

Maryland's State Wildlife Action Plan Element Guide

The Maryland Department of Natural Resources, Wildlife and Heritage Service (MD DNR WHS) has prepared this guide to accompany Maryland's 2015 – 2025 State Wildlife Action Plan (SWAP) for readers, and, in particular, the National Advisory Acceptance Team (NAAT), to readily identify and locate the sections that address each of the eight elements required to be included in all SWAPs.

Maryland's SWAP consists of the main body of text and a series of appendices that provide more detailed information and supporting documentation. The main body of the SWAP has ten chapters, which are closely aligned with the eight required elements. Most of the chapters have supporting appendices, except for Chapters 2, 8, and 10. Other supplementary documents, such as this guide, are presented as supplementary documents at the end of the SWAP. These additional appendices are applicable to the entire SWAP, rather than individual chapters. Figures, tables, and appendices are labeled throughout the document with the first number referring to the corresponding chapter and the second number or letter in sequential order as the figure, table, or appendix is introduced in the text. For example, Figure 2.4 is the fourth figure in Chapter 2 and Appendix 6c is the third appendix supporting Chapter 6.

The process used to review and update the SWAP was very similar to that which was used to develop the 2005 version; a SWAP coordinator was hired and a core team of MD DNR staff formed the principal group who worked through each of the eight required elements and the guidance provided by the Association of Fish and Wildlife Agencies and the NAAT. The element numbers have been included in text throughout the SWAP for reference and are usually found near the beginning or end of the chapters. The table below outlines in general the chapter(s) with most of the information addressing each of the eight elements. Additional information on each element is often included in related chapters as well. The eight elements are also listed below as section headers, along with a more detailed description of the chapters and appendices where readers can find the information pertinent to each.

Element	MD SWAP Chapter
Element 1: Information on the distribution and abundance of species of wildlife, including low and declining populations as the state deems appropriate, that are indicative of the diversity and health of the state's wildlife.	Chapter 3: Maryland's Wildlife and Species of Greatest Conservation Need Chapter 4: Maryland's Key Wildlife Habitats
Element 2: Descriptions of locations and relative condition of key habitats and community types essential to conservation of species identified in the 1 st element.	Chapter 4: Maryland's Key Wildlife Habitats

<p>Element 3: Descriptions of problems which may adversely affect species identified in the 1st element or their habitats, and priority research and survey efforts needed to identify factors which may assist in restoration and improved conservation of these species and habitats.</p>	<p>Chapter 3: Maryland's Wildlife and Species of Greatest Conservation Need</p> <p>Chapter 5: Threats to Maryland's Wildlife Species and their Habitats</p> <p>Chapter 6: Climate Change</p> <p>Chapter 7: Conservation Actions</p>
<p>Element 4: Descriptions of conservation actions determined to be necessary to conserve the identified species and habitats and priorities for implementing such actions.</p>	<p>Chapter 3: Maryland's Wildlife and Species of Greatest Conservation Need</p> <p>Chapter 7: Conservation Actions</p> <p>Chapter 8: Monitoring and Effectiveness Measures</p>
<p>Element 5: Descriptions of the proposed plans for monitoring species identified in the 1st element and their habitats, for monitoring the effectiveness of the conservation actions proposed in the 4th element, and for adapting these conservation actions to respond appropriately to new information or changing conditions.</p>	<p>Chapter 8: Monitoring and Effectiveness Measures</p>
<p>Element 6: Descriptions of procedures to review the Strategy at intervals not to exceed 10 years.</p>	<p>Chapter 9: Revision Process, Outreach, and Plan Implementation</p> <p>Chapter 10: Plan Review and Revision</p>
<p>Element 7: Descriptions of the plans for coordinating, to the extent feasible, the development, implementation, review, and revision of the Strategy with Federal, State, and local agencies and Indian tribes that manage significant land and water areas within the state or administer programs that significantly affect the conservation of identified species and habitats.</p>	<p>Chapter 9: Revision Process, Outreach, and Plan Implementation</p> <p>Chapter 10: Plan Review and Revision</p>
<p>Element 8: Descriptions of the necessary public participation in the development, revision, and implementation of the Plan.</p>	<p>Chapter 9: Revision Process, Outreach, and Plan Implementation</p> <p>Chapter 10: Plan Review and Revision</p>

Element 1: Information on the distribution and abundance of species of wildlife, including low and declining populations as the state deems appropriate, that are indicative of the diversity and health of the state's wildlife.

MD DNR staff, taxonomic experts, and other partners reviewed the 2005 list of Species of Greatest Conservation Need (SGCN) and made appropriate changes by removing 94 species, reaffirming the validity of 408 species, and adding 202 new species. **Chapter 3** (Maryland's Wildlife and Species of Greatest Conservation Need) includes a discussion of the SGCN list and details of the process used to select SGCN. The list of taxa groups from which SGCN were identified was expanded since the 2005 Plan to review and include additional marine species and more invertebrates, such as skates, caddisflies, stoneflies, moths, bees, and ants. Appendices 1a and 1b contain reduced versions of the complete 2015 SGCN list, with just scientific and common names. Appendices 3a and 3b contain the complete 2015 SGCN list, with corresponding conservation ranks and state and federal legal status for each species. These conservation ranks (i.e., global and state ranks) and status categories were developed based on various factors, including the species distribution, abundance, and population trends (i.e., whether the species is known to be declining). Numerous sources of information were used to generate the conservation ranks and inform decisions about the composition of the SGCN list, including both published and unpublished sources such as the expertise of local professional and field biologists, as well as online and internal databases. One of the important online databases providing distribution information is the [Maryland Biodiversity Project](#) website, which includes distribution maps for many of the more than 16,000 species documented in Maryland. The results from inventory, monitoring, and research efforts, many of which were funded by State Wildlife Grants in the last 10 years, were also an important information source. Information on SGCN status was also obtained from regional assessments such as Regional Species of Conservation Need identified by the Northeast states and regional bird conservation plans. Many of these information sources are included in Appendices 3c, 3d, and 3i, and in the list of references at the end of **Chapter 3**. Individuals, organizations, and agencies are provided within **Chapter 9** (Revision Process, Outreach, and Plan Implementation), Appendices 9a and 9b, **Chapter 10** (Plan Review and Revision), and the 'Online Resources' supplementary document.

Specific distribution maps for each of the 610 SGCN have not been included in the 2015 SWAP. Because the distribution and abundance of SGCN and other Maryland wildlife species are directly related to the condition, extent, and location of their habitats, maps are included for nearly all of the key wildlife habitats. These are provided in **Chapter 4** (Maryland's Key Wildlife Habitats), and specific cross-references between SGCN and their corresponding primary habitats are in Appendix 4a. While some species can be found in a variety of habitats, many SGCN are less adaptive and are restricted to one or relatively few habitat types.

Some species, especially a number of invertebrates, were newly added as SGCN but are currently lacking sufficient population abundance, trend, distribution, or other data. This was recognized through the process of identifying threats, as detailed in **Chapter 5** (Threats to Maryland's Wildlife and Species of Greatest Conservation Need), and corresponding conservation actions, as detailed in **Chapter 7** (Conservation Actions). Specific actions for identified inventory, monitoring, and research projects needed to obtain these important missing

data for species which lack adequate abundance and/or distribution information are listed in Appendices 7g – 7m.

Element 2: Descriptions of locations and relative condition of key habitats and community types essential to conservation of species identified in the 1st element.

Information on Maryland’s key wildlife habitats necessary for the survival of SGCN, as well as the natural communities included within them, is primarily found in **Chapter 4** and Appendices 4a – 4f. This list was substantially reviewed and revised since the 2005 Plan, especially for those habitats based on natural vegetation communities so they are compatible with regional and national habitat classifications. The 2005 Plan contained 35 key wildlife habitats; whereas this SWAP contains 59 key wildlife habitats. These 59 habitats are extensively described in **Chapter 4**, including information on their condition, distribution, and the SGCN and rare natural communities associated with them. Also provided are cross-references to the Northeastern Terrestrial Wildlife Habitat Classification System and the Northeastern Aquatic Habitat Classification System. In addition to the statewide maps included with 57 of the 59 habitat descriptions, the Maryland counties in which key wildlife habitats occur are included in Appendix 4c. The threats to these habitats are discussed in **Chapters 5** and **6** (Climate Change) and the corresponding conservation actions to address these threats are provided in **Chapter 7** and Appendices 7b – 7f.

Element 3: Descriptions of problems which may adversely affect species identified in the 1st element or their habitats, and priority research and survey efforts needed to identify factors which may assist in restoration and improved conservation of these species and habitats.

Problems which may adversely affect SGCN or their key wildlife habitats are generally considered “threats” that cause stress to those elements of biodiversity. “Threats to Maryland’s Wildlife Species and their Habitats” is the title of **Chapter 5**, and the specific threats related to the many aspects of the overarching phenomenon referred to as Climate Change is the subject of **Chapter 6**. Threats for groups of species are also summarized in **Chapter 3**. Because information about the types, levels, and immediacy of threats are among the many criteria used to assess the conservation status of SGCN and their habitats, the information sources for threat information are the same as described for Element 1. Many of these information sources are included in Appendices 3c, 3d, and 3i, and in the list of references at the end of **Chapter 3**. Individuals, organizations, and agencies are provided within **Chapter 9**, Appendices 9a and 9b, **Chapter 10**, and the ‘Online Resources’ supplementary document. Additional information sources are provided in the list of references for **Chapters 4, 5, and 6**.

Unlike the 2005 Plan, this revised SWAP provides two chapters specifically on the topic of threats and uses the hierarchical International Union for Conservation of Nature (IUCN) Threats Classification System as the basis for the discussion, with some minor updates to make it more applicable to Maryland. The IUCN system was selected by and agreed to be used within the Northeast states and was recommended by the Association of Fish and Wildlife Agencies in the 2012 document “National Best Practices for State Wildlife Action Plans.” This standard classification of threats allows for consistency in identifying threats to SGCN and habitats at multiple geographic scales: statewide, regionally, and nationally. The threat classification system

has 15 primary categories, each of which has its own section in **Chapter 5**, and significant sub-categories are often discussed in detail. The threats are not just state-specific, but have been included regardless of their origin, such as air-borne pollutants from across the country causing acid rain deposition or invasive species arriving from Asia, Europe, or other international regions. Recovery plans for federally listed species and other available geographically or tax-based conservation plans were reviewed for information in this SWAP and are referenced throughout **Chapter 3**, supporting SGCN threats and actions. Finally, species-specific and habitat-specific threats and the conservation actions necessary to address those threats are provided in great detail in **Chapter 7** and its appendices.

Some species, especially a number of invertebrates, were newly added as SGCN for this revision and currently lack sufficient data on their stressors and problems, including the severity or immediacy of their threats. This lack of information was recognized as its own form of threat related to proper management and discussed under IUCN Category 12 (Resource Management Needs). Specific actions for identified inventory, monitoring, and research projects needed to obtain these important missing data for habitats and species which lack adequate threat information are listed in Appendices 7b – 7f for key wildlife habitats and Appendices 7g – 7m for species.

Element 4: Descriptions of conservation actions determined to be necessary to conserve the identified species and habitats and priorities for implementing such actions.

Conservation actions to sustain, properly manage, restore, or otherwise improve populations of SGCN and their habitats are provided primarily in **Chapter 7** and its appendices. Each action is listed in direct association with the threat that it was intended to abate, resolve, or address. Thus, the actions are specifically linked to the goals and objectives for the actions. Because the identified threats may be either very specific to a certain species or very broad, the conservation actions may also be specific or very broad and generalized to address regional or international threats that could be the focus of multiple state or federal agency activities. Conservation actions for species groups are also summarized in **Chapter 3**.

As discussed under Element 3, some species, especially a number of invertebrates, are newly added as SGCN and are currently lacking sufficient data on their stressors and problems, including the severity or immediacy of their threats. This lack of information was recognized as its own form of threat related to proper management and discussed under IUCN Category 12 (Resource Management Needs). Specific actions for identified inventory, monitoring, and research projects needed to obtain these important missing data for habitats and species which lack adequate threat information are listed in Appendices 7b – 7f for key wildlife habitats and Appendices 7g – 7m for species. In **Chapter 8**, a process is described to determine objectives and indicators for conservation actions in order to facilitate monitoring and measurement of the effectiveness of those conservation actions. Example indicators are also presented, largely based on resources created since 2005 to assist with measuring performance.

Finally, the conservation actions listed in **Chapter 7** also provide basic information on whether or not each action is considered a priority. The process and criteria used to assign these priorities

is discussed at the beginning of **Chapter 7**, in Appendix 7a, and specifically itemized in Table 7.1.

Element 5: Descriptions of the proposed plans for monitoring species identified in the 1st element and their habitats, for monitoring the effectiveness of the conservation actions proposed in the 4th element, and for adapting these conservation actions to respond appropriately to new information or changing conditions.

Chapter 8 addresses Monitoring and Effectiveness Measures. Innumerable individuals, projects, programs, organizations, and governmental agencies are currently involved in monitoring Maryland's SGCN and other wildlife and their habitats, including the impacts and outcomes of their projects, programs, and policies. Many of these ongoing efforts are summarized in Table 8.1 for SGCN and Table 8.2 for habitats. The contributions of regional monitoring and coordination, including for large-scale threats such as climate change, are included in this chapter to effectively address monitoring at appropriate geographic scales.

Chapter 3 summarizes conservation actions for major groups of SGCN and their habitats that can be met through monitoring. **Chapter 7** presents more specific monitoring needs under the action category of 'Data Collection and Analysis – Inventory, Monitoring, and Research.' **Chapter 7** also lists monitoring actions for all SGCN and key wildlife habitats under the threat category 'Resource Management Needs (IUCN category 12)'. Conservation actions in these categories were prioritized as described in **Chapter 7**, and a process to meet monitoring gaps and improve monitoring for conservation is outlined in **Chapter 8**. **Chapter 8** also describes how monitoring data will be used in an adaptive management process to improve conservation actions.

Example performance or effectiveness measures are presented in **Chapter 8**, including indicators developed for conservation targets in the Northeast states and for general types of conservation actions supported by State Wildlife Grants. A method to link strategies to objectives that are connected to a conservation target is provided as a means to identify monitoring and research needs, as well as determine measures of effectiveness for priority conservation actions. A detailed example is presented to demonstrate how these "results chains" can identify appropriate effectiveness measures and guide future efforts.

Element 6: Descriptions of procedures to review the Strategy at intervals not to exceed 10 years.

The procedures used to review and update the 2005 Plan to create the 2015 SWAP are detailed in **Chapter 9** (Revision Process, Outreach, and Plan Implementation) and its appendices, as well as in **Chapter 10** (Plan Review and Revision). The basic steps used during this revision cycle will likely remain the same for the next 10-year cycle, although detailed processes may vary somewhat depending on factors such as the availability of new information, coordination with new conservation partners, or the development of new internal policies.

Element 7: Descriptions of the plans for coordinating, to the extent feasible, the development, implementation, review, and revision of the Strategy with Federal, State, and local agencies and Indian tribes that manage significant land and water areas within the state or administer programs that significantly affect the conservation of identified species and habitats.

Descriptions of the plans and processes used to coordinate the SWAP revision and implementation with federal, state, and local agencies, as well as Native American tribes within Maryland are provided in **Chapter 9** and its appendices, as well as in **Chapter 10**. Appendix 9a contains an extensive list of the initiatives and programs administered by federal, state, and local agencies related to the State Wildlife Action Plan. Many of these ongoing projects will continue to involve multiple governmental agencies because they are supported by existing regulatory or policy-based initiatives. As additional conservation actions from **Chapter 7** are identified as the highest priorities for implementation, opportunities for the involvement of federal, state, and local agencies as well as NGOs and other partners will continue to be encouraged, sought out, and realized whenever possible and appropriate.

Chapter 8 includes information regarding the continued coordination with federal, state, and local agencies and NGOs to monitor the health and status of SGCN and key wildlife habitats (Tables 8.1, 8.2). As additional conservation actions from **Chapter 7** are identified as the highest priorities for implementation, opportunities for agency, organization, and land manager involvement will continue to be encouraged, sought out, and realized whenever possible. Appropriate adaptive management processes will be used to review the outcomes of conservation actions and revise implementation strategies.

Element 8: Descriptions of the necessary public participation in the development, revision, and implementation of the Plan.

Public participation in the development and revision of the 2015 SWAP was encouraged and specifically solicited in a number of ways. From the development of an updated SGCN list to the review of threats and prioritization of conservation actions, the public was invited to provide comments through stakeholder workshops, presentations, and a number of social media outlets as discussed in **Chapter 9** and its appendices, especially Appendices 9b – 9c. Examples of public involvement in SWAP implementation, specifically through assisting with a number of conservation actions funded through State Wildlife Grants and other funding sources in the last 10 years, are provided in Appendix 9d and in **Chapter 10**. A number of these projects are ongoing, such as the Maryland Amphibian and Reptile Atlas project and the Maryland Bird Conservation Initiative, which has started to develop implementation strategies for the revised SWAP. As additional conservation actions from **Chapter 7** are identified as the highest priorities for implementation, opportunities for public involvement will continue to be encouraged, sought out, and realized whenever possible and appropriate.