



CHAPTER 10

TENNESSEE SWAP REVIEW AND REVISION

STATE WILDLIFE ACTION PLANS (SWAPs) MUST BE UPDATED at intervals of 10 years or less, according to requirements of the US Fish and Wildlife Service (USFWS). Per recommendations of the Association of Fish and Wildlife Agencies (AFWA), for updating state wildlife action plans, the Tennessee Wildlife Resources Agency (TWRA) and The Nature Conservancy (TNC) brought together representatives of conservation-focused governmental agencies and private organizations during the 2025 SWAP development process, which met several times in 2024-25 to participate in and guide development of the SWAP (Ch. 9).

In addition, AFWA recommends that SWAP reviews align with other relevant internal conservation planning efforts, for example in Tennessee, TWRA's Strategic Plan. Finally, AFWA also recommends landscape scale conservation be considered when developing SWAPs. This entails working at large scales, across



jurisdictions, toward shared conservation priorities (AFWA 2023) and is addressed in Ch. 7 Regional Conservation.

TWRA will use information and products provided annually by the Steering Committee and supporting working groups to provide the foundation for the next ten-year comprehensive SWAP review to be submitted on September 30, 2035.

Photos top to bottom: Chris Simpson at 2024 Meeting of the SWAP Steering Committee in Murfreesboro, TN / Daniel Istvanko, TWRA; cardinal flower (*Lobelia cardinalis*) / Rob Colvin, TWRA

Summary: The SWAP Review and Revision Process 2025-2035

1. Align SWAP reviews with the overall TWRA agency planning cycle. Specifically, integrate TWRA's cycles for SWAP planning with strategic planning, operational planning, and annual planning.
2. Improve and expand data sharing through shared databases and GIS information. Partner engagement in SWAP implementation and planning will be greatly enhanced through the Steering Committee. TWRA will build upon relationships to reciprocally share and upgrade, on a regular basis, databases and GIS information with the most recent information collected by partners.
3. Develop an online dashboard accessible by the public to increase conservation opportunities in the state and on private lands, with an eye to developing a digital SWAP in 2035.

10.1. Integrating Conservation Implementation, SWAP Review, and TWRA Planning Cycles

SWAP interim reviews and updates will be incorporated into the agency's comprehensive planning cycle

(see Fig. 10.1), by coordinating and sharing information across planning processes and divisions within the agency. Table 10.1. shows the overlap and relationship of the various planning cycles over the SWAP's 10-year timeframe for implementation and revision.

Strategic Planning Cycle

TWRA's Strategic Planning cycle recurs at six-year intervals. The Strategic Plan sets forth the agency's legal responsibilities, policies, and program structure; it also identifies goals, objectives, problems, and strategies for each program. The SWAP helps inform the planning components for the next iteration of TWRA's strategic plan process, and both the Strategic Plan and SWAP help to guide annual budgetary and operational planning in subsequent years. In year three of the

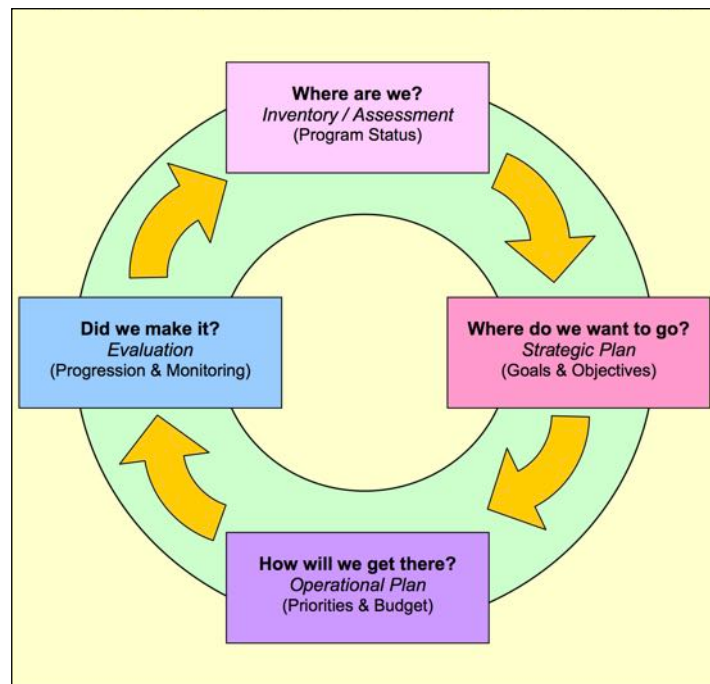


Figure 10.1 Graphic representation of the TWRA's planning system and iterative cycle

Strategic Planning cycle, a mid-term evaluation is conducted to determine program progress toward Strategic Plan goals. An end-of-cycle evaluation also occurs in year six.

Operational Planning Cycle

Operational Plans are site-specific plans that guide the management of discrete state-owned units, such as WMAs. The primary management objectives for WMAs typically focus on game species. The role of diversity staff in operational planning is mainly to ensure that the impacts to Species of Greatest Conservation Need (SGCN)—both animals and plants—and significant natural communities are minimal, while promoting management strategies that improve SGCN habitat. Operational Plans are informed by both Strategic Plan Goals and SWAP priorities.

Table 10.1 TWRA planning cycles

	The Strategic Plan focuses on priority habitats identified in the SWAP; uses project evaluations and SWAP 3-year reviews to assess progress	Operational plans guide specific stewardship activities to achieve Strategic Plan goals; GCN species and habitat priorities are guided by the SWAP	Project evaluations inform TWRA management, COA projects and partnerships; are entered spatially in GIS relational database and reported	Annual budgets are informed by past project priorities and results; they factor in SWG and partner funding proposals	SWAP triennial reviews/ updates: include key partners, review of annual project evaluations, response to emerging issues, and development of new projects and funding partnerships as needed
Year	Strategic Plan Cycle (2024 = year 1)	Operational Planning (WMA and other plans)	Annual Project Evaluations, (SWGs +)	Annual Budget Planning Cycle	State Wildlife Action Plan Cycle (2026 = year 1)
2025				Data/results from previous year project evaluations informs budgeting	SWAP Update Approval; finalize steering committee and working groups framework and objectives; complete biennial review of state Threatened and Endangered species list (Tenn. Code Ann. § 70-8-105) and SGCN list review.
2026		SWAP GCN species habitat priorities, objectives, and stewardship recommendations developed for incorporation into Operational Plans developed to achieve Strategic Plan goals on TWRA-owned lands	First annual review of projects under SWAP 2025, according to Effectiveness Measures guidelines	Data/results from previous year project evaluations informs budgeting	

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Year	Strategic Plan Cycle (2024 = year 1)	Operational Planning (WMA and other plans)	Annual Project Evaluations, (SWGs +)	Annual Budget Planning Cycle	State Wildlife Action Plan Cycle (2026 = year 1)
2027	3-year evaluation of agency program progress toward achieving Strategic Plan goals; Next Strategic Plan Cycle begins; incorporates annual project reviews and SWAP review data		Annual review of projects/ effectiveness	Data/results from previous year project evaluations informs budgeting	Complete biennial review of state Threatened and Endangered species list (Tenn. Code Ann. § 70-8-105) and SGCN list review.
2028	New Strategic Plan approved (2028-2034)		Annual review of projects/ effectiveness	Data/results from previous year project evaluations informs budgeting	1st triennial review: Evaluation of the Steering Committee and its working groups assessing conservation progress and effectiveness, communications, data transfers, and reporting
2029			Annual review of projects/ effectiveness	Data/results from previous year project evaluations informs budgeting	Complete biennial review of state Threatened and Endangered species list (Tenn. Code Ann. § 70-8-105) and SGCN list review.

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	The Strategic Plan focuses on priority habitats identified in the SWAP; uses project evaluations and SWAP 3-year reviews to assess progress	Operational plans guide specific stewardship activities to achieve Strategic Plan goals; GCN species and habitat priorities are guided by the SWAP	Project evaluations inform TWRA management, COA projects and partnerships; are entered spatially in GIS relational database and reported	Annual budgets are informed by past project priorities and results; they factor in SWG and partner funding proposals	SWAP triennial reviews/ updates: include key partners, review of annual project evaluations, response to emerging issues, and development of new projects and funding partnerships as needed
Year	Strategic Plan Cycle (2024 = year 1)	Operational Planning (WMA and other plans)	Annual Project Evaluations, (SWGs +)	Annual Budget Planning Cycle	State Wildlife Action Plan Cycle (2026 = year 1)
2030		Quinquennial review of Operational Plans and projects evaluating effectiveness.	Annual review of projects/ effectiveness	Data/results from previous year project evaluations informs budgeting	
2031	3-year evaluation of agency program progress toward achieving Strategic Plan goals		Annual review of projects/ effectiveness	Data/results from previous year project evaluations informs budgeting	2nd triennial review: Evaluation of the Steering Committee and its working groups assessing conservation progress and effectiveness, communications, data transfers, and reporting; complete biennial review of state Threatened and Endangered species list (Tenn. Code Ann. § 70-8-105) and SGCN list review.

Table 10.1 TWRA planning cycles

	The Strategic Plan focuses on priority habitats identified in the SWAP; uses project evaluations and SWAP 3-year reviews to assess progress	Operational plans guide specific stewardship activities to achieve Strategic Plan goals; GCN species and habitat priorities are guided by the SWAP	Project evaluations inform TWRA management, COA projects and partnerships; are entered spatially in GIS relational database and reported	Annual budgets are informed by past project priorities and results; they factor in SWG and partner funding proposals	SWAP triennial reviews/ updates: include key partners, review of annual project evaluations, response to emerging issues, and development of new projects and funding partnerships as needed
Year	Strategic Plan Cycle (2024 = year 1)	Operational Planning (WMA and other plans)	Annual Project Evaluations, (SWGs +)	Annual Budget Planning Cycle	State Wildlife Action Plan Cycle (2026 = year 1)
2032		Review and revise recommendations developed for incorporation into Operational Plans developed to achieve Strategic Plan goals on TWRA-owned lands	Annual review of projects/ effectiveness	Data/results from previous year project evaluations informs budgeting	
2033			Annual review of projects/ effectiveness	Data/results from previous year project evaluations informs budgeting	Complete biennial review of state Threatened and Endangered species list (Tenn. Code Ann. § 70-8-105) and SGCN list review.
2034	3-year evaluation of agency program progress toward achieving Strategic Plan goals; coordinate with SWAP Update		Annual review of projects/ effectiveness	Data/results from previous year project evaluations informs budgeting	3rd triennial review: Evaluation of the Steering Committee and its working groups assessing conservation progress and effectiveness, communications, data transfers, and reporting

Table 10.1 TWRA planning cycles

	The Strategic Plan focuses on priority habitats identified in the SWAP; uses project evaluations and SWAP 3-year reviews to assess progress	Operational plans guide specific stewardship activities to achieve Strategic Plan goals; GCN species and habitat priorities are guided by the SWAP	Project evaluations inform TWRA management, COA projects and partnerships; are entered spatially in GIS relational database and reported	Annual budgets are informed by past project priorities and results; they factor in SWG and partner funding proposals	SWAP triennial reviews/ updates: include key partners, review of annual project evaluations, response to emerging issues, and development of new projects and funding partnerships as needed
Year	Strategic Plan Cycle (2024 = year 1)	Operational Planning (WMA and other plans)	Annual Project Evaluations, (SWGs +)	Annual Budget Planning Cycle	State Wildlife Action Plan Cycle (2026 = year 1)
2035		Quinquennial review of Operational Plans and projects evaluating effectiveness.	Annual review of projects/ effectiveness	Data/results from previous year project evaluations informs budgeting	SWAP Update #2: incorporate 3 previous triennial Steering Committee reviews; complete biennial review of state Threatened and Endangered species list (Tenn. Code Ann. § 70-8-105) and SGCN list review.

Annual Project Evaluation Cycle

Within 90 days of the fiscal year closing, every TWRA project is subjected to an annual evaluation according to established performance measures. Beginning in 2026, this process will include evaluation according to the Effectiveness Measures guidelines recommended by AFWA (see Chapter 9), while project spatial data will be entered into the SWAP GIS relational database. These evaluations will assess the effectiveness of SWG-funded and other projects, inform future SWAP priorities, and provide a measure of progress toward Strategic Plan goals.

SWAP Planning Cycle

The effectiveness of the steering committee and its working groups will be reviewed iteratively on a cycle of three-year reviews and will focus on evaluating conservation progress and effectiveness, communications across all partners and collaborators, annual data transfers, and the development and completion of annual reports. The results of three triennial reviews would then be incorporated into a draft SWAP update in year 10.

The USFWS is supportive of this approach and will collaborate with partners to share data, align resources, provide feedback and expertise when adaptively managing species and/or habitats, and support designing the digital 2035 SWAP.

Additionally, and as required by Tenn. Code Ann. § 70-8-105, TWRA will perform a review of the state In Need of Management, Threatened, and Endangered Species lists biennially. This will require convening agency biologists and SMEs biennially to ensure reviews are performed in accordance with previously established procedures. Because all species designated by the state In Need of Management, Threatened, and Endangered Species list are also SGCN, biennial reviews will include reviews of SGCN. This approach increases the frequency of SGCN reviews from every ten years to every two years. All information produced from these reviews will be incorporated into the next 10-year revision of the SWAP.

By including partners in SWAP 3-year reviews, the agency is fostering the incorporation of SWAP priorities into the strategic planning efforts of other agencies and organizations.



Morefield's leather-flower (*Clematis morefieldii*), a federally endangered plant species that also occurs on the Tennessee Natural Heritage Program's Rare Plant List / TDEC

10.2. SWAP GIS Relational Database Updates

In addition to documenting project evaluation data annually, and to ensure that Tennessee's SWAP remains a “living plan,” TWRA will build upon relationships already established between the Agency and TNC, the Natural Heritage Inventory Program within the Tennessee Department of Environment and Conservation (TDEC) Division of Natural Areas, and the Tennessee Valley Authority to reciprocally share and update, on a regular basis, databases with the most recent information each organization has collected.



Grassland “bald” at Roan Mountain, a type of natural grassland in the Southeast / Alan Cressler

TWRA will continue partnerships with agencies, such as Tennessee Division of Forestry, Tennessee Department of Transportation, U.S Department of Agriculture (USDA) Natural Resources Conservation Service, and the USFWS, while exploring partnerships with other organizations as appropriate. TWRA also will explore opportunities to share information on priorities and projects through different types of website interfaces for partners and the general public, with access and data protocols designed to protect sensitive information and ensure appropriate application of the data.

10.3. Emerging Issues

New issues inevitably arise between each 10-year comprehensive review cycle for State Wildlife Action Plans. SWAP Best Practices guidance indicates that these emerging issues can be addressed through “documented coordination with the US Fish and Wildlife Service . . . as long as the issue is included in the next revision” (AFWA 2012).

At the time of this writing, Highly Pathogenic Avian Influenza (HPAI) is a growing threat having devastating effects on wildlife, human health, and the economy. In 2022, the first HPAI infection since 2016 was found in wild birds in the U.S (CDC 2025b). Wild birds can be infected with HPAI and show no signs of illness (USDA APHIS 2025). On the other hand, HPAI can also cause significant mortality among birds—particularly waterfowl, waterbirds, and raptors (AOS 2022). This virus has infected wild birds around the globe, hitting colonially nesting seabirds and birds of prey particularly hard. In June 2022, the first large-scale outbreak in wild mammals (so called “spillover”

into new taxa) occurred in Harbor and Gray Seals along the US coast of Maine (Puryear and Runstadler 2024). By the end of 2023, HPAI had been confirmed in 502 wild bird and 60 mammal species worldwide, primarily carnivores. (Puryear and Runstadler 2024).

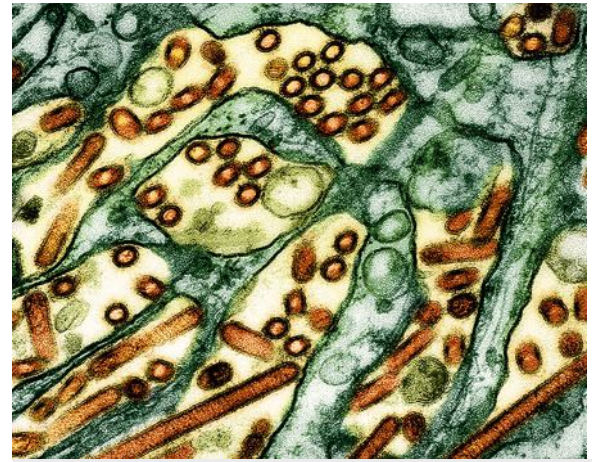
Next, in March 2024 a multistate outbreak of HPAI in dairy cows was reported—the first time that a bird flu virus had been found in cows. In the United States, since 2022, USDA APHIS has reported HPAI virus detections in more than 200 mammals, including dogs and cats (CDC 2025). By April 2, 2025, 168,257,258 poultry had been affected in 51 US jurisdictions along with 996 dairy herds with outbreaks among dairy cattle in 17 states. Poultry infections are deadly. In dairy cattle they cause illness and a decline in milk production, but strict containment and decontamination protocols can help prevent spread among dairy herds (USDA APHIS 2024b).

At least 51 US jurisdictions have recorded avian flu in wild bird populations. “High-pathogenicity Avian Influenza has expanded into wildlife in unprecedented numbers and species diversity, with unmatched disease severity for influenza in wildlife” (Puryear and Runstadler 2024). As of April 2, 2025, HPAI had also infected 70 people in the US, with one fatality (CDC 2025).

HPAI is a classic “One Health” issue (see Appendix H) in that the pathogen is shared among many wildlife species as well as humans, and the virus can be spread between species. Currently, there is



Monarch butterfly in a power line right-of-way / Adam Dattilo



Colorized transmission electron micrograph of avian influenza A H5N1 virus particles (yellow/red), otherwise known as highly pathogenic avian influenza (HPAI) / CDC

no cure for wildlife or people infected with the virus; therefore, prevention and further research are critical.

Other examples of potential emerging issues in the future may involve consideration of the special habitat needs of insect pollinators. Pollinators play a crucial role in the overall health of ecosystems and maintenance of plant diversity in many habitat types (The Heinz Center 2013). Assessing the status of pollinators in Tennessee and their potential management needs could be considered emerging issues in future plan iterations.

Addressing complex challenges requires a commitment to collaboration among many agencies and stakeholders, particularly through advance planning and a willingness to share

information in transparent decision-making processes. For the SWAP, emerging issues will be addressed on the planning cycle described, documented with the USFWS, and summarized in subsequent revision documents.

10.4. Lessons Learned from Tennessee's SWAP Review and Revision

The following is a list of ideas and potential next-step actions from Tennessee's SWAP planning team that could improve TWRA's processes in preparing for the next iteration of SWAP revision:

- Organize all plans, monitoring reports, and other useful documents on a comprehensive internal server and staff-accessible drive to facilitate compiling pertinent information for the next revision.
- Assess robustness of internal and external datasets used in creation and maintenance of the SWAP and weed out unreliable data. Such will require internal quality control (QC) between data collection and data distribution so that any errors are not promoted to external aggregate datasets where QC may be nearly impossible.
- Improve TWRA staff training in use and application of SWAP GIS data and Steering Committee databases.
- Maintain regularly updated maps of conservation action and project locations.
- Complete development of a comprehensive database, simplifying data transfers with partners and increasing conservation planning decision-making activities.

- Ensure that data entry protocols for projects are established and clear and that all individuals conducting data entry work are trained in data QC standards as appropriate.
- Communicate regularly and intentionally with agency partners, non-governmental organizations, and other stakeholders about ongoing work to foster collaborative efforts and engagement in conservation efforts.

These types of specific activities, in conjunction with a more standardized review process aligned with TWRA's overall planning cycles, will help the agency more efficiently address the SWAP revision requirements of the USFWS over time, improve public awareness and engagement with species and habitat conservation in Tennessee, and ultimately increase the success of conservation efforts.



Scott Dykes holding the first recorded over-wintering Virginia Big-eared Bat (*Corynorhinus townsendii virginianus*) in Tennessee / Scott Dykes, TWRA