Criteria for Prioritizing Habitat for Representative Wildlife Species in Conservation Design for the Connecticut River Watershed

**Background and Purpose**

The Connecticut River Watershed Pilot is developing a Landscape Conservation Design that entails a spatial plan for conservation action. As currently conceived, the spatial plan will categorize or rank locations in the watershed to indicate the collective priorities of partners in sustaining a diverse suite of ecosystems and populations of fish and wildlife. From a terrestrial and wetlands standpoint, at least four important factors will be considered in determining which locations are considered to be highest priority:

1. Habitat quality for representative species of wildlife[[1]](#footnote-1)
2. Locations that support rare or endangered wildlife
3. Integrity and resilience of ecosystems
4. Locations of rare natural communities

To address factor 1, a set of species-habitat models for representative species of wildlife are being finalized. When the models are fully implemented, the representative species results will not only indicate current capacity of the landscape to support the species, but also projections of potential future capability. Future projections will reflect scenarios of climate change, urban growth (development), and forest change.

Representative species will be incorporated into the overall conservation design following an optimization step that combines the individual species results. To conduct the optimization, partners must make decisions for the Connecticut River Watershed regarding:

1. How (if at all) to factor in future scenarios of the capability of the landscape to support representative wildlife species.
2. Whether particular species (and by extension, the ecosystems and other species they are intended to represent) are considered as being of higher priority for conservation relative to other representative species.

These decisions will affect the final conservation design, including which locations are selected for the highest tier of prioritization (i.e., a “core area”).

**Status of Discussions to Date**

As of June 2014, members of the terrestrial and wetlands team have participated in several discussions related to the decisions for incorporating representative species into the conservation design. Major points of discussion include the following:

* Some participants have reservations about the merits of using representative species models in conservation design.
* Some participants have concerns about the approach of combining and weighting multiple datasets, each of which generally is associated with unquantifiable uncertainties.
* Participants are generally willing to develop and apply species prioritization criteria, but given the previous two points also want to compare the results of any weighting decisions with simpler (i.e., unweighted or equal-weighted) approaches before making any final decisions.
* Prioritization criteria should consider not just the representative species, but the associated habitats and species that the representative species is intended to represent.

**Criteria for Incorporating Future Change (Within Species)**

Recognizing the caveats of the previous section, participants generally favored incorporation of potential future scenarios of landscape and climate change into prioritization of habitat for representative species. They regarded the threats as being of high relevance to conservation. Based on initial discussion, criteria for addressing future conditions are as follows:

* Higher priority should be placed on habitat that is expected to retain its climate suitability for species, relative to habitat of the same quality that is expected to lose its climate suitability. How heavily to emphasize this criterion has not been decided, and application of the criterion may vary among species.
* Higher priority should be placed on habitat that is expected to lose suitability for species due to development and urban growth, relative to habitat of the same current quality that is not expected to lose its suitability due to these factors. The rationale is that conservation action should be directed at high priority areas that are also at risk of loss.

To date, the group has not discussed whether and how to weight loss or gain of habitat capability due to projected forest change.

**Species Prioritization Criteria (Across Species)**

Drawing from the parallel process to weight ecosystem types, participants generally supported the following criteria for assigning higher priority to species:

* Degree of current threat – Species (and the habitats and species they represent) that have experienced significant losses (e.g., in the past 50 years) or are otherwise facing significant threats. It could make sense to focus on species with population declines known or believed to be due to habitat loss in the Northeast region or Conn. River watershed.
* Regional responsibility – Species (and the habitats and species they represent) for which the Connecticut River watershed is particularly important within the Northeast region (or at even larger scales, including global), suggesting a high responsibility for conservation action within the watershed.
* Regional rarity – Species that are relatively rare at a regional (or larger) scale, particularly if they occupy relatively uncommon ecosystem or habitat types. This criterion may not apply to species if the species is relatively rare in the Northeast region but not elsewhere, such that conservation actions directed at the species here will have marginal overall benefits.

The following potential criteria have been suggested but not yet discussed by the larger group:

* Climate vulnerability – higher priority for species that are more vulnerable. (Alternatives are possible, including higher priority for species that are less vulnerable.)
* Societal or ecological value – Species (and the habitats and species they represent) that are more highly valued by the public or stakeholders based on recreational, economic, aesthetic, or ecological value.

**Application of the Criteria**

The criteria have not yet been applied to the representative species being used in the Pilot.

1. A *representative species* is one that, because of its habitat use, ecosystem function, or management response, typifies lifecycle or habitat requirements for a larger group of species. Also referred to as a “surrogate species.” [↑](#footnote-ref-1)