
EXECUTIVE SUMMARY



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This Delaware Wildlife Action Plan (DEWAP) presents a ten-year strategy for keeping today's wildlife from becoming tomorrow's memory. It fulfills a federal mandate enabling Delaware to be eligible for funding under the State Wildlife Grant program (SWG). These funds provide a historic opportunity to reverse the decline of Delaware's wildlife populations and the loss of key habitats.

Although one of the smallest of the 50 States, Delaware is home to a diversity of wildlife due to its range of habitats between the Atlantic Ocean coastline and the Piedmont border with Pennsylvania. More than 2,800 species can be found in Delaware, almost a quarter of which are designated Species of Greatest Conservation Need (SGCN) for the 2015 revision. This document provides a blueprint for that wildlife diversity to continue to thrive. Though the Delaware Division of Fish and Wildlife (DNREC DFW) plays a lead role in the DEWAP's development and in future implementation, the Plan is intended for all who can actively engage in conservation.

The 2015 DEWAP addresses each of the criteria required by Congress under Public Laws 107-063 (FY02), 108-447 (FY05), and 109-54 (FY06). These laws provide funding and administration through the U.S. Fish and Wildlife Service (USFWS), Office of Federal Assistance and State Wildlife Grant Program. This document is organized in a manner that addresses each of these criteria (the eight required elements) in the order they are identified in the law. It presents the species of greatest conservation need (SGCN), their key habitats, issues and research needs, conservation actions, how the Department of Natural Resources and Environmental Control (DNREC) will monitor effectiveness, coordinate with conservation partners, and foster public participation in wildlife conservation efforts.

The 2015 DEWAP is the first revision of the 2005 document, finalized in 2007. This revision builds on the knowledge gained over the last ten years. Since 2005, Delaware has been involved with several state, regional, and national projects to address conservation and monitoring of SGCN and their habitats. The 2015 DEWAP was a two-year process that involved the review of a comprehensive inventory of natural resource information and conservation programs, and included consultation with a diversity of stakeholders in the state, region and nation. Information on the full array of wildlife and wildlife conservation efforts in Delaware was solicited, researched, and compiled. From these data, DNREC DFW, additional taxonomic experts, and conservation partners identified Delaware's SGCN.

Because of the availability of more recent and complete data, the 2015 list was created using updated data and criteria. The updated process resulted in the addition of 255 previously unlisted taxa and a net addition of 231 taxa to the SGCN list, for a total of 688 SGCN. Each SGCN has a status rank or tier, which denotes the degree of conservation need for that species. Tier 1 species are in the highest and most urgent need of conservation and include the rarest species in the state. Tier 2 species are of moderate conservation concern and urgency in Delaware, and Tier 3 species are listed as SGCN for reasons such as population declines or high regional responsibility and are still relatively more common in Delaware.

Nearly all of Delaware's habitats are used to some extent by at least one SGCN. Wildlife habitats were revised using updated classification systems, namely the Northeast Terrestrial Wildlife Habitat

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Classification, Northeast Aquatic Habitat Classification System, Coastal and Marine Ecological Classification standard, and the Atlantic Coastal Fish Habitat Partnership habitats. For the 2015 Revision of the DEWAP, wildlife habitats are spatially prioritized using existing frameworks based on principles of landscape ecology and conservation biology provides a consistent framework to help identify and prioritize areas for natural resource protection.

Some of the highest ranked statewide issues affecting Delaware's wildlife are climate change and severe weather (including salinity changes and intrusion, effects on dams and impoundments), invasive species (primarily plant species) and administrative needs. Other important issues include habitat loss or conversion from residential and commercial development, agriculture, and water management (ditching, extraction, retention ponds, dams, etc.). To address these issues, conservation actions were developed at the statewide level, habitat level, and SGCN ecological group level. Development and ranking of these issues and actions included many stakeholders and partners who will be needed in the implementation of the DEWAP priority actions.

Monitoring Delaware's SGCN, key habitats, and the effectiveness of the conservation actions provides important and necessary information for DNREC DFW and its partners. It allows these agencies and organizations to determine the most efficient methods to reduce and eliminate issues facing the state's fish and wildlife resources. Monitoring is also necessary to track the success of conservation actions, ensuring the most efficient use of limited staffing and funds. The 2015 DEWAP includes several new tools for information management and conservation planning to track the implementation and effectiveness of conservation actions. Examples of these tools include the Northeast Regional Monitoring and Performance Reporting Framework, the State Wildlife Grants Effectiveness Measures Project, the Northeast Lexicon Project, and the Tracking and Reporting Actions for the Conservation of Species system of the U.S. Fish and Wildlife Service's Wildlife and Sport Fish Restoration Program.

Delaware's effectiveness monitoring framework starts with a specific conservation action, and then the action is linked to relevant issues, habitats and species. Next, indicators and measures are selected for each step, and monitoring data are used to track and populate those indicators. Taken together, the measurements of these indicators will provide the essential information needed for evaluating the effectiveness of conservation actions. Conservation actions will be refined or new actions will be developed based upon whether the original actions were effective in aiding the state's SGCN and key habitats (i.e., adaptive management). In addition to these adaptations, the DEWAP will undergo a complete review every ten years.

Species of Greatest Conservation Need Conservation Monitoring Example

To illustrate the how each of the eight required elements was addressed by the DEWAP, the Bethany Beach firefly (*Photuris bethaniensis*) is used as an example. Discovered in 1949 and described by Frank McDermott in 1953, this firefly was named for the only location it is known to inhabit. This interesting firefly is restricted to two sites in the interdunal wetlands along Atlantic Ocean beaches near Bethany Beach, Delaware. Subsequent surveys for this globally-rare species yielded no new records until 1994 when biologists from the Delaware Natural Heritage Program rediscovered the species in the same wetlands presumed surveyed by McDermott. This discovery also confirmed the strong habitat association between the Bethany Beach firefly and the dynamic interdunal wetlands that provided the obligate habitat required to maintain a population if this species, raising the need for effective habitat management and protection to allow the species to persist into the future. DNREC DFW staff and regional experts on Delaware’s invertebrate fauna considered the elevated status of the species, its distribution and abundance, and conservation efforts employed to date to support both the species and its habitat. In consideration of that information, the Bethany Beach firefly was examined as a candidate SGCN. Any species is considered a *candidate* for SGCN status if it occurs in Delaware and meets any one of the nine criteria below:

1. Federally Endangered, Threatened, or Candidate status: **No**
2. State Legal Status of Endangered: **Yes**
3. Global Rank of G₃ or higher: **G_{1Q}**
4. S-Rank of S₂ or higher, SH, SX for Breeding, Nonbreeding or Both: **S₁**
5. RSGCN for the Northeast: **No**
6. IUCN Red List Status of near Threatened or higher: **No**
7. Taxon-specific Conservation Concern from specified plans: **N/A**
8. Endemic, Near-Endemic, or Disjunct: **Endemic**
9. Scientific Data and Expert Consensus: **Agreed**



Figure 1 Bethany Beach firefly (*P. bethaniensis*). Photo: Christopher Heckscher

As the criteria above reveal, the Bethany Beach firefly met criteria #2, as it has a status of endangered at the state level. It is very important to note, that this species is one of only two known wildlife species endemic only to Delaware (criteria #8), and so the Delaware state responsibility is considered high. For both the 2006 and 2015 DEWAP this species was determined to be a Tier 1 SGCN (**Element 1**). The Bethany Beach firefly is known only to use interdunal wetland habitats (**Element 2**). These habitats are quite rare in Delaware and restricted to oceanfront beaches and are at risk from a number of threats ranging from disturbance and degradation, natural processes and increased sensitivity to sea level rise (SLR), climate change and invasive species (**Element 3**). These wetland systems are particularly vulnerable to sea level rise and will unlikely persist without direct habitat management (**Element 4**). Coordinated monitoring of coastline dynamics and



Figure 2 Interdunal Wetlands, the primary and only habitat of the Bethany Beach firefly. Photo: William A. McAvoy

this unique species and maintain its contribution as a component of Delaware’s fish and wildlife diversity (**Element 7**), completing a process to guide conservation for this species and many other SGCN that include public input at each step (**Element 8**).

the status of populations and distribution along the coast are direct actions that can be undertaken to adaptively manage the habitat and address threats (**Element 5**) and provide important, relevant and reliable data to be used and considered in future revisions and updates to the overall plan (**Element 6**). Identifying conservation actions through monitoring will allow DNREC DFW, conservation partners and the public an opportunity to have a direct role in the conservation of

Summary of the DEWAP Document

Chapter 1 presents an overview of Delaware’s wildlife, including information on the distribution and abundance of species. The process by which the 2015 DEWAP SGCN were selected is described in detail. There is information about the wildlife taxonomic groups from which the SGCN are derived, with a total of 184 bird species, 43 herpetofauna species, 23 mammal species, 105 fish species, and 333 invertebrate species.

Chapter 2 examines Delaware’s habitats in relation to the state’s wildlife, especially its SGCN, as wildlife and diversity cannot survive and thrive without suitable habitat. The habitats are discussed in a regional context and the new habitat classification is explained. Habitat extent and condition is described in detail and maps presenting the distribution are provided for all habitats for which there was sufficient data. Detailed habitat associations are provided for the SGCN, a comprehensive resource that had not been compiled for the state.

Chapter 3 analyzes the issues affecting SGCN and their habitats in Delaware. Some of these issues are statewide, while others affect habitat groups, specific habitat types, species ecological groups, or certain specific taxa. IUCN threat categories were used as the Delaware threat categories and given priority ranking, in line with the Northeast Regional Lexicon and Synthesis.

Chapter 4 recommends a broad range of actions to address the identified issues impacting Delaware’s SGCN and their habitats. Other conservation and management plans have identified many goals or objectives for addressing wildlife conservation threats, and thus these were surveyed carefully and integrated into this DEWAP Revision. Using TRACS action categories, Chapter 4 presents hundreds of ranked inventory/research/monitoring needs and conservation actions that will serve as a detailed blueprint for addressing conservation in Delaware through the next decade.

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Chapter 5 discusses the need for effective monitoring and adaptive management to assess trends affecting wildlife and the success of conservation actions. Delaware already has a number of effective monitoring programs in place, outlined in Appendix 5. Coordination of monitoring efforts and the effective sharing of information are of key importance to the implementation of the DEWAP, and continued efforts in developing new tools to aid in this process is important, discussed here, and repeatedly identified as a high ranking conservation action in Chapter 4.

Chapter 5 also describes the process and the timeframe by which the DEWAP will be reviewed and updated. The goal is to maintain the DEWAP as a living document, keeping it as up-to-date as possible, acknowledging data gaps as they are filled and identifying and addressing new ones. This chapter also describes the review process and schedule of other conservation and management plans in the state. Chapter 5 also describes the *Northeast SWAP Database*, which is a data management tool that provides a basic structure for storing and querying data collected by the individual states as part of their SWAP revisions. The database includes full support for results chains as well as indicators and the AFWA SWG Effectiveness Measures.

Chapter 6 describes coordination with partners and stakeholders in the development of the 2015 DEWAP and how this coordination and collaboration will continue through the next ten-year cycle. Past and potential opportunities to use existing and new partnerships to help implement the DEWAP are also described here. Members of the Oversight, Revision Development, and Technical Review Teams are identified, and Appendix 6 provides a list of Partners. Work leading up to publication of the current document has proceeded under the framework of a stakeholder and public input review plan that included partner and stakeholder meetings as well as correspondence and communication with the public through websites, published articles, newsletters, and a series of public open houses.

In conclusion, there are many challenges facing Delaware's wildlife species and the habitats and ecosystems that support them. The intent of the DEWAP is to identify those challenges and to recommend important steps that can be taken to conserve wildlife in the state. The tools exist, the networks and partnerships are in place, and the conservation measures needed to protect Delaware's wildlife have been identified and are within reach.

This Wildlife Action Plan is a community document designed for public use. The information it contains will be widely disseminated to provide a strong foundation as well as inspiration for the work ahead.

By itself, this Plan cannot guarantee the future of wildlife in Delaware. Legislators, local government officials, park and refuge managers, conservationists, business leaders, educators, and concerned individuals must all take important, necessary steps toward that end. It is Delaware's Wildlife Action Plan to keep today's wildlife from becoming a memory over the next decade.