.9%	0	60.9%	180	60.0%	144	60.2%
SNF41	28652	10903	38.1%	0	38.1%	130	37.6%	131	37.6%

*Data source:* CDS data, 21Feb2006.  
*Other Footnotes:* National Forest System lands only

Based on changes from existing condition without succession, all alternatives would retain denning habitat in patches >5 acres on 38% to 61% of lynx habitat. This is well above the 10% guideline.

**Indicator 10: Currently Unsuitable Lynx Habitat on all ownerships**

This indicator provides a measure of G-WL-3 which states “limit disturbance within each LAU on NFS lands as follows: if more than 30% of the total lynx habitat (all ownerships) within an LAU is currently in unsuitable condition, no further reduction of suitable condition should occur as a result of vegetation management activities by National Forest.

*Table H.4 Indicator 10: Lynx hare habitat currently in an unsuitable and suitable condition on all ownerships*

LAU	Total Lynx Habitat on all ownerships (acres)	Currently Unsuitable Hare Habitat*		Currently Suitable Hare Habitat**	
		acres	%	Acres	%
SNF38	24728	2905	11.7%	15592	63.1%
SNF39	15728	801	5.1%	12479	79.3%
SNF40	22137	759	3.4%	17618	79.6%
SNF41	29985	470	1.6%	21255	70.9%

*Data source:* CDS data, 21Feb2006, includes activities in signed decisions. Data from MN DNR was evaluated from their 5-year plan and includes current and potential harvests.

*Other Footnotes:* \*All ownerships are included. County and private lands were evaluated with 2004 aerial photographs and were either in suitable condition or were non-habitat. \*\*Only federal lands are included.

Current unsuitable habitat on all ownership in lynx analysis units SNF 38-41 ranges from 1.6% to 11.7%, well below the 30% guideline. The amount of unsuitable land includes federal and state land. Lands in county or private ownership were evaluated using recent aerial photography and were found to be either suitable habitat or non-habitat. Non-habitat includes the Cook County airport, Hedstrom’s Lumber Company, permanent farm fields, and private residences.

In all LAUs, the acres of federal land providing suitable hare habitat with canopy cover (upland forest > 4 years old and lowland forest > 9 years old) ranges from about 63% to 80% of the total lynx habitat on all ownerships.

**Indicator 11: Cumulative change to unsuitable condition on NFS lands.**

This indicator is used to measure S-WL-1 which states that management activities on NFS lands shall not change more than 15% of lynx habitat on NFS lands within an LAU to an unsuitable condition within a 10-year period.

*Table H.5 Indicator 11: Cumulative change to unsuitable condition on NFS lands (S-WL-1).*

LAUs	National Forest System Lands	Existing Condition 2005*		Change to unsuitable condition in a 10 year period (2005-2015)								
				Alternative 1			Alternative 2			Alternative 3		
				Present Actions**	Total Change		Proposed Change^	Total Change		Proposed Change^	Total Change	
				Acres	Acres	%	Acres	Acres	%	Acres	Acres	%
SNF38	24658	0	0.0%	209	209	0.8%	465	674	2.7%	1482	1691	6.9%
SNF39	15600	0	0.0%	0	0	0.0%	304	304	1.9%	304	304	1.9%
SNF40	22023	0	0.0%	0	0	0.0%	143	143	0.6%	143	143	0.6%
SNF41	29798	0	0.0%	0	0	0.0%	130	130	0.4%	130	130	0.4%
Total							1042			2059		

Table H.5 Indicator 11: Cumulative change to unsuitable condition on NFS lands (S-WL-1).

LAUs	National Forest System Lands	Existing Condition 2005*		Change to unsuitable condition in a 10 year period (2005-2015)								
				Alternative 1			Alternative 2			Alternative 3		
				Present Actions**		Total Change	Proposed Change^		Total Change	Proposed Change^		Total Change
				Acres	%	Acres	%	Acres	%	Acres	%	Acres

Data Source: \*Data set to zero at the start of Forest Plan revision. No management actions occurred in the DT project area between FP revision and prior to Kadunce EA \*\*Reflects past decisions since Forest Plan Revision Implementation (June 2004) that have resulted in a change to unsuitable (Kadunce EA). ^ This figure represents the worst case and assumes that all present and proposed actions will be in the 0-4 age class at the same time. Proposed changes do not reflect successional changes.

Unsuitable habitat would increase in LAU 38 from 0.8% to 2.7% in Alternative 2 and to 6.9% in Alternative 3, within the threshold of a 15% change in ten years. In LAUs 39-41 unsuitable habitat would be reduced from current conditions by no more than 1.9%. This assumes that all acres would be harvested at the same time and add to any existing unsuitable acres. Succession is not considered during the ten year period of this analysis.

**Lynx Habitat – Human disturbance/Access Indicators**

**Indicator 12: Road and snow-compacted trail density**

Indicator 12, below, is used to measure G-WL-8 which states that within LAUs generally maintain road and snow-compacting trail densities below 2 miles per square mile to maintain the natural competitive advantage of lynx in deep snow. Where total road and regularly-used snow-compacting trail densities are greater than 2 miles per square mile and coincide with lynx habitat, prioritize roads for seasonal restrictions or reclamation in those areas, where practical or feasible. In this guideline “roads” include all ownerships of classified and unclassified roads and “regularly-used trails” are those that are used most years for most of the snow season.

**Indicator 13: changes in temporary roads from the current mileage and road decommissioning**

Indicator 13 is based on Alternative 1 (no action) as being zero miles because any current temporary roads will be closed after management activities are complete.

Because Indicators 12 and 13 are closely linked, they are discussed together, below.

Table H.6 Indicator 12: Road and snow-compacted Trail Density

Lynx Analysis Units	Land Area sq. mi.*	Existing Condition**		Alternative 1		Alternative 2		Alternative 3	
		Miles	mi/mi	miles	mi/mi	miles	mi/mi	miles	mi/mi
SNF 38	58.79	117.73	2.00	118.09	2.01	118.09	2.01	117.44	2.00
SNF 39	40.70	63.23	1.55	63.23	1.55	62.23	1.53	62.23	1.53
SNF 40	41.14	51.77	1.26	51.77	1.26	51.77	1.26	51.77	1.26

*Table H.6 Indicator 12: Road and snow-compacted Trail Density*

Lynx Analysis Units	Land Area sq. mi.*	Existing Condition**		Alternative 1		Alternative 2		Alternative 3	
		Miles	mi/mi	miles	mi/mi	miles	mi/mi	miles	mi/mi
SNF 41	57.16	108.56	1.90	108.56	1.90	108.56	1.90	108.56	1.90

*Data source:* \*From 2004\_04\_26\_snf lau rds trails.xls (forest-wide analysis),

\*\* NFS Infra data for Devil Trout, 2/23/06,

*Other Footnotes:* Mileage for dual use of winter trail on FR 1367 (Meridian Road) is counted only once.

Lynx analysis unit SNF 38: All alternatives maintain road and snow compacted trail density at about 2 miles per square mile. A proposed special use private property access road (0.36 mile in length) will contribute to an increase in road density in Alternatives 1-3. In Alternative 3, an objective maintenance level 2 road (0.646 mile in length) will be decommissioned, effecting a reduction in road and snow compacted trail density to slightly below the existing condition.

Lynx analysis unit SNF 39: One mile of unclassified road would be decommissioned in lynx analysis unit SNF 39 in both Alternatives 2 and 3, reducing the road density to 1.53 mi/mi<sup>2</sup> from 1.55 mi/mi<sup>2</sup> in the existing condition and Alternative 1.

Lynx analysis units SNF 40 and 41: would remain at existing conditions (1.26 mi/mi<sup>2</sup> and 1.90 mi/mi<sup>2</sup>, respectively) under all alternatives.