

**New Jersey Department of Environmental Protection
Division of Fish and Wildlife**

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**Species Status Assessment using the Delphi Technique --
Operating Procedures and Guidelines**

December 21, 2015



Species Status Assessments using the Delphi Technique – Operating Procedures and Guidelines

Section I. Standard Operating Procedures to serve as guidance for conducting species status reviews.

ENSP will endeavor to complete a review of species status using the Delphi Technique for all species currently included on Endangered and Nongame lists at least once every 5 to 10 years. The Delphi Technique and its application to wildlife species status determination was documented in peer-reviewed literature (Clark et al. 2006, An Objective Means of Species Status Assessment: Adapting the Delphi Technique. Wildlife Society Bulletin 34:419-425, available online at <http://njfishandwildlife.com/ensp/pdf/literature/objective-means-status-assessment.pdf>).

ENSP will generally avoid single species reviews, but may undertake reviews of single species or smaller subsets of large taxa in light of unanticipated circumstances (e.g., disease outbreaks that decimate populations or unusual human effects).

ENSP staff will include ENSAC in determining which “new” taxa (that is, species groups that are not yet on the endangered or nongame lists) should be addressed by Delphi review.

1. Selecting the staff Project Manager

The Project Manager (PM) will be the ENSP expert on the taxon. The PM will be responsible for identifying prospective expert reviewers, inviting them to participate, and overseeing completion of the review, but will not compile and analyze data if they also participate on the review panel.

The PM may also serve as the data analyst and compiler only if they are NOT serving on the review panel. If the PM is a review participant, a separate compiler will be assigned by ENSP who will be in charge of compiling the results of each round.

2. Selecting the panel of reviewers.

- a. Panel should consist of at least seven people so that it is able to obtain an 85% or greater consensus when there is one dissenting vote. A Delphi review will not be conducted with fewer than five panelists. When there are fewer than seven panelists, consensus will be considered reached when 80% of panelists agree on a status.
- b. Role of ENSP staff – provide suggestions based on experience with species group.
 - i. PM will poll staff, ENSAC and (potentially) species experts for possible experts. This will be done without revealing the names of any prospective panelists.
 - ii. PM will review initial list of names with staff before contacting any possible panelist regarding their interest or suggestions for additional names.
 - iii. ENSP staff can comprise no more than 20% of panel. Total DFW participation in a panel (including biologists from bureaus other than ENSP) will not exceed 33%

- iv. PM will provide initial list of names to ENSP Chief (or delegate).
- c. Role of initial panelists – on initial contact/invite with potential panelists, PM asks panelists for names of other potential panelists based upon a description of required expertise. PM provides a limited time frame for this response and follows up. In polling prospective reviewers, the PM never reveals names of other experts.
- d. PM provides final list of invitees to ENSP Chief (or delegate), along with a brief summary of the characteristics of the group (for example, number of experts from academic institutions, government agencies, private consulting firms, etc; number of experts who have published on relevant topics; number of ENSP biologists whose area of expertise and responsibility covers relevant topics, etc.)
- e. Role of ENSAC – review the summary of panel expertise (not including names).
- f. ENSP Chief (or delegate) sends out invitation to the potential panelists that is cosigned by ENSAC Chair. Responses required by specified date; PM follows up to promote participation.
- g. PM provides list of positive, negative and non-responses to ENSP Chief (or delegate). PM makes the decision to proceed or continue pursuing additional panelists to meet minimum panel size and assure sufficient expertise in all areas.
- h. Reviewers are selected based on their knowledge and experience with species or species' habitats in New Jersey, their understanding of basic conservation biology principles, and their familiarity with the status of species populations within the state, statewide or regionally. Reviewers will not necessarily have an understanding of population status for all species under review, but should have understanding of several species and should have the knowledge and experience by which they will consider information provided by other participants to form opinions about the conservation status of species under review. In cases where reviewers with knowledge and experience within the state are limited, reviewers may be selected based on overall knowledge and experience with the species. The knowledge and experience of reviewers may be evidenced by publications in the biology and conservation fields, and/or by the recognition of their peers in their area of expertise.

3. Selecting the initial list of species to be reviewed.

- a. PM develops initial list based on the following sources, when available:
 - i. All species with NJ endangered, threatened or special concern status;
 - ii. National and regional taxonomic working group lists (NEPARC, PIF, etc.);
 - iii. State Wildlife Action Plan (SWAP) Species of Greatest Conservation Need (SGCN) in NJ, and SGCN lists from other states in region (or compilation of same by USFWS).
 - iv. IUCN (International Union for Conservation of Nature) lists;

- v. Biotics state (S) and global (G) ranked species for NJ with S/N/G rank <4, U, or H;
 - vi. Biotics S and G ranks for surrounding states (NY, CT, PA, DE, MD) (rank <4);
 - vii. Consultation with others within and outside ENSP (can include potential panelists).
- b. PM provides initial list of species to be reviewed to ENSP Chief/delegate for approval.
 - c. Panelists will be provided opportunity to add species to the review list in the first round (see below). Any native species suggested for review will be included in the review.
 - d. Goal is for the list to be inclusive of any species for which there is some chance that it might be considered a species of special concern, threatened, or endangered. Species classified as “game” species that meet these criteria should be included, which would necessitate panelists that are experts on those species.

4. Compiling background materials

- a. PM conducts initial research into available materials to inform panelists regarding the status of species under consideration, including:
 - i. Other states’ SGCN lists;
 - ii. Legal (under state imperiled species statutes) and other status and justification in surrounding states;
 - iii. IUCN classification and citation for each species;
 - iv. Other lists with status provided (National Audubon, NEPARC, PIFBCR);
 - v. Available population trends, indices, etc., that are recent and relevant to NJ.
- b. PM may consult with experts (on the panel and otherwise) regarding general background material that may be available.
- c. Published scientific literature that may be new or difficult to find.

5. Standardized Instructions to Panelists

- a. Provide written instructions of the process (c).
- b. Provide definitions of terms (see Section II).
- c. Explain how to consider status of species outside of state and those with degrees of peripherality to NJ (provided in Section II, Background).
- d. Explain necessity of providing justification statements that are required for a vote of E, T or SC, and how to use justifications provided by others (provided in Section II, Background).

- e. Explain how to use information provided by other panelists (opinions, data, etc.) to move from “no opinion” to a ranking with some level of confidence (provided in Section II, Background).
- f. Explain how to use confidence levels (see Section II, Background).
- g. Explain how to provide data sources: Published data can be cited and the panelist provides a summary statement of the publication; the publication may be posted by ENSP on Web Portal in the round following its citation by any reviewer. Unpublished data should be relayed in the comments section by reviewers. Encourage panelists to provide this information in round 1.

6. Round 1.

- a. Cover letter from ENSP.
- b. Instructions.
- c. Response forms.
- d. Background materials.
- e. Request for additions to species list for consideration noting that all species “nominees” for review will be added to list.
- f. Return envelope and/or email and/or website/portal for submitting votes.

7. Summarizing round results and standardizing round reports sent to panelists.

- a. Each successive round presents, for each species, the number of votes for each status and the average confidence level for each status.
- b. Each panelist’s vote is associated with their justification statements. For example, the panelist’s statement is followed by the panelist’s vote in parentheses; or, panelists’ statements are grouped by the suggested status category.
- c. If ENSP staff identifies and obtains an online, computerized survey service, this process may be automated. Staff will investigate these possible services.
- d. The compilation of votes toward consensus will use the statuses E, T, SC, S, U, and NA. Status votes of “NO” (no opinion) will not be counted in the calculation of consensus (80% or 85%, depending on item 2A, above).

8. Compilation of final results

Results Report Content:

- a. An executive summary that includes the number of status review panelists and a general statement about the group’s composition (see item 2d above), the time period of the review from beginning to completion, and a summary of results that will be submitted to ENSAC for review and approval. ENSP may make recommendations here regarding species statuses for which consensus could not be reached.

b. Summary table or list of species reviewed by common name and scientific name; each species' current status; the number of the round in which consensus was reached; and the consensus status. For birds, this table or list will include both Breeding Season and Non-breeding Season information. If consensus was not reached for a species, the "consensus status" is "NC" ("No Consensus") or left blank.

c. An appendix of the final round compilations by species, each of which includes the species name, final status tabulation (i.e., the status for which consensus was reached or the distribution of votes among statuses without the required consensus agreement), indication of consensus, and ending confidence levels. These final round sheets also include the comments in the Explanation field accumulated over the course of the review (rounds 1 through final).

d. An appendix that includes the unpublished data or gray literature and a listing of citations of published literature that were provided at the beginning of the review process or provided to reviewers by request during the course of the review process.

9. Presentation of the Project Manager's Results Report to ENSAC.

The Results Report is prepared and reviewed by ENSP staff. ENSP staff may make recommendations on status for species for which consensus was not reached. The results and any ENSP recommendations are presented to the ENSAC at a regular ENSAC public meeting.

10. Vote by ENSAC to Recommend Adoption of Statuses.

- a. Based on presentation and discussion of Results Report with the recommendations on species statuses made by ENSP, ENSAC makes recommendations on each species' status.
- b. The approved ENSAC recommendations are added to the summary table in the Results Report (item 8b, above), footnoted as to the date of the ENSAC action. This will be considered the Final Report.

11. Distribute the Final Report to interested agencies and cooperators and via the DFW web site. Amend NJ S-ranks as appropriate.

Section II. Instructions for Delphi panelists

BACKGROUND OF THE DELPHI TECHNIQUE

The Delphi Technique is a systematic method for reaching consensus among experts in which absolute, quantitative answers are either unknown or unknowable. It is an iterative process characterized by anonymity among the participating experts, controlled feedback via the principal investigator (in this case, the ENSP), and a statistical estimator of group opinion. By structuring the group communication process, the Delphi Technique helps the group reach a consensus of opinion by incorporating all available data and disseminating those data among all participants.

By using the Delphi Technique, species reviewers are able to state their opinion on each species' status and provide information to support it. Through the process of successive rounds, participants may modify their opinion based on information provided by all panelists. This process of sharing information and opinions promotes learning and allows modification of opinions where appropriate. Alternatively, those who believe strongly in their position may continue to assert that position and present additional data to support it.

Thus, it is essential to the process that participants provide the reasons for their status votes in the "explanation" field. In particular, reviewers should provide justification for votes for endangered, threatened and special concern statuses. In successive rounds, reviewers should read those justifications and use their judgment and knowledge to evaluate the information as they select (again) the species rank. Similarly, reviewers select a confidence level with each status vote, and reviewers should consider the resulting confidence averages associated with species ranks as they make subsequent decisions. Through subsequent rounds and the sharing of information, reviewers who may have had "no opinion" on species in the early rounds should be able to vote for species ranks, even if those votes are associated with relatively low confidence levels.

INSTRUCTIONS TO EXPERT PANELISTS FOR PREPARING STATUS ASSESSMENTS

Please read these instructions carefully before filling out the questionnaire.

The following pages list a select number of species for which status should be officially defined in New Jersey. Many of you participated in the initial status review, and some of that work has led to this more refined list.

For each species, please select the status code that best applies to the species in New Jersey. With each selection, also indicate your level of confidence in your assessment by circling the appropriate number.

The key and explanation of the letter and numeric codes are as follows:

STATUS DEFINITIONS

E - Endangered: Applies to a species whose prospects for survival within the state are in immediate danger due to one or several factors, such as loss or degradation of habitat, overexploitation, predation, competition, disease or environmental pollution, etc. An endangered species likely requires immediate action to avoid extinction within NJ.

T - Threatened: Applies to species that may become Endangered if conditions surrounding it begin to or continue to deteriorate. Thus, a Threatened species is one that is already vulnerable as a result of, for example, small population size, restricted range, narrow habitat affinities, significant population decline, etc.

SC - Special Concern: Applies to species that warrant special attention because of inherent vulnerability to environmental deterioration or habitat modification that would result in their becoming Threatened if conditions surrounding the species begin or continue to deteriorate. This category includes species that meet the foregoing criteria and for which, in addition, there is little understanding of their current population status.

S – Secure-Stable: Applies to species that appear to be secure in NJ and not in any immediately foreseeable danger of becoming “endangered,” “threatened,” or “special concern.”

U – Undetermined-Unknown: Applies to species that cannot be assigned a status of endangered, threatened, special concern or secure-stable because not enough information exists on which to base a judgment.

NO - No Opinion: Applies to any species for which you feel that you do not possess sufficient information or experience on which to base a judgment, although other people may have such information.

NA – Not Applicable: The species does not occur in New Jersey with regularity or predictability.

CONFIDENCE LEVELS

Please rate your level of confidence for your status assessments by indicating a numeric designation for every choice that you make. Ratings run on a continuous scale that goes from 1 to 8, defined as:

Unreliable	Risky	Reliable	Certain				
1	2	3	4	5	6	7	8

These four categories are defined loosely for this exercise as:

Unreliable: Great risk of being wrong; of no use as basis for a decision.

Risky: Substantial risk of being wrong; unwilling to use as basis for decision without other information.

Reliable: Some risk of being wrong; willing to make a decision based on this but recognizing some chance of error.

Certain: Low risk of being wrong; decision based on this will not be totally wrong because of at least some supporting fact(s).

EXPLANATION

In this space, please indicate briefly the basis for your choice for Endangered, Threatened, and Special Concern designations, including your underlying assumptions, views, facts and/or data to support your position. Provide the information you think will be helpful to the panel members in explaining your decision. Explanations should be as specific as possible but need not be exhaustive. If there is new published documentation in support of your assessment, please provide the citation for it (here and to ENSP, who will make it available for the next round). If you are hand-writing your submission, please write legibly so that your input can be used for round 2; you may use extra sheets or the back of the sheet.