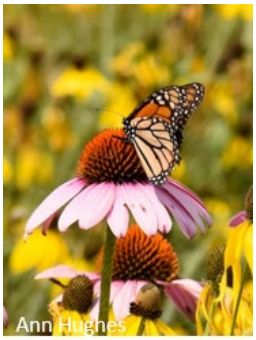
Species Status Assessment Framework

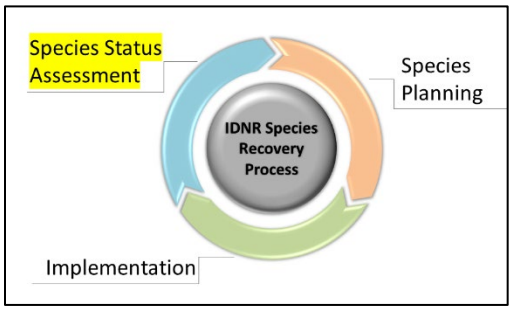
IDNR Natural Heritage Species Recovery Process

The Species Status Assessment template can be found on the Recovery Guidance website



Context

Species recovery can be conceptualized as a three-phase recursive process with the goal of maintaining or enhancing status of the species in Illinois. The assessment phase results in a state-specific Species Status Assessment (SSA), which includes a robust evaluation of the distribution, abundance, and population structure for the species. The SSA provides the information necessary to identify and implement conservation actions (phases two and three) and to evaluate efficacy of those actions.



Species Status Assessment Goal

A SSA provides a contemporary evaluation of a species' distribution, abundance, and population structure and viability. It provides baseline information for estimating trends in distribution and abundance.

The SSA guidance provided below offers substantial flexibility in data resolution and analytical requirements to account for the range of methods and difficulty in gathering data among taxonomic groups; however, the guidance does establish minimum data requirements to ensure resulting evaluations are sufficiently robust, repeatable, and can be used to identify and evaluate conservation actions.

Upon completion of the Species Status Assessment, email the document (in MS Word format) to the Endangered Species Program. The Endangered Species Program will facilitate the review process and may request changes to ensure consistency. For the protection of the species, all specific location information will be redacted prior to posting on the Recovery website.

Data Standards

SSAs will reflect availability and characteristics of existing data, resources directed at collecting targeted data, and traits of assessed species. Ideally, data used for the SSA will have the following characteristics:

- A spatially nested approach to sampling a species that provides opportunity to identify and evaluate relevant ecological and management scales.
- Sampling with methods (e.g., gear, suitable habitat, sufficient effort) that target the focal species to ensure accuracy and relevance of survey results.
- Repeated samples within spatial and temporal units that provide an opportunity to perform statistical analyses.
- Density or abundance estimates that provide a greater resolution of information than relative abundance estimates.
- Observation records relevant to the contemporary status of the species. The general rule is ten years or three generations, whichever is longer (e.g., Alligator snapping turtles can live 20-70

years, contemporary records would be within the last 60 years (i.e., minimum of three generations)).

Components of Species Status Assessment

A valid SSA will include five primary components and adhere to the standards of data and analytical resolution presented in this guidance. At a minimum, the categories of information described below can be used to evaluate a species' subnational status rank (i.e., S-rank) and to rank Element Occurrence (EO) records. Ideally, information can be used to delineate populations, estimate abundance at multiple scales, and estimate viability at multiple scales. **If data for the required elements of the SSA are not available, please specify the lack of information as appropriate in each section.** The SSA template (found on the Recovery Guidance website) should be used as a guide while creating the SSA.

1. Species Description and Conservation Status

Identifying the species being assessed improves communication and defines the scope of the assessment. Inventorying existing evaluations of conservation status provides a foundational assessment of the species at multiple spatial scales. Relevant information includes:

A. Taxonomic classification. If applicable, include notes regarding disagreement in classification and alternative common and scientific names.
B. A general description of habitat associations and life history characteristics. Provides context for subsequent sections of the status assessment.
C. Existing national, regional/subnational rank, state and federal listing status, and state/regional conservation status. This should include at a minimum, the global and subnational conservation ranks (i.e., G-rank and S-rank), state and federal listing status, and conservation status under the Illinois Wildlife Action Plan and Midwest Regional Species of Greatest Conservation Need List. If recent information compels a reevaluation of conservation ranks, the methods and results of those reevaluations should be provided. For more information on how to update the conservation rank, visit Nature Serve's S-Rank Evaluation Guidance and Tool for Updating Ranks.

2. Range and Distribution Estimate

Using the finest resolution available, identify the species' contemporary range and distribution. Historic range and distribution may also be provided for context. Reported as a minimum convex polygon or using relevant spatial units (e.g., watershed, grid cells, EOs). At a minimum, species range and distribution estimates will include:

A. An estimate of the species' range. The species' range is the geographic area where the species could be found, usually presented on a national or global scale.
B. An estimate of the species' distribution. A species' distribution is the spatiotemporal arrangement of the species within the range, preferably presented on a state scale. At a minimum, occurrence records can be used to demonstrate distribution. Sample locations where the species was not detected can be included to illustrate relative occupancy.
C. A narrative detailing any knowledge gaps in the species' range and/or distribution. Provides context for range/distribution estimates.
D. Ideally, reported distributions should include:
    i. Habitat suitability, occupancy, or distribution modeling. These methods account for incomplete sampling coverage and imperfect detection.
    ii. Changes in distribution over time.

3. Abundance Estimate

Abundance is the number of individuals in an area. At a minimum, reported abundance should include:

A. A count of individuals and density estimate at multiple spatial scales. The level of detail will be limited by the resolution of available data. Multiple measures of species abundance should be presented if available (e.g., number of individuals observed within the EO, sample-based abundance, density of relative abundance, etc.). The scale will be relevant to available data (e.g., locale, EO, watershed, state-wide).

B. A narrative detailing any knowledge gaps in the species' abundance. Provides context for abundance estimates.

C. Ideally, abundance estimates include:

   i. Model-based or mathematical estimates of true abundance at multiple spatial scales. These may incorporate distribution modeling or independent efforts. Mark-recapture or genetic techniques may also be used to estimate abundance.

   ii. Changes in abundance over time.

4. Population Identification and Viability

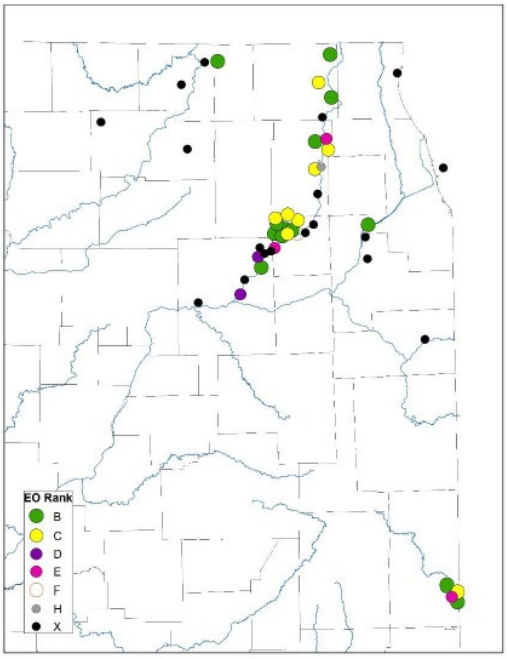
A population is comprised of individuals occupying the same space and time that have a reasonable likelihood of engaging in ecological interactions (e.g., competition, reproduction). Populations can be convenient units of conservation, and population delineation and characterization provide information regarding a species status at multiple spatiotemporal scales.

At a minimum, characterization of populations includes:

A. EO viability ranking. NatureServe's Ranking Species Occurrences standards will be used to determine EO Ranking (see the Recovery Guidance webpage for additional guidance). Although EOs are not always synonymous with populations, ranking EOs provides information regarding species persistence and characteristics of occurrence record data.

   i. EO Ranking Map. Using any available mapping software (e.g., ArcGIS, Google Earth, etc.) display the EO rank for the species' EO records. Each rank will be color coded (or otherwise identified) with a legend on the map.

      - EO Ranking Map Example:



ii. EO Ranking Table. Each table should include, at a minimum, EO Number, EO Name, Last Survey Date, EO Rank, and Justification for the rank. EO ranks may be grouped by geographic unit (county, watershed, etc.) within the table, if the EOs have the same rank. A single rank for the entire state is not sufficient. Large tables may be appended.

- EO Ranking Table Example:

EO_NUM	EO Name	Last Survey Date	EO Rank	Justification
1	Big Rock	2021	B	Multiple moderate density/abundance samples over long period of time. Large spatial extent of EO. Some development that could threaten long-term persistence.
2	South Waukegan	1995	X	Presumed extirpated. Failed to find in 2000, 2001, 2002, 2006
4	Ferson	2021	C	Mixed density/abundance, including a did-not-detect. In moderate urban area.
10	Somonauk	2012	D	Very low density. Not sampled since 2012. Previous EO rank was C.
12	Norton Creek	2009	H	No samples for 12 years.
new	Dayton Bluffs unnamed site	2021	D	Two samples that observed just one individual each.
not listed	Blackberry	2013	F	Failed to find, but not yet presumed extirpated. Not found in 2014, or prior to 2013.
Multiple EOs	All Lake Michigan Records	2022	F	No records in past 10 years, but X ranking cannot be compelled because of sampling inefficiencies and lack of dispersal information

B. EO protection status. Identifying EOs occurring within boundaries of protected areas may provide some additional context for EO ranks and frame potential conservation actions. Categories of protection include dedicated nature preserves or land and water reserves, INAIs (including relevant qualifying feature), state-owned lands, and conservation lands owned by partner organizations or agencies. EO protection can be identified in the EO rank table, generalized within the narrative (e.g., 10% of EOs are located within nature preserves, 90% of EOs are located on private property), or included in a map format.

C. Significance of populations for Federal recovery or any partner-led initiatives, if applicable. Briefly describe (no more than 2-3 sentences) the relative importance of Illinois' populations for other entities' recovery efforts. This may provide context for targeted conservation actions.

D. Ideally, populations should be evaluated using methods designed for population characterization and conducted in target populations so that results reflect the ecology and behaviors specific to Illinois' conditions. More robust evaluations may include:

i. Delineation and count of populations using ecological and behavioral knowledge of the species. Dispersal estimates, spatial distribution patterns, or mating behaviors may provide reasonable estimates of population boundaries.

ii. Abundance estimates within each population. See component 3, above, for abundance estimate standards.

iii. Genetic analysis. Genetic heterogeneity can be used to estimate exchange of individuals and delineate population boundaries.

iv. Individual tracking. Tracking (e.g., radio telemetry, GPS-based records) may be used to estimate individual dispersal under population-specific conditions and delineate populations.

v. Population viability analysis (PVA). PVAs using demographic information, rather than simple time-series datasets, are preferred.

5. Citations
Include any citations used in the document.

For help documents, examples, and the SSA template, please visit the Recovery Guidance website.