

North Carolina Climate Change Ecosystem Assessment Glossary of Terms

Levels of Organization

Ecosystem Groups: Broad classification of habitat types that consist of an assemblage of two or more Natural Communities, as described in the Classification of the Natural Communities of North Carolina, 3rd Approximation (Schafale & Weakley, 1990). The Natural Communities, and associated species, have been grouped based on similarity of habitat types and common needs and issues. These groups are sometimes referred to as Biological Themes and are described more fully in the report Descriptions of the Biological Themes of North Carolina (NC Natural Heritage Program, 2001).

Natural Communities: A distinct and recurring assemblage of populations of plants, animals, bacteria, and fungi naturally associated with each other and their physical environment, as defined in the Classification of the Natural Communities of North Carolina, 3rd Approximation (Schafale and Weakley, 1990).

LHI Guilds: Landscape Habitat Indicator Guilds are groups of animal species that are sensitive to fragmentation of specific types of habitats, as defined by Hall (2004). Blocks of habitat where these species are still well represented – termed LHI Core Areas – are considered to have high landscape integrity, a critical need if species and communities are to be able to shift their ranges or otherwise adapt to the effects of climate change. Like Natural Communities, LHI Guilds are associated with particular Ecosystem Groups, although unlike Natural Communities, a given LHI Guild may be associated with more than one Group.

Plants: Plant species included in the analysis are limited to species tracked as Elements by the Natural Heritage Program and that are strongly associated with a particular Ecosystem Group.

Terrestrial Animals: Terrestrial animals included in this analysis consist of species that conduct all or at least a significant portion of their activities on land. Semi-aquatic species, including salamanders, frogs, and dragonflies, are considered “terrestrial” if they spend a significant portion of their time foraging out of the water or if they otherwise frequently move overland. These species are linked to particular Ecosystem Groups through their inclusion within LHI Guilds. Species listed in the report include those that are on the NHP Element List, NHP Watch List, or the lists of Priority Species in WRC’s Wildlife Action Plan.

Aquatic Animals: Animals that are either completely aquatic or that spend the majority of their time foraging or moving within streams, rivers, lakes or other freshwater habitats. Species included in this analysis are strongly associated with particular Ecosystem Groups and are tracked as Elements by the Natural Heritage Program.

Factors, Responses, and Other Report Headings:

Climate Change Factor: Broad category of effects of climate change. The specific nature, intensity, and scope of the factor may vary from one Ecosystem Group to another, and these factors are explained in the comments fields.

Factor Likelihood: How likely this climate change factor will affect the Ecosystem Group by 2050

High = highly likely to occur

Med = moderately likely to occur

Low = limited chance of occurring

Uncertain = uncertain to occur

(If there is little chance of a factor occurring, it is not included on the list for that particular Ecosystem Group.)

Factor Effect: How the factor will affect the Ecosystem Group

Negative = all aspects of the factor will be detrimental to the Ecosystem Group as a whole

Mix = some aspects of the factor will be detrimental and some will be beneficial

Positive = all aspects of the factor will be beneficial to the Ecosystem Group as a whole

Uncertain = effects are uncertain

Factor Magnitude: How severely and extensively the climate change factor will impact the Ecosystem Group

High = factor will cause severe impacts or substantial alteration to the Ecosystem Group as a whole, eliminating or degrading a significant portion of it or affecting most occurrences.

Med = factor will cause significant impact to the Ecosystem Group by severely affecting a limited portion of it or by having moderate impact on most of it.

Low = factor will have measurable but limited impact to the Ecosystem Group affecting only a small portion of it or causing minor alterations to most of it.

Uncertain = severity of impacts are uncertain

Ecosystem Response: Broad category of ecosystem responses to various climate change factors. Some factors can cause multiple responses, or a response can be caused by multiple factors.

Ecosystem Response Likelihood: How likely the change is to happen by 2050 in response to the climate change factors

High = highly likely to occur

Med = moderately likely to occur

Low = limited chance of occurring

Uncertain = likelihood is uncertain

Ecosystem Response Effect: How the ecosystem will respond to the climate change factor

Negative = all aspects of the ecosystem response will be detrimental to the Ecosystem Group as a whole

Mix = some aspects of the ecosystem response will be detrimental and some will be beneficial

Positive = all aspects of the ecosystem response will be beneficial to the Ecosystem Group as a whole

Uncertain = ecosystem response is uncertain

Ecosystem Response Magnitude: The degree or extent of the ecosystem response

High = ecosystem response will be widespread and will permanently affect the biological Ecosystem Group as a whole

Med = ecosystem response will occur at some sites and may not permanently affect the Ecosystem Group as a whole

Low = ecosystem response may occur at few sites or will not cause significant, permanent degradation to the Ecosystem Group as a whole

Uncertain = severity of response is uncertain

Element Rank: Conservation status rank assigned by NatureServe in coordination with Natural Heritage Programs across the range of the element.

GRank = Global Conservation Status rank

SRank = Subnational (state) Conservation Status Rank (rank within NC)

Rank	<u>Rank Definition</u>
1	<u>Critically imperiled</u> - Critically imperiled due to extreme rarity or some factor(s) making it especially vulnerable to extirpation (or extinction). Typically five or fewer occurrences or very few remaining individuals (<1,000).
2	<u>Imperiled</u> - Imperiled due to rarity or some factor(s) making it very vulnerable to extirpation. Typically six to 20 occurrences or few remaining individuals (1,000 to 3,000).
3	<u>Vulnerable</u> - Vulnerable to extinction either because rare or uncommon, or found only in a restricted range (even if abundant at some locations), or due to other factors making it vulnerable to extirpation. Typically 21 to 100 occurrences or between 3,000 and 10,000 individuals.
4	<u>Apparently secure</u> - Apparently secure and widespread, usually with more than 100 occurrences and more than 10,000 individuals.
5	<u>Secure</u> - Common, widespread, and abundant. Essentially ineradicable under present conditions. Typically with considerably more than 100 occurrences and more than 10,000 individuals.
H	<u>Historical</u> - Of historical occurrence, with some expectation that it may be rediscovered. Its presence may not have been verified in the past 20 years. Upon verification of an extant occurrence, H-ranked elements would typically receive a 1 rank. Note: an element is not automatically assigned an H (or X) rank if it has not been verified in the past 20 years; some effort must have been made to locate or relocate occurrences.

- X Presumed extinct/extirpated - Believed to be extinct (at the global level) or extirpated (at the subnational/state level). Has not been located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.

Endemic: Species or communities that are restricted to North Carolina (true endemics) or that occur primarily in North Carolina but also occur to a limited extent in closely adjoining areas of neighboring states (near endemics). Species listed as endemics for an Ecosystem Group are also highly associated with that group and are thus potentially vulnerable to extinction due to impacts that affect the group overall.

Major Disjunct: Species or communities that are geographically separated from a main range in a different part of the state or country. These species in NC are usually separated from the nearest occurrences by several counties and most often by one or more states. As in the case of Endemics, species listed as major disjuncts for an Ecosystem Group are also highly associated with that group both ecologically and spatially and are thus potentially vulnerable to extirpation due to impacts that affect the group overall.

Extinction/Extirpation-Prone: Species that have highly restricted ranges, fragmented populations, specialized habitat associations, or other factors that make them vulnerable to elimination from the state. Species listed in this category for an Ecosystem Group have a high probability of being eliminated from North Carolina before the year 2050 due to climate changes or other impacts to the Ecosystem Group to which it belongs.

Status:

US = Federal status or ranking

LE = Listed as Endangered

LT = Listed as Threatened

FSC = Federal Species of Concern

C=Candidate for Federal Listing

NC = State status or ranking

E = Endangered

T = Threatened

SC = Special Concern

P = Proposed for State Listing

SR = Significantly Rare

W = NHP Watch List

WAP = State Wildlife Action Plan

P = Priority Species, as defined in NC WAP (NC Wildlife Resources Commission, 2005)

Threats: Broad category of threats to the Ecosystem Group as a whole. Where climate change is given as a threat, it represents all the factors and aspects of climate change identified for the Ecosystem Group. Other threats represent threats that already exist or that will occur with or without climate change.

Combined Threats Rank Order: Rough order of importance of the identified threats. Threats with roughly equal importance are given the same rank value.

Interventions (Adaptation Strategies): Broad category of actions or adaptation strategies that can be taken to reduce or mitigate the impact of climate change. The specific nature of the intervention may differ from one Ecosystem Group to the next. Details are given in the comment fields.

Intervention Importance: Importance of the intervention to the future survival or condition of the Ecosystem Group as a whole, given expected changes in the climate.

High = the intervention is highly essential to reduce or mitigate the expected impacts

Med = the intervention is moderately essential, but will reduce or mitigate the expected impacts to a lesser degree

Low = the intervention will help reduce or mitigate expected impacts, but to a relatively small degree

Uncertain = importance of the intervention is uncertain

Intervention Feasibility: Ease with which the intervention could be implemented, including technical feasibility, cost, and likely opposition.

High = the intervention could readily be implemented, given an achievable level of funding and public support

Medium = the intervention could be implemented, but would be difficult for technical or practical reasons, or would be expensive relative to other interventions

Low = the intervention would be very difficult to implement even with substantial funding and support