Risks to Wildlife and Habitats: Change in Assessed Values 2005 to 2015

Introduction

The 2005 NH Wildlife Action Plan evaluated threats for SGCN and habitats using a systematic and repeatable approach.

Purpose of Identifying and Ranking Threats

1. Describe threats in a consistent, standardized format to facilitate planning decisions.
2. Provide a tool that will allow NHFG to objectively prioritize actions within and among levels of the ecological hierarchy (e.g., within species, within habitat, and among species and habitats).
3. Provide a source of data that can be queried to obtain a comprehensive overview of threats.

As a measure of performance and condition, we repeated an assessment of threats evaluated during 2005.

Methodology

During 2005, the NH evaluated threats for habitats and SGCN in a similar approach to 2015. The approach taken during 2015 is described in detail under *Appendix E, Threat Assessment Instructions.* Some modifications to the methodology were made in order to maximize consistency with the other Northeast states. Modifications to our 2005 approach are described below.

SCGN and Habitats
The number of SGCN and habitats changed from 2005 to 2015 (see Chapter 2). We only compared threat ranks for those SGCN and habitats that were included in both Wildlife Action Plans.

International Union for Conservation of Nature (IUCN) System
During 2015, we adopted the threat categories outlined by IUCN and the Northeast Lexicon and listed below. In some cases, these groupings were somewhat different than what NH used during 2005. For example, during 2005, Oil Spills, Mercury, and Acid Deposition were all separate threat categories and were combined into one category during 2015: Pollution.

- Residential and Commercial Development
- Agriculture and Aquaculture
- Energy Production and Mining

- Transportation and Service Corridors
- Biological Resource Use
- Human Intrusions and Disturbance
- Natural System Modifications
- Invasive and Other Problematic Species and Genes
- Pollution
- Climate Change and Severe Weather.

Threat Ranking: Habitats and SGCN

The 2015 methodology used the same 5 categories for assessing threats for habitats and SGCN. In some cases, the terminology was slightly different (Scope = Spatial Extent; Severity = Severity; Timing = Immediacy; Information = Certainty; Likelihood = Likelihood) but the meaning was very similar.

During 2005, NH assessed each of the 5 threat categories within 4 categories (4, 3, 2, 1) The 2015 threat ranking methodology used 3 categories (H, M, L). Because we wanted to compare NH threat ranks from 2005 to threat ranks in 2015, we wanted to use a similar approach in assigning ranks, to the extent possible. Consequently, we converted the 2005 threat ranks to the 2015 threat methodology. First, we collapsed the 4 categories from 2005 into 3 categories (H, M, L) using the following crosswalk:

Scope (2005)	**Spatial Extent (2015)**
4=Throughout (>50%)	H =Pervasive (>50%)
3=Widespread (15-50%)	M = Dispersed/Patch (10-50%)
2=Scattered (5-15%)	M = Dispersed/Patch (10-50%)
1=Localized (<5%)	L = Localized (<10%)

Severity (2005)	**Severity (2015)**
4=Catastrophic (>50%)	H=Severe
3=Serious (21-50%)	M=Moderate/substantial
2=Moderate (5-20%)	M=Moderate/substantial
1= Mild (<5%)	L=Slight/minor

Timing (2005)	**Immediacy (2015)**
4=Current (<1 yr)	H = < 1 yr
3=Imminent (1-3 years)	M=(1-10 yr)
2=Near-term (3-10 years)	M=(1-10 yr)
1= Long-term (>10 years)	L=(10-100 yr)

Information (2005)	Certainty (2015)
4= Well Documented	H = Sufficient info
3 - Somewhat Documented	M=some info/questions remain
2 = Weekly Documented	M=some info/questions remain
1 = Undocumented	L = poorly understood/data insufficient

Likelihood (2005)	Likelihood (2005)
4=Certain (100%)	4=Certain (100%)
3=Likely (50-99%)	3=Likely (50-99%)
2=Possible (10-49%)	2=Possible (10-49%)
1=Unlikely (0-9%)	1=Unlikely (0-9%)

This methodology was used to convert all of the raw threat scores from 2005.

Combining Threat Categories for Overall Score

The NH 2005 threat methodology combined the 5 threat categories using a mathematical formula that resulted in a final score between 0 and 4. This score was then converted to 4 categories. After consideration, the NH Wildlife Action Plan Implementation Team decided to use an alternative approach during 2015. This alternative approach is described in Appendix E and involves a series of decision matrices as opposed to a mathematical formula. This approach relies more heavily on the Spatial extent and severity threat scores. Immediacy and certainty scores were only used reduce threat scores when effects were predicted as long-term or when certainty was low. Due to overlap with other threat categories, the Likelihood category was not used in calculating a final score. Therefore, the 2015 methodology used 4 of the 5 categories to calculate a final threat category.

Results

611 threat ranks were evaluated in both 2005 and 2015. Fifty-four percent (n = 338) of threats evaluated during both 2005 and 2015 did not change in categorized threat. Thirty-two percent (n=201) threats decreased in assessed risk score and 13.5% increased in assessed risk score. The majority (24% of all categories) of changes in threat scores were from M (2005) to L (2015).

Twenty threat assessment scores changed from *high* (2005) to *low* (2015). (6 habitat threats, 14 species threats; Table 3). In some cases, risk may have been reduced during the last 10 years. In other cases, new data and/or other information was available and included in the risk assessment. It is also possible that some change in scores here were due to small changes in methodology between the years. The 2015 methodology focused on future impacts from the threat whereas the 2005 methodology may have included some degree of historic impacts. For example, residential and commercial development has had a high degree of impacts to NH saltmarsh habitat but a substantial amount of new residential and commercial development adjacent and in the saltmarsh is unlikely because it is either already impacted or regulated by state and federal law.

Table 1. Frequencies of risk categories for the 2005 NH Wildlife Action Plan and the 2015 Wildlife Action Plan. Only threats that were assessed in both plans are included here.

2005 Rank	2015 Rank	#	Percent
H	H	24	3.9
H	M	29	4.7
H	L	20	3.3
M	H	33	5.4
M	M	112	18.3
M	L	149	24.4
L	H	9	1.5
L	M	41	6.7
L	L	194	31.8
		611	100

Table 2. Frequencies and percentages of risk ranks that remained the same, increased, or decreased in risk rank between the 2005 NH Wildlife Action Plan and the 2015 Wildlife Action Plan. Only threats that were assessed in both plans are included here.

	#	%
Same Rank	330	54.0
Increase Risk	83	13.6
Reduced Risk	198	32.4
	611	100.0

Nine threats changed from *low* (2005) to *high* (2015) (4 habitat threats, 5 species threats; Table 4). In some cases, changes in threat rank were the result of actual changes. However, in most cases, threat ranks changed as a result of additional information. Some invasive insects (e.g., Balsam wooly adelgid, spruce budworm, hemlock wholly adelgid, emerald ash borer) have increased in distribution and abundance over the last ten years or are predicted to over the next 10 years and are considered a much greater threat to those forest systems than previously. During 2005, climate change was included in the NH WAP but was not consistently evaluated across habitats and species. As such, several species (saltmarsh sparrow, spruce grouse) and habitats (salt marsh) had elevated concerns during 2015. A regional assessment of wood turtles elucidated threats for the species and as a result, the species overall risk in NH was elevated from 2005 to 2015.

Table 3. Threats to species and habitats that changed from '*high'* during 2005 to '*low'* during 2015 as part of NH's Wildlife Action Plan revision.

Habitat or Species	**IUCN Level 1**	**IUCN Level 2**
Alpine	Climate change & severe weather	
Alpine	Energy production & mining	Renewable energy
Appalachian Oak Pine Forest	Transportation & service corridors	Roads & railroads
Appalachian Oak Pine Forest	Natural system modifications	
Caves and Mines	Energy production & mining	Mining & quarrying
Salt Marsh	Residential & commercial development	
Cobblestone Tiger Beetle	Natural system modifications	Dams & water management/use
Common Loon	Pollution	Air-borne pollutants
Common Loon	Residential & commercial development	
Common Loon	Pollution	Industrial & military effluents
Common Tern	Residential & commercial development	
Eastern Pondmussel	Invasive & other problematic species, genes & diseases	Invasive non-native/alien species/diseases
Eastern Small-footed Bat	Energy production & mining	Mining & quarrying
Pine Barrens Lepidoptera	Transportation & service corridors	
Pine Barrens Lepidoptera	Invasive & other problematic species, genes & diseases	Invasive non-native/alien species/diseases
Roseate Tern	Residential & commercial development	
Saltmarsh Sparrow	Residential & commercial development	
Saltmarsh Sparrow	Transportation & service corridors	Roads & railroads
Sleepy duskywing	Transportation & service corridors	
Sleepy duskywing	Invasive & other problematic species, genes & diseases	Invasive non-native/alien species/diseases

Table 4. Threats to species and habitats that changed from '*low'* during 2005 to '*high'* during 2015 as part of NH's Wildlife Action Plan revision.

Habitat or Species	**IUCN Level 1**	**IUCN Level 2**
High Elevation Spruce-Fir Forest	Invasive & other problematic species, genes & diseases	Invasive non-native/alien species/diseases
Northern Hardwood-Conifer Forest	Invasive & other problematic species, genes & diseases	
Salt Marsh	Climate change & severe weather	Habitat shifting & alteration
Salt Marsh	Pollution	Industrial & military effluents
Common Loon	Biological resource use	
Saltmarsh Sparrow	Climate change & severe weather	Habitat shifting & alteration
Spruce Grouse	Climate change & severe weather	Habitat shifting & alteration
Wood Turtle	Agriculture & aquaculture	
Wood Turtle	Transportation & service corridors	Roads & railroads

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