ELEMENT 4

Conservation Actions

Maine's 2025 State Wildlife Action Plan

Table of Contents

List of Figures

List of Tables

Table of Appendix Tables

Key to Acronyms

IUCN	International Union for the Conservation of Nature
MDIFW	Maine Department of Inland Fisheries and Wildlife
MDMR	Maine Department of Marine Resources
MNAP	Maine Natural Areas Program
SGCN	Species of Greatest Conservation Need
SWAP	State Wildlife Action Plan

Prepared by Maine Department of Inland Fisheries and Wildlife in Collaboration with Maine Departments of Agriculture, Conservation, and Forestry and Marine Resources, and Key Conservation Partners

Element 4: Conservation Actions

4.0 Abstract

The conservation actions contained in Maine's revised State Wildlife Action Plan (SWAP) consist of complementary coarse- and fine-filter approaches that maximize limited conservation dollars. The Maine Department of Inland Fisheries and Wildlife (MDIFW), the Maine Department of Marine Resources (MDMR), the Maine Natural Areas Program (MNAP), and other conservation partners worked closely to develop and prioritize a list of coarse- and fine-filter conservation actions. Some actions are very specific while others are written more generally so they can be adapted as needed to emerging issues and information. Conservation actions are non-regulatory approaches undertaken voluntarily by agencies and other conservation partners. Actions include both on-going conservation and management strategies and new and updated actions that can be used to bolster existing efforts or inspire new ones.

The actions reflect several stages of prioritization. Conservation partners identified a total of nearly 900 conservation actions in this updated SWAP. Of these, partners applied 575 actions to individual Species of Greatest Conservation Need (SGCN), with 295 applied to species guilds, Conservation partners also identified 417 habitat actions, including 170 marine and coastal habitat actions, 89 freshwater aquatic habitat actions, and 158 terrestrial and wetland habitat actions. In addition, 22 actions were identified at the Landscape Level - common actions across multiple habitats and SGCN associated with those habitats.

Given the volume of habitat conservation actions identified, workgroups developed several themes to organize actions into discrete packages of related actions that address common threats or use similar techniques. Actions within a theme are often complementary, and when undertaken together, may be the most effective and efficient use of conservation resources. Four 'super-themes' emerged across habitat groups: Connectivity, Invasive Species, Mapping and Outreach, and Climate Change. Actions included in these themes will be more effective with coordinated efforts across habitats.

Each conservation action is linked to its target SGCN or habitat and the threat(s) the action is addressing in a master (relational) database, updated from the 2015 Plan. We also identified 12 programmatic actions to help guide implementation and tracking of the 2025 Action Plan; we have broadly grouped these actions as Outreach and Engagement, Funding and Tracking, Action Development, and Regional and Statewide Partnerships. In this chapter, we also describe criteria partners can use to direct resources to high priority conservation actions in the plan. We also discuss differences from Maine's 2015 CWCS.

4.1 Introduction

In the previous chapter, we identified the primary issues affecting Maine's Species of Greatest Conservation Need (SGCN) and their habitats. In this chapter, we discuss strategies ('conservation actions') to address the negative effects of threats on SGCN and habitats. Conservation actions are non-regulatory, initiated voluntarily by agencies and other conservation partners. They are not intended to replace current management strategies, but can be

used to bolster existing efforts or inspire new ones. In this chapter, we describe our approach to reviewing and revising conservation actions at the SGCN, habitat, and programmatic scales and introduce a strategy for maintaining engagement with partners for pursuing and tracking conservation actions over the next ten years.

Maine's 2025 Wildlife Action Plan consists of complementary coarse- and fine-filter conservation actions that maximize limited conservation dollars. Coarse-filter conservation actions are those applied broadly at large spatial scales (e.g., habitats, landscape) and benefit most species associated with that habitat or group of habitats. Coarse-filter actions focus largely on conserving plant and animal communities and the interactions among them, ensuring the community of habitats and associated species will persist and benefit over time. Much of the focus in updating this Plan was at the coarse-filter level, recognizing that there are efficiencies with conservation actions that apply at the habitat or community level because they will benefit multiple species rather than tackling one species at a time. However, certain SGCN require 'fine-filter' actions designed to alleviate stressors not adequately addressed through coarse-filter actions.

Agencies and conservation partners worked closely to re-evaluate the catalog of coarse- and fine-filter conservation actions identified in 2015, remove or revise them if necessary, and add new actions to address new SGCN, new and/or more urgent threats, or new thinking. We continue to balance action specificity with flexibility so that actions can be adapted to emerging issues and information. These actions are extensive and comprehensive, and thus, their implementation will require a truly statewide collaborative effort among partners. Maine's conservation actions present a diverse set of opportunities from which state and federal agencies and conservation partners can select actions that reflect their interests, expertise, and abilities. For example, some actions are suitable for private citizens while others are best accomplished by large regional inter-agency partnerships. We hope all partners will see a role for themselves in the 2025 Wildlife Action Plan and identify new opportunities for collaboration.

4.1.1 Significant Differences from Maine's 2015 Plan

Both Maine's 2015 and 2025 Wildlife Action Plans incorporate fine-and coarse-filter approaches to SGCN conservation. Approaching the 2025 SWAP as an update to the 2015 Plan, and with the database built and populated from the 2015 Plan, the process for the development of the 2025 Wildlife Action Plan was very different. For conservation actions, this meant the first step was to review the actions identified in 2015 to determine if they were still applicable. Many were kept intact from 2015, some were removed as no longer applicable, some were revised to meet the challenges of the new decade, and entirely new conservation actions were added. New SGCN, new habitat definitions, new threats, and new conservation options not available before led to the creation of new conservation actions in the 2025 Wildlife Action Plan.

At the habitat level, conservation actions were updated for each habitat (i.e. Intertidal Mudflat or Intertidal Sandy Shore) and habitat grouping (i.e. Intertidal Habitats). In addition, we added a new landscape scale category – a much broader scale than previously used – and assigned conservation actions at the landscape scale that apply across multiple habitats and habitat groupings. Additionally, while climate change was referenced occasionally in the 2015 Plan, in 2025 the effects of climate change and specific conservation actions to address those effects were updated and/or added, and incorporated throughout.

In this Plan, we also:

1. Approached the plan for revisions using a three-tier process in which we (1) engaged habitat-based subcommittees and a climate subcommittee of experts and (2) engaged conservation partners on revisions to threats and conservation actions before (3) the plan went out for a 30-day public review.

2. Added conservation actions for the 301 new plant SGCN and for freshwater aquatic, marine and coastal, and terrestrial and freshwater wetland habitats. Some habitat names and descriptions were changed and/or updated from 2015 to better align with current terminology and our understanding of various habitats. For example, both river/stream and pond/lake freshwater aquatic habitats were divided into 19 different habitat types to better reflect each biogeochemical system.

3. Described an additional scale of action by identifying conservation actions that either could be enacted at the landscape scale to address broad conservation threats, or when enacted locally could have landscape-level impacts. For example, developing erosion control seed mixes with native plants for use across the state could have widespread impacts. Similarly, each individual culvert that reconnects previously fragmented habitats has broader implications than just at that site.

4. Placed the emphasis of our conservation actions on the coarser scale of habitats, habitat groupings, and landscapes where we could be more effective at achieving larger impacts for more species than by taking a more species-specific approach.

5. Added "Climate Change" as a super-theme that crosses all habitats and habitat groupings.

6. Added an action type of 'completed' to document when specific conservation actions described in the 2015 SWAP were successfully completed.

7. Revised the programmatic actions to include more specific approaches to support regular, continued engagement with partners to more successfully implement conservation actions over the next ten years, until the State Wildlife Action Plan is updated again in 2035.

8. Implemented the prioritization for conservation actions based on biological impact and feasibility for SGCN and habitats, completed in 2020 for most terrestrial and freshwater aquatic habitats, and re-evaluated those rankings with partners in 2025.

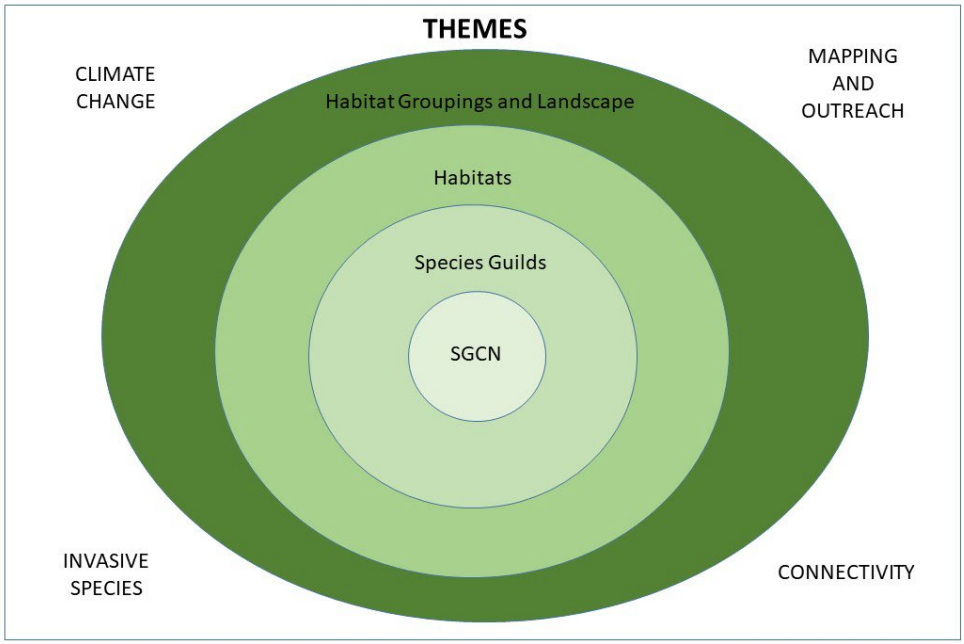
4.1.2 General Considerations for Development of Conservation Actions

MDIFW collaborated closely with partners, species specialists, and habitat experts over a twelve-month period (May 2024 - May 2025) to develop SGCN and habitat conservation actions, to identify conservation action priorities based on biological priority and feasibility, and to identify conservation actions related to climate change. Species specialists reviewed and updated the Conservation Actions identified at the SGCN level, and Conservation Actions at the Habitat level were reviewed and updated by the 2025 SWAP Subcommittees. As in 2015, we created three subcommittees focused around broad habitat groupings – Freshwater Aquatic Habitats, Marine and Coastal Habitats, and Terrestrial and Freshwater Wetlands Habitats. These subcommittees reviewed

the Threats and Conservation Actions described in 2015 and revised them as needed for 2025, including updating language, removing Conservation Actions that are no longer applicable, and adding new Conservation Actions. For 2025 we added an additional subcommittee focused on Climate Change to cut across all the Habitats and individual SGCN, and to bring in elements from Maine's Climate Council and new studies and literature. We wrote conservation action descriptions broadly enough to allow for adaptive management over the next ten years, but with enough specificity to help assess performance (AFWA 2012). We also revised the 11 programmatic actions identified in 2015 by removing one, as the goal was accomplished, and adding two for a total of 12 programmatic actions that will guide SWAP implementation over the next ten years.

We identified 562 SGCN, 295 species guild, and 417 habitat conservation actions. Within the habitat conservation actions, we identified 22 new conservation actions that are applicable at the landscape level. These lists reflect several scales of conservation action identification and implementation. At the smallest scale, we developed SGCN-specific actions for Priority 1 and Priority 2 species where species-specific actions were warranted. We addressed Priority 3 species and species that would benefit from broader actions at the guild level. For habitats, we organized many of the more specific habitats into broader groupings to which we assigned Conservation Actions that were applicable for the group of habitats. Conservation Actions assigned to the Landscape level are actions that are applicable at a larger ecological scale and that cross multiple individual and varied habitats and habitat types. All the habitat-based conservation actions were then organized into larger themes, and four of those themes ('super-themes') were applicable in all habitat type groups – Freshwater Aquatic Habitats, Marine and Coastal Habitats, and Terrestrial and Freshwater Wetland Habitats (Figure 4-1).

Figure 4- 1 Schematic indicating the multiple scales at which the 2025 SWAP Conservation Actions have been identified and will be undertaken.



We prioritized our comprehensive list of actions based on biological priority.

1. **Biological Priority:** MDIFW assigned actions a biological priority based on how essential that action will be toward conserving a species or habitat over the next ten years. Biological priority does not take into account the economic or practical feasibility of actions. Because MDIFW developed actions only for priority stressors, there is no 'low' level of biological priority.

    a. **Critical**: Actions that are necessary for sustaining species or habitats in order to prevent the loss of populations or significant portions of habitats or habitat integrity in the next ten years.

    b. **High**: Actions that are important for conserving habitats or preventing the loss of SGCN populations but would not result in dire losses if not enacted over the next ten years.

    c. **Moderate:** Actions that would benefit habitats or SGCN but alone may not be crucial for their continued existence over the next ten years.

In addition, we used the following categories to help organize and prioritize SGCN and habitat conservation actions:

2. **Action Category:** MDIFW assigned conservation actions to one of the following six broad categories to help organize related actions. While some actions fit into multiple categories, we assigned the best-fitting category for each action.

    a. **Habitat management:** Addresses stressors to SGCN habitats through habitat conservation, management, or stewardship.

    b. **Policy:** Addresses existing policies or the need for new policies that encourage conservation of SGCN and habitats; all actions in this category are strictly non-regulatory.

    c. **Public outreach:** Addresses the need to raise the public's awareness of the stressors to SGCN and their habitats.

    d. **Research:** Addresses gaps in our understanding of life history, productivity, mortality, habitat requirements, limiting factors, interactions with other species, and conservation needs of SGCN.

    e. **Species Management:** Addresses management needs at the species or population level.

    f. **Surveys and Monitoring:** Addresses data gaps and informational needs on the distribution, abundance, and status of SGCN.

And we clarified if each action was new, ongoing, or complete:

3. **Action Type:** This category indicates whether an action is already underway ('**on-going**'), if a new effort is needed ('**new**'), or if an action from the previous SWAP has been completed ('**complete'**). We included

on-going actions in the 2025 Plan to acknowledge and provide continued support for on-going conservation efforts.

Each conservation action is linked to its target SGCN or habitat, the threat(s) the action is addressing, and the above categories in a master (relational) database that was developed as part of the 2015 Wildlife Action Plan. This database allows internal users to quickly search by 1) habitat, SGCN, or threat and 2) group actions by categories or programs of interest. The database is intended to help MDIFW and its sister agencies continue to evaluate and maintain this information and keep it up-to-date over time in order to be able to track changes between Action Plans and to make developing each subsequent Action Plan easier.

4.2 SGCN Conservation Actions

4.2.1 SGCN Action Background

Conservation actions for Maine's SGCN represent the Wildlife Action Plan's fine-filter approach to species conservation. Although we anticipate that coarse-filter, habitat-based actions will ultimately address most of the important problems facing SGCN, there are some species that require individual attention. In some cases, threats impacting SGCN are not directly related to that species' habitat (e.g., white-nosed syndrome in bats), or individual SGCN have specific habitat requirements that cannot be reasonably addressed by generic conservation actions for habitats. Additionally, some SGCN have pre-existing conservation plans (e.g., Atlantic Salmon) where managers have already determined actions to monitor and conserve the species. In these cases, MDIFW adopted actions from these established plans. In assigning conservation actions to SGCN, we hope to ensure that no SGCN 'falls through the cracks' over the next 10 years. At the same time, we attempted to limit the application of species-specific conservation actions to those SGCN with pressing species-level conservation needs.

4.2.2 2025 Update of SGCN Conservation Actions

We reviewed and revised conservation actions as follows:

1. Species specialists within MDIFW, MDMR, and MNAP evaluated the 23 species 'guilds' identified in the 2015 SWAP, and added new guilds where appropriate for a total of 58 species 'guilds'. Most of the new guilds were associated with the 301 newly added plant SGCN. Guilds consisted of groups of species facing similar conservation problems, and for which conservation actions could be developed concurrently. Guilds included Priority 1, Priority 2, and Priority 3 SGCN.

2. Using professional knowledge, species specialists re-evaluated existing conservation actions and revised conservation actions to address threats of medium-high or high priority (see Element 3) that had been assigned to Priority 1 or Priority 2 SGCN where necessary. Conservation actions assigned to guilds applied

to all species within the guild, regardless of the species priority level. For each conservation action, specialists re-evaluated the rank for biological priority, action type, and action category.

3. Once specialists completed initial assignments, the Coordination Team updated the list of conservation actions that apply to many species within broader taxonomic or functional groups. See Table 4-1 for the revised conservation actions applied to broad taxonomic or functional groups. This revised table was then reviewed by the specialists for confirmation.

On August 1, 2025, MDIFW posted the entire draft Wildlife Action Plan online for a 30-day public comment period (see Elements 7/8 for more information). MDIFW, agency partners, and the Steering Committee reviewed all comments received that addressed SGCN conservation actions. MDIFW and the Steering Committee modified conservation actions as appropriate.

4.2.3 Summary of SGCN Conservation Actions

MDIFW and partners identified a total of 891 conservation actions for SGCN. Of these, we applied 34 actions to one or more taxonomic or functional groups such as "All SGCN" or "Marine SGCN" (Table 4-1), 295 to guilds of species (Appendix Tables 4-1 to 4-6), and 562 to individual SGCN (Appendix Tables 4-7 to 4-12). Within the broad taxonomic or functional groups, we assigned 11 actions to All SGCN species, 16 to All Marine SGCN, 4 to All Non-marine SGCN, and 3 to All Plant SGCN (Table 4-1). Of the SGCN-specific actions, MDIFW and partners applied 272 to birds, 40 to reptiles or amphibians, 111 to invertebrates, 28 to inland fish, 23 to mammals, 76 to marine vertebrate species, and 12 to individual plant SGCN (Table 4-2). We classified most actions as research or survey and monitoring, reflecting the pervasive need to gather more information on SGCN in order to facilitate their conservation, but habitat management was also a common action classification, driven primarily by the addition of plants to the SWAP. Nearly half of the SGCN conservation actions are already on-going in some form (although they may require enhancement), and two conservation actions were identified as having been completed since 2015, both associated with insect population evaluations and NatureServe S-rank updates (Table 4-3). MDIFW and partners viewed approximately 15% of actions as critical to habitat conservation over the next ten years (Table 4-4).

Table 4- 1 Conservation Actions assigned to Taxonomic or broad Functional Groups.

Functional Group	Category	Biological Priority	Type	Description
ALL SGCN	Policy	high	on-going	Conduct a comprehensive review of S-ranks for overdue taxa that include SGCN and share with Natureserve
ALL SGCN	Policy	high	on-going	Develop conservation actions for all medium-ranked stressors assigned to Priority 1 and Priority 2 SGCN
ALL SGCN	Policy	high	on-going	Improve quality of mapping and tracking of priority species and populations using MDIFW's ETSC database
ALL SGCN	Policy	high	on-going	Integrate SGCN habitat needs and Conservation Actions more explicitly into MDIFW Wildlife Management Area Plans
ALL SGCN	Policy	high	on-going	Review and update SGCN distribution maps
ALL SGCN	Policy	moderate	on-going	Ensure ETSC database tracking is in place and accurate for all Priority 1 SGCN, and prioritze ETSC database tracking for a higher proportion of Priority 2 SGCN than are currently tracked
ALL SGCN	Public Outreach	high	new	Send press releases and social media outreach announcing the new SWAP 2025 plan once approved
ALL SGCN	Public Outreach	high	on-going	Increase public awareness of the economic and ecological value of SGCN and their conservation needs
ALL SGCN	Public Outreach	high	on-going	Provide increased partner and public access to SGCN species reports, maps, and conservation actions through MEGIS, or other venues
ALL SGCN	Public Outreach	moderate	new	Develop a streamlined, public- and partner-friendly SWAP 2025 interface, as a separate online document or as an interactive website.
ALL SGCN	Survey and Monitoring	critical	on-going	Conduct statewide surveys of SGCN to inform status, distribution, threats, and habitat use and establish regular survey intervals for priority populations.
Marine SGCN	Habitat Management	high	on-going	Assess new aquaculture sites for potential positive, benign, or negative species interactions. Continue to review the presence of and impacts to ecologically sensitive species and areas during the review process.

Functional Group	Category	Biological Priority	Type	Description
Marine SGCN	Public Outreach	high	on-going	Continue to work with the fishing industry to develop gear modifications that reduce the risk of entanglement and conduct outreach on gear best practices to use
Marine SGCN	Public Outreach	high	on-going	Increase capacity for collaborative data collection and management that fosters partnerships among harvesters, citizens, scientists, and managers
Marine SGCN	Public Outreach	high	on-going	Increased leadership and education regarding climate change mitigation and adaptation
Marine SGCN	Research	critical	on-going	Create species distribution maps to facilitate reduced response time to potential oil spills by creating 'hot' zones
Marine SGCN	Research	high	new	Conduct laboratory and in situ research to understand the direct and indirect impacts of climate change (e.g. warming ocean temperatures, decreased salinity, increased eutrophication) and ocean acidification on individual species, food webs, and ecosystem functioning
Marine SGCN	Research	high	new	Conduct research to better understand impacts on marine SGCN and recovery from mechanical disturbances at various scales (e.g. dredging, dredge disposal, offshore infrastructure construction, mineral mining, etc.).
Marine SGCN	Research	high	on-going	Conduct research to evaluate the impacts (including sublethal/lethal effects) of nutrients, chemicals, and other pollutants on marine SGCN to better understand risks to exposure, and monitor natural environments to understand where these stressors may be impacting SGCN
Marine SGCN	Research	high	on-going	Determine accuracy of harvester and dealer reported landings for target species and bycatch.
Marine SGCN	Research	high	on-going	Improve understanding of non-harvested species through targeted data collection, habitat surveys, and other efforts
Marine SGCN	Research	high	on-going	Investigate biological effects (both lethal and sublethal) of oil spills and related treatments and response techniques including oil dispersants, burning, etc., as well as the short- and long-term effect of oil spills

Functional Group	Category	Biological Priority	Type	Description
Marine SGCN	Research	high	on-going	Map species distributions and abundances to track changes over time, identify ecologically important areas for multiple SGCN, and examine ecosystem interactions and predator-prey relationships.
Marine SGCN	Research	moderate	on-going	Research the impacts of diversifying Maine's marine fisheries on both non-commercial and commercially important SGCN
Marine SGCN	Species Management	high	on-going	Improve evaluation of commercially-harvested intertidal and subtidal SGCN through designation of conserved areas and rotational management (e.g., scallops)
Marine SGCN	Survey and Monitoring	high	on-going	Conduct surveys to monitor and better understand distribution and abundance
Marine SGCN	Survey and Monitoring	moderate	on-going	Create an incentive-based reporting tool for non-commercial bycatch
Non-marine SGCN	Habitat Management	high	on-going	map and distribute information on species distribution, habitat requirements, and conservation actions with a goal of increased voluntary conservation by landowners, towns, and land trusts
Non-marine SGCN	Public Outreach	high	on-going	develop and expand outreach programs aimed at engaging landowners and the general public in species and habitat conservation efforts
Non-marine SGCN	Research	high	new	Model and track climate-driven habitat change to help identify potential climate refugia for long-term planning and resilience
Non-marine SGCN	Survey and Monitoring	moderate	on-going	Develop and implement standardized monitoring programs and geospatial mapping to more effectively document and understand impacts from threats including climate change
Plant SGCN	Habitat Management	high	on-going	Develop Early Detection Rapid Response Protocols for invasive species in proximity of mapped plant occurrences.
Plant SGCN	Habitat Management	high	on-going	Require survey to be conducted prior to construction or other projects, and avoid construction within 250' of plant populations
Plant SGCN	Survey and Monitoring	high	on-going	Establish regular survey intervals for high-ranked occurrences.

Table 4- 2 SGCN conservation actions by Action Category

Taxonomic Group	Habitat Management	Policy	Public Outreach	Research	Species Management	Survey and Monitoring	Total
Birds	72	14	35	80	29	42	**272**
Inland Fish	12	0	0	7	4	5	**28**
Mammals	2	3	2	5	4	7	**23**
Marine	3	0	6	42	12	13	**76**
Reptiles and Amphibians	9	4	3	3	17	4	**40**
Invertebrates	15	14	14	20	11	37	**111**
Plants	3	0	0	0	6	3	**12**
Total	**116**	**35**	**60**	**157**	**83**	**111**	**562**

Table 4- 3 SGCN conservation actions by Action Type

Taxonomic Group	New	On-going	Total
Birds	172	100	**272**
Inland Fish	5	23	**28**
Mammals	10	13	**23**
Marine	32	44	**76**
Reptiles and Amphibians	8	32	**40**
Invertebrates	73	38	**111**
Plants	2	10	**12**
Total	**302**	**260**	**562**

Table 4- 4 SGCN conservation actions by Biological Priority

Taxonomic Group	Critical	High	Moderate	Total
Birds	25	168	79	**272**
Inland Fish	12	13	3	**28**
Mammals	2	12	9	**23**
Marine	14	39	23	**76**
Reptiles and Amphibians	5	25	10	**40**
Invertebrates	23	58	30	**111**
Plants	3	6	3	**12**
Total	**84**	**321**	**157**	**562**

4.3 Habitat Conservation Actions

4.3.1 Habitat Action Background

Maine's 2025 Wildlife Action Plan takes a holistic approach to SGCN conservation by focusing on both species and habitats, but in this Plan the focus is heavier on habitats. Habitat-scale conservation uses a coarse-filter approach whereby strategies applied to habitats likely benefit many of the species that occur there or will likely occur there in the future. Because habitat-scale actions simultaneously benefit multiple species, they often are an efficient way to stretch limited conservation dollars and often complement species-specific approaches. While this Plan identifies nearly 900 SGCN actions, many of the most common threats to Maine's SGCN are associated with habitats, and the most effective solutions to address those threats are at the habitat level (see Element 3).

Maine's landscape is diverse, from subtidal gravel beds to alpine tundra, and the issues facing these habitats are complex, from localized land-use conversion to regional impacts of climate change. In order to systematically and holistically address these complexities, threats and conservation actions were reviewed and revised within the larger Habitat Subcommittees – Freshwater Aquatic Habitats, Marine and Coastal Habitats, and Terrestrial and Freshwater Wetland Habitats (see Chapter 2 for descriptions of these subcommittees and their operational charters). An additional subcommittee focusing on Climate Change across the habitats and SGCN was also established. These subcommittees were made up of federal and state natural resource agency staff, academia, staff of relevant non-profit organizations, and other experts in the field. Habitat subcommittees reviewed the threats and conservation actions identified in 2015 and revised them for 2025 – deleting those that are no longer relevant, adding new ones, and revising existing ones for 2025 where necessary. The subcommittee on Climate Change reviewed all the threats and climate actions from the perspective of Climate Change, and added new and revised existing actions accordingly.

For 2025, Conservation Actions were also identified at the Landscape level in order to address threats that exist at a larger landscape scale and to address threats that were commonly identified in most, and sometimes all, habitats. For example, invasive species are a threat to many different habitats and at many different scales, so creating the structure to address invasive species across the landscape – including establishing early identification and rapid response strategies – can be the most effective conservation action to address that broad threat.

4.3.2 2025 Update of Habitat Conservation Actions

Maine reviewed and revised its habitat conservation actions as follows:

1. Habitat-based subcommittees (Freshwater Aquatic Habitats, Marine and Coastal Habitats, and Terrestrial and Freshwater Wetland Habitats) and one Climate Change subcommittee of experts were established to review the conservation actions identified in 2015. They proposed revisions including deletions, modifications, and the creation of new actions. Next, we convened a partner meeting during which conservation partners from across the state and across specialties reviewed the conservation actions and

discussed additional revisions. Finally, we sent out surveys to partners and to the general public for additional feedback on revisions to the conservation actions for the 2025 Wildlife Action Plan.

2. Subcommittees revised 2015 'habitat groupings' (Table 4-16) as necessary, based on similar ecology, spatial distribution, and/or stressors. Certain macrogroups (e.g., vernal pools, tidal marsh, a number of headwater stream systems) did not fit cleanly into habitat groupings due to their ecological uniqueness or nuances of threats facing them; we pulled these macrogroups out separately into their own habitat groupings. Many of the changes in names and definitions of habitats and habitat groupings from 2015 to 2025 are related to updates to the nomenclature from the IUCN North American Habitat Classification Scheme.

Table 4- 5 Habitat groupings addressed by habitat subcommittees

Subcommittee	Habitat Grouping	Habitats (Macrogroups)
Terrestrial/Freshwater Wetlands	Intensive Human Land Use	Agricultural, Urban-Suburban Built
	Quarries and Mines	Extractive
	Tree Plantations	Exotic Upland Forest, Plantation and Ruderal Forest
	Coastal and Interior Pine Barrens	North Atlantic Coastal Forest & Woodland
	Freshwater Marshes	Eastern North American Marsh, Wet Meadow & Shrubland, Modified-Managed Marsh
	Grasslands- Shrublands-Right of way vegetation	Ruderal Shrubland & Grassland, Agricultural, Maintained Grasses and Mixed Cover
	Lakeshore or Pondshore	Atlantic & Gulf Coastal Plain Wet Prairie & Marsh, North American Freshwater Coastal Beach & Rocky Shore
	Northern Floodplain and Swamp Forests	Laurentian-Acadian Flooded & Swamp Forest, North American Boreal Conifer Poor Swamp
	Northern Peatlands	North American Boreal & Sub-boreal Bog & Acidic Fen, North American Boreal & Sub-boreal Alkaline Fen
	Northern Upland Forests	Acadian-Northern Appalachian Forest
	Rocky Summits-Outcrops-Mountaintops	Laurentian-Acadian Acidic Rocky Scrub & Grassland, Eastern North American Alpine Tundra, Eastern North American Cliff & Rock Vegetation, Laurentian-Acadian Calcareous Scrub & Grassland

	South Central Upland Forests	Appalachian Oak - Pine Forest & Woodland
	South-Central Floodplains and Swamps	Coastal Plain Evergreen Hardwood - Conifer Swamp, Central Hardwood Swamp Forest
	Vernal Pools	Lentic System
Marine/Coastal	Tidal Marsh	Intertidal tidal marsh (peat forming)
	Intertidal	Intertidal Mudflat, Intertidal Sandy Shore, Intertidal Mollusc Reefs, Intertidal Bedrock, Intertidal Gravel Shore, Intertidal Water Column
	Subtidal	Subtidal Mud Bottom, Subtidal Sand Bottom, Subtidal Mollusc Reefs, Subtidal Bedrock Bottom, Subtidal Coarse Gravel Bottom, Subtidal Pelagic (Water Column)
	Rocky Coast	North American Atlantic Coastal Dune, Grassland & Rocky Headland, Temperate Atlantic Intertidal Shore
	Coastal	North American Atlantic Coastal Dune, Grassland & Rocky Headland, North American Atlantic Coastal Beach & Rocky Shore
	Coastal Islands	North American Atlantic Coastal Dune, Grassland & Rocky Headland
Freshwater Aquatics	Streams, Rivers, Lakes, and Ponds	Lotic Systems, Lentic Systems

3. Habitat-focused subcommittees reviewed conservation actions for their respective habitat group (Freshwater Aquatic Habitats, Marine and Coastal Habitats, and Terrestrial and Freshwater Wetland Habitats) and recommended revisions where necessary (added, modified, or deleted). Part of that review included re-evaluating the ranks assigned for Biological Priority, Action Type, and Action Category. The Climate Action subcommittee reviewed conservation actions associated with SGCN and Habitats identified as particularly vulnerable to changes in the climate, and reviewed conservation actions associated with climate-related threats and made suggestions for revisions and additions.

4. On May 16, 2025 a second partner meeting was held in which participants split into break out groups based on the habitat and climate subcommittees (Freshwater Aquatic Habitats, Marine and Coastal Habitats, Terrestrial and Freshwater Wetland Habitats, and Climate). These partner groups then reviewed the 2015 habitat-level threats and conservation actions and subcommittee revisions where available and suggested revisions where necessary. Partner groups then reviewed conservation action rankings that

were developed in 2020 by MDIFW staff (based on biological impacts and feasibility, as described in the 2015 Wildlife Action Plan) and revised the rankings as appropriate.

5. On May 24, 2025 we surveyed partners and the general public for additional comments on and proposals for revisions to the threats and conservation actions. The survey was open for two full weeks. We modified habitat conservation actions where appropriate, based on partner and public review comments.

6. Final revisions to the habitat conservation actions were entered into the SWAP database and final versions can be found in Appendix Tables 4-13 through 4-15.

7. From these discussions Landscape-level threats and conservation actions were identified. Landscape-level conservation actions are ones that either could be enacted at the landscape scale to address broad conservation threats, or when enacted locally could have landscape-level impacts. For example, developing erosion control seed mixes with native plants for use across the state could have widespread impacts. Similarly, each individual culvert that reconnects previously fragmented habitats has broader implications than just at that site. (See Table 4-6)

8. We posted the draft State Wildlife Action Plan online on August 1, 2025 for a 30-day public comment period (see Elements 7/8 for more information). MDIFW, agency partners and the Steering Committee reviewed the comments received addressing SGCN conservation actions. MDIFW and the Steering Committee modified conservation actions as appropriate.

Table 4- 6 2025 Maine Wildlife Action Plan Landscape-level Habitat Conservation Actions. Actions are sorted by Action Category, then by Biological Priority (Critical, High, Moderate)

Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Habitat Management	Work with the Maine Department of Transportation and municipalities to support enhancements to transportation infrastructure facilitating terrestrial species movement for SGCN.	Roads and Railroads	Critical	On-going
Habitat Management	Support land conservation opportunities that include representation of Maine's full suite of abiotic and biogeographical regions.	Habitat Shifting or Alteration	Critical	On-going
Habitat Management	Prioritize early detection and control of problematic invasive species that have both local and landscape scale impacts.	Invasive Non-native-Alien Species-Diseases	Critical	On-going
Habitat Management	Collaborate with regional partners to track and monitor invasive species coming into Maine	Invasive Non-native-Alien Species-Diseases	Critical	On-going
Habitat Management	Prioritize and accelerate land and water conservation efforts within BwH Focus Areas of statewide significance	Habitat Shifting or Alteration	Critical	On-going
Habitat Management	Encourage conservation of native fish species through a variety of methods including strategically eliminating barriers to fish passage (e.g. dams, undersized culverts), and other restoration measures that yield watershed scale benefits.	Dams and Water Management-Use	Critical	On-going
Habitat Management	Provide regular data sharing and technical assistance to landowners and forest industry on best management of SGCN species and habitats.	Logging and Wood Harvesting	Critical	On-going
Habitat Management	Support land acquisition projects that enhance and facilitate terrestrial SGCN species movement.	Habitat Shifting or Alteration	High	On-going
Habitat Management	Integrate aquatic habitat connectivity into BwH Focus Areas and other landscape connectivity mapping initiatives	Habitat Shifting or Alteration	High	On-going

Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Habitat Management	Develop strategies to preserve habitat connectivity in renewable energy projects that account for safety and access requirements (e.g. fencing on solar arrays).	Renewable Energy	Moderate	New
Policy	Support development of local sources for native seeds in erosion control mixes and recommend the use of native seed mixes in the context of environmental reviews and MDIFW/BPL public lands stewardship.	Invasive Non-native-Alien Species-Diseases	High	New
Policy	Support forest management, wetland restoration, and other stewardship actions by external partners including private landowners, Wabanaki Nations, municipalities, and land trusts that enhance and connect high value habitats statewide.	Invasive Non-native-Alien Species-Diseases	High	New
Policy	Convene a statewide process to develop a landscape conservation blueprint. This process will be developed through collaboration across state agencies, the Wabanaki Nations, and large landowners, to prioritize the conservation and management of key inland and coastal habitats.	Habitat Shifting or Alteration	High	New
Policy	Incorporate information from regional climate change vulnerability assessments into SGCN and habitat management plans	Habitat Shifting or Alteration	High	New
Policy	Support management and conservation for at-risk SGCN habitats through current use tax law mechanisms and management plans, such as tree growth.	Housing and Urban Areas	High	On-going
Policy	Support and encourage incentive programs directed to landowners for road infrastructure improvements.	Roads and Railroads	High	On-going
Policy	Provide incentives to landowners and municipalities to conserve high quality shoreline areas that provide critical habitat value and buffering functions for coastal waters.	Housing and Urban Areas	High	On-going

Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Public Outreach	Provide information on SGCN species and habitat locations and technical assistance with conservation measures to private landowners, municipalities, and land trusts, through the Beginning with Habitat Program and other outreach and technical assistance programs.	Housing and Urban Areas	Critical	On-going
Research	Conduct an updated climate change vulnerability assessment of habitat groups in Maine.	Habitat Shifting or Alteration	High	New
Research	Conduct an updated assessment of the effects of climate change on biodiversity across Maine	Habitat Shifting or Alteration	High	New
Research	Assess currently conserved lands for climate change resiliency and use this information to help inform future conservation projects to protect under-represented, resilient habitats	Habitat Shifting or Alteration	High	New
Survey and Monitoring	Continue and expand long-term monitoring stations for air and water quality, snowpack, and weather data, to better assess climate change impacts at statewide and regional scales.	Habitat Shifting or Alteration	High	On-going

4.3.3 Summary of Habitat Conservation Actions

We identified 417 habitat actions that address threats in all habitat groupings, including 89 freshwater aquatic habitat actions, 170 marine and coastal habitat actions, and 158 terrestrial and freshwater wetland habitat actions (Table 4-7). In general, we classified most actions as habitat management, policy, or public outreach (Table 4-7), and more than half are already on-going (Table 4-8). While all actions included on our list are important, we viewed approximately 20% as critical to habitat conservation over the next ten years (Table 4-9).

Table 4- 7 Habitat Conservation Actions by Action Category

Habitat Category	Habitat Management	Policy	Public Outreach	Research	Species Management	Survey and Monitoring	Total
Freshwater	35	16	21	5	2	10	**89**

Marine / Coastal	52	33	37	32	0	16	**170**
Terrestrial / Freshwater Wetlands	66	27	36	7	4	18	**158**
Total	**153**	**76**	**94**	**44**	**6**	**44**	**417**

Table 4- 8 Habitat Conservation Actions by Type

Habitat Category	New	On-going	Completed	Total
Freshwater	27	61	**1**	**88**
Marine / Coastal	45	125	**0**	**170**
Terrestrial / Freshwater Wetlands	46	111	**1**	**158**
Total	**118**	**297**	**2**	**417**

Table 4- 9 Habitat Conservation Actions by Biological Priority

Habitat Category	Critical	High	Moderate	Total
Freshwater	10	62	17	**89**
Marine / Coastal	20	72	78	**170**
Terrestrial / Freshwater Wetlands	48	58	52	**158**
Total	**78**	**192**	**147**	**417**

Some of the top priority actions that emerged from reviews by species specialists, subcommittees, and partners included:

For **Coastal and Marine habitats**, one overarching action that rose to the top was the need for better enforcement of existing rules.

Three cross-cutting conservation actions were identified as high priority for **Freshwater Aquatic habitats**:

- Improve riparian/shoreline habitat management
- Enhance habitat connectivity for fish and other aquatic organisms
- Mitigate threats posed by invasive species

A variety of conservation actions were identified as top priorities for various **Terrestrial and Freshwater Wetland habitats**:

- Provide support for the existing tree growth tax law which discourages the conversion of forest and swamp SGCN habitats to other non-forested land uses
- Provide floodplain forest location information to municipalities and land trusts

- Encourage conservation of freshwater marshes and other high value SGCN wetland habitats using a variety of approaches such as acquisitions, easements, and incentives
- Collaboratively identify freshwater marsh restoration priorities
- Map and distribute information on existing grasslands, shrublands, and early successional high value SGCN habitats to towns, land trusts, and landowners
- Develop outreach approaches and materials for municipal planners and land trusts on the important wildlife values of pine barrens and the need for fire or mechanical management to perpetuate these habitats
- Encourage conservation of high value vernal pool complexes using a variety of voluntary approaches through Beginning with Habitat, MNRCP, and Public Lands management
- Develop BMPs to inform and address time of year restrictions for falcons or hibernating bats for Rocky Summits-Outcrops-Mountaintops

Finally, numerous high priority actions were identified at the **Landscape Level**, such as:

- Provide information on SGCN species and habitat locations and technical assistance with conservation measures to private landowners, municipalities, and land trusts, through the Beginning with Habitat Program and other outreach and technical assistance programs.
- Work with the Maine Department of Transportation and municipalities to support enhancements to transportation infrastructure facilitating terrestrial species movement for SGCN.
- Prioritize early detection, rapid response, and control of problematic invasive species that have both local and landscape scale impacts.
- Encourage conservation of native fish species through a variety of methods including strategically eliminating barriers to fish passage (e.g. dams, undersized culverts), and other restoration measures that yield watershed scale benefits.
- Provide regular data sharing and technical assistance to landowners and forest industry on best management of SGCN species and habitats.
- Support land conservation opportunities that include representation of Maine's full suite of abiotic and biogeographical regions.
- Support development of local sources for native seeds in erosion control mixes and recommend the use of native seed mixes in the context of environmental reviews and MDIFW/BPL public lands stewardship.

4.3.4 2025 Update of Habitat Themes

Given the volume of habitat conservation actions identified in the 2015 Wildlife Action Plan, habitat workgroups developed several themes to organize these actions into discrete packages of related actions that address common threats or use similar techniques (Tables 4-10, 4-11, 4-12). Actions within a theme are often complementary, and thus, simultaneously undertaking multiple actions within a theme may be the most effective and efficient use of limited conservation dollars. These themes were re-evaluated and expanded in the 2025 Plan with the addition of a theme around Climate Change.

Four 'super-themes' emerged across all three broad habitat groups; actions included in these themes will likely benefit from coordinated efforts across habitats. The themes are:

1. **Connectivity:** This super-theme addresses terrestrial and aquatic habitat connectivity and includes facilitating the persistence and range expansion of SGCN and their habitats in the face of climate change. This super-theme also addresses common causes of habitat fragmentation.

2. **Invasive Species:** Actions in this super-theme consist of monitoring, containment, and control of invasive species. We assigned the Invasive Non-native/Alien Species/Diseases threat to the largest number of habitat macrogroups and it has the potential to affect nearly every habitat in Maine. This threat also affects many SGCN.

3. **Mapping and Outreach:** Actions in this super-theme address mapping and outreach needs for SGCN and habitats. We identified Lack of Knowledge as a priority threat for SGCN. For example, many marine SGCN distributions and habitats are largely unknown and therefore unmapped. Many negative effects of threats can be minimized or avoided by simply knowing where SGCN and habitats are located and conveying this information to local decision makers, landowners, and conservation stewards.

4. **Climate Change:** Actions in this super-theme address a wide range of climate change effects including sea level rise; changes in the timing, frequency, and size of storms; changes to water temperature, stratification, and chemistry related to climate change; changes to habitat features including local temperature and rain/snowfall timing and amounts, forest/plant composition, and changes to dominant air and water currents; and the presence of new species and diseases associated with a changing climate.

*Table 4- 10 Conservation Action Themes Found Across Freshwater Aquatic Habitats. *Bold lettering indicates a cross-cutting theme common among the three habitat categories (Freshwater Aquatic Habitats, Marine and Coastal Habitats, and Terrestrial and Freshwater Wetland Habitats)*

Theme	Conservation Action Theme Description	Habitat Groups Directly Addressed by Theme
Freshwater Aquatic Habitat Themes		
Mapping and Outreach*	Map the distribution of SGCN, their habitats, and their threats, and provide this information to landowners, land trusts, municipal governments, and conservation partners to aid in spatial planning	Streams; Rivers; Lakes; Ponds
Connectivity*	Maintain and improve aquatic connectivity for SGCN and their habitats through mapping, outreach, and town/municipal collaboration while considering impacts of climate change and invasive species	Streams; Rivers; Lakes; Ponds
Invasive Species*	Use Early Detection and Rapid Response to monitor, contain, and control the spread of invasive species that negatively impact SGCN or their habitats through surveys, research, public outreach, habitat management, and reclamation	Streams; Rivers; Lakes; Ponds
Climate Change*	Increase understanding of climate change threats to freshwater aquatic ecosystems through expansion of stream temperature monitoring efforts and take steps to address the effects of climate change by supporting land management and conservation efforts associated with freshwater aquatic systems that are sensitive to the effects of climate change and by constructing crossings to pass storm flows	Streams; Rivers; Lakes; Ponds
Riparian and Shoreline Habitat	Maintain and restore riparian and shoreline habitats used by SGCN through land conservation and by providing technical assistance and education to municipalities, natural resource professionals, and landowners. Also provide incentives for landowners to conserve high quality riparian and shoreline habitat and collaborate with interested parties to develop BMPs targeted at mitigating climate change and land-use effects	Streams; Rivers; Lakes; Ponds
Pollution	Reduce pollution and degradation of important SGCN habitats by working with landowners and municipalities to improve wastewater treatment and reduce impacts from development near lake and river shores	Streams; Rivers; Lakes; Ponds
Dams	Improve passage of aquatic SGCN at dams by working with dam owners on adding state-of-the-art fish passage or undertaking removal when appropriate at the highest priority sites	Streams; Rivers; Lakes; Ponds

*Table 4- 11 Conservation Action Themes Found Across Marine and Coastal Habitats. *Bold lettering indicates a cross-cutting theme common among the three habitat categories (Freshwater Aquatic Habitats, Marine and Coastal Habitats, and Terrestrial and Freshwater Wetland Habitats)*

Theme	Conservation Action Theme Description	Habitat Groups Directly Addressed by Theme
Marine and Coastal Habitat Themes		
Mapping and Outreach*	Map and provide outreach/technical assistance for SGCN occurrence and habitat location information for marine spatial planning and other uses	Intertidal; Subtidal; Tidal marsh; Rocky coast; Coastal
Connectivity*	Maintain and improve habitat connectivity for SGCN aquatic organisms in the face of climate change through mapping, outreach, town/municipal collaboration, and voluntary habitat conservation	Intertidal; Subtidal; Tidal marsh; Coastal
Invasive Species*	Monitor, contain, and control the spread of invasive species that are negatively affecting SGCN habitats through Early Detection and Rapid Response and through research, management, public outreach, and enforcement of existing policies and regulations	Intertidal; Subtidal; Tidal marsh; Rocky coast
Climate Change*	Reduce impacts of climate change to SGCN, SGCN habitats, and coastal communities by researching the effects of climate change on SGCN and their habitats and incorporating this information and other climate change concepts into coastal development and infrastructure planning, spatial modeling, fishable stock management, habitat conservation and restoration, and other efforts	Intertidal; Subtidal; Tidal marsh; Rocky coast; Coastal
Research and Technology	Provide outreach/technical assistance for the fishing industry and others to adopt new and underutilized technologies designed to reduce impacts to SGCN habitats including, but not limited to, litter reduction, ghost gear removal, bycatch reduction, pollution mitigation, climate change and ocean acidification, alternative energies, and aquaculture	Intertidal; Subtidal; Tidal marsh
Law Enforcement Training	Conduct law enforcement training and workshops to increase knowledge and understanding of SGCN and their habitats for higher regulatory effectiveness in SGCN conservation	Intertidal; Subtidal; Tidal marsh; Rocky coast
Waterbird Protection	Minimize impacts to SGCN waterbird feeding, roosting and nesting habitats from activities including but not limited to development, extreme storms, fishing, and recreation	Intertidal; Rocky coast; Coastal

Sustainable Harvest	Evaluate and implement new and existing methods to monitor and manage commercial and recreational harvest of SGCN to ensure ecological sustainability (including ecosystem or bay scale management)	Intertidal; Subtidal
Development	Minimize loss of marine SGCN habitats due to development (e.g., structures, dwellings, docks, piers, aquaculture facilities, and marinas) and mitigate for associated impacts such as contaminants (e.g., oil, gas, and chemical spills) and disturbance associated with human activity	Intertidal; Subtidal; Tidal marsh; Coastal; Rocky coast

*Table 4- 12 Conservation Action Themes Found Across Terrestrial and Freshwater Wetland Habitats. *Bold lettering indicates a cross-cutting theme common among the three habitat categories (Freshwater Aquatic Habitats, Marine and Coastal Habitats, and Terrestrial and Freshwater Wetland Habitats)*

Theme	Conservation Action Theme Description	Habitat Groups Directly Addressed by Theme
Terrestrial and Freshwater Wetland Habitat Themes		
Mapping and Outreach*	Identify, map, distribute information, and provide technical assistance and outreach to landowners, towns, land trusts, etc. on the location and management of selected high-value, at-risk habitats important to the conservation of SGCN	Vernal pools; South-central forests and swamps; Grassland, shrubland, early successional; Pine barrens; Freshwater marshes; Floodplain forest
Connectivity*	Facilitate the persistence and range migration of SGCN in Maine in the face of a changing climate by ensuring landscape connectivity (both terrestrial and aquatic) through reducing habitat fragmentation and promoting the voluntary conservation of diverse and resilient landscapes and watersheds	Northern forests and swamps; Pine barrens; Freshwater marshes; Rocky summits, outcrops; Vernal pools
Invasive Species*	Use Early Detection and Rapid Response approach to monitor, prevent, contain, and control invasive species (plant and animal) and diseases with potential for significant detrimental impact on SGCN and their primary habitats	Vernal pools; Northern forests and swamps; South-central forests and swamps; Freshwater marshes; Floodplain forests; Grasslands, shrublands, early successional
Climate Change*	Continue research to better understand predicted impacts of climate change on vulnerable habitats, assess conserved lands for climate change resiliency and use this information to guide future conservation efforts, and adopt climate-friendly forest management practices	Northern Upland Forest; Rocky Summits, Outcrops, Mountaintops; South-central Floodplains and Swamps; Vernal Pools

Incentives	Identify potential additions or improvements to existing financial and non- financial incentives to encourage landowner participation in the restoration, conservation, and management of habitats important to SGCN	Northern forests and swamps; South-central forests and swamps; Grassland, shrubland, early successional; Pine barrens; Freshwater marshes; Floodplain forest
Ruderal Habitats	Identify opportunities for expansion of ruderal habitat in southern Maine, which includes determining the spatial quantity and distribution necessary for SGCN conservation, identifying where habitat expansion could most practically occur, and collaborating with conservation partners to develop habitat management guidelines	Grassland, shrubland, early successional
Habitat Expansion	Identify opportunities for expansion of early successional forest habitats in southern Maine and ecologically mature forests in northern Maine vital for SGCN persistence, which includes determining the area necessary, and collaborating with conservation partners to develop habitat management guidelines	Northern forests and swamps; Grassland, shrubland, early successional
Problematic Native Species and Disease	Monitor and manage the impact of problematic native species and diseases on SGCN and their habitats	Northern forests and swamps; South-central forests and swamps; Floodplain forest; Grasslands, shrublands, early successional
Habitat Loss and Fragmentation	Minimize habitat loss and fragmentation by guiding detrimental land-use activities away from the most sensitive and limited SGCN habitats and by conserving lands and buffers surrounding sensitive SGCN habitats	Freshwater marshes; Grasslands, shrublands, early successional; Northern forests and swamps; Pine barrens, South-central forests and swamps; Vernal pools; Floodplain forests
Voluntary Habitat Management	Promote voluntary SGCN habitat management on both private and public lands, especially habitats that are limited and hard to manage economically, such as ruderal habitats, grasslands, pine barrens, floodplains, early and late successional forest habitats	Pine barrens; Rocky summits, outcrops; Grasslands, shrublands, early successional; Northern forests and swamps; Freshwater marshes; Floodplain forest
Habitat Management and Forestry	Collaborate with conservation partners to develop habitat management guidelines for SGCN and their habitats and encourage their voluntary incorporation into forest management plans,forest certification systems, and outcome-based forestry programs	Vernal pools; Northern forests and swamps; Floodplain forest; South-central forests and swamps
Biological Monitoring and Management	Conduct biological monitoring as required to guide the conservation of SGCN and their habitats especially for habitats requiring active management (e.g., grasslands, shrublands, early successional habitats) or are vulnerable to adjacent activities	Grasslands, shrublands, early successional; vernal pools, Northern forests and swamps; South-central forests and swamps; Rocky summits, outcrops

4.3.5 Climate Change

In 2015 several of the threats and climate actions referenced impacts of climate change, but as a concept it was not fully investigated in the 2015 State Wildlife Action Plan. Since then there has been new research into the effects of climate change on Maine's wildlife and habitats, documenting significant changes in species ranges, distributions, population levels, and landscapes across Maine. Since 2015 the State of Maine has also begun to face the effects of climate change and pursue avenues for action, as detailed in the 2024 Maine Won't Wait climate action plan and accompanying report from the Scientific and Technical Subcommittee of the Maine Climate Council. Knowing how climate change is threatening SGCN and Habitats and identifying the priority threats and priority conservation actions can help us better attend to this daunting issue.

Early in the process to update and revise the Wildlife Action Plan for 2025, it became clear that addressing climate change would be necessary. A Climate Subcommittee was formed to focus on identifying the priority climate change threats and conservation actions for species, habitats, habitat groupings, and landscapes. The selected threats and conservation actions were then evaluated by conservation partners and agency staff. Additionally, a crosswalk was developed to connect the 2025 Wildlife Action Plan conservation actions to the priority actions identified in Maine Won't Wait (see Appendix Table 4-16).

Many **Species of Greatest Conservation Need** are considered vulnerable to impacts from a warming world. Data on climate impacts for SGCN listed in the 2015 SWAP were reviewed and discussed by the Climate Subcommittee and Conservation Partners. In addition to those noted as being particularly vulnerable to changes in climate in 2015, the Subcommittee and Partners determined the following species groups were especially vulnerable given changes just over the past 10 years and trajectories for changes ahead:

- alpine species
- freshwater aquatic species
- tidal/subtidal shellfish and fishery species
- seabirds and shorebirds

The Climate Subcommittee and Partners also identified the following **Habitats** as being particularly vulnerable and needing special attention:

- alpine habitats
- floodplains
- coastal/nearshore habitats

Next, the Climate Subcommittee of the SWAP Steering Committee and Conservation Partners reviewed in detail all the threats and conservation actions associated with climate change pulled from the 2015 SWAP and added/modified/deleted those lists for the update to the 2025 SWAP.

Based on extensive discussion and analysis, participants identified the following main threats related to climate impacts (based on the IUCN threats list) that applied across all major habitat groupings:

1. **Changes in Temperature Regimes**
2. **Changes in Precipitation and Hydrological Regimes**

3. **Invasive Non-native – Alien Species – Diseases**
4. **Habitat Shifting or Alteration**

Top climate threats by Habitat Groups were also identified, and after identifying top primary and secondary threats for the Habitat Groups, subcommittee members and partners identified top conservation actions needed to address those threats, being mindful of how the IUCN threats might translate into meaningful threats for Maine. For example, #1 **Changes in Temperature Regimes** includes such threats as warming waters in the Gulf of Maine leading to local loss of shrimp and range shifts for black bass and lobster; higher temperatures in lakes, ponds, and streams resulting in early algal blooms in lakes and lower oxygen levels in coldwater streams. **Changes in Precipitation and Hydrological Regimes** are already affecting streams with more extreme high and low flows from flooding and drought; causing early dryouts in vernal pool during low precipitation years; and creating havoc for loggers that can no longer depend on frozen ground for their operations. Many **Invasive Non-native – Alien Species – Diseases** are spreading rapidly because of climate change, including invasive plants such as Japanese Knotweed, Glossy Buckthorn, and Bittersweet; alien insects such as Emerald Ash Borer, Browntail Moth and Hemlock Wooly Adelgid that were previously kept in check by colder temperatures; and diseases such as *Aspergillosis* are becoming more widespread in Common Loons. Finally, Maine is witnessing **Habitat Shifting or Alteration** from threats such as expanded development, rising sea level, and northward and upslope movement of alpine and subalpine habitat.

The full list of the **Top Climate Threats and Conservation Priorities by Habitat Grouping and for Landscapes** can be found in Appendix Table 4-17.

This overview is focused primarily on the high level outcomes related to climate threats and conservation actions. Some of the new actions incorporated into the 2025 SWAP include:

- Need for more temperature and biomonitoring of lakes, ponds, and higher order streams and as early indicators of where we need to prioritize water quality protection actions.
- Reduce point and non-point pollution as a means of reducing nearshore acidification.
- Continue to increase culvert sizes and/or remove barriers to fish migration (e.g. undersized culverts, dams, roads in marshes).
- Identify conservation priorities in areas that may serve as climate refugia.
- Place snow data sensors across the state and in mountain ecosystems in relevant locations/at appropriate scale.
- Assess conserved lands resiliency and gaps.
- Better incorporate aquatic connectivity and riparian habitats into mapping and conservation planning.
- Continue to support and expand use of vegetated buffers in shoreland zone to reduce erosion and contribution of pollutants to water resources.
- Early detection/rapid response with regard to any and all new environmental threats coming in from invasive pests, plants, or species, and pathogens.

When considering how best to prioritize these and other conservation actions, the Climate Subcommittee and Partners determined it was important to recognize that there is much we don't know about how climate change will affect species, habitats, and landscapes, so it will be essential to undertake long-term monitoring of changes in

habitats and environmental variables and to better recognize and understand the complicated interactions with changing human dimensions such as land use changes, recreational impacts, and population increases.

A few resources that can help partners further explore these issues and take action include The Nature Conservancy's Climate Resiliency Maps, Beginning with Habitat maps and outreach materials, the Maine Stream Habitat Viewer, and the Maine Won't Wait Climate Action Plan and accompanying documents.

4.4 Programmatic Conservation Actions

MDIFW and the Steering Committee identified 12 programmatic actions to guide implementation and tracking of the 2025 Wildlife Action Plan (Table 4-13). Target start dates for each programmatic action (short-term: within the first few years of Plan implementation; mid-term: within the first half of Plan implementation; long-term: within the second half of Plan implementation) are given. We categorized programmatic actions as follows:

1. **Outreach and Engagement (Programmatic Actions 1-3):** Actions to inform and engage the public and partners on Action Plan accomplishments and opportunities for involvement. These actions will also be referenced in Elements 7-8.

    a. **Programmatic Action 1:** Establish an Action Plan Implementation Committee comprised of conservation partners and agency staff to help guide implementation of the 2025 Action Plan (short-term) and prepare for the 2035 Action Plan (long-term). As described in chapter 7/8, MDIFW coordinated closely with the SWAP Steering Committee during plan development. During the winter of 2025/2026, MDIFW will transition this committee into an Action Plan Implementation Committee composed of interested Steering Committee members and other key partners. They will work with agency staff to help implement the 2025 Plan and address emerging issues. The Implementation Committee will meet at least annually with additional updates provided through email and phone conferences. Within the first year of Plan implementation, MDIFW will work with the Implementation Committee to develop a charter and to set goals and objectives for the group. MDIFW also will work with the Implementation Committee to establish several subcommittees (composed of agency staff, Implementation Committee members, and other interested partners) to address specific implementation measures and technical needs, such as Programmatic Actions 2 and 5.

    b. **Programmatic Action 2:** Devise and implement outreach strategies, including periodic meetings, to inform and engage conservation partners and the general public on 2025 Action Plan information, accomplishments, and opportunities for involvement (mid-term). MDIFW will work with the Implementation Committee and the Outreach Subcommittee (to be established) to develop and implement strategies that: 1) make the 2025 SWAP available to all users in accessible formats, and 2) foster partner and public engagement in the Plan. First, the committees will explore multiple approaches (suggested by partners during plan development) for accessing plan information

including online links to SGCN ecology and conservation information, SGCN habitat management recommendations, SGCN distribution data, and information modules targeted to different user groups (e.g., private landowners, land trusts, municipalities) and regions (e.g., individual ecoregions or watersheds). MDIFW will work with the Implementation Committee and Outreach Subcommittee to guide development of these online tools as well as other formats for accessing plan information. In addition, MDIFW will continue to update the 2025 Wildlife Action Plan website and provide contact information. To address the second task, MDIFW will work with the Implementation Committee and Outreach Subcommittee to generate materials (e.g., newsletters, blog posts, social media posts) and coordinate periodic events (e.g., annual meetings, trainings) to update partners on plan accomplishments and opportunities for involvement.

c. **Programmatic Action 3:** Develop a public survey of SWAP and non-game species awareness, concerns, and priorities (initial survey: short-term; second survey: long-term [tentative]). Additional surveys also highlight the importance of Maine's wildlife resources to land-use decisions (Butler et al. 2014) and to the state's economy (Southwick Associates 2013). However, there is little information on Maine citizens' awareness of Action Plan and nongame species conservation. Public opinion surveys conducted in other states (e.g., Pennsylvania [Responsive Management 2014]) have shown increasing public concern for and awareness of non-game species. Soon, MDIFW will undertake a large-scale public survey to determine attitudes toward game and non-game conservation, management, and funding. Survey results will help guide MDIFW priorities and outreach approaches. This survey also provides a timely opportunity to highlight Maine's 2025 Action Plan and discuss options for establishing stable funding for wildlife conservation. MDIFW may also conduct a second survey toward the end of Plan implementation to gauge the effectiveness of public outreach and education efforts developed as part of Programmatic Action 2.

2. **Funding and Tracking (Programmatic Actions 4-8):** Actions to bolster funding, capacity, and tracking of SGCN-related projects. Programmatic Action 5 will be referenced in Elements 7/8, and Programmatic Actions 7 and 8 in Elements 5/6.

   a. **Programmatic Action 4:** This action supports efforts to establish stable state and federal funding sources for SGCN and habitat conservation. At the state level, MDIFW and partners will continue to investigate stable funding sources for SGCN conservation. At the federal level MDIFW and partners will continue to support efforts such as the Recovering America's Wildlife Act to secure additional funding for state wildlife programs.

   b. **Programmatic Action 5:** Consider establishing a competitive small grants program to make a portion of State Wildlife Grant (SWG) funds available to partners implementing priority actions identified in the 2025 Action Plan (mid-term). MDIFW may establish a competitive grants program to make a small portion of SWG funds available to partners. This program has two major benefits: 1) awarded funds will help leverage partners' existing or new SGCN conservation efforts; and, 2) it encourages ongoing partner involvement in the Action Plan

and communication with MDIFW through periodic RFPs and reporting requirements. A small grants program also addresses conservation partner requests for greater access to SWG funds. To establish a small grants program, MDIFW must first address several logistical and grant administration needs. Because SWG funds are limited, MDIFW will work with partners to identify the minimum award amount necessary to leverage matching funds or seed money for SGCN conservation projects. If this amount is feasible and does not compromise ongoing SWG-funded projects and personnel, MDIFW will work with the Implementation Committee to develop a transparent grant advertising, selection, and reporting process. This Programmatic Action will also be referenced in Element 7/8

c. **Programmatic Action 6:** This action focuses on increasing long-term agency support for the State Wildlife Action Plan implementation through the establishment of a full-time SWAP Coordinator position. While many staff in MDIFW, DMR, and MNAP work on projects related to SGCN conservation, there currently are no dedicated SWAP staff or programs to coordinate Plan administration, tracking, or outreach, especially across agencies.

d. **Programmatic Action 7:** Annually compile agency and partner expenditures and seek additional match opportunities to maximize efficiency and impact of 2025 Action Plan implementation (short-term). This Programmatic Action will also be referenced in Element 5/6

e. **Programmatic Action 8:** Track SWAP conservation action implementation accomplishments by agencies and partners. With nearly 900 SGCN and habitat related conservation actions, successful implementation of Maine's 2025 Action Plan will require collaborative efforts between MDIFW and its many conservation partners. Furthermore, State Wildlife Grant funds are limited and, as a state, we need to ensure these dollars are being spent efficiently to achieve desired conservation outcomes. Within the first few years of Plan implementation, MDIFW will work closely with partners to develop tracking systems for conservation expenditures and expenses. MDIFW will develop feedback mechanisms to track partner efforts and accomplishments and use this information to periodically assess the effectiveness of the 2025 Action Plan. MDIFW developed a State Wildlife Action Plan Conservation Action Tracker (SWAP CAT) tool to track success of agency partner actions after the release of the 2015 Plan. However, the time needed for staff of agencies and partner organizations to enter the information into the tool led to eventual disuse, and changes in technology over 10 years has rendered the platform in need of an overhaul. Other methodologies for tracking actions will be discussed by the Action Plan Implementation Committee. MDIFW also will highlight Action Plan progress and successes at periodic meetings with partners and through media as part of Programmatic Theme 2. To further leverage limited funds, MDIFW also will work with partners to maximize existing match opportunities and identify new ones, especially for volunteer time that MDIFW has not previously tracked. This Programmatic Action will also be referenced in Element 5/6.

3. **Action Development (Programmatic Action 9):** This action relates to creating SMART (Specific, Measurable, Achievable, Results-oriented, and Time-bound) objectives for high priority SGCN and habitat conservation actions. We discuss this action in Elements 5/6.

a. **Programmatic Action 9:** MDIFW and partners developed a comprehensive menu of conservation actions to address Maine's most pressing SGCN and habitat needs. The list is long, despite taking several measures to include only the most important actions (e.g., only developing actions for medium or high level threats). This is due to several reasons. First, Maine has a wide range of habitats, from subtidal mollusk reefs to high altitude alpine meadows. The threats affecting these habitats and their SGCN are extremely nuanced and often habitat-specific. Furthermore, we are fortunate to have a broad partner base with diverse interests and missions, from habitat conservation and research to advocacy. Rather than present a restricted list applicable to only a subset of partners, we opted to present the full suite of actions so that partners across the state can find a nexus to some aspect of the plan.
We recognize that we cannot implement every action in the plan, even with broad partner support. In order to focus our efforts, after the development of the 2025 Plan, MIDFW will work with the Action Plan Implementation Committee to further prioritize conservation actions across State natural resource agencies (MDIFW, MDEP, MDMR, MNAP) and work with partners to address the highest priorities. For actions determined to have sufficient biological impact and feasibility, we will establish SMART objectives to monitor action accomplishments over the next ten years.

4. **Regional and Statewide Partnerships (Programmatic Actions 10-11):** These actions address continued MDIFW and partner involvement in existing conservation efforts.

a. **Programmatic Action 10:** Develop a Statewide Landscape Conservation Blueprint. Between 2020 and 2023 MDIFW worked with partners to update its conservation opportunity areas, which are known as "Beginning with Habitat Focus Areas of Statewide Ecological Significance." This broad, collaborative process resulted in the designation of Focus Areas that cover roughly 11.5% of the state and which support habitat for more than 85% of Maine's at-risk plant and animal species (http://beginningwithhabitat.org/about_bwh/focusareas.html). Following completion of the State Wildlife Action Plan, MDIFW and external partners will begin development of a Statewide Lamndscape Conservation Blueprint. This resource will complement the Beginning with Habitat Focus Areas of Statewide Ecological Significance and will include 1) Additional habitat prioritization, 2) Regional projects and case studies and 3) A conservation investment plan.

1) Habitat Prioritization: The habitat prioritization element builds on the momentum of the Maine State Wildlife Action Plan to identify priority habitats for collaborative non-regulatory conservation actions. Maine will not retain its biodiversity without considering how species may move across the landscape in response to a changing climate. Building on the Focus Areas of Statewide Ecological Significance, this project will address this planning need by identifying and mapping priority habitat resources that promote connectivity, such as places where wildlife move across the landscape, within stream

networks, across roadways, or in marine environments.

2) Demonstration/ Regional Projects: In this project element, habitat conservation tools will be tested in specific regional project examples. Some of these demonstration projects include strategic conservation planning projects with regional conservation organizations, identification of carbon incentive opportunities with commercial forest landowners, and opportunities to adjust municipal policies to benefit both habitat and people. Through demonstration projects, Beginning with Habitat will work with participants from multiple sectors to refine mapping products, develop a menu of non-regulatory conservation strategies to achieve shared conservation objectives, and begin to identify near-term actions and key conservation investment needed to achieve the goal of maintaining a connected and resilient landscape for people and wildlife.

3) Conservation investment plan: A final key project element of the Landscape Conservation Blueprint builds on the habitat prioritization and demonstration projects, described above, to identify potential conservation projects that could be implemented in the near term. These conservation projects will reflect the highest priority actions for landscape conservation in Maine and if implemented, will help achieve the vision of maintaining and restoring a resilient and connected landscape for people and wildlife long into the future.

b. **Programmatic Action 11:** This action supports efforts to address the threats identified in the Plan and holds the entire SWAP team – State agencies and partners – accountable for continuing progress on Conservation Actions. The State SWAP team and Steering Committee will meet annually to assess implementation efforts, and biennially track the continued relevancy, implementation, and efficacy of the Conservation Actions.

5. **State Agency Coordination (Programmatic Action 12):** This action addresses the need for better coordination across State natural resource agencies. The first action would be to house all nongame, non-marine state species and habitat specialists within one organization by completing the merger of DIFW and MNAP.

Table 4- 13 2025 Maine Wildlife Action Plan Programmatic Actions.

Program Type	Programmatic Action #	Program Description	Target Start Timeframe		
			Short Term	Mid Term	Long Term
Outreach and Engagement	PA 1	Establish a Wildlife Action Plan Implementation Committee comprised of conservation partners and agency staff to help guide implementation of the Plan (Element 7/8)	X		X
	PA 2	Devise and implement outreach strategies, including periodic meetings, to inform and engage conservation partners and the general public on 2025 Wildlife Action Plan information, accomplishments, and opportunities for involvement (Element 7/8)		X	
	PA 3	Develop a statewide public survey of SWAP and non-game species awareness, concerns, and priorities (Element 7/8)	X		X
Funding and Tracking	PA 4	Secure stable and additional sources of federal and state funding for SGCN and habitat conservation (Element 4)		X	
	PA 5	Consider establishing a competitive small grants program to provide funds to partners implementing priority actions identified in the 2025 SWAP (Element 7/8)		X	
	PA 6	Establish a full-time SWAP Coordinator position in order to support MDIFW, DMR, and MNAP nongame species staff to implement SGCN conservation actions (Element 4)			X
	PA 7	Annually compile agency and partner expenditures and seek additional match opportunities to maximize efficiency and impact of 2025 SWAP implementation (Element 5/6)	X		
	PA 8	Track SWAP conservation action implementation accomplishments by agencies and partners (Element 5/6)	X		
Action Development	PA 9	Develop SMART (Specific, Measurable, Achievable, Results-oriented, and Time-bound) style objectives for high priority habitat-scale and SGCN conservation actions (Element 5/6)		X	
Regional	PA 10	Identify new and review/update existing SGCN Conservation Opportunity Areas, including Focus Areas of Statewide Significance, using SGCN distribution data, resilient landscapes analyses, and landscape planning concepts (Element 7/8)	X	X	X

Partnerships	PA 11	Hold annual SWAP Steering Committee meetings to keep actions on track, biennially assess continued relevancy and assess progress on actions (Element 7/8)	X	X	X
State Agency Coordination	PA 12	Initiate state natural resource agency coordination, including finalizing the merger of IFW and MNAP (Element 4)	X		

4.5 An Approach to Prioritizing Conservation Efforts

4.5.1 Uses for Prioritizing Considerations

Maine's 2025 Wildlife Action Plan needs to be a tightly prioritized plan because State Wildlife Grant (SWG) funds are limited and the number of SGCN is large. As discussed in 4.1.2, we have already prioritized conservation actions in a number of important ways:

1. We assigned SGCN to three priority levels and only prioritized conservation actions for Priority 1 and Priority 2 SGCN.

2. We ranked threats and developed conservation actions only for threats ranked high or medium-high.

3. We also ranked conservation actions on behalf of SGCN and habitats by biological priority (e.g., Critical, High, Moderate).

With regard to the approximately 20 habitat conservation themes (Section 4.3.4), rather than prioritizing among these per se, we offer them as an organizational tool for agencies and partners to use to focus their efforts at a larger scale. For example, invasive species has been identified as a theme that cuts across all habitat types in Maine, so an organization focusing on addressing invasive species can have a significant impact at multiple scales and across multiple habitats and species.

In the sections below, we describe a suite of criteria we recommend federal and state agencies and conservation partners use to focus their conservation resources towards actions that will have the most impact, are the most urgent, and most likely to succeed. See Figure 4-3 for a graphic of how this could work. These criteria could also form the basis for MDIFW to select proposals for SWG funding, although for proposals competing for SWG funding, there are likely to be additional criteria and considerations, such as whether the proposal has clear and measurable objectives and the amount of non-federal, non-MDIFW funds offered.

4.5.2 Criteria for Prioritizing Conservation Actions

1. **Biological Impact Considerations**
   The overarching concept is that, all other things being equal, actions that benefit Priority 1 SGCN (i.e., those at most immediate risk of extirpation from Maine) should be higher priority than those for Priority 2 and Priority 3 SGCN. Actions that benefit multiple SGCN should have priority over those that benefit only a single species. Actions that impact a larger geographic scale should have priority over those that impact only a small area.

   a. **Degree of Impact:** Will the proposed action or suite of actions significantly affect the conservation status of the SGCN(s) and/or its habitat (e.g., improved distribution, abundance, or viability essential to avoiding extirpation)?

b. **Scope of Impact:** Will the proposed action or suite of actions significantly affect the conservation status of multiple SGCN or multiple habitats or facilitate multiple actions for multiple SGCN and their habitats at a state-wide level?

c. **Endurance of Impact:** Will the proposed actions likely have lasting impact (e.g., even in the face of significant sea level rise or other impacts of a changing climate)?

d. **Regional/National Collaboration:** Are the proposed actions recommended through an established regional or national conservation initiative, such that the certainty of impact is greater through increased peer review of approach, experience in implementation or evidence of success, as well as amplification of impact through regional networking?

2. **Feasibility Considerations**

a. **Partnership:** Does the proposal enhance opportunities for conservation partner collaboration, and are partners willing and able to participate?

b. **Public Support:** Does the proposal conserve SGCN of high economic, social, or cultural value such that it is likely to have strong support from relevant sectors and/or the general public?

c. **Capacity:** Does MDIFW and/or conservation partners have the necessary expertise, staff capacity and resources to successfully complete the proposed action?

d. **Value (Cost-Benefit Ratio)**: How do the proposal's likely costs compare to its likely impact.

Figure 4- 2 Conservation Action prioritization matrix. Highly feasible actions that will have high or medium biological impact should be the highest priority; those with medium feasibility and high or medium biological impact should be the next priority; and action

FEASIBILITY	BIOLOGICAL IMPACT		
	HIGH	MEDIUM	LOW
High	Should be highest priority actions – achievable results with high impact	High priority actions – highly feasible and with significant biological impact	May be very feasible but not significant impact
Medium	High priority actions – still very feasible and with high biological impact	Likely worthwhile – medium impact and feasibility	Consider options with more impact
Low	Significant hurdles, but would have valuable impact	Proposal needs revision, or consider other actions	Likely not worth the effort

4.6 Literature Cited

Association of Fish and Wildlife Agencies (A FWA). 2012. Best Practices Working Group 2012. Best Practices for State Wildlife Action Plans – Voluntary Guidance to States for Revision and Implementation. Washington (DC): Association of Fish and Wildlife Agencies. 80pp. Association of Fish and Wildlife Agencies, Teaming With Wildlife, State Wildlife Action Plan (SWAP).

Anderson, M.G. M. Clark, C.E. Ferree, A. Jospe, A. Olivero Sheldon and K.J. Weaver. 2013. Northeast Habitat Guides: A companion to the terrestrial and aquatic habitat maps. The Nature Conservancy, Eastern Conservation Science, Eastern Regional Office. Boston, MA. http://nature.ly/HabitatGuide.

Beginning with Habitat: A land use planning and plant and animal conservation program for landowners, land trusts, and municipalities. Maine Dept. of Inland Fisheries and Wildlife, Augusta, Maine. https://www.maine.gov/ifw/fish-wildlife/wildlife/beginning-with-habitat/index.html

Maine Dept. of Inland Fisheries and Wildlife (MDIFW). 2015. Maine's Wildlife Action Plan. Maine Dept. of Inland Fisheries and Wildlife, Augusta, Maine. 395 pp.

Maine Climate Council. 2020. *Maine Won't Wait: A Four-Year Plan for Climate Action.* Maine Office of Innovation and the Future, Augusta, Maine. 124 pp.

Maine Climate Council, 2024 Update. *Maine Won't Wait: A Four-Year Plan for Climate Action.* Maine Office of Innovation and the Future, Augusta, Maine. 194 pp.

Maine Climate Council, Scientific and Technical Subcommittee, 2024 Update. *Scientific Assessment of Climate Change and Its Effects in Maine.* Maine Office of Innovation and the Future, Augusta, Maine. 254 pp.

4.7 Appendices

Appendix Table 4- 1 Conservation Actions assigned to Bird Guilds

Guild	Species	Category	Biological Priority	Type	Description
Aerial Insectivores	Chimney Swift, Common Nighthawk, Barn Swallow, Cliff Swallow, Purple Martin, Bank Swallow, Northern Rough-winged Swallow, Tree Swallow	Habitat Management	high	new	Promote maintenance and protection of known nest sites across varied structure types (e.g., chimneys, culverts, barns, snags, cliff faces. Many aerial insectivores use human structures for breeding and roosting. Actions that protect or retrofit such structures (e.g., keeping chimneys open, preserving snags, managing bridge culverts) can be highly beneficial.
Aerial Insectivores	Chimney Swift, Common Nighthawk, Barn Swallow, Cliff Swallow, Purple Martin, Bank Swallow, Northern Rough-winged Swallow, Tree Swallow	Habitat Management	high	on-going	Encourage design of infrastructure projects to minimize nesting disturbances, incorporating bird-friendly design and maintenance practices into transportation, energy, and construction planning can reduce mortality.
Aerial Insectivores	Chimney Swift, Common Nighthawk, Barn Swallow, Cliff Swallow, Purple Martin, Bank Swallow, Northern Rough-winged Swallow, Tree Swallow	Policy	high	new	Advocate for reduced use of pesticides that reduce aerial insect abundance - aerial insectivores rely on robust flying insect populations. Widespread pesticide use contributes to declining insect biomass, which in turn reduces prey availability. Shifts to integrated pest management and pesticide regulations should benefit all aerial insectivores.

Guild	Species	Category	Biological Priority	Type	Description
Aerial Insectivores	Chimney Swift, Common Nighthawk, Barn Swallow, Cliff Swallow, Purple Martin, Bank Swallow, Northern Rough-winged Swallow, Tree Swallow	Public Outreach	critical	new	Increase public awareness of aerial insectivore declines and opportunities for stewardship - Public engagement is essential for encouraging behaviors like preserving nest sites (particularly for the birds that utilize human-associated structures like chimneys, barns, gravel pits etc.), reducing pesticide use, and installing/maintaining nest boxes.
Aerial Insectivores	Chimney Swift, Common Nighthawk, Barn Swallow, Cliff Swallow, Purple Martin, Bank Swallow, Northern Rough-winged Swallow, Tree Swallow	Survey and Monitoring	critical	new	Statewide inventory of aerial insectivore nesting and roosting habitat use. Conduct a comprehensive statewide survey of nesting and roosting habitat availability and use for aerial insectivores that utilize human-associated structures (e.g., barns, chimneys, culverts, bridges, nest boxes). This project will also quantify the availability and use of natural nesting habitats (e.g., banks, snags, cavities) to assess current habitat use patterns and identify gaps. The results will guide species-specific conservation actions and infrastructure policy recommendations.
Aerial Insectivores	Chimney Swift, Common Nighthawk, Barn Swallow, Cliff Swallow, Purple Martin, Bank Swallow, Northern Rough-winged Swallow, Tree Swallow	Survey and Monitoring	critical	on-going	Support long-term monitoring programs for aerial insectivores to improve understanding of population trends and inform conservation actions. Several species in this guild (e.g., Whip-poor-will, Common Nighthawk) remain poorly monitored. Continued investment in programs like the Maine Nightjar Monitoring Project, Nest Box Monitoring efforts, Maine Cliff Swallow Colony Monitoring Program, breeding bird surveys, etc. Supplement with targeted

Guild	Species	Category	Biological Priority	Type	Description
					monitoring (e.g., automated acoustic units or colony counts) as needed.
Boreal Conifer birds	American Goshawk, Golden Eagle, Broad-winged Hawk, Canada Jay, Red Crossbill, White-winged Crossbill, Rusty Blackbird, Boreal Chickadee, Bay-breasted Warbler, Blackburnian Warbler, Cape May Warbler, Tennessee Warbler, Wilson's Warbler, Ruby-crowned Kinglet, Olive-sided Flycatcher, Yellow-bellied Flycatcher, Black-backed Woodpecker, American Three-toed Woodpecker	Habitat Management	critical	on-going	Conserve large, contiguous tracts of mature spruce-fir and black spruce forest across Maine's boreal region.
Boreal Conifer birds	American Goshawk, Golden Eagle, Broad-winged Hawk, Canada Jay, Red Crossbill, White-winged Crossbill, Rusty Blackbird, Boreal Chickadee, Bay-breasted Warbler, Blackburnian Warbler, Cape May Warbler, Tennessee	Habitat Management	high	new	Promote forest management practices that maintain or restore mature conifer forest structure, including vertical diversity and intact canopy cover.

Guild	Species	Category	Biological Priority	Type	Description
	Warbler, Wilson's Warbler, Ruby-crowned Kinglet, Olive-sided Flycatcher, Yellow-bellied Flycatcher, Black-backed Woodpecker, American Three-toed Woodpecker				
Boreal Conifer birds	American Goshawk, Golden Eagle, Broad-winged Hawk, Canada Jay, Red Crossbill, White-winged Crossbill, Rusty Blackbird, Boreal Chickadee, Bay-breasted Warbler, Blackburnian Warbler, Cape May Warbler, Tennessee Warbler, Wilson's Warbler, Ruby-crowned Kinglet, Olive-sided Flycatcher, Yellow-bellied Flycatcher, Black-backed Woodpecker, American Three-toed Woodpecker	Habitat Management	moderate	new	Minimize large-scale salvage and preemptive harvesting during forest pest outbreaks to preserve long-term forest integrity. Promote pest outbreak response strategies that maintain mature forest structure (older trees, snags and downed wood, structural diversity).
Boreal Conifer birds	American Goshawk, Golden Eagle, Broad-winged Hawk, Canada Jay, Red Crossbill, White-winged Crossbill, Rusty Blackbird, Boreal Chickadee, Bay-breasted Warbler, Blackburnian Warbler, Cape May Warbler, Tennessee Warbler, Wilson's Warbler, Ruby-crowned Kinglet, Olive-sided Flycatcher,	Habitat Management	moderate	on-going	Manage for a mature white pine component including those that extend beyond the canopy.

Guild	Species	Category	Biological Priority	Type	Description
	Yellow-bellied Flycatcher, Black-backed Woodpecker, American Three-toed Woodpecker				
Boreal Conifer birds	American Goshawk, Golden Eagle, Broad-winged Hawk, Canada Jay, Red Crossbill, White-winged Crossbill, Rusty Blackbird, Boreal Chickadee, Bay-breasted Warbler, Blackburnian Warbler, Cape May Warbler, Tennessee Warbler, Wilson's Warbler, Ruby-crowned Kinglet, Olive-sided Flycatcher, Yellow-bellied Flycatcher, Black-backed Woodpecker, American Three-toed Woodpecker	Public Outreach	high	new	Coordinate across public and private landowners to maintain landscape-scale connectivity of mature boreal forest habitats.
Boreal Conifer birds	American Goshawk, Golden Eagle, Broad-winged Hawk, Canada Jay, Red Crossbill, White-winged Crossbill, Rusty Blackbird, Boreal Chickadee, Bay-breasted Warbler, Blackburnian Warbler, Cape May Warbler, Tennessee Warbler, Wilson's Warbler, Ruby-crowned Kinglet, Olive-sided Flycatcher,	Research	high	new	Identify and protect climate refugia and elevational/latitudinal habitat gradients critical to boreal species persistence under changing conditions.

Guild	Species	Category	Biological Priority	Type	Description
	Yellow-bellied Flycatcher, Black-backed Woodpecker, American Three-toed Woodpecker				
Boreal Conifer birds	American Goshawk, Golden Eagle, Broad-winged Hawk, Canada Jay, Red Crossbill, White-winged Crossbill, Rusty Blackbird, Boreal Chickadee, Bay-breasted Warbler, Blackburnian Warbler, Cape May Warbler, Tennessee Warbler, Wilson's Warbler, Ruby-crowned Kinglet, Olive-sided Flycatcher, Yellow-bellied Flycatcher, Black-backed Woodpecker, American Three-toed Woodpecker	Survey and Monitoring	high	new	Increase coordinated monitoring efforts across seasons and regions to better track population trends and distribution shifts in boreal bird communities.
Boreal Conifer birds	American Goshawk, Golden Eagle, Broad-winged Hawk, Canada Jay, Red Crossbill, White-winged Crossbill, Rusty Blackbird, Boreal Chickadee, Bay-breasted Warbler, Blackburnian Warbler, Cape May Warbler, Tennessee Warbler, Wilson's Warbler, Ruby-crowned Kinglet, Olive-sided Flycatcher,	Survey and Monitoring	high	new	Incorporate innovative monitoring approaches (e.g., ARUs, remote sensing) to improve detection of low-density or cryptic species across remote boreal landscapes.

Guild	Species	Category	Biological Priority	Type	Description
	Yellow-bellied Flycatcher, Black-backed Woodpecker, American Three-toed Woodpecker				
Boreal Conifer birds	American Goshawk, Golden Eagle, Broad-winged Hawk, Canada Jay, Red Crossbill, White-winged Crossbill, Rusty Blackbird, Boreal Chickadee, Bay-breasted Warbler, Blackburnian Warbler, Cape May Warbler, Tennessee Warbler, Wilson's Warbler, Ruby-crowned Kinglet, Olive-sided Flycatcher, Yellow-bellied Flycatcher, Black-backed Woodpecker, American Three-toed Woodpecker	Survey and Monitoring	high	new	Monitor bird community responses to spruce budworm treatment and integrate bird impact assessments into outbreak response planning. Expand research and monitoring efforts to understand short- and long-term effects of insecticide use (including newer agents like tebufenozide) on boreal bird populations, especially for spruce budworm specialists.
Colonial Wading Birds	Great Blue Heron, Little Blue Heron, Snowy Egret, Black-crowned Night-heron	Public Outreach	moderate	new	Develop outreach program to educate landowners and recreational users about colonial wading bird breeding habitat requirements and sensitivity to disturbance.
Colonial Wading Birds	Great Blue Heron, Little Blue Heron, Snowy Egret, Black-crowned Night-heron	Research	moderate	new	Investigate effect of aerial predators (gulls, crows, eagles) on nesting success.
Colonial Wading Birds	Great Blue Heron, Little Blue Heron, Snowy Egret, Black-crowned Night-heron	Species Management	moderate	on-going	In cooperation with landowners and partners, develop and post signs at colonies encouraging users to keep a wide berth during nesting.

Guild	Species	Category	Biological Priority	Type	Description
Colonial Wading Birds	Great Blue Heron, Little Blue Heron, Snowy Egret, Black-crowned Night-heron	Survey and Monitoring	high	on-going	Implement targeted surveys to better understand the distribution and status of this species and to help direct conservation actions to newly documented populations.
Grassland Birds	Northern Harrier, Upland Sandpiper, American Kestrel, Horned Lark, Grasshopper Sparrow, Field Sparrow, Bobolink, Eastern Meadowlark, Short-eared Owl, American Barn Owl	Habitat Management	critical	new	Prioritize acquisition or long-term conservation of high-value grasslands through fee ownership or easement.
Grassland Birds	Northern Harrier, Upland Sandpiper, American Kestrel, Horned Lark, Grasshopper Sparrow, Field Sparrow, Bobolink, Eastern Meadowlark, Short-eared Owl, American Barn Owl	Habitat Management	high	on-going	Support programs such as Ag Allies that provide incentives to private landowners and working farms for grassland bird habitat management.
Grassland Birds	Northern Harrier, Upland Sandpiper, American Kestrel, Horned Lark, Grasshopper Sparrow, Field Sparrow, Bobolink, Eastern Meadowlark, Short-eared Owl, American Barn Owl	Public Outreach	high	new	Develop and implement outreach, partnerships, and other strategies to increase the adoption of practices that minimize the exposure of grassland birds to environmental contaminants.
Grassland Birds	Northern Harrier, Upland Sandpiper, American Kestrel, Horned Lark, Grasshopper Sparrow, Field Sparrow, Bobolink, Eastern Meadowlark, Short-eared Owl, American Barn Owl	Public Outreach	high	new	Develop a comprehensive outreach program and to promote beneficial management practices, including habitat and pest management, and to highlight opportunities for involvement in species management and monitoring through community science programs.

Guild	Species	Category	Biological Priority	Type	Description
Grassland Birds	Northern Harrier, Upland Sandpiper, American Kestrel, Horned Lark, Grasshopper Sparrow, Field Sparrow, Bobolink, Eastern Meadowlark, Short-eared Owl, American Barn Owl	Public Outreach	high	on-going	Develop an outreach program to inform small landowners of the best methods for keeping fields open for grassland wildlife.
Grassland Birds	Northern Harrier, Upland Sandpiper, American Kestrel, Horned Lark, Grasshopper Sparrow, Field Sparrow, Bobolink, Eastern Meadowlark, Short-eared Owl, American Barn Owl	Research	high	new	Advance understanding of how existing grassland bird data can be used to identify information gaps and determine where additional survey efforts may be needed to guide habitat conservation prioritization, habitat management, outreach, and species-specific conservation planning.
Grassland Birds	Northern Harrier, Upland Sandpiper, American Kestrel, Horned Lark, Grasshopper Sparrow, Field Sparrow, Bobolink, Eastern Meadowlark, Short-eared Owl, American Barn Owl	Species Management	high	on-going	Develop a BMP guide for farmers to minimize negative effects of cutting hay/silage during the grassland bird nesting season. NRCS recommendations should be viewed as a start with increased emphasis on timing, field size, and bird behavioral cues.
Grassland Birds	Northern Harrier, Upland Sandpiper, American Kestrel, Horned Lark, Grasshopper Sparrow, Field Sparrow, Bobolink, Eastern Meadowlark, Short-eared Owl, American Barn Owl	Survey and Monitoring	high	new	Map and monitor priority grassland sites statewide to inform conservation targeting.
Grassland Birds	Northern Harrier, Upland Sandpiper, American Kestrel, Horned Lark, Grasshopper Sparrow, Field Sparrow, Bobolink, Eastern	Survey and Monitoring	high	new	Develop and implement standardized monitoring programs to more effectively document and understand environmental contaminant and disease exposure at state and regional scales.

Guild	Species	Category	Biological Priority	Type	Description
	Meadowlark, Short-eared Owl, American Barn Owl				
High Elevation birds	American Pipit , Blackpoll Warbler, Bicknell's Thrush	Habitat Management	critical	new	Protect and manage existing high-elevation forest and alpine habitats. Conservation of existing alpine and subalpine habitats through land acquisition, easements, or management plans will help prevent fragmentation and degradation. These mountaintop areas support rare species that have no alternative habitat in the state.
High Elevation birds	American Pipit , Blackpoll Warbler, Bicknell's Thrush	Habitat Management	high	new	Limit recreational impacts in sensitive alpine and subalpine areas. Recreational use of Maine's alpine zones is increasing. During the short breeding season, human disturbance can displace birds from critical nesting areas. Trail management, seasonal closures, signage, and visitor education can reduce these pressures and support reproductive success. As recreational infrastructure expands into higher elevations, careful planning is needed to minimize impacts on alpine and subalpine habitats. Conservation partners should coordinate with land managers and developers to avoid key breeding areas during siting or expansion of recreational infrastructure.

Guild	Species	Category	Biological Priority	Type	Description
High Elevation birds	American Pipit , Blackpoll Warbler, Bicknell's Thrush	Habitat Management	moderate	on-going	Avoid siting new wind energy infrastructure in sensitive high-elevation breeding areas. High elevation taxa may be affected by both habitat disturbance and collision risk from wind turbines in subalpine habitats. Avoidance of key nesting areas can reduce direct and indirect impacts.
High Elevation birds	American Pipit , Blackpoll Warbler, Bicknell's Thrush	Research	high	new	Model and track climate-driven habitat change. All members of the high-elevation guild are vulnerable to climate-driven shifts in treeline, snowpack, and vegetation structure. Modeling future habitat changes and identifying potential climate refugia are critical for long-term planning and resilience.
High Elevation birds	American Pipit , Blackpoll Warbler, Bicknell's Thrush	Survey and Monitoring	high		Support regional research collaborations and species working groups. High-elevation songbirds face heightened vulnerability to climate change across their ranges due to their dependence on limited alpine and subalpine habitat. Collaboration with regional monitoring programs such as Mountain Birdwatch, and participation in species-specific working groups, is essential. These efforts enhance understanding of range-wide population dynamics and ensure Maine's data contributes to coordinated conservation planning.

Guild	Species	Category	Biological Priority	Type	Description
High Elevation birds	American Pipit , Blackpoll Warbler, Bicknell's Thrush	Survey and Monitoring	high	new	Monitor high-elevation bird populations statewide. Birds in high-elevation habitats are difficult to access and poorly sampled by standard monitoring programs. Targeted, long-term monitoring is needed to track population trends, detect range shifts, and guide conservation priorities.
Island Nesting Seabirds	Razorbill, Atlantic Puffin, Herring Gull, Laughing Gull, Great Black-backed Gull, Roseate Tern, Common Tern, Arctic Tern, Leach's Storm-petrel, Double-crested Cormorant, Great Cormorant	Research	high	new	Determine the association with commercial fisheries and climate-induced changes to food availability
Island Nesting Seabirds	Razorbill, Atlantic Puffin, Herring Gull, Laughing Gull, Great Black-backed Gull, Roseate Tern, Common Tern, Arctic Tern, Leach's Storm-petrel, Double-crested Cormorant, Great Cormorant	Research	high	on-going	Determine which factors influence breeding success and productivity
Island Nesting Seabirds	Razorbill, Atlantic Puffin, Herring Gull, Laughing Gull, Great Black-backed Gull, Roseate Tern, Common Tern, Arctic Tern, Leach's Storm-petrel, Double-crested Cormorant, Great Cormorant	Survey and Monitoring	high	on-going	Continue seabird restoration activities at historic nesting sites using social attraction, vegetation management, and predator control

Guild	Species	Category	Biological Priority	Type	Description
Marsh birds	Black Tern, Wilson's Snipe, Yellow Rail, American Coot, Common Gallinule, Sora, Sedge Wren, American Bittern, Least Bittern, Pied-billed Grebe	Habitat Management	high	new	Work with landowners to maximize hemi-marsh conditions and maintain stable water levels.
Marsh birds	Black Tern, Wilson's Snipe, Yellow Rail, American Coot, Common Gallinule, Sora, Sedge Wren, American Bittern, Least Bittern, Pied-billed Grebe	Habitat Management	high	new	Develop Best Management Practices that are compatible with the needs of the marsh birds and other wetland wildlife, distribute to landowners and via ER and Beginning with Habitat, and make readily available on IFW website.
Marsh birds	Black Tern, Wilson's Snipe, Yellow Rail, American Coot, Common Gallinule, Sora, Sedge Wren, American Bittern, Least Bittern, Pied-billed Grebe	Public Outreach	moderate	new	Develop outreach tools for promoting ethical wildlife observation and share with boaters and birders.
Marsh birds	Black Tern, Wilson's Snipe, Yellow Rail, American Coot, Common Gallinule, Sora, Sedge Wren, American Bittern, Least Bittern, Pied-billed Grebe	Species Management	high	new	For marsh birds that are hunted in the Atlantic Flyway, work with other states, provinces, and territories to support development of population models to ensure sustainable harvest. This may involve implementing a flyway monitoring program; improving the Harvest Information program; improving the rails and snipe parts collection survey; and determining breeding origin of species that are harvested at high-harvest locations.
Marsh birds	Black Tern, Wilson's Snipe, Yellow Rail, American Coot, Common Gallinule, Sora, Sedge Wren, American	Species Management	moderate	new	Work with landowners to develop and post signs or other strategies for discouraging recreational users from disturbing nesting birds.

Guild	Species	Category	Biological Priority	Type	Description
	Bittern, Least Bittern, Pied-billed Grebe				
Marsh birds	Black Tern, Wilson's Snipe, Yellow Rail, American Coot, Common Gallinule, Sora, Sedge Wren, American Bittern, Least Bittern, Pied-billed Grebe	Survey and Monitoring	high	new	Implement targeted surveys and regular monitoring to better understand the distribution and status of secretive marsh birds and to help direct conservation actions to newly documented populations. Explore innovative methods such as autonomous recording units (ARUs).
Saltmarsh birds	Willet, Saltmarsh Sparrow, Nelson's Sparrow	Habitat Management	critical	new	Prioritize conservation and restoration of high-value tidal marshes. Focus conservation efforts on the most important marshes for Saltmarsh Guild species, as identified by the Atlantic Coast Joint Venture (ACJV), to maximize impact and resource efficiency.
Saltmarsh birds	Willet, Saltmarsh Sparrow, Nelson's Sparrow	Habitat Management	critical	new	Restore marshes using science-based best practices. Implement priority restoration techniques such as elevation enhancement, ditch remediation, and runneling, specifically tailored to each marsh, with Saltmarsh Guild species in mind. All restoration projects should incorporate pre- and post-restoration bird monitoring to evaluate efficacy and inform adaptive management.

Guild	Species	Category	Biological Priority	Type	Description
Saltmarsh birds	Willet, Saltmarsh Sparrow, Nelson's Sparrow	Habitat Management	critical	new	Permanently protect critical habitat Conserve remaining intact tidal marshes and adjacent uplands through acquisition, conservation easements, and other long-term legal protections.
Saltmarsh birds	Willet, Saltmarsh Sparrow, Nelson's Sparrow	Habitat Management	high	new	Address legacy impacts from past human modifications Identify and remediate historical hydrologic alterations (e.g., ditching, impoundments, fill) that have degraded tidal flow, vegetation communities, and nesting habitat suitability.
Saltmarsh birds	Willet, Saltmarsh Sparrow, Nelson's Sparrow	Habitat Management	high	new	Support and collaborate with programs such as Maine DMR's CoastWise Initiative to remove undersized tidal restrictions and restore natural hydrology to impacted tidal marshes. Restoring hydrological function through culvert replacement and infrastructure redesign is critical for reversing decades of marsh degradation. These efforts should be paired with pre-and-post effort bird monitoring
Saltmarsh birds	Willet, Saltmarsh Sparrow, Nelson's Sparrow	Habitat Management	moderate	on-going	Manage invasive vegetation to enhance habitat structure - Suppress invasive species (e.g., Phragmites australis) where they degrade nesting or foraging conditions.
Saltmarsh birds	Willet, Saltmarsh Sparrow, Nelson's Sparrow	Policy	high	new	Prevent further habitat loss and fragmentation of tidal marshes by coordinating with regulators and municipalities to avoid development or infrastructure that compromises marsh

Guild	Species	Category	Biological Priority	Type	Description
					integrity or increases flooding in key breeding areas. Develop and promote Best Management Practices (BMPs) that increase upland buffers, reduce human impacts, and facilitate inland marsh migration.
Saltmarsh birds	Willet, Saltmarsh Sparrow, Nelson's Sparrow	Public Outreach	high	new	Secure opportunities for inland marsh migration. Collaborate with landowners and municipalities to preserve adjacent uplands and remove barriers to inland marsh migration, reducing the impacts of coastal squeeze and maintaining marsh function in the face of sea-level rise.
Saltmarsh birds	Willet, Saltmarsh Sparrow, Nelson's Sparrow	Public Outreach	high	new	Promote public and municipal engagement in saltmarsh conservation - Increase awareness and participation in saltmarsh stewardship by providing educational materials and technical assistance to landowners, towns, and coastal stakeholders.
Saltmarsh birds	Willet, Saltmarsh Sparrow, Nelson's Sparrow	Survey and Monitoring	high	on-going	Advance collaborative coastal bird planning and monitoring Participate in regional initiatives (e.g., SHARP, ACJV) to align conservation actions, share data, and prioritize sites most important for long-term species viability.
Shorebirds	Black-bellied Plover, American Oystercatcher, Ruddy Turnstone, Sanderling, Dunlin, Red Knot, Purple Sandpiper, Least Sandpiper, Semipalmated Sandpiper, Short-billed Dowitcher,	Habitat Management	moderate	new	Use voluntary agreements, conservation easements, conservation tax abatements and incentives to protect important habitats.

Guild	Species	Category	Biological Priority	Type	Description
	Whimbrel, Red Phalarope, Lesser Yellowlegs, Greater Yellowlegs				
Shorebirds	Black-bellied Plover, American Oystercatcher, Ruddy Turnstone, Sanderling, Dunlin, Red Knot, Purple Sandpiper, Least Sandpiper, Semipalmated Sandpiper, Short-billed Dowitcher, Whimbrel, Red Phalarope, Lesser Yellowlegs, Greater Yellowlegs	Public Outreach	high	on-going	Provide outreach to pet owners, beachgoers, kayakers, beach managers, and landowners to raise public awareness on shorebirds and on the impacts of disturbance to nesting, feeding, and roosting areas from recreational activities in coastal areas.
Shorebirds	Black-bellied Plover, American Oystercatcher, Ruddy Turnstone, Sanderling, Dunlin, Red Knot, Purple Sandpiper, Least Sandpiper, Semipalmated Sandpiper, Short-billed Dowitcher, Whimbrel, Red Phalarope, Lesser Yellowlegs, Greater Yellowlegs	Research	high	on-going	Work with the partners to conduct research to determine the impact of macroalgae harvest on marine birds.
Shorebirds	Black-bellied Plover, American Oystercatcher, Ruddy Turnstone, Sanderling, Dunlin, Red Knot, Purple Sandpiper, Least Sandpiper, Semipalmated Sandpiper, Short-billed Dowitcher, Whimbrel, Red Phalarope,	Research	high	on-going	Identify prey resources in significant staging areas to determine potential limiting factors and optimal management techniques to promote these resources.

Guild	Species	Category	Biological Priority	Type	Description
	Lesser Yellowlegs, Greater Yellowlegs				
Shorebirds	Black-bellied Plover, American Oystercatcher, Ruddy Turnstone, Sanderling, Dunlin, Red Knot, Purple Sandpiper, Least Sandpiper, Semipalmated Sandpiper, Short-billed Dowitcher, Whimbrel, Red Phalarope, Lesser Yellowlegs, Greater Yellowlegs	Research	high	on-going	Determine length of stay at stopover areas, site fidelity, local movements and premigration condition to determine if coastal habitats are meeting shorebird requirements for successful migration.
Shorebirds	Black-bellied Plover, American Oystercatcher, Ruddy Turnstone, Sanderling, Dunlin, Red Knot, Purple Sandpiper, Least Sandpiper, Semipalmated Sandpiper, Short-billed Dowitcher, Whimbrel, Red Phalarope, Lesser Yellowlegs, Greater Yellowlegs	Research	high	on-going	Conduct longterm monitoring of ecosystem-wide impacts of cutting algae to determine potential impacts to shorebird habitats and invertebrate prey.
Shorebirds	Black-bellied Plover, American Oystercatcher, Ruddy Turnstone, Sanderling, Dunlin, Red Knot, Purple Sandpiper, Least Sandpiper, Semipalmated Sandpiper, Short-billed Dowitcher, Whimbrel, Red Phalarope,	Research	moderate	new	Determine limiting factors for SGCN shorebird species on breeding, migratory, or wintering areas.

Guild	Species	Category	Biological Priority	Type	Description
	Lesser Yellowlegs, Greater Yellowlegs				
Shorebirds	Black-bellied Plover, American Oystercatcher, Ruddy Turnstone, Sanderling, Dunlin, Red Knot, Purple Sandpiper, Least Sandpiper, Semipalmated Sandpiper, Short-billed Dowitcher, Whimbrel, Red Phalarope, Lesser Yellowlegs, Greater Yellowlegs	Species Management	high	new	Place symbolic stake and twine fencing around important beach roosting areas with signage to identify roosting areas.
Shorebirds	Black-bellied Plover, American Oystercatcher, Ruddy Turnstone, Sanderling, Dunlin, Red Knot, Purple Sandpiper, Least Sandpiper, Semipalmated Sandpiper, Short-billed Dowitcher, Whimbrel, Red Phalarope, Lesser Yellowlegs, Greater Yellowlegs	Survey and Monitoring	high	on-going	Identify and map priority feeding and roosting areas including offshore habitats, and implement protection initiatives. Enter data in MDIFW ETSC database.
Shorebirds	Black-bellied Plover, American Oystercatcher, Ruddy Turnstone, Sanderling, Dunlin, Red Knot, Purple Sandpiper, Least Sandpiper, Semipalmated Sandpiper, Short-billed Dowitcher, Whimbrel, Red Phalarope,	Survey and Monitoring	high	on-going	To determine population status continue monitoring program for SGCN shorebird species at high priority migration sites coastwide. Continue to coordinate with ISS, PRISM, Atlantic Flyway ESMP programs.

Guild	Species	Category	Biological Priority	Type	Description
	Lesser Yellowlegs, Greater Yellowlegs				
Shrub or Young forest birds	New England Cottontail, Eastern Whip-poor-will, Lincoln's Sparrow, Fox Sparrow , Eastern Towhee, White-throated sparrow, Brown Thrasher, Prairie Warbler, Chestnut-sided Warbler, Yellow Warbler, Mourning Warbler, Blue-winged Warbler, Nashville Warbler	Habitat Management	high	on-going	Conduct active restoration of shrubland and young forest habitat on private and public lands in areas of the state in which the habitat type is limiting.
Shrub or Young forest birds	New England Cottontail, Eastern Whip-poor-will, Lincoln's Sparrow, Fox Sparrow , Eastern Towhee, White-throated sparrow, Brown Thrasher, Prairie Warbler, Chestnut-sided Warbler, Yellow Warbler, Mourning Warbler, Blue-winged Warbler, Nashville Warbler	Habitat Management	moderate	new	Encourage use of native shrub species in wildlife plantings and land restoration projects. Promote the use of native shrub and early successional plantings in ecological restoration, transportation corridor management, solar farms, and utility ROWs to provide high-quality breeding and foraging habitat for shrubland birds. Avoid invasive or ornamental species that reduce habitat quality.
Shrub or Young forest birds	New England Cottontail, Eastern Whip-poor-will, Lincoln's Sparrow, Fox Sparrow , Eastern Towhee, White-throated sparrow, Brown Thrasher, Prairie Warbler, Chestnut-sided Warbler, Yellow Warbler, Mourning Warbler, Blue-	Public Outreach	moderate	new	Promote forest management practices that create or maintain early successional habitat. Encourage silvicultural techniques such as patch cutting, shelterwood harvests, and variable retention to maintain a mosaic of forest age classes across the landscape, especially within large blocks of private industrial forest, land trusts, etc. Promote

Guild	Species	Category	Biological Priority	Type	Description
	winged Warbler, Nashville Warbler				programs like Forestry for Maine Birds that support practices benefiting early successional birds while maintaining forest productivity.
Shrub or Young forest birds	New England Cottontail, Eastern Whip-poor-will, Lincoln's Sparrow, Fox Sparrow , Eastern Towhee, White-throated sparrow, Brown Thrasher, Prairie Warbler, Chestnut-sided Warbler, Yellow Warbler, Mourning Warbler, Blue-winged Warbler, Nashville Warbler	Public Outreach	moderate	on-going	Improve public perception of the value of early successional habitat, especially in southern Maine.
Shrub or Young forest birds	New England Cottontail, Eastern Whip-poor-will, Lincoln's Sparrow, Fox Sparrow , Eastern Towhee, White-throated sparrow, Brown Thrasher, Prairie Warbler, Chestnut-sided Warbler, Yellow Warbler, Mourning Warbler, Blue-winged Warbler, Nashville Warbler	Species Management	moderate	on-going	Ecosystem effects of white-tailed deer densities should be included as one of the parameters used to set deer management goals in southern Maine. New England cottontail and other species dependent on shrubby early successional habitat would benefit from this consideration.
Urban raptors	Cooper's Hawk, Sharp-shinned Hawk, Red-shouldered Hawk, Merlin, Peregrine Falcon, Eastern Screech-Owl	Public Outreach	high	on-going	Prevent nest disturbance through various collaborations, partnerships, approaches, and outreach efforts.

Guild	Species	Category	Biological Priority	Type	Description
Urban raptors	Cooper's Hawk, Sharp-shinned Hawk, Red-shouldered Hawk, Merlin, Peregrine Falcon, Eastern Screech-Owl	Public Outreach	moderate	new	Develop and expand outreach and partnerships to promote bird-safe building practices, including the use of window treatments that reduce collisions in urban and suburban areas, as well as appropriate responses to building entrapment. Provide clear guidance on these practices and increase public awareness through various communication methods, including printed materials, websites, social media, workshops, and collaboration with building owners and managers.
Urban raptors	Cooper's Hawk, Sharp-shinned Hawk, Red-shouldered Hawk, Merlin, Peregrine Falcon, Eastern Screech-Owl	Public Outreach	moderate	new	Develop and implement outreach, partnerships, and other strategies to increase the adoption of practices that minimize exposure to environmental contaminants.
Urban raptors	Cooper's Hawk, Sharp-shinned Hawk, Red-shouldered Hawk, Merlin, Peregrine Falcon, Eastern Screech-Owl	Research	moderate	new	Collaborate with utility companies, transportation agencies, and other relevant industries to document and share data on raptor injuries and mortalities related to power lines, electrocution, vehicle and aircraft collisions, and other infrastructure-related threats. Develop a shared reporting system to analyze spatial and temporal patterns of these incidents, guiding targeted mitigation efforts and informing strategies to reduce future occurrences.
Urban raptors	Cooper's Hawk, Sharp-shinned Hawk, Red-shouldered Hawk, Merlin,	Survey and Monitoring	high	new	Develop and implement standardized monitoring programs to more effectively document and understand environmental contaminant exposure.

Guild	Species	Category	Biological Priority	Type	Description
	Peregrine Falcon, Eastern Screech-Owl				
Urban raptors	Cooper's Hawk, Sharp-shinned Hawk, Red-shouldered Hawk, Merlin, Peregrine Falcon, Eastern Screech-Owl	Survey and Monitoring	moderate	new	Support efforts to monitor and document the impacts of window collisions, building on existing programs or partnerships where possible.

Appendix Table 4- 2 Conservation Actions assigned to Terrestrial and Freshwater Invertebrate Guilds

Guild	Species	Category	Biological Priority	Type	Description
Freshwater Mussels	Triangle Floater, Brook Floater, Yellow Lampmussel, Tidewater Mucket, Eastern Pearlshell, Alewife Floater	Habitat Management	critical	on-going	Develop/distribute Best Management Practices for landowners, land managers and conservation partners to avoid and minimize impacts of intensive land use activities (e.g., forestry, stream crossings, agriculture, development, hydro facilities).
Freshwater Mussels	Triangle Floater, Brook Floater, Yellow Lampmussel, Tidewater Mucket, Eastern Pearlshell, Alewife Floater	Habitat Management	high	new	Proactively work with conservation partners to focus incentives for voluntary habitat management towards farms where forested riparian buffers are lacking and/or livestock have access to the stream channel, especially where at-risk species are present.

Guild	Species	Category	Biological Priority	Type	Description
Freshwater Mussels	Triangle Floater, Brook Floater, Yellow Lampmussel, Tidewater Mucket, Eastern Pearlshell, Alewife Floater	Policy	critical	new	Increase MDIFW staff capacity for survey, research, and conservation of SGCN invertebrates.
Freshwater Mussels	Triangle Floater, Brook Floater, Yellow Lampmussel, Tidewater Mucket, Eastern Pearlshell, Alewife Floater	Public Outreach	moderate	on-going	Develop/distribute outreach materials to raise public awareness and appreciation of freshwater mussel ecology, threats and conservation needs.
Freshwater Mussels	Triangle Floater, Brook Floater, Yellow Lampmussel, Tidewater Mucket, Eastern Pearlshell, Alewife Floater	Research	high	completed	Update NatureServe S-ranks for all Maine freshwater mussel species.
Freshwater Mussels	Triangle Floater, Brook Floater, Yellow Lampmussel, Tidewater Mucket, Eastern Pearlshell, Alewife Floater	Research	high	on-going	Work with conservation partners (e.g., Regional Working Groups, University of Maine) to improve understanding of conservation needs, life history, population status, survey and monitoring techniques, etc.

Guild	Species	Category	Biological Priority	Type	Description
Freshwater Mussels	Triangle Floater, Brook Floater, Yellow Lampmussel, Tidewater Mucket, Eastern Pearlshell, Alewife Floater	Species Management	high	on-going	Update/modernize the statewide freshwater mussel database, including with external records (e.g., iNaturalist, museum specimens, literature) to better inform conservation actions.
Freshwater Mussels	Triangle Floater, Brook Floater, Yellow Lampmussel, Tidewater Mucket, Eastern Pearlshell, Alewife Floater	Survey and Monitoring	high	on-going	Conduct comprehensive statewide surveys to inform/update distribution and status.
Freshwater Mussels	Triangle Floater, Brook Floater, Yellow Lampmussel, Tidewater Mucket, Eastern Pearlshell, Alewife Floater	Survey and Monitoring	high	on-going	Develop standardized survey, relocation, and post-monitoring protocols for projects where Take of listed freshwater mussels may occur as a result of project activities.
Forest Snails	Spike-lip Crater, Big-tooth Whitelip	Survey and Monitoring	high	new	Conduct widespread and systematic surveys for forest snails to better understand their distribution and status. There is some evidence that these snails are not as widespread or abundant as they were in the past but very little effort has been invested in understanding their contemporary status and distribution

Guild	Species	Category	Biological Priority	Type	Description
Pond Snails	Bigmouth Pondsnail, Obese Pondsnail	Policy	high	new	MDIFW needs greater staff capacity for survey and conservation of SGCN invertebrates
Pond Snails	Bigmouth Pondsnail, Obese Pondsnail	Research	high	on-going	Continue to engage with university and other partners to conduct research to help determine if either or both of Maine's pond snails are distinct or endemic species. Genetic analysis is the primary means by which this may be achieved. This issue remains unresolved and has implications for the relative importance of investing in the conservation of either species
Pond Snails	Bigmouth Pondsnail, Obese Pondsnail	Survey and Monitoring	high	new	Conduct surveys for Maine's pond snails to better document where SGCN species are found so that thier populations can be conserved and their habitat needs can be better understood
Vertigo Snails	Malleated Vertigo, Six-whorl Vertigo, Mystery Vertigo, Olive Vertigo	Policy	high	new	MDIFW needs greater staff capacity for survey and conservation of SGCN invertebrates

Guild	Species	Category	Biological Priority	Type	Description
Vertigo Snails	Malleated Vertigo, Six-whorl Vertigo, Mystery Vertigo, Olive Vertigo	Survey and Monitoring	high	new	Conduct widespread and systematic surveys for vertigo snails to better understand their distribution and status. Very little effort has been invested in understanding their contemporary status and distribution
Bumble Bees	Rusty-patched Bumble Bee, Ashton's Cuckoo Bumble Bee, Lemon Cuckoo Bumble Bee, Appalachian Cuckoo Bumble Bee, Yellow Bumble Bee, Brown-belted Bumble Bee, Indiscriminate Cuckoo Bumble Bee , American Bumble Bee, Red-belted Bumble Bee, Sanderson's Bumble Bee, Yellowbanded Bumble Bee	Policy	critical	new	Increase MDIFW staff capacity for survey and conservation of SGCN invertebrates.
Bumble Bees	Rusty-patched Bumble Bee, Ashton's Cuckoo Bumble Bee, Lemon Cuckoo Bumble Bee, Appalachian Cuckoo Bumble Bee, Yellow Bumble Bee, Brown-belted Bumble Bee, Indiscriminate Cuckoo Bumble Bee , American Bumble Bee, Red-belted Bumble Bee, Sanderson's	Public Outreach	high	on-going	Develop/distribute guidelines and outreach materials to inform conservation partners, land use managers, and the general public about the impacts of pesticides on native pollinators and to promote the alternative use of Integrated Pest Management practices.

Guild	Species	Category	Biological Priority	Type	Description
	Bumble Bee, Yellowbanded Bumble Bee				
Bumble Bees	Rusty-patched Bumble Bee, Ashton's Cuckoo Bumble Bee, Lemon Cuckoo Bumble Bee, Appalachian Cuckoo Bumble Bee, Yellow Bumble Bee, Brown-belted Bumble Bee, Indiscriminate Cuckoo Bumble Bee , American Bumble Bee, Red-belted Bumble Bee, Sanderson's Bumble Bee, Yellowbanded Bumble Bee	Public Outreach	moderate	on-going	Develop/distribute outreach materials to inform land managers and homeowners about creating and managing habitat for native pollinators, and the importance of using native plants.
Bumble Bees	Rusty-patched Bumble Bee, Ashton's Cuckoo Bumble Bee, Lemon Cuckoo Bumble Bee, Appalachian Cuckoo Bumble Bee, Yellow Bumble Bee, Brown-belted Bumble Bee, Indiscriminate Cuckoo Bumble Bee , American Bumble Bee, Red-belted Bumble Bee, Sanderson's Bumble Bee, Yellowbanded Bumble Bee	Public Outreach	moderate	on-going	Develop/distribute outreach materials to raise public awareness and appreciation of native pollinator ecology, threats and conservation needs.

Guild	Species	Category	Biological Priority	Type	Description
Bumble Bees	Rusty-patched Bumble Bee, Ashton's Cuckoo Bumble Bee, Lemon Cuckoo Bumble Bee, Appalachian Cuckoo Bumble Bee, Yellow Bumble Bee, Brown-belted Bumble Bee, Indiscriminate Cuckoo Bumble Bee , American Bumble Bee, Red-belted Bumble Bee, Sanderson's Bumble Bee, Yellowbanded Bumble Bee	Research	high	completed	Update NatureServe Sranks for all Maine bumble bee species based on results of the Maine Bumble Bee Atlas.
Bumble Bees	Rusty-patched Bumble Bee, Ashton's Cuckoo Bumble Bee, Lemon Cuckoo Bumble Bee, Appalachian Cuckoo Bumble Bee, Yellow Bumble Bee, Brown-belted Bumble Bee, Indiscriminate Cuckoo Bumble Bee , American Bumble Bee, Red-belted Bumble Bee, Sanderson's Bumble Bee, Yellowbanded Bumble Bee	Research	high	on-going	Analyze results of the Maine Bumble Bee Atlas project, research and incorporate external Maine records (historical and modern), and produce a summary document and conservation assessment.
Bumble Bees	Rusty-patched Bumble Bee, Ashton's Cuckoo Bumble Bee, Lemon Cuckoo Bumble Bee, Appalachian Cuckoo Bumble Bee, Yellow Bumble	Survey and Monitoring	high	completed	Conduct a statewide bumble bee atlasing project.

Guild	Species	Category	Biological Priority	Type	Description
	Bee, Brown-belted Bumble Bee, Indiscriminate Cuckoo Bumble Bee , American Bumble Bee, Red-belted Bumble Bee, Sanderson's Bumble Bee, Yellowbanded Bumble Bee				
Bumble Bees	Rusty-patched Bumble Bee, Ashton's Cuckoo Bumble Bee, Lemon Cuckoo Bumble Bee, Appalachian Cuckoo Bumble Bee, Yellow Bumble Bee, Brown-belted Bumble Bee, Indiscriminate Cuckoo Bumble Bee , American Bumble Bee, Red-belted Bumble Bee, Sanderson's Bumble Bee, Yellowbanded Bumble Bee	Survey and Monitoring	high	on-going	Conduct comprehensive, targeted statewide surveys to inform status, distribution, threats, and habitat use.
Flowerflies	Long-haired Wrinklehead, Hourglass Drone Fly, Slosson's Pond Fly, Eastern Swiftwing, Yellow-faced Swiftwing, Holarctic Bristleside, Yellow Sedgesitter, Eastern Hoary	Policy	critical	new	Increase MDIFW staff capacity for survey and conservation of SGCN invertebrates.
Flowerflies	Long-haired Wrinklehead, Hourglass Drone Fly, Slosson's Pond Fly, Eastern	Public Outreach	moderate	on-going	Develop/distribute guidelines and outreach materials to inform conservation partners, land use

Guild	Species	Category	Biological Priority	Type	Description
	Swiftwing, Yellow-faced Swiftwing, Holarctic Bristleside, Yellow Sedgesitter, Eastern Hoary				managers, and the general public about the impacts of pesticides on native insect pollinators and to promote the alternative use of Integrated Pest Management practices.
Flowerflies	Long-haired Wrinklehead, Hourglass Drone Fly, Slosson's Pond Fly, Eastern Swiftwing, Yellow-faced Swiftwing, Holarctic Bristleside, Yellow Sedgesitter, Eastern Hoary	Public Outreach	moderate	on-going	Develop/distribute outreach materials to inform land managers and homeowners about creating and managing habitat for native insect pollinators, and the importance of using native plants.
Flowerflies	Long-haired Wrinklehead, Hourglass Drone Fly, Slosson's Pond Fly, Eastern Swiftwing, Yellow-faced Swiftwing, Holarctic Bristleside, Yellow Sedgesitter, Eastern Hoary	Public Outreach	moderate	on-going	Develop/distribute outreach materials to raise public awareness and appreciation of native insect pollinator ecology, threats and conservation needs.
Flowerflies	Long-haired Wrinklehead, Hourglass Drone Fly, Slosson's Pond Fly, Eastern Swiftwing, Yellow-faced Swiftwing, Holarctic Bristleside, Yellow Sedgesitter, Eastern Hoary	Research	high	new	Develop a comprehensive species list and database of records for Maine flower flies and assign a preliminary state status and NatureServe Srank for each species.

Guild	Species	Category	Biological Priority	Type	Description
Flowerflies	Long-haired Wrinklehead, Hourglass Drone Fly, Slosson's Pond Fly, Eastern Swiftwing, Yellow-faced Swiftwing, Holarctic Bristleside, Yellow Sedgesitter, Eastern Hoary	Survey and Monitoring	high	new	Initiate and conduct the statewide Maine Flower Fly Survey using community science participants to document the diversity, distribution, and status of Maine's flower fly fauna.
Dry Barrens Lepidoptera	Dusted Skipper, Sleepy Duskywing, Leonard's Skipper, Cobweb Skipper, Southern Cloudywing, Edwards' Hairstreak, Coral Hairstreak, Similar Underwing, Oblique Zale, Barrens Itame, Twilight Moth, Barrens Metarranthis Moth, Nepytia pellucidaria, Waxed Sallow Moth, Barrens Chaetaglaea, Speyer's Cucullia Moth, Pine Pinion, Pink Sallow, Acadian Swordgrass Moth, Broad Sallow, Red-winged Sallow, Bold-based Zale Moth, Pine Barrens Zanclognatha, Pine Devil, Eastern Buckmoth, Graceful Clearwing, Southern Pine Sphinx, Huckleberry Sphinx	Habitat Management	critical	on-going	Conduct a statewide review of potential high quality barrens habitat that is threatened by ecological succession and identify strategic habitat restoration actions for implementation by key conservation partners.

Guild	Species	Category	Biological Priority	Type	Description
Dry Barrens Lepidoptera	Dusted Skipper, Sleepy Duskywing, Leonard's Skipper, Cobweb Skipper, Southern Cloudywing, Edwards' Hairstreak, Coral Hairstreak, Similar Underwing, Oblique Zale, Barrens Itame, Twilight Moth, Barrens Metarranthis Moth, Nepytia pellucidaria, Waxed Sallow Moth, Barrens Chaetaglaea, Speyer's Cucullia Moth, Pine Pinion, Pink Sallow, Acadian Swordgrass Moth, Broad Sallow, Red-winged Sallow, Bold-based Zale Moth, Pine Barrens Zanclognatha, Pine Devil, Eastern Buckmoth, Graceful Clearwing, Southern Pine Sphinx, Huckleberry Sphinx	Habitat Management	critical	on-going	A concerted effort should be made to conserve as much of the remaining unprotected sandplain grasslands and PP/SO barrens as possible.
Dry Barrens Lepidoptera	Dusted Skipper, Sleepy Duskywing, Leonard's Skipper, Cobweb Skipper, Southern Cloudywing, Edwards' Hairstreak, Coral Hairstreak, Similar Underwing, Oblique Zale, Barrens Itame, Twilight	Policy	critical	new	Increase MDIFW staff capacity for survey and conservation of SGCN invertebrates.

Guild	Species	Category	Biological Priority	Type	Description
	Moth, Barrens Metarranthis Moth, Nepytia pellucidaria, Waxed Sallow Moth, Barrens Chaetaglaea, Speyer's Cucullia Moth, Pine Pinion, Pink Sallow, Acadian Swordgrass Moth, Broad Sallow, Red-winged Sallow, Bold-based Zale Moth, Pine Barrens Zanclognatha, Pine Devil, Eastern Buckmoth, Graceful Clearwing, Southern Pine Sphinx, Huckleberry Sphinx				
Dry Barrens Lepidoptera	Dusted Skipper, Sleepy Duskywing, Leonard's Skipper, Cobweb Skipper, Southern Cloudywing, Edwards' Hairstreak, Coral Hairstreak, Similar Underwing, Oblique Zale, Barrens Itame, Twilight Moth, Barrens Metarranthis Moth, Nepytia pellucidaria, Waxed Sallow Moth, Barrens Chaetaglaea, Speyer's Cucullia Moth, Pine Pinion, Pink Sallow, Acadian Swordgrass Moth, Broad Sallow, Red-winged	Public Outreach	moderate	on-going	Develop/distribute guidelines and outreach materials to inform conservation partners, land use managers, and the general public about the impacts of pesticides on native pollinators and to promote the alternative use of Integrated Pest Management practices.

Guild	Species	Category	Biological Priority	Type	Description
	Sallow, Bold-based Zale Moth, Pine Barrens Zanclognatha, Pine Devil, Eastern Buckmoth, Graceful Clearwing, Southern Pine Sphinx, Huckleberry Sphinx				
Dry Barrens Lepidoptera	Dusted Skipper, Sleepy Duskywing, Leonard's Skipper, Cobweb Skipper, Southern Cloudywing, Edwards' Hairstreak, Coral Hairstreak, Similar Underwing, Oblique Zale, Barrens Itame, Twilight Moth, Barrens Metarranthis Moth, Nepytia pellucidaria, Waxed Sallow Moth, Barrens Chaetaglaea, Speyer's Cucullia Moth, Pine Pinion, Pink Sallow, Acadian Swordgrass Moth, Broad Sallow, Red-winged Sallow, Bold-based Zale Moth, Pine Barrens Zanclognatha, Pine Devil, Eastern Buckmoth, Graceful Clearwing, Southern Pine Sphinx, Huckleberry Sphinx	Species Management	high	on-going	Communication with Maine Forest Service and Bureau of Pest Control is necessary to prevent unintended mortality from aerial pesticide spraying (e.g., for spongy moth and spruce budworm)

Guild	Species	Category	Biological Priority	Type	Description
Forested Wetlands Lepidoptera	Hessel's Hairstreak, Satyr Comma, Appalachian Brown, Spicebush Swallowtail	Policy	critical	new	MDIFW needs greater staff capacity for survey and conservation of SGCN invertebrates / policy, high, new
Forested Wetlands Lepidoptera	Hessel's Hairstreak, Satyr Comma, Appalachian Brown, Spicebush Swallowtail	Research	high	on-going	Complete a statewide butterfly atlas and use it to increase public and private awareness of the state's Lepidoptera and their conservation challenges.
Forested Wetlands Lepidoptera	Hessel's Hairstreak, Satyr Comma, Appalachian Brown, Spicebush Swallowtail	Species Management	high	new	Develop and distribute forestry Best Management Practices for cooperative landowners and forest management community
Forested Wetlands Lepidoptera	Hessel's Hairstreak, Satyr Comma, Appalachian Brown, Spicebush Swallowtail	Survey and Monitoring	moderate	on-going	More populations are likely to be detected with directed survey effort
Peatland Lepidoptera	Bog Elfin, Clayton's Copper, Crowberry Blue, Bog Fritillary, Frigga Fritillary, New England Buckmoth	Policy	critical	new	MDIFW needs greater staff capacity for survey and conservation of SGCN invertebrates
Peatland Lepidoptera	Bog Elfin, Clayton's Copper, Crowberry Blue, Bog Fritillary, Frigga Fritillary, New England Buckmoth	Policy	moderate	new	Communication with Maine Forest Service and Bureau of Pest Control are necessary to prevent unintended mortality from aerial pesticide spraying (e.g., for spruce budworm)

Guild	Species	Category	Biological Priority	Type	Description
Peatland Lepidoptera	Bog Elfin, Clayton's Copper, Crowberry Blue, Bog Fritillary, Frigga Fritillary, New England Buckmoth	Research	high	on-going	Complete a statewide butterfly atlas and use it to increase public and partner awareness of the state's Lepidoptera and their conservation challenges
Peatland Lepidoptera	Bog Elfin, Clayton's Copper, Crowberry Blue, Bog Fritillary, Frigga Fritillary, New England Buckmoth	Species Management	high	new	Complete forestry Best Management Practices for distribution to cooperative landowners and forest management interests.
Headwater Stream Mayflies	Brown's Comb Minnow Mayfly, Roaring Brook Mayfly, Rhithrogena jejuna Eaton (s.s.), Wild Primitive Minnow Mayfly, Barbarous Primitive Minnow Mayfly	Habitat Management	critical	on-going	Develop/distribute Best Management Practices for landowners, land managers and conservation partners to avoid and minimize impacts of intensive land use activities (e.g., forestry, stream crossings, development, renewable energy projects, transmission line ROWs).
Headwater Stream Mayflies	Brown's Comb Minnow Mayfly, Roaring Brook Mayfly, Rhithrogena jejuna Eaton (s.s.), Wild Primitive Minnow Mayfly, Barbarous Primitive Minnow Mayfly	Policy	critical	new	Increase MDIFW staff capacity for survey and conservation of SGCN invertebrates.
Headwater Stream Mayflies	Brown's Comb Minnow Mayfly, Roaring Brook Mayfly, Rhithrogena jejuna Eaton (s.s.), Wild Primitive Minnow Mayfly, Barbarous Primitive Minnow Mayfly	Public Outreach	moderate	on-going	Develop/distribute outreach materials to raise public awareness and appreciation of freshwater aquatic insect ecology, threats and conservation needs.

Guild	Species	Category	Biological Priority	Type	Description
Headwater Stream Mayflies	Brown's Comb Minnow Mayfly, Roaring Brook Mayfly, Rhithrogena jejuna Eaton (s.s.), Wild Primitive Minnow Mayfly, Barbarous Primitive Minnow Mayfly	Research	high	completed	Update NatureServe S-ranks for all state-listed mayfly species.
Headwater Stream Mayflies	Brown's Comb Minnow Mayfly, Roaring Brook Mayfly, Rhithrogena jejuna Eaton (s.s.), Wild Primitive Minnow Mayfly, Barbarous Primitive Minnow Mayfly	Survey and Monitoring	high	on-going	Conduct comprehensive statewide surveys to inform/update diversity, distribution, habitat use, life history, and status.
Riverine Mayflies	Baetisca berneri, Carolina Armored Mayfly, Great Lakes Armored Mayfly, Provancher's Armored Mayfly, Rough Flat-headed Mayfly, Boreal Cleft-footed Minnow Mayfly, Midas Primitive Minnow Mayfly, Tomah Mayfly, Demaray's Primitive Minnow Mayfly, Hatchet Primitive Minnow Mayfly	Habitat Management	critical	on-going	Develop/distribute Best Management Practices for landowners, land managers and conservation partners to avoid and minimize impacts of intensive land use activities (e.g., forestry, stream crossings, agriculture, development, hydro facilities).
Riverine Mayflies	Baetisca berneri, Carolina Armored Mayfly, Great Lakes Armored Mayfly, Provancher's Armored Mayfly, Rough Flat-headed	Policy	critical	new	Increase MDIFW staff capacity for survey and conservation of SGCN invertebrates.

Guild	Species	Category	Biological Priority	Type	Description
	Mayfly, Boreal Cleft-footed Minnow Mayfly, Midas Primitive Minnow Mayfly, Tomah Mayfly, Demaray's Primitive Minnow Mayfly, Hatchet Primitive Minnow Mayfly				
Riverine Mayflies	Baetisca berneri, Carolina Armored Mayfly, Great Lakes Armored Mayfly, Provancher's Armored Mayfly, Rough Flat-headed Mayfly, Boreal Cleft-footed Minnow Mayfly, Midas Primitive Minnow Mayfly, Tomah Mayfly, Demaray's Primitive Minnow Mayfly, Hatchet Primitive Minnow Mayfly	Public Outreach	moderate	on-going	Develop/distribute outreach materials to raise public awareness and appreciation of freshwater aquatic insect ecology, threats and conservation needs.
Riverine Mayflies	Baetisca berneri, Carolina Armored Mayfly, Great Lakes Armored Mayfly, Provancher's Armored Mayfly, Rough Flat-headed Mayfly, Boreal Cleft-footed Minnow Mayfly, Midas Primitive Minnow Mayfly, Tomah Mayfly, Demaray's Primitive Minnow Mayfly,	Research	high	completed	Update NatureServe S-ranks for all state-listed mayfly species.

Guild	Species	Category	Biological Priority	Type	Description
	Hatchet Primitive Minnow Mayfly				
Riverine Mayflies	Baetisca berneri, Carolina Armored Mayfly, Great Lakes Armored Mayfly, Provancher's Armored Mayfly, Rough Flat-headed Mayfly, Boreal Cleft-footed Minnow Mayfly, Midas Primitive Minnow Mayfly, Tomah Mayfly, Demaray's Primitive Minnow Mayfly, Hatchet Primitive Minnow Mayfly	Survey and Monitoring	high	new	Conduct comprehensive statewide surveys to inform/update diversity, distribution, habitat use, and status.
Lacustrine Odonates	Comet Darner, Dusky Dancer, Tule Bluet, Big Bluet, New England Bluet, Scarlet Bluet, Citrine Forktail, Rambur's Forktail, Ringed Emerald, Lilypad Clubtail, Common Sanddragon, Needhams Skimmer, Carolina Saddlebags, Black Saddlebags, Martha's Pennant	Habitat Management	high	on-going	Develop/distribute Best Management Practices for landowners, land managers and conservation partners to avoid and minimize impacts of intensive land use activities (e.g., forestry, stream crossings, agriculture, development, hydro facilities).

Guild	Species	Category	Biological Priority	Type	Description
Lacustrine Odonates	Comet Darner, Dusky Dancer, Tule Bluet, Big Bluet, New England Bluet, Scarlet Bluet, Citrine Forktail, Rambur's Forktail, Ringed Emerald, Lilypad Clubtail, Common Sanddragon, Needhams Skimmer, Carolina Saddlebags, Black Saddlebags, Martha's Pennant	Policy	critical	new	Increase MDIFW staff capacity for survey, research, and conservation of SGCN invertebrates.
Lacustrine Odonates	Comet Darner, Dusky Dancer, Tule Bluet, Big Bluet, New England Bluet, Scarlet Bluet, Citrine Forktail, Rambur's Forktail, Ringed Emerald, Lilypad Clubtail, Common Sanddragon, Needhams Skimmer, Carolina Saddlebags, Black Saddlebags, Martha's Pennant	Public Outreach	moderate	on-going	Develop/distribute outreach materials to raise public awareness and appreciation of freshwater aquatic insect ecology, threats and conservation needs.
Lacustrine Odonates	Comet Darner, Dusky Dancer, Tule Bluet, Big Bluet, New England Bluet, Scarlet Bluet, Citrine Forktail, Rambur's Forktail,	Public Outreach	moderate	on-going	Develop/distribute guidelines and outreach materials to inform conservation partners, land use managers, and the general public about the impacts of pesticides on native

Guild	Species	Category	Biological Priority	Type	Description
	Ringed Emerald, Lilypad Clubtail, Common Sanddragon, Needhams Skimmer, Carolina Saddlebags, Black Saddlebags, Martha's Pennant				insects and to promote the alternative use of Integrated Pest Management practices.
Lacustrine Odonates	Comet Darner, Dusky Dancer, Tule Bluet, Big Bluet, New England Bluet, Scarlet Bluet, Citrine Forktail, Rambur's Forktail, Ringed Emerald, Lilypad Clubtail, Common Sanddragon, Needhams Skimmer, Carolina Saddlebags, Black Saddlebags, Martha's Pennant	Research	high	completed	Update NatureServe S-ranks for all Maine Odonata based on results of the Maine Damselfly and Dragonfly Survey.
Lacustrine Odonates	Comet Darner, Dusky Dancer, Tule Bluet, Big Bluet, New England Bluet, Scarlet Bluet, Citrine Forktail, Rambur's Forktail, Ringed Emerald, Lilypad Clubtail, Common Sanddragon, Needhams Skimmer, Carolina Saddlebags, Black	Research	high	on-going	Analyze results of the Maine Dragonfly & Damselfly Survey, research and incorporate external Maine records (historical and modern), and produce a summary document and conservation assessment.

Guild	Species	Category	Biological Priority	Type	Description
	Saddlebags, Martha's Pennant				
Lacustrine Odonates	Comet Darner, Dusky Dancer, Tule Bluet, Big Bluet, New England Bluet, Scarlet Bluet, Citrine Forktail, Rambur's Forktail, Ringed Emerald, Lilypad Clubtail, Common Sanddragon, Needhams Skimmer, Carolina Saddlebags, Black Saddlebags, Martha's Pennant	Survey and Monitoring	high	completed	Conduct a statewide dragonfly/damselfly atlasing project.
Lacustrine Odonates	Comet Darner, Dusky Dancer, Tule Bluet, Big Bluet, New England Bluet, Scarlet Bluet, Citrine Forktail, Rambur's Forktail, Ringed Emerald, Lilypad Clubtail, Common Sanddragon, Needhams Skimmer, Carolina Saddlebags, Black Saddlebags, Martha's Pennant	Survey and Monitoring	high	on-going	Conduct comprehensive statewide surveys to inform status, distribution, threats, and habitat use.

Guild	Species	Category	Biological Priority	Type	Description
Palustrine Odonates	Sedge Darner, Swamp Darner, Spatterdock Darner, Quebec Emerald, Ringed Boghaunter, Canada Whiteface, Painted Skimmer, Zigzag Darner, Incurvate Emerald, Elfin Skimmer	Habitat Management	high	on-going	Develop/distribute Best Management Practices for landowners, land managers and conservation partners to avoid and minimize impacts of intensive land use activities (e.g., forestry, stream crossings, agriculture, development, hydro facilities)
Palustrine Odonates	Sedge Darner, Swamp Darner, Spatterdock Darner, Quebec Emerald, Ringed Boghaunter, Canada Whiteface, Painted Skimmer, Zigzag Darner, Incurvate Emerald, Elfin Skimmer	Policy	critical	new	Increase MDIFW staff capacity for survey, research, and conservation of SGCN invertebrates.
Palustrine Odonates	Sedge Darner, Swamp Darner, Spatterdock Darner, Quebec Emerald, Ringed Boghaunter, Canada Whiteface, Painted Skimmer, Zigzag Darner, Incurvate Emerald, Elfin Skimmer	Public Outreach	moderate	on-going	Develop/distribute outreach materials to raise public awareness and appreciation of freshwater aquatic insect ecology, threats and conservation needs.
Palustrine Odonates	Sedge Darner, Swamp Darner, Spatterdock Darner, Quebec Emerald, Ringed Boghaunter, Canada Whiteface, Painted	Public Outreach	moderate	on-going	Develop/distribute guidelines and outreach materials to inform conservation partners, land use managers, and the general public about the impacts of pesticides on native

Guild	Species	Category	Biological Priority	Type	Description
	Skimmer, Zigzag Darner, Incurvate Emerald, Elfin Skimmer				insects and to promote the alternative use of Integrated Pest Management practices.
Palustrine Odonates	Sedge Darner, Swamp Darner, Spatterdock Darner, Quebec Emerald, Ringed Boghaunter, Canada Whiteface, Painted Skimmer, Zigzag Darner, Incurvate Emerald, Elfin Skimmer	Research	high	completed	Update NatureServe S-ranks for all Maine Odonata based on results of the Maine Damselfly and Dragonfly Survey.
Palustrine Odonates	Sedge Darner, Swamp Darner, Spatterdock Darner, Quebec Emerald, Ringed Boghaunter, Canada Whiteface, Painted Skimmer, Zigzag Darner, Incurvate Emerald, Elfin Skimmer	Research	high	on-going	Analyze results of the Maine Dragonfly & Damselfly Survey, research and incorporate external Maine records (historical and modern), and produce a summary document and conservation assessment.
Palustrine Odonates	Sedge Darner, Swamp Darner, Spatterdock Darner, Quebec Emerald, Ringed Boghaunter, Canada Whiteface, Painted Skimmer, Zigzag Darner, Incurvate Emerald, Elfin Skimmer	Survey and Monitoring	high	completed	Conduct a statewide dragonfly/damselfly atlasing project.

Guild	Species	Category	Biological Priority	Type	Description
Palustrine Odonates	Sedge Darner, Swamp Darner, Spatterdock Darner, Quebec Emerald, Ringed Boghaunter, Canada Whiteface, Painted Skimmer, Zigzag Darner, Incurvate Emerald, Elfin Skimmer	Survey and Monitoring	high	on-going	Conduct comprehensive statewide surveys to inform status, distribution, threats, and habitat use.
Riverine Odonates	Arrowhead Spiketail, Broad-tailed Shadowdragon, Rapids Clubtail, Cobra Clubtail, Southern Pygmy Clubtail, Extra-striped Snaketail, Boreal Snaketail, Pygmy Snaketail, Arrow Clubtail, Ocellated Emerald, Mocha Emerald	Habitat Management	high	on-going	Develop/distribute Best Management Practices for landowners, land managers and conservation partners to avoid and minimize impacts of intensive land use activities (e.g., forestry, stream crossings, agriculture, development, hydro facilities).
Riverine Odonates	Arrowhead Spiketail, Broad-tailed Shadowdragon, Rapids Clubtail, Cobra Clubtail, Southern Pygmy Clubtail, Extra-striped Snaketail, Boreal Snaketail, Pygmy Snaketail, Arrow Clubtail, Ocellated Emerald, Mocha Emerald	Policy	critical	new	Increase MDIFW staff capacity for survey, research, and conservation of SGCN invertebrates.
Riverine Odonates	Arrowhead Spiketail, Broad-tailed Shadowdragon, Rapids Clubtail, Cobra	Public Outreach	moderate	on-going	Develop/distribute outreach materials to raise public awareness and appreciation

Guild	Species	Category	Biological Priority	Type	Description
	Clubtail, Southern Pygmy Clubtail, Extra-striped Snaketail, Boreal Snaketail, Pygmy Snaketail, Arrow Clubtail, Ocellated Emerald, Mocha Emerald				of freshwater aquatic insect ecology, threats and conservation needs.
Riverine Odonates	Arrowhead Spiketail, Broad-tailed Shadowdragon, Rapids Clubtail, Cobra Clubtail, Southern Pygmy Clubtail, Extra-striped Snaketail, Boreal Snaketail, Pygmy Snaketail, Arrow Clubtail, Ocellated Emerald, Mocha Emerald	Public Outreach	moderate	on-going	Develop/distribute guidelines and outreach materials to inform conservation partners, land use managers, and the general public about the impacts of pesticides on native insects and to promote the alternative use of Integrated Pest Management practices.
Riverine Odonates	Arrowhead Spiketail, Broad-tailed Shadowdragon, Rapids Clubtail, Cobra Clubtail, Southern Pygmy Clubtail, Extra-striped Snaketail, Boreal Snaketail, Pygmy Snaketail, Arrow Clubtail, Ocellated Emerald, Mocha Emerald	Research	high	completed	Update NatureServe S-ranks for all Maine Odonata based on results of the Maine Damselfly and Dragonfly Survey.
Riverine Odonates	Arrowhead Spiketail, Broad-tailed Shadowdragon, Rapids Clubtail, Cobra Clubtail, Southern Pygmy Clubtail, Extra-striped	Research	high	on-going	Analyze results of the Maine Dragonfly & Damselfly Survey, research and incorporate external Maine records (historical and modern), and produce a

Guild	Species	Category	Biological Priority	Type	Description
	Snaketail, Boreal Snaketail, Pygmy Snaketail, Arrow Clubtail, Ocellated Emerald, Mocha Emerald				summary document and conservation assessment.
Riverine Odonates	Arrowhead Spiketail, Broad-tailed Shadowdragon, Rapids Clubtail, Cobra Clubtail, Southern Pygmy Clubtail, Extra-striped Snaketail, Boreal Snaketail, Pygmy Snaketail, Arrow Clubtail, Ocellated Emerald, Mocha Emerald	Survey and Monitoring	high	completed	Conduct a statewide dragonfly/damselfly atlasing project.
Riverine Odonates	Arrowhead Spiketail, Broad-tailed Shadowdragon, Rapids Clubtail, Cobra Clubtail, Southern Pygmy Clubtail, Extra-striped Snaketail, Boreal Snaketail, Pygmy Snaketail, Arrow Clubtail, Ocellated Emerald, Mocha Emerald	Survey and Monitoring	high	on-going	Conduct comprehensive statewide surveys to inform status, distribution, threats, and habitat use.
Riparian Tiger Beetles	Appalachian Tiger Beetle, Cobblestone Tiger Beetle	Policy	high	new	MDIFW needs greater staff capacity for survey and conservation of SGCN invertebrates

Appendix Table 4- 3 Conservation Actions assigned to Inland Fish Guilds.

Guild	Species	Category	Biological Priority	Type	Description
Lentic Salmonids	Arctic Charr, Lake Trout, Landlocked Atlantic Salmon	Habitat Management	high	on-going	Identify key terrestrial habitats connected or adjacent to aquatic habitats that are essential to maintaining viability of populations
Lentic Salmonids	Arctic Charr, Lake Trout, Landlocked Atlantic Salmon	Habitat Management	high	on-going	Identify key aquatic habitats such as spawning sites and coordinate protection with federal, state, or NGOs and willing private landowners
Lentic Salmonids	Arctic Charr, Lake Trout, Landlocked Atlantic Salmon	Research	moderate	new	Address information gaps regarding impacts of sea-run alewife restoration.
Lentic Salmonids	Arctic Charr, Lake Trout, Landlocked Atlantic Salmon	Survey and Monitoring	critical	new	Develop a statewide, comprehensive lake thermal long-term monitoring effort comparable to the Maine Stream Temperature Monitoring Network.
Lentic Salmonids	Arctic Charr, Lake Trout, Landlocked Atlantic Salmon	Survey and Monitoring	critical	on-going	Monitor the fish assemblage of each lake, in particular the existence of invasive species

Guild	Species	Category	Biological Priority	Type	Description
Rare Minnows	Creek Chubsucker, Eastern Silvery Minnow, Pearl Dace, Bridle Shiner, Blacknose Shiner, Longnose Dace	Research	critical	new	Determine population abundance, habitat use, size and age structure and interaction with other fish species in representative waters
Rare Minnows	Creek Chubsucker, Eastern Silvery Minnow, Pearl Dace, Bridle Shiner, Blacknose Shiner, Longnose Dace	Research	critical	on-going	Develop a robust, reliable method to assess population trends, habitat associations, and geographic distribution.
Rare Minnows	Creek Chubsucker, Eastern Silvery Minnow, Pearl Dace, Bridle Shiner, Blacknose Shiner, Longnose Dace	Research	moderate	new	Determine susceptibility and risks associated with certain disease scenarios such as VHS
Whitefishes	Lake Whitefish, Round Whitefish	Research	critical	on-going	Determine population abundance, habitat use, size and age structure and interaction with other fish species in representative waters

Guild	Species	Category	Biological Priority	Type	Description
Whitefishes	Lake Whitefish, Round Whitefish	Research	high	on-going	Identify factors that have contributed to declining populations of lake and round whitefish.
Whitefishes	Lake Whitefish, Round Whitefish	Species Management	critical	on-going	Develop and implement rehabilitation programs for fisheries that have declined.

Appendix Table 4- 4 Conservation Actions assigned to Mammal Guilds.

Guild	Species	Category	Biological Priority	Type	Description
Cave Bats	Big Brown Bat, Eastern Small-footed Myotis, Little Brown Bat, Northern Long-eared Myotis, Tri-colored Bat	Research	high	on-going	Conduct research to evaluate the use of talus slopes and other rocky habitats by hibernating bats, including determining the distribution of potential hibernacula, and the habitat and environmental factors that influence winter occupancy.
Cave Bats	Big Brown Bat, Eastern Small-footed Myotis, Little Brown Bat, Northern Long-eared Myotis, Tri-colored Bat	Species Management	high	on-going	Implement curtailment procedures (and adjust as necessary) to reduce mortality associated with wind turbines. Evaluate the effectiveness of bat deterrents and implement if the science suggests that they can successfully reduce bat mortality.

Guild	Species	Category	Biological Priority	Type	Description
Cave Bats	Big Brown Bat, Eastern Small-footed Myotis, Little Brown Bat, Northern Long-eared Myotis, Tri-colored Bat	Species Management	high	on-going	Minimize the impact of White Nose Syndrome by limiting access to hibernacula, following decontamination procedures, and evaluating the practicality and effectiveness of treatments.
Cave Bats	Big Brown Bat, Eastern Small-footed Myotis, Little Brown Bat, Northern Long-eared Myotis, Tri-colored Bat	Survey and Monitoring	moderate	on-going	Conduct a monitoring effort to address knowledge gaps pertaining to the distribution, relative abundance, habitat use, and population trends of our cave bats.
Tree Bats	Silver-haired Bat, Eastern Red Bat, Hoary Bat	Research	moderate	new	Conduct research on migration patterns.
Tree Bats	Silver-haired Bat, Eastern Red Bat, Hoary Bat	Species Management	high		Implement curtailment procedures to reduce mortality associated with wind turbines.

Guild	Species	Category	Biological Priority	Type	Description
Small Mammals	Rock (yellow-nosed) Vole, Penobscot Meadow Vole, Woodland Vole, Northern Bog Lemming, Long-tailed Shrew	Survey and Monitoring	moderate	new	Conduct a survey effort to fill in knowledge gaps on the distribution, population status, and habitat use of Maine's small mammals.

Appendix Table 4- 5 Conservation Actions assigned to Marine Guilds.

Guild	Species	Category	Biological Priority	Type	Description
Bivalves	Eastern oyster, Softshell Clam, Quahog, hard clam, Atlantic Great Piddock, Atlantic Sea Scallop, Blue Mussel, Gaper Clam, Icelandic Scallop	Policy	critical	on-going	Through education and collaboration, reduce the use of antifouling agents and biocides that negatively affect SGCN, and investigate alternative biofouling agents.
Brachiopod	Lamp Shell	Policy	critical	new	Reduce the collection and possession of live specimens

Guild	Species	Category	Biological Priority	Type	Description
Brachiopod	Lamp Shell	Policy	critical	on-going	Through education and collaboration, reduce the use of antifouling agents and biocides that negatively affect SGCN, and investigate alternative biofouling agents.
Brachiopod	Lamp Shell	Public Outreach	high	on-going	Encourage the use of more targeted fishing gear in order to reduce bycatch and habitat disturbance
Brachiopod	Lamp Shell	Research	high	new	Develop molecular tools to identify where specimens are collected.
Gastropods	American Pelican Foot, Clathrate Trophon, pygmy whelk, Murex, Spindle Shell, Limancina Snail, Wavy Lamellaria	Policy	critical	new	Reduce the collection and possession of live specimens

Guild	Species	Category	Biological Priority	Type	Description
Gastropods	American Pelican Foot, Clathrate Trophon, pygmy whelk, Murex, Spindle Shell, Limancina Snail, Wavy Lamellaria	Policy	critical	new	Reduce the use of tributilyn compounds as a biocide and antifouling prophalactic
Gastropods	American Pelican Foot, Clathrate Trophon, pygmy whelk, Murex, Spindle Shell, Limancina Snail, Wavy Lamellaria	Public Outreach	high	on-going	Encourage the use of more targeted fishing gear in order to reduce bycatch and habitat disturbance
Gastropods	American Pelican Foot, Clathrate Trophon, pygmy whelk, Murex, Spindle Shell, Limancina Snail, Wavy Lamellaria	Research	high	new	Develop molecular tools to identify where specimens are collected.
Gastropods	American Pelican Foot, Clathrate Trophon, pygmy whelk, Murex, Spindle Shell, Limancina Snail, Wavy Lamellaria	Survey and Monitoring	high	on-going	Ground-truth mapped habitat and compare to historical maps to monitor change over time, may require updating mapping plans to map more frequently
Cnidaria	Sea Strawberry, Dead Man's Fingers	Policy	critical	new	Reduce the collection and possession of live specimens

Guild	Species	Category	Biological Priority	Type	Description
Cnidaria	Sea Strawberry, Dead Man's Fingers	Policy	critical	on-going	Through education and collaboration, reduce the use of antifouling agents and biocides that negatively affect SGCN, and investigate alternative biofouling agents.
Cnidaria	Sea Strawberry, Dead Man's Fingers	Public Outreach	high	on-going	Encourage the use of more targeted fishing gear in order to reduce bycatch and habitat disturbance
Cnidaria	Sea Strawberry, Dead Man's Fingers	Research	high	new	Develop molecular tools to identify where specimens are collected.
Echinoderms	Orange-footed Sea Cucumber, Green Sea Urchin, Forbes's Starfish, Common Sea Star, Common Sun Star, Northern Basket Starfish, Psolus fabricii, Psolus phantapus, Purple Sunstar, Sea Cucumber, White Sea Star	Policy	critical	on-going	Through education and collaboration, reduce the use of antifouling agents and biocides that negatively affect SGCN, and investigate alternative biofouling agents.
Echinoderms	Orange-footed Sea Cucumber, Green Sea Urchin, Forbes's Starfish,	Public Outreach	high	on-going	Encourage the use of more targeted fishing gear in order to reduce bycatch and habitat disturbance

Guild	Species	Category	Biological Priority	Type	Description
	Common Sea Star, Common Sun Star, Northern Basket Starfish, Psolus fabricii, Psolus phantapus, Purple Sunstar, Sea Cucumber, White Sea Star				
Echinoderms	Orange-footed Sea Cucumber, Green Sea Urchin, Forbes's Starfish, Common Sea Star, Common Sun Star, Northern Basket Starfish, Psolus fabricii, Psolus phantapus, Purple Sunstar, Sea Cucumber, White Sea Star	Public Outreach	high	on-going	Encourage the use of more targeted fishing gear in order to reduce bycatch and habitat disturbance
Echinoderms	Orange-footed Sea Cucumber, Green Sea Urchin, Forbes's Starfish, Common Sea Star, Common Sun Star, Northern Basket Starfish, Psolus fabricii, Psolus phantapus, Purple Sunstar, Sea Cucumber, White Sea Star	Research	high	new	Investigate the effect of various harvesting practices on the integrity of habitats and trophic and ecological systems
Echinoderms	Orange-footed Sea Cucumber, Green Sea Urchin, Forbes's Starfish, Common Sea Star, Common Sun Star, Northern Basket	Research	high	new	Research to understand how effects such as habitat modifications, population changes, and pollution can influence SGCN

Guild	Species	Category	Biological Priority	Type	Description
	Starfish, Psolus fabricii, Psolus phantapus, Purple Sunstar, Sea Cucumber, White Sea Star				
Echinoderms	Orange-footed Sea Cucumber, Green Sea Urchin, Forbes's Starfish, Common Sea Star, Common Sun Star, Northern Basket Starfish, Psolus fabricii, Psolus phantapus, Purple Sunstar, Sea Cucumber, White Sea Star	Research	high	new	Identify species that are resilient to ocean acidification (OA) and rises in sea surface temperature (SST).
Echinoderms	Orange-footed Sea Cucumber, Green Sea Urchin, Forbes's Starfish, Common Sea Star, Common Sun Star, Northern Basket Starfish, Psolus fabricii, Psolus phantapus, Purple Sunstar, Sea Cucumber, White Sea Star	Research	high	on-going	Expand existing education and research among researchers and managers to improve understanding and management ability
Echinoderms	Orange-footed Sea Cucumber, Green Sea Urchin, Forbes's Starfish, Common Sea Star, Common Sun Star, Northern Basket Starfish, Psolus fabricii, Psolus phantapus, Purple	Research	high	on-going	Conduct research to support management, including but not limited to stock assessments, population genetics, population monitoring, etc.

Guild	Species	Category	Biological Priority	Type	Description
	Sunstar, Sea Cucumber, White Sea Star				
Echinoderms	Orange-footed Sea Cucumber, Green Sea Urchin, Forbes's Starfish, Common Sea Star, Common Sun Star, Northern Basket Starfish, Psolus fabricii, Psolus phantapus, Purple Sunstar, Sea Cucumber, White Sea Star	Survey and Monitoring	high	on-going	Ground-truth mapped habitat and compare to historical maps to monitor change over time, may require updating mapping plans to map more frequently
Shrimp	Northern Shrimp, Polar Lebbeid Shrimp, Spiny Lebbeid Shrimp	Policy	critical	on-going	Through education and collaboration, reduce the use of antifouling agents and biocides that negatively affect SGCN, and investigate alternative biofouling agents.
Shrimp	Northern Shrimp, Polar Lebbeid Shrimp, Spiny Lebbeid Shrimp	Research	high	on-going	Develop molecular tools to identify where specimens are collected.
Shrimp	Northern Shrimp, Polar Lebbeid Shrimp, Spiny Lebbeid Shrimp	Research	high	on-going	Expand existing education and research among researchers and managers to improve understanding and close data loopholes in order to inform management
Shrimp	Northern Shrimp, Polar Lebbeid Shrimp, Spiny Lebbeid Shrimp	Survey and Monitoring	high	on-going	Ground-truth mapped habitat and compare to historical maps to monitor change over time, may require updating mapping plans to map more frequently

Guild	Species	Category	Biological Priority	Type	Description
Groundfish	Striped Bass, American Sand Lance, Winter Flounder, Atlantic Wolffish, Cusk, Atlantic Cod, Haddock, Spotted Wolffish, White Hake	Habitat Management	high	new	Develop marine benthic habitat maps. Data from these maps could then be used to inform species distribution modeling.
Groundfish	Striped Bass, American Sand Lance, Winter Flounder, Atlantic Wolffish, Cusk, Atlantic Cod, Haddock, Spotted Wolffish, White Hake	Research	moderate	on-going	Conduct species distribution modeling to understand how species distributions are changing due to enviornmental change.
Groundfish	Striped Bass, American Sand Lance, Winter Flounder, Atlantic Wolffish, Cusk, Atlantic Cod, Haddock, Spotted Wolffish, White Hake	Survey and Monitoring	high	on-going	Continue inshore long-term surveys for groundfish species to quantify abundance, biomass, and spatial distribution of these species.
Diadromous Fish	American Eel, Blueback Herring, Alewife, American Shad, Rainbow Smelt, Atlantic Salmon, Atlantic Sturgeon, Shortnose sturgeon	Habitat Management	high	on-going	Encourage improved municipal planning for siting for new or retrofitting development, taking into account future environmental change, to improve connectivity for diadromous fish passage

Guild	Species	Category	Biological Priority	Type	Description
Diadromous Fish	American Eel, Blueback Herring, Alewife, American Shad, Rainbow Smelt, Atlantic Salmon, Atlantic Sturgeon, Shortnose sturgeon	Habitat Management	high	on-going	Encourage the use of more targeted fishing gear in order to reduce bycatch and habitat disturbance.
Diadromous Fish	American Eel, Blueback Herring, Alewife, American Shad, Rainbow Smelt, Atlantic Salmon, Atlantic Sturgeon, Shortnose sturgeon	Public Outreach	high	on-going	Conduct education to increase awareness of the importance of these species to maintaining productive ecosystem functioning.
Diadromous Fish	American Eel, Blueback Herring, Alewife, American Shad, Rainbow Smelt, Atlantic Salmon, Atlantic Sturgeon, Shortnose sturgeon	Public Outreach	moderate	on-going	Continue to work with the fishing industry to develop gear modifications that reduce of bycatch of diadromous fishes
Diadromous Fish	American Eel, Blueback Herring, Alewife, American Shad, Rainbow Smelt, Atlantic Salmon, Atlantic Sturgeon, Shortnose sturgeon	Research	critical	on-going	Determine the location and timing of critical habitat use (for endangered species) and important habitat use for diadromous fishes at different life history stages

Guild	Species	Category	Biological Priority	Type	Description
Diadromous Fish	American Eel, Blueback Herring, Alewife, American Shad, Rainbow Smelt, Atlantic Salmon, Atlantic Sturgeon, Shortnose sturgeon	Research	high	new	Investigate methods to reduce incidental bycatch in commerical and recreational fisheries
Diadromous Fish	American Eel, Blueback Herring, Alewife, American Shad, Rainbow Smelt, Atlantic Salmon, Atlantic Sturgeon, Shortnose sturgeon	Research	high	new	Improve understanding of the relative roles of natural predation, fishing mortality, and climate change in stock dynamics
Diadromous Fish	American Eel, Blueback Herring, Alewife, American Shad, Rainbow Smelt, Atlantic Salmon, Atlantic Sturgeon, Shortnose sturgeon	Research	high	on-going	Improve understanding of species distribution especially in regards to ecosystem interactions, predator-prey relationships, and prey buffering concepts
Diadromous Fish	American Eel, Blueback Herring, Alewife, American Shad, Rainbow Smelt, Atlantic Salmon, Atlantic Sturgeon, Shortnose sturgeon	Research	high	on-going	Gather information to support management, including stock assessments, population genetics, population monitoring, etc.
Diadromous Fish	American Eel, Blueback Herring, Alewife, American Shad, Rainbow Smelt, Atlantic Salmon, Atlantic	Survey and Monitoring	critical	on-going	Monitor population stock status through surveys and sampling programs

Guild	Species	Category	Biological Priority	Type	Description
	Sturgeon, Shortnose sturgeon				
Diadromous Fish	American Eel, Blueback Herring, Alewife, American Shad, Rainbow Smelt, Atlantic Salmon, Atlantic Sturgeon, Shortnose sturgeon	Survey and Monitoring	high	on-going	Ground-truth mapped habitat and compare to historical maps to monitor change over time, may require updating mapping plans to map more frequently
Seaturtles	Loggerhead Seaturtle, Green Seaturtle, Leatherback Seaturtle, Kemp's Ridley Seaturtle	Habitat Management	moderate	on-going	Reduce the amount of ghost gear that could increase the risk of entanglement for sea turtles
Seaturtles	Loggerhead Seaturtle, Green Seaturtle, Leatherback Seaturtle, Kemp's Ridley Seaturtle	Public Outreach	high	new	Conduct outreach with fishermen to increase reporting for entangled turtles
Seaturtles	Loggerhead Seaturtle, Green Seaturtle, Leatherback Seaturtle, Kemp's Ridley Seaturtle	Public Outreach	moderate	new	Conduct outreach and trainings to improve the detection of and response time to entangled turtles in Maine waters
Seaturtles	Loggerhead Seaturtle, Green Seaturtle, Leatherback Seaturtle, Kemp's Ridley Seaturtle	Public Outreach	moderate	on-going	Continue to work with the fishing industry to develop gear modifications that reduce the risk of entanglement and

Guild	Species	Category	Biological Priority	Type	Description
					conduct outreach on gear best practices to use
Seaturtles	Loggerhead Seaturtle, Green Seaturtle, Leatherback Seaturtle, Kemp's Ridley Seaturtle	Survey and Monitoring	critical	on-going	Conduct baseline surveys to determine the seasonal density and distribution of fixed fishing gear
Seaturtles	Loggerhead Seaturtle, Green Seaturtle, Leatherback Seaturtle, Kemp's Ridley Seaturtle	Survey and Monitoring	high	on-going	Gather baseline data on the configurations of fixed fishing gear used as a function of seasonality and distance from shore.
Seaturtles	Loggerhead Seaturtle, Green Seaturtle, Leatherback Seaturtle, Kemp's Ridley Seaturtle	Survey and Monitoring	moderate	new	Conduct surveys (aerial, boat based) to determine the distribution of sea turtles in the coastal waters of Maine
Whales	North Atlantic Right Whale, Sei Whale, Finback Whale, Humpback Whale, Sperm Whale, Blue Whale	Habitat Management	moderate	on-going	Reduce the amount of ghost gear that could increase the risk of entanglement for large whales
Whales	North Atlantic Right Whale, Sei Whale, Finback Whale, Humpback Whale, Sperm Whale, Blue Whale	Public Outreach	high	on-going	Continue to work with the fishing industry to develop gear modifications that reduce the risk of entanglement and

Guild	Species	Category	Biological Priority	Type	Description
					conduct outreach on gear best practices to use
Whales	North Atlantic Right Whale, Sei Whale, Finback Whale, Humpback Whale, Sperm Whale, Blue Whale	Public Outreach	moderate	on-going	Conduct outreach and trainings to improve the detection of and response time to entangled whales in Maine waters
Whales	North Atlantic Right Whale, Sei Whale, Finback Whale, Humpback Whale, Sperm Whale, Blue Whale	Survey and Monitoring	critical	new	Conduct surveys (aerial, boat based and/or passive acoustic) to determine the distribution of large whales in the coastal waters of Maine
Whales	North Atlantic Right Whale, Sei Whale, Finback Whale, Humpback Whale, Sperm Whale, Blue Whale	Survey and Monitoring	critical	on-going	Conduct baseline surveys to determine the seasonal density and distribution of fixed fishing gear
Whales	North Atlantic Right Whale, Sei Whale, Finback Whale, Humpback Whale, Sperm Whale, Blue Whale	Survey and Monitoring	high	on-going	Gather baseline data on the configurations of fixed fishing gear used as a function of seasonality and distance from shore.
Whales	North Atlantic Right Whale, Sei Whale, Finback Whale, Humpback Whale, Sperm Whale, Blue Whale	Survey and Monitoring	high	on-going	Determine the high overlap areas between whales, high risk behaviors or persistent habitat use and fixed fishing gear

Appendix Table 4- 6 Conservation Actions assigned to Plant Guilds.

Guild	Species	Category	Biological Priority	Type	Description
Alpine or subalpine plants	Boreal Bentgrass, Alpine Bearberry, Tundra Dwarf Birch, Dwarf White Birch, Russett Sedge, Alaskan Clubmoss, Alpine Willow-herb, Hornemann's Willow-herb, Oakes' Eyebright, Arctic Red Fescue, Moss Bell-heather, Alpine Sweet-grass, Alpine Azalea, Northern Wood-rush, Spiked Wood-rush, Alpine Cudweed, Silverling, Alpine Bistort, Mountain Heath, Wavy Bluegrass, Boott's Rattlesnake Root, Lapland Rosebay, Arctic Willow, Dwarf Willow, Tea-leaved Willow, Bearberry Willow, Star Saxifrage, Cutler's Goldenrod, Mountain Hairgrass, Alpine Speedwell, Glaucous Rattlesnake-root, Lapland Diapensia, Alpine Blueberry, Livelong Saxifrage, Bigelow's Sedge	Habitat Management	high	on-going	Work with species specialists to apply suitable protective buffers to populations when construction, road building, timber harvest, or soil disturbance are proposed.

Guild	Species	Category	Biological Priority	Type	Description
Alpine or subalpine plants	Boreal Bentgrass, Alpine Bearberry, Tundra Dwarf Birch, Dwarf White Birch, Russett Sedge, Alaskan Clubmoss, Alpine Willow-herb, Hornemann's Willow-herb, Oakes' Eyebright, Arctic Red Fescue, Moss Bell-heather, Alpine Sweet-grass, Alpine Azalea, Northern Wood-rush, Spiked Wood-rush, Alpine Cudweed, Silverling, Alpine Bistort, Mountain Heath, Wavy Bluegrass, Boott's Rattlesnake Root, Lapland Rosebay, Arctic Willow, Dwarf Willow, Tea-leaved Willow, Bearberry Willow, Star Saxifrage, Cutler's Goldenrod, Mountain Hairgrass, Alpine Speedwell, Glaucous Rattlesnake-root, Lapland Diapensia, Alpine Blueberry, Livelong Saxifrage, Bigelow's Sedge	Habitat Management	high	on-going	Establish or reroute trails to avoid populations.

Guild	Species	Category	Biological Priority	Type	Description
Alpine or subalpine plants	Boreal Bentgrass, Alpine Bearberry, Tundra Dwarf Birch, Dwarf White Birch, Russett Sedge, Alaskan Clubmoss, Alpine Willow-herb, Hornemann's Willow-herb, Oakes' Eyebright, Arctic Red Fescue, Moss Bell-heather, Alpine Sweet-grass, Alpine Azalea, Northern Wood-rush, Spiked Wood-rush, Alpine Cudweed, Silverling, Alpine Bistort, Mountain Heath, Wavy Bluegrass, Boott's Rattlesnake Root, Lapland Rosebay, Arctic Willow, Dwarf Willow, Tea-leaved Willow, Bearberry Willow, Star Saxifrage, Cutler's Goldenrod, Mountain Hairgrass, Alpine Speedwell, Glaucous Rattlesnake-root, Lapland Diapensia, Alpine Blueberry, Livelong Saxifrage, Bigelow's Sedge	Habitat Management	high	on-going	Identify and protect populations that are in good-excellent condition, robust, or in potential refugia.

Guild	Species	Category	Biological Priority	Type	Description
Alpine or subalpine plants	Boreal Bentgrass, Alpine Bearberry, Tundra Dwarf Birch, Dwarf White Birch, Russett Sedge, Alaskan Clubmoss, Alpine Willow-herb, Hornemann's Willow-herb, Oakes' Eyebright, Arctic Red Fescue, Moss Bell-heather, Alpine Sweet-grass, Alpine Azalea, Northern Wood-rush, Spiked Wood-rush, Alpine Cudweed, Silverling, Alpine Bistort, Mountain Heath, Wavy Bluegrass, Boott's Rattlesnake Root, Lapland Rosebay, Arctic Willow, Dwarf Willow, Tea-leaved Willow, Bearberry Willow, Star Saxifrage, Cutler's Goldenrod, Mountain Hairgrass, Alpine Speedwell, Glaucous Rattlesnake-root, Lapland Diapensia, Alpine Blueberry, Livelong Saxifrage, Bigelow's Sedge	Survey and Monitoring	moderate	on-going	Require field surveys prior to permitting or construction.

Guild	Species	Category	Biological Priority	Type	Description
Coastal non-tidal plants	Pickering's Reed Bent-grass, Awned Sedge, Ink-berry, Beach Wormwood, Red-root Flatsedge	Habitat Management	high	on-going	Avoid construction within 250' of populations.
Coastal non-tidal plants	Pickering's Reed Bent-grass, Awned Sedge, Ink-berry, Beach Wormwood, Red-root Flatsedge	Habitat Management	high	on-going	Develop Early Detection Rapid Response Protocols for mapped occurrences.
Coastal non-tidal plants	Pickering's Reed Bent-grass, Awned Sedge, Ink-berry, Beach Wormwood, Red-root Flatsedge	Habitat Management	high	on-going	Work with conservation partners to develop watershed-scale water management plans. Encourage BMPs to avoid siltation and nutrient inputs and promote retention of vegetated buffers.
Coastal non-tidal plants	Pickering's Reed Bent-grass, Awned Sedge, Ink-berry, Beach Wormwood, Red-root Flatsedge	Survey and Monitoring	high	on-going	Surveys required prior to construction.
Coastal non-tidal plants	Pickering's Reed Bent-grass, Awned Sedge, Ink-berry, Beach Wormwood, Red-root Flatsedge	Survey and Monitoring	high	on-going	Establish regular survey intervals for high-ranked occurrences.

Guild	Species	Category	Biological Priority	Type	Description
Forested wetland plants	Small Round-leaved Orchis, Screwstem, Cat-tail Sedge, Ram's-head Lady's-slipper, Showy Lady's-slipper, White Adder's-mouth, Swamp White Oak, Hoary Willow, Showy Goldenrod, Bulbous Bitter-cress, Smooth Winterberry Holly, Swamp Honeysuckle, Marsh Valerian, Spicebush, Northern Bog Sedge, Sparse-flowered Sedge, Black Ash, American Elm	Habitat Management	high	on-going	Work with species specialists to apply suitable protective buffers to populations when construction, road building, timber harvest, or soil disturbance are proposed.
Forested wetland plants	Small Round-leaved Orchis, Screwstem, Cat-tail Sedge, Ram's-head Lady's-slipper, Showy Lady's-slipper, White Adder's-mouth, Swamp White Oak, Hoary Willow, Showy Goldenrod, Bulbous Bitter-cress, Smooth Winterberry Holly, Swamp Honeysuckle, Marsh Valerian, Spicebush, Northern Bog Sedge, Sparse-flowered Sedge, Black Ash, American Elm	Habitat Management	high	on-going	Develop Early Detection Rapid Response protocols for non-native invasive plants that threaten SGCN populations.

Guild	Species	Category	Biological Priority	Type	Description
Forested wetland plants	Small Round-leaved Orchis, Screwstem, Cat-tail Sedge, Ram's-head Lady's-slipper, Showy Lady's-slipper, White Adder's-mouth, Swamp White Oak, Hoary Willow, Showy Goldenrod, Bulbous Bitter-cress, Smooth Winterberry Holly, Swamp Honeysuckle, Marsh Valerian, Spicebush, Northern Bog Sedge, Sparse-flowered Sedge, Black Ash, American Elm	Habitat Management	high	on-going	Work with conservation partners to develop watershed-scale water management plans.
Forested wetland plants	Small Round-leaved Orchis, Screwstem, Cat-tail Sedge, Ram's-head Lady's-slipper, Showy Lady's-slipper, White Adder's-mouth, Swamp White Oak, Hoary Willow, Showy Goldenrod, Bulbous Bitter-cress, Smooth Winterberry Holly, Swamp Honeysuckle, Marsh Valerian, Spicebush, Northern Bog Sedge, Sparse-flowered Sedge, Black Ash, American Elm	Public Outreach	high	on-going	Encourage BMPs to avoid siltation and nutrient inputs and promote retention of vegetated buffers.

Guild	Species	Category	Biological Priority	Type	Description
Forested wetland plants	Small Round-leaved Orchis, Screwstem, Cat-tail Sedge, Ram's-head Lady's-slipper, Showy Lady's-slipper, White Adder's-mouth, Swamp White Oak, Hoary Willow, Showy Goldenrod, Bulbous Bitter-cress, Smooth Winterberry Holly, Swamp Honeysuckle, Marsh Valerian, Spicebush, Northern Bog Sedge, Sparse-flowered Sedge, Black Ash, American Elm	Survey and Monitoring	high	on-going	Require field surveys prior to permitting or construction.
Forested wetland plants	Small Round-leaved Orchis, Screwstem, Cat-tail Sedge, Ram's-head Lady's-slipper, Showy Lady's-slipper, White Adder's-mouth, Swamp White Oak, Hoary Willow, Showy Goldenrod, Bulbous Bitter-cress, Smooth Winterberry Holly, Swamp Honeysuckle, Marsh Valerian, Spicebush, Northern Bog Sedge, Sparse-flowered Sedge, Black Ash, American Elm	Survey and Monitoring	high	on-going	Establish plan to keep population data updated in particular for high-ranked or vulnerable occurrences.

Guild	Species	Category	Biological Priority	Type	Description
Grassland Plants	Upright Bindweed, Muhlenberg Sedge, Clothed Sedge, Northern Blazing Star, Dry Land Sedge	Habitat Management	critical	on-going	Maintain suitable habitat through prescribed fire to reduce risk of catastrophic wildfire or fire during growing season if droughts occur
Grassland Plants	Upright Bindweed, Muhlenberg Sedge, Clothed Sedge, Northern Blazing Star, Dry Land Sedge	Habitat Management	high	on-going	Work with species specialists to apply suitable protective buffers to populations when construction, road building, timber harvest, or soil disturbance are proposed.
Grassland Plants	Upright Bindweed, Muhlenberg Sedge, Clothed Sedge, Northern Blazing Star, Dry Land Sedge	Habitat Management	high	on-going	Develop Early Detection Rapid Response protocols for non-native invasive plants that threaten SGCN populations.
Grassland Plants	Upright Bindweed, Muhlenberg Sedge, Clothed Sedge, Northern Blazing Star, Dry Land Sedge	Habitat Management	high	on-going	Establish and/or continue controlled burn programs to support the species persistence.
Grassland Plants	Upright Bindweed, Muhlenberg Sedge, Clothed Sedge, Northern Blazing Star, Dry Land Sedge	Public Outreach	high	on-going	Educate the public about the importance of fire regimes in maintaining natural species assemblages.
Grassland Plants	Upright Bindweed, Muhlenberg Sedge, Clothed Sedge, Northern Blazing Star, Dry Land Sedge	Survey and Monitoring	high	on-going	Surveys required prior to construction or related impacts.
Grassland Plants	Upright Bindweed, Muhlenberg Sedge, Clothed	Survey and Monitoring	high	on-going	Establish regular survey intervals for high-ranked occurrences.

Guild	Species	Category	Biological Priority	Type	Description
	Sedge, Northern Blazing Star, Dry Land Sedge				
Hardwood to mixed forest plants	Wild Ginger, Cut-leaved Toothwort, Spreading Sedge, Bur-reed Sedge, Bitternut Hickory, Spotted Wintergreen, Autumn Coral-root, Flowering Dogwood, Northern Wild Comfrey, Squirrel-corn, Male Fern, Showy Orchid, Boreal Bedstraw, Northern Stickseed, Small Whorled Pogonia, Mountain Honeysuckle, American Ginseng, Scarlet Oak, Chestnut Oak, Great Rhododendron, Clammy Azalea, Rue-anemone, Wild Coffee, Nodding Pogonia, Summer Grape, Fern-leaved False Foxglove, Blunt-lobed Grapefern, Upland Boneset, Large Toothwort, Mountain-laurel, American Chestnut, Pale Jewel-weed, White Vervain, Sassafras, Purple Clematis, Goldie's Wood Fern, Broad Beech Fern, Wild Chess, Hairy	Habitat Management	high	on-going	Work with species specialists to apply suitable protective buffers to populations when construction, road building, timber harvest, or soil disturbance are proposed.

Guild	Species	Category	Biological Priority	Type	Description
	Wood Brome-grass, Bottlebrush Grass, Cliff Muhly, White Ash, Green Ash, Honewort, Sharp-lobed hepatica				
Hardwood to mixed forest plants	Wild Ginger, Cut-leaved Toothwort, Spreading Sedge, Bur-reed Sedge, Bitternut Hickory, Spotted Wintergreen, Autumn Coral-root, Flowering Dogwood, Northern Wild Comfrey, Squirrel-corn, Male Fern, Showy Orchid, Boreal Bedstraw, Northern Stickseed, Small Whorled Pogonia, Mountain Honeysuckle, American Ginseng, Scarlet Oak, Chestnut Oak, Great Rhododendron, Clammy Azalea, Rue-anemone, Wild Coffee, Nodding Pogonia, Summer Grape, Fern-leaved False Foxglove, Blunt-lobed Grapefern, Upland Boneset, Large Toothwort, Mountain-laurel, American Chestnut, Pale Jewel-weed, White Vervain, Sassafras,	Habitat Management	high	on-going	Prioritize acquisition or long-term conservation of high-value areas through fee ownership or easement.

Guild	Species	Category	Biological Priority	Type	Description
	Purple Clematis, Goldie's Wood Fern, Broad Beech Fern, Wild Chess, Hairy Wood Brome-grass, Bottlebrush Grass, Cliff Muhly, White Ash, Green Ash, Honewort, Sharp-lobed hepatica				
Hardwood to mixed forest plants	Wild Ginger, Cut-leaved Toothwort, Spreading Sedge, Bur-reed Sedge, Bitternut Hickory, Spotted Wintergreen, Autumn Coral-root, Flowering Dogwood, Northern Wild Comfrey, Squirrel-corn, Male Fern, Showy Orchid, Boreal Bedstraw, Northern Stickseed, Small Whorled Pogonia, Mountain Honeysuckle, American Ginseng, Scarlet Oak, Chestnut Oak, Great Rhododendron, Clammy Azalea, Rue-anemone, Wild Coffee, Nodding Pogonia, Summer Grape, Fern-leaved False Foxglove, Blunt-lobed Grapefern, Upland Boneset, Large Toothwort,	Habitat Management	high	on-going	Develop Early Detection Rapid Response protocols for non-native invasive plants that threaten SGCN populations.

Guild	Species	Category	Biological Priority	Type	Description
	Mountain-laurel, American Chestnut, Pale Jewel-weed, White Vervain, Sassafras, Purple Clematis, Goldie's Wood Fern, Broad Beech Fern, Wild Chess, Hairy Wood Brome-grass, Bottlebrush Grass, Cliff Muhly, White Ash, Green Ash, Honewort, Sharp-lobed hepatica				
Hardwood to mixed forest plants	Wild Ginger, Cut-leaved Toothwort, Spreading Sedge, Bur-reed Sedge, Bitternut Hickory, Spotted Wintergreen, Autumn Coral-root, Flowering Dogwood, Northern Wild Comfrey, Squirrel-corn, Male Fern, Showy Orchid, Boreal Bedstraw, Northern Stickseed, Small Whorled Pogonia, Mountain Honeysuckle, American Ginseng, Scarlet Oak, Chestnut Oak, Great Rhododendron, Clammy Azalea, Rue-anemone, Wild Coffee, Nodding Pogonia, Summer Grape, Fern-leaved	Survey and Monitoring	high	on-going	Require field surveys prior to permitting or construction.

Guild	Species	Category	Biological Priority	Type	Description
	False Foxglove, Blunt-lobed Grapefern, Upland Boneset, Large Toothwort, Mountain-laurel, American Chestnut, Pale Jewel-weed, White Vervain, Sassafras, Purple Clematis, Goldie's Wood Fern, Broad Beech Fern, Wild Chess, Hairy Wood Brome-grass, Bottlebrush Grass, Cliff Muhly, White Ash, Green Ash, Honewort, Sharp-lobed hepatica				
Hardwood to mixed forest plants	Wild Ginger, Cut-leaved Toothwort, Spreading Sedge, Bur-reed Sedge, Bitternut Hickory, Spotted Wintergreen, Autumn Coral-root, Flowering Dogwood, Northern Wild Comfrey, Squirrel-corn, Male Fern, Showy Orchid, Boreal Bedstraw, Northern Stickseed, Small Whorled Pogonia, Mountain Honeysuckle, American Ginseng, Scarlet Oak, Chestnut Oak, Great Rhododendron, Clammy	Survey and Monitoring	high	on-going	Establish plan to keep population data updated in particular for high-ranked or vulnerable occurrences.

Guild	Species	Category	Biological Priority	Type	Description
	Azalea, Rue-anemone, Wild Coffee, Nodding Pogonia, Summer Grape, Fern-leaved False Foxglove, Blunt-lobed Grapefern, Upland Boneset, Large Toothwort, Mountain-laurel, American Chestnut, Pale Jewel-weed, White Vervain, Sassafras, Purple Clematis, Goldie's Wood Fern, Broad Beech Fern, Wild Chess, Hairy Wood Brome-grass, Bottlebrush Grass, Cliff Muhly, White Ash, Green Ash, Honewort, Sharp-lobed hepatica				
Non-tidal rivershore plants	Cut-leaved Anemone, Hairy Arnica, Neglected Reed-grass, Northern Gentian, Robinson's Hawkweed, Great St John's-wort, Slender Rush, Auricled Twayblade, St John Oxytrope, Furbish's Lousewort, Mountain Timothy, Seneca Snakeroot, Horned Beak-rush, Sandbar Willow, Blue-leaf Willow, Canada Burnet, Canada	Habitat Management	high	on-going	Work with conservation partners to develop watershed-scale water management plans.

Guild	Species	Category	Biological Priority	Type	Description
	Buffaloberry, Indian Grass, Shining Ladies'-tresses, Longleaf Dropseed, Anticosti Aster, Northern Painted Cup, Hyssop-leaved Fleabane, Huron Tansy, Alpine Milk-vetch, Robbins' Milk-vetch, Alpine Sweet-broom, Mistassini Primrose, Boundary Meadow-rue, Gaspé Shadbush, Long-leaved Bluet, New England Violet, Black Sedge, Dioecious Sedge, Houghton's Flatsedge, Awned Flatsedge, Few-flowered Spikerush, Alpine Rush, Pale Green Orchis, NorthernWormwood, Teel lovegrass				
Non-tidal rivershore plants	Cut-leaved Anemone, Hairy Arnica, Neglected Reed-grass, Northern Gentian, Robinson's Hawkweed, Great St John's-wort, Slender Rush, Auricled Twayblade, St John Oxytrope, Furbish's Lousewort, Mountain Timothy, Seneca Snakeroot,	Habitat Management	high	on-going	Encourage BMPs to avoid siltation and nutrient inputs and promote retention of vegetated buffers.

Guild	Species	Category	Biological Priority	Type	Description
	Horned Beak-rush, Sandbar Willow, Blue-leaf Willow, Canada Burnet, Canada Buffaloberry, Indian Grass, Shining Ladies'-tresses, Longleaf Dropseed, Anticosti Aster, Northern Painted Cup, Hyssop-leaved Fleabane, Huron Tansy, Alpine Milk-vetch, Robbins' Milk-vetch, Alpine Sweet-broom, Mistassini Primrose, Boundary Meadow-rue, Gaspé Shadbush, Long-leaved Bluet, New England Violet, Black Sedge, Dioecious Sedge, Houghton's Flatsedge, Awned Flatsedge, Few-flowered Spikerush, Alpine Rush, Pale Green Orchis, NorthernWormwood, Teel lovegrass				
Non-tidal rivershore plants	Cut-leaved Anemone, Hairy Arnica, Neglected Reed-grass, Northern Gentian, Robinson's Hawkweed, Great St John's-wort, Slender Rush, Auricled Twayblade, St John	Habitat Management	high	on-going	Work with species specialists to apply suitable protective buffers to populations when construction, road building, timber harvest, or soil disturbance are proposed.

Guild	Species	Category	Biological Priority	Type	Description
	Oxytrope, Furbish's Lousewort, Mountain Timothy, Seneca Snakeroot, Horned Beak-rush, Sandbar Willow, Blue-leaf Willow, Canada Burnet, Canada Buffaloberry, Indian Grass, Shining Ladies'-tresses, Longleaf Dropseed, Anticosti Aster, Northern Painted Cup, Hyssop-leaved Fleabane, Huron Tansy, Alpine Milk-vetch, Robbins' Milk-vetch, Alpine Sweet-broom, Mistassini Primrose, Boundary Meadow-rue, Gaspé Shadbush, Long-leaved Bluet, New England Violet, Black Sedge, Dioecious Sedge, Houghton's Flatsedge, Awned Flatsedge, Few-flowered Spikerush, Alpine Rush, Pale Green Orchis, NorthernWormwood, Teel lovegrass				

Guild	Species	Category	Biological Priority	Type	Description
Non-tidal rivershore plants	Cut-leaved Anemone, Hairy Arnica, Neglected Reed-grass, Northern Gentian, Robinson's Hawkweed, Great St John's-wort, Slender Rush, Auricled Twayblade, St John Oxytrope, Furbish's Lousewort, Mountain Timothy, Seneca Snakeroot, Horned Beak-rush, Sandbar Willow, Blue-leaf Willow, Canada Burnet, Canada Buffaloberry, Indian Grass, Shining Ladies'-tresses, Longleaf Dropseed, Anticosti Aster, Northern Painted Cup, Hyssop-leaved Fleabane, Huron Tansy, Alpine Milk-vetch, Robbins' Milk-vetch, Alpine Sweet-broom, Mistassini Primrose, Boundary Meadow-rue, Gaspé Shadbush, Long-leaved Bluet, New England Violet, Black Sedge, Dioecious Sedge, Houghton's Flatsedge, Awned Flatsedge, Few-flowered Spikerush, Alpine Rush, Pale Green Orchis,	Habitat Management	high	on-going	Avoid permanent alteration of shoreline through hardening projects or in - river alteration of ice and water flow

Guild	Species	Category	Biological Priority	Type	Description
	NorthernWormwood, Teel lovegrass				
Non-tidal rivershore plants	Cut-leaved Anemone, Hairy Arnica, Neglected Reed-grass, Northern Gentian, Robinson's Hawkweed, Great St John's-wort, Slender Rush, Auricled Twayblade, St John Oxytrope, Furbish's Lousewort, Mountain Timothy, Seneca Snakeroot, Horned Beak-rush, Sandbar Willow, Blue-leaf Willow, Canada Burnet, Canada Buffaloberry, Indian Grass, Shining Ladies'-tresses, Longleaf Dropseed, Anticosti Aster, Northern Painted Cup, Hyssop-leaved Fleabane, Huron Tansy, Alpine Milk-vetch, Robbins' Milk-vetch, Alpine Sweet-	Research	high	new	Increase survey capacity to assess population sizes, reproductive status, and population viability of riverine species.

Guild	Species	Category	Biological Priority	Type	Description
	broom, Mistassini Primrose, Boundary Meadow-rue, Gaspé Shadbush, Long-leaved Bluet, New England Violet, Black Sedge, Dioecious Sedge, Houghton's Flatsedge, Awned Flatsedge, Few-flowered Spikerush, Alpine Rush, Pale Green Orchis, NorthernWormwood, Teel lovegrass				
Old field or roadside	Moonwort, Swarthy Sedge, Bicknell's Sedge, Orono Sedge, Barren-strawberry, Pale Moonwort, Hairy Boneset, Small Reed Grass, Dawn-land Sedge	Habitat Management	high	on-going	Work with species specialists to apply suitable protective buffers to populations when construction, road building, timber harvest, or soil disturbance are proposed.
Old field or roadside	Moonwort, Swarthy Sedge, Bicknell's Sedge, Orono Sedge, Barren-strawberry, Pale Moonwort, Hairy Boneset, Small Reed Grass, Dawn-land Sedge	Habitat Management	high	on-going	Develop Early Detection Rapid Response protocols for non-native invasive plants that threaten SGCN populations.
Old field or roadside	Moonwort, Swarthy Sedge, Bicknell's Sedge, Orono Sedge, Barren-strawberry,	Habitat Management	high	on-going	Establish and/or continue controlled burn programs to support native species persistence.

Guild	Species	Category	Biological Priority	Type	Description
	Pale Moonwort, Hairy Boneset, Small Reed Grass, Dawn-land Sedge				
Old field or roadside	Moonwort, Swarthy Sedge, Bicknell's Sedge, Orono Sedge, Barren-strawberry, Pale Moonwort, Hairy Boneset, Small Reed Grass, Dawn-land Sedge	Public Outreach	high	on-going	Educate the public about the importance of fire regimes in maintaining natural species assemblages.
Old field or roadside	Moonwort, Swarthy Sedge, Bicknell's Sedge, Orono Sedge, Barren-strawberry, Pale Moonwort, Hairy Boneset, Small Reed Grass, Dawn-land Sedge	Survey and Monitoring	high	on-going	Require field surveys prior to permitting or construction.
Old field or roadside	Moonwort, Swarthy Sedge, Bicknell's Sedge, Orono Sedge, Barren-strawberry, Pale Moonwort, Hairy Boneset, Small Reed Grass, Dawn-land Sedge	Survey and Monitoring	high	on-going	Establish plan to keep population data updated in particular for high-ranked or vulnerable occurrences.
Open upland plants	Wild Indigo, Variable Sedge, Dwarf Dandelion, Dwarf Prairie Willow, Canada Mountain-ricegrass, Late Purple Aster	Habitat Management	high	on-going	Work with species specialists to apply suitable protective buffers to populations when construction, road building, timber harvest, or soil disturbance are proposed.

Guild	Species	Category	Biological Priority	Type	Description
Open upland plants	Wild Indigo, Variable Sedge, Dwarf Dandelion, Dwarf Prairie Willow, Canada Mountain-ricegrass, Late Purple Aster	Habitat Management	high	on-going	Prioritize acquisition or long-term conservation of high-value areas through fee ownership or easement.
Open upland plants	Wild Indigo, Variable Sedge, Dwarf Dandelion, Dwarf Prairie Willow, Canada Mountain-ricegrass, Late Purple Aster	Survey and Monitoring	high	on-going	Require field surveys prior to permitting or construction.
Open water plants	Prototype Quillwort, Pygmy Water-lily, Fries' Pondweed, Spotted Pondweed, Straight-leaved Pondweed, Northern Slender Pondweed, Water Stargrass, Vasey's Pondweed, Acadian Quillwort, Shore Quillwort	Habitat Management	high	on-going	Develop Early Detection Rapid Response Protocols for mapped occurrences.
Open water plants	Prototype Quillwort, Pygmy Water-lily, Fries' Pondweed, Spotted Pondweed, Straight-leaved Pondweed, Northern Slender Pondweed, Water Stargrass, Vasey's Pondweed, Acadian Quillwort, Shore Quillwort	Survey and Monitoring	high	on-going	Establish regular survey intervals for high-ranked occurrences.

Guild	Species	Category	Biological Priority	Type	Description
Open wetland plants	Meadow Sedge, Long-tubercled Spike-rush, Sharp-scaled Manna-grass, Slender Blue Flag, Vasey Rush, Foxtail Bog-clubmoss, Jacobs Ladder, Long's Bulrush, Pendulous Bulrush, Creeping Spike-moss, Adder's Tongue Fern, Southern Bog-clubmoss, Hollow Joe-pye Weed, Red-stemmed Gentian, Slender False Pimpernel, Garber's Sedge, Beaked Sedge, Slender Spikerush, Georgia Bulrush, Moor Rush, Northern sweet-grass, Acadian dodder, Bailey's sedge	Habitat Management	high	on-going	Work with species specialists to apply suitable protective buffers to populations when construction, road building, timber harvest, or soil disturbance are proposed.
Open wetland plants	Meadow Sedge, Long-tubercled Spike-rush, Sharp-scaled Manna-grass, Slender Blue Flag, Vasey Rush, Foxtail Bog-clubmoss, Jacobs Ladder, Long's Bulrush, Pendulous Bulrush, Creeping Spike-moss, Adder's Tongue Fern, Southern Bog-clubmoss, Hollow Joe-pye Weed, Red-	Habitat Management	high	on-going	Work with conservation partners to develop watershed-scale water management plans.

Guild	Species	Category	Biological Priority	Type	Description
	stemmed Gentian, Slender False Pimpernel, Garber's Sedge, Beaked Sedge, Slender Spikerush, Georgia Bulrush, Moor Rush, Northern sweet-grass, Acadian dodder, Bailey's sedge				
Open wetland plants	Meadow Sedge, Long-tubercled Spike-rush, Sharp-scaled Manna-grass, Slender Blue Flag, Vasey Rush, Foxtail Bog-clubmoss, Jacobs Ladder, Long's Bulrush, Pendulous Bulrush, Creeping Spike-moss, Adder's Tongue Fern, Southern Bog-clubmoss, Hollow Joe-pye Weed, Red-stemmed Gentian, Slender False Pimpernel, Garber's Sedge, Beaked Sedge, Slender Spikerush, Georgia Bulrush, Moor Rush, Northern sweet-grass, Acadian dodder, Bailey's sedge	Public Outreach	high	on-going	Encourage BMPs to avoid siltation and nutrient inputs and promote retention of vegetated buffers.

Guild	Species	Category	Biological Priority	Type	Description
Open wetland plants	Meadow Sedge, Long-tubercled Spike-rush, Sharp-scaled Manna-grass, Slender Blue Flag, Vasey Rush, Foxtail Bog-clubmoss, Jacobs Ladder, Long's Bulrush, Pendulous Bulrush, Creeping Spike-moss, Adder's Tongue Fern, Southern Bog-clubmoss, Hollow Joe-pye Weed, Red-stemmed Gentian, Slender False Pimpernel, Garber's Sedge, Beaked Sedge, Slender Spikerush, Georgia Bulrush, Moor Rush, Northern sweet-grass, Acadian dodder, Bailey's sedge	Species Management	high	on-going	Develop Early Detection Rapid Response protocols for non-native invasive plants that threaten SGCN populations.
Open wetland plants	Meadow Sedge, Long-tubercled Spike-rush, Sharp-scaled Manna-grass, Slender Blue Flag, Vasey Rush, Foxtail Bog-clubmoss, Jacobs Ladder, Long's Bulrush, Pendulous Bulrush, Creeping Spike-moss, Adder's Tongue Fern, Southern Bog-clubmoss, Hollow Joe-pye Weed, Red-	Survey and Monitoring	high	on-going	Establish plan to keep population data updated in particular for high-ranked or vulnerable occurrences.

Guild	Species	Category	Biological Priority	Type	Description
	stemmed Gentian, Slender False Pimpernel, Garber's Sedge, Beaked Sedge, Slender Spikerush, Georgia Bulrush, Moor Rush, Northern sweet-grass, Acadian dodder, Bailey's sedge				
Open wetland plants	Meadow Sedge, Long-tubercled Spike-rush, Sharp-scaled Manna-grass, Slender Blue Flag, Vasey Rush, Foxtail Bog-clubmoss, Jacobs Ladder, Long's Bulrush, Pendulous Bulrush, Creeping Spike-moss, Adder's Tongue Fern, Southern Bog-clubmoss, Hollow Joe-pye Weed, Red-stemmed Gentian, Slender False Pimpernel, Garber's Sedge, Beaked Sedge, Slender Spikerush, Georgia Bulrush, Moor Rush, Northern sweet-grass, Acadian dodder, Bailey's sedge	Survey and Monitoring	high	on-going	Require field surveys prior to permitting or construction.

Guild	Species	Category	Biological Priority	Type	Description
Peatland (freshwater) plants	Prairie Sedge, English Sundew, Slender-leaved Sundew, Prairie White-fringed Orchid, Low Spike-moss, Yellow-eyed Grass, Atlantic White Cedar, Swamp Birch, Bog Bedstraw, Northern Comandra, Button Sedge, Livid Sedge	Habitat Management	high	on-going	Work with species specialists to apply suitable protective buffers to populations when construction, road building, timber harvest, or soil disturbance are proposed.
Peatland (freshwater) plants	Prairie Sedge, English Sundew, Slender-leaved Sundew, Prairie White-fringed Orchid, Low Spike-moss, Yellow-eyed Grass, Atlantic White Cedar, Swamp Birch, Bog Bedstraw, Northern Comandra, Button Sedge, Livid Sedge	Habitat Management	high	on-going	Develop Early Detection Rapid Response protocols for non-native invasive plants that threaten SGCN populations.
Peatland (freshwater) plants	Prairie Sedge, English Sundew, Slender-leaved Sundew, Prairie White-fringed Orchid, Low Spike-moss, Yellow-eyed Grass, Atlantic White Cedar, Swamp Birch, Bog Bedstraw, Northern	Habitat Management	high	on-going	Work with conservation partners to develop watershed-scale water management plans.

Guild	Species	Category	Biological Priority	Type	Description
	Comandra, Button Sedge, Livid Sedge				
Peatland (freshwater) plants	Prairie Sedge, English Sundew, Slender-leaved Sundew, Prairie White-fringed Orchid, Low Spike-moss, Yellow-eyed Grass, Atlantic White Cedar, Swamp Birch, Bog Bedstraw, Northern Comandra, Button Sedge, Livid Sedge	Habitat Management	high	on-going	Encourage BMPs to avoid siltation and nutrient inputs and promote retention of vegetated buffers.
Peatland (freshwater) plants	Prairie Sedge, English Sundew, Slender-leaved Sundew, Prairie White-fringed Orchid, Low Spike-moss, Yellow-eyed Grass, Atlantic White Cedar, Swamp Birch, Bog Bedstraw, Northern Comandra, Button Sedge, Livid Sedge	Habitat Management	moderate	on-going	Identify and protect populations at northern edge of range or that are large and healthy, to protect viability of species even if peatlands experience more drying
Peatland (freshwater) plants	Prairie Sedge, English Sundew, Slender-leaved Sundew, Prairie White-fringed Orchid, Low Spike-moss, Yellow-eyed Grass,	Public Outreach	high	on-going	Complete forestry Best Management Practices for distribution to cooperative landowners and forest management interests.

Guild	Species	Category	Biological Priority	Type	Description
	Atlantic White Cedar, Swamp Birch, Bog Bedstraw, Northern Comandra, Button Sedge, Livid Sedge				
Peatland (freshwater) plants	Prairie Sedge, English Sundew, Slender-leaved Sundew, Prairie White-fringed Orchid, Low Spike-moss, Yellow-eyed Grass, Atlantic White Cedar, Swamp Birch, Bog Bedstraw, Northern Comandra, Button Sedge, Livid Sedge	Survey and Monitoring	high	on-going	Require field surveys prior to permitting or construction.
Peatland (freshwater) plants	Prairie Sedge, English Sundew, Slender-leaved Sundew, Prairie White-fringed Orchid, Low Spike-moss, Yellow-eyed Grass, Atlantic White Cedar, Swamp Birch, Bog Bedstraw, Northern Comandra, Button Sedge, Livid Sedge	Survey and Monitoring	high	on-going	Establish plan to keep population data updated in particular for high-ranked or vulnerable occurrences.
Rocky coastal plants	Nova Scotia Agalinis, Marsh-elder, Marsh Felwort, Blinks	Public Outreach	high	on-going	Discourage foot traffic from sensitive areas or near populations

Guild	Species	Category	Biological Priority	Type	Description
Rocky summits and outcrops plants	Aleutian Maidenhair Fern, Allegheny Vine, Smooth Rockcress, Missouri Rockcress, Green Spleenwort, New England Northern Reed Grass, Ebony Sedge, Intermediate Sedge, Slender Cliffbrake, Rock Whitlow-grass, Lance-leaved Draba, Smooth draba, Alpine Clubmoss, Secund Rush, Common Butterwort, White Bluegrass, Early Crowfoot, Northern Woodsia, Smooth Woodsia, Blunt-lobed Woodsia, Mountain Firmoss, Fogg's Goosefoot, Smooth Sandwort, Mountain Sandwort, Michaux's Sandwort, Douglas' Knotweed, Bird's-eye Primrose, Tufted Saxifrage, Maidenhair Fern, Ebony Spleenwort, Fragrant Wood Fern, Capillary Sedge, Bulrush Sedge, Soft-leaf Muhly, Clinton's Bulrush	Habitat Management	high	on-going	Work with species specialists to apply suitable protective buffers to populations when construction, road building, timber harvest, or soil disturbance are proposed.

Guild	Species	Category	Biological Priority	Type	Description
Rocky summits and outcrops plants	Aleutian Maidenhair Fern, Allegheny Vine, Smooth Rockcress, Missouri Rockcress, Green Spleenwort, New England Northern Reed Grass, Ebony Sedge, Intermediate Sedge, Slender Cliffbrake, Rock Whitlow-grass, Lance-leaved Draba, Smooth draba, Alpine Clubmoss, Secund Rush, Common Butterwort, White Bluegrass, Early Crowfoot, Northern Woodsia, Smooth Woodsia, Blunt-lobed Woodsia, Mountain Firmoss, Fogg's Goosefoot, Smooth Sandwort, Mountain Sandwort, Michaux's Sandwort, Douglas' Knotweed, Bird's-eye Primrose, Tufted Saxifrage, Maidenhair Fern, Ebony Spleenwort, Fragrant Wood Fern, Capillary Sedge, Bulrush Sedge, Soft-leaf Muhly, Clinton's Bulrush	Habitat Management	high	on-going	Establish or reroute trails to avoid populations.

Guild	Species	Category	Biological Priority	Type	Description
Rocky summits and outcrops plants	Aleutian Maidenhair Fern, Allegheny Vine, Smooth Rockcress, Missouri Rockcress, Green Spleenwort, New England Northern Reed Grass, Ebony Sedge, Intermediate Sedge, Slender Cliffbrake, Rock Whitlow-grass, Lance-leaved Draba, Smooth draba, Alpine Clubmoss, Secund Rush, Common Butterwort, White Bluegrass, Early Crowfoot, Northern Woodsia, Smooth Woodsia, Blunt-lobed Woodsia, Mountain Firmoss, Fogg's Goosefoot, Smooth Sandwort, Mountain Sandwort, Michaux's Sandwort, Douglas' Knotweed, Bird's-eye Primrose, Tufted Saxifrage, Maidenhair Fern, Ebony Spleenwort, Fragrant Wood Fern, Capillary Sedge, Bulrush Sedge, Soft-leaf Muhly, Clinton's Bulrush	Habitat Management	high	on-going	Maintain cool, shaded conditions at population sites to retain moisture and prevent dessication/loss of habitat

Guild	Species	Category	Biological Priority	Type	Description
Rocky summits and outcrops plants	Aleutian Maidenhair Fern, Allegheny Vine, Smooth Rockcress, Missouri Rockcress, Green Spleenwort, New England Northern Reed Grass, Ebony Sedge, Intermediate Sedge, Slender Cliffbrake, Rock Whitlow-grass, Lance-leaved Draba, Smooth draba, Alpine Clubmoss, Secund Rush, Common Butterwort, White Bluegrass, Early Crowfoot, Northern Woodsia, Smooth Woodsia, Blunt-lobed Woodsia, Mountain Firmoss, Fogg's Goosefoot, Smooth Sandwort, Mountain Sandwort, Michaux's Sandwort, Douglas' Knotweed, Bird's-eye Primrose, Tufted Saxifrage, Maidenhair Fern, Ebony Spleenwort, Fragrant Wood Fern, Capillary Sedge, Bulrush Sedge, Soft-leaf Muhly, Clinton's Bulrush	Survey and Monitoring	high	on-going	Require field surveys prior to permitting or construction.

Guild	Species	Category	Biological Priority	Type	Description
Shallow emergent plants	Narrow-leaved Goldenrod, Fall Fimbry, Featherfoil, Dwarf Bulrush, Comb-leaved Mermaid-weed, Lesser Yellow Water Crowfoot, Tall Beak-rush, Terrestrial Water-starwort, Pointed Watermeal, Columbian Watermeal, Sweet Pepper-bush, Yellow Pond-lily, Narrow-leaved Arrowhead	Habitat Management	critical	on-going	Develop Early Detection Rapid Response protocols for non-native invasive plants that threaten SGCN populations.
Shallow emergent plants	Narrow-leaved Goldenrod, Fall Fimbry, Featherfoil, Dwarf Bulrush, Comb-leaved Mermaid-weed, Lesser Yellow Water Crowfoot, Tall Beak-rush, Terrestrial Water-starwort, Pointed Watermeal, Columbian Watermeal, Sweet Pepper-bush, Yellow Pond-lily, Narrow-leaved Arrowhead	Survey and Monitoring	moderate	on-going	Establish plan to keep population data updated in particular for high-ranked or vulnerable occurrences.
Tidal wetland plants	Common Eelgrass, Purple Agalinis, Marsh Bulrush, Long's Bitter-cress, Salt Marsh Sedge, Lilaeopsis, Stiff Arrowhead, American	Habitat Management	critical	on-going	Protect areas that could serve as marsh migration corridors as sea level rises

Guild	Species	Category	Biological Priority	Type	Description
	Sea-blite, Small Salt-marsh Aster, Mudwort, Saltmarsh Agalinis, Eaton's Bur-marigold, Estuary Bur-marigold, Dwarf Glasswort, Water Pimpernel, Pygmyweed, Spongy-leaved Arrowhead, Saltmarsh Bulrush, Tidal Spikerush, Beaked Spikerush, Parker's Pipewort, Gaspé Arrow-grass, Horned Pondweed, Vanilla sweet-grass, Camphorweed				
Tidal wetland plants	Common Eelgrass, Purple Agalinis, Marsh Bulrush, Long's Bitter-cress, Salt Marsh Sedge, Lilaeopsis, Stiff Arrowhead, American Sea-blite, Small Salt-marsh Aster, Mudwort, Saltmarsh Agalinis, Eaton's Bur-marigold, Estuary Bur-marigold, Dwarf Glasswort, Water Pimpernel, Pygmyweed, Spongy-leaved Arrowhead, Saltmarsh Bulrush, Tidal Spikerush, Beaked Spikerush, Parker's Pipewort, Gaspé Arrow-	Habitat Management	high	on-going	Develop Early Detection Rapid Response protocols for non-native invasive plants that threaten SGCN populations.

Guild	Species	Category	Biological Priority	Type	Description
	grass, Horned Pondweed, Vanilla sweet-grass, Camphorweed				
Tidal wetland plants	Common Eelgrass, Purple Agalinis, Marsh Bulrush, Long's Bitter-cress, Salt Marsh Sedge, Lilaeopsis, Stiff Arrowhead, American Sea-blite, Small Salt-marsh Aster, Mudwort, Saltmarsh Agalinis, Eaton's Bur-marigold, Estuary Bur-marigold, Dwarf Glasswort, Water Pimpernel, Pygmyweed, Spongy-leaved Arrowhead, Saltmarsh Bulrush, Tidal Spikerush, Beaked Spikerush, Parker's Pipewort, Gaspé Arrow-grass, Horned Pondweed, Vanilla sweet-grass, Camphorweed	Habitat Management	high	on-going	Work with conservation partners to develop watershed-scale water management plans.
Tidal wetland plants	Common Eelgrass, Purple Agalinis, Marsh Bulrush, Long's Bitter-cress, Salt Marsh Sedge, Lilaeopsis, Stiff Arrowhead, American Sea-blite, Small Salt-marsh Aster, Mudwort, Saltmarsh	Habitat Management	high	on-going	Restore marshes using science-based practices. Implement priority restoration techniques such as enhancement, ditch remediation, and runneling, specifically tailored to each marsh, with Saltmarsh and Tidal Wetland species in mind. All restoration projects should incorperate

Guild	Species	Category	Biological Priority	Type	Description
	Agalinis, Eaton's Bur-marigold, Estuary Bur-marigold, Dwarf Glasswort, Water Pimpernel, Pygmyweed, Spongy-leaved Arrowhead, Saltmarsh Bulrush, Tidal Spikerush, Beaked Spikerush, Parker's Pipewort, Gaspé Arrow-grass, Horned Pondweed, Vanilla sweet-grass, Camphorweed				pre- and post-restoration bird and vegetation monitoring to evaluate efficacy and inform adaptive management.
Tidal wetland plants	Common Eelgrass, Purple Agalinis, Marsh Bulrush, Long's Bitter-cress, Salt Marsh Sedge, Lilaeopsis, Stiff Arrowhead, American Sea-blite, Small Salt-marsh Aster, Mudwort, Saltmarsh Agalinis, Eaton's Bur-marigold, Estuary Bur-marigold, Dwarf Glasswort, Water Pimpernel, Pygmyweed, Spongy-leaved Arrowhead, Saltmarsh Bulrush, Tidal Spikerush, Beaked Spikerush, Parker's Pipewort, Gaspé Arrow-grass, Horned Pondweed,	Habitat Management	high	on-going	Encourage BMPs to avoid siltation and nutrient inputs and promote retention of vegetated buffers.

Guild	Species	Category	Biological Priority	Type	Description
	Vanilla sweet-grass, Camphorweed				
Tidal wetland plants	Common Eelgrass, Purple Agalinis, Marsh Bulrush, Long's Bitter-cress, Salt Marsh Sedge, Lilaeopsis, Stiff Arrowhead, American Sea-blite, Small Salt-marsh Aster, Mudwort, Saltmarsh Agalinis, Eaton's Bur-marigold, Estuary Bur-marigold, Dwarf Glasswort, Water Pimpernel, Pygmyweed, Spongy-leaved Arrowhead, Saltmarsh Bulrush, Tidal Spikerush, Beaked Spikerush, Parker's Pipewort, Gaspé Arrow-grass, Horned Pondweed, Vanilla sweet-grass, Camphorweed	Policy	high	new	Prioritize conservation and restoration of high-value tidal marshes. Focus conservation efforts on the most important marshes for Saltmarsh and Tidal Wetland Guild species, as well as those with variable present condition and marsh migration space.
Tidal wetland plants	Common Eelgrass, Purple Agalinis, Marsh Bulrush, Long's Bitter-cress, Salt	Policy	moderate	on-going	Conserve remaining intact tidal marshes and adjacent non-tidal buffers through

Guild	Species	Category	Biological Priority	Type	Description
	Marsh Sedge, Lilaeopsis, Stiff Arrowhead, American Sea-blite, Small Salt-marsh Aster, Mudwort, Saltmarsh Agalinis, Eaton's Bur-marigold, Estuary Bur-marigold, Dwarf Glasswort, Water Pimpernel, Pygmyweed, Spongy-leaved Arrowhead, Saltmarsh Bulrush, Tidal Spikerush, Beaked Spikerush, Parker's Pipewort, Gaspé Arrow-grass, Horned Pondweed, Vanilla sweet-grass, Camphorweed				acquisition, conservation easements, and other long-term legal protections.

Appendix Table 4- 7 Conservation Actions assigned to Bird SGCN

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Ammodramus savannarum	Grasshopper Sparrow	Research	critical	new	Advance demographic research to inform population modeling: - Conduct studies on productivity, survival, and limiting factors at selected sites to improve understanding of vital rates and inform population viability modeling. - Use this information to assess long-term sustainability of Maine's Grasshopper Sparrow population under different management and climate scenarios.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Ammodramus savannarum	Grasshopper Sparrow	Survey and Monitoring	critical	on-going	Enhance and expand site-based conservation and monitoring: - Maintain and monitor populations at known nesting areas (e.g., Kennebunk Plains, former Naval Air Station Brunswick), and resume or expand surveys at previously occupied sites (e.g., Sanford Airport, Wells Barrens, Poland Spring fields). - Contact landowners at these and other high-potential sites to evaluate opportunities for habitat enhancement and long-term protection. - Assess habitat condition, ownership, and management needs using updated landscape analysis and incorporate results into conservation targeting.
Ammodramus savannarum	Grasshopper Sparrow	Habitat Management	critical	on-going	Evaluate and refine management techniques: - Analyze long-term population and management data at key sites like Kennebunk Plains to evaluate effectiveness of different management regimes (e.g., burn frequency, mowing). - Work with landowners and managers to prevent incompatible practices (e.g., livestock grazing during May 1–Aug 5 nesting window, intensive mowing) and encourage use of compatible methods (e.g., prescribed fire, delayed mowing, rotational management).
Ammodramus savannarum	Grasshopper Sparrow	Species Management	critical	new	Develop a comprehensive Species Conservation Plan for Grasshopper Sparrow in Maine.
Ammodramus savannarum	Grasshopper Sparrow	Survey and Monitoring	high	new	Support collaborative outreach and incentive-based programs: - Collaborate with conservation partners to provide outreach and technical assistance to landowners, airports, and military installations to adopt Grasshopper Sparrow-friendly practices. - Highlight Grasshopper Sparrow as a flagship species in grassland bird outreach, especially in southern Maine where it may be the rarest representative.
Ammodramus savannarum	Grasshopper Sparrow	Habitat Management	high	on-going	Restore and create suitable habitat: - Restore suitable habitat on former gravel pits, agricultural fields, and other open sites using native grasses (e.g., little bluestem) and low-growing species (e.g., lowbush blueberry). - Prevent woody encroachment and conversion to other land uses at key breeding sites.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Ammospiza caudacuta	Saltmarsh Sparrow	Species Management	moderate	on-going	Assess the extent and conservation implications of hybridization between Saltmarsh and Nelson's Sparrows in Maine, and identify marshes where hybridization pressure is low to prioritize for genetic conservation.
Ammospiza caudacuta	Saltmarsh Sparrow	Species Management	critical	new	Develop a Maine-specific Saltmarsh Sparrow Conservation Plan. Focused conservation planning is critical to coordinate actions across agencies and prioritize marshes and management strategies based on vulnerability and bird use.
Ammospiza caudacuta	Saltmarsh Sparrow	Research	moderate	new	Evaluate the role of tidal restoration in improving Saltmarsh Sparrow resilience to sea-level rise, compare effectiveness of different restoration practices.
Ammospiza caudacuta	Saltmarsh Sparrow	Research	high	on-going	Evaluate mercury exposure in Saltmarsh Sparrows across Maine marshes and identify high-risk sites to inform contaminant management.
Ammospiza caudacuta	Saltmarsh Sparrow	Habitat Management	high	on-going	Support and expand Phragmites control efforts where appropriate. Integrate long-term bird monitoring to evaluate restoration success and ensure treatment supports Saltmarsh Sparrow habitat.
Ammospiza nelsoni	Nelson's Sparrow	Research	moderate	on-going	Assess the extent and implications of Saltmarsh–Nelson's Sparrow hybridization in Maine. Investigate hybrid zone dynamics, genetic introgression, and potential impacts on the conservation status of Nelson's Sparrow populations in Maine.
Ammospiza nelsoni	Nelson's Sparrow	Habitat Management	moderate	on-going	Support and expand efforts to control invasive Phragmites australis in tidal marshes. Coordinate with partners to prioritize, monitor, and implement ecologically sensitive Phragmites management in or near key Nelson's Sparrow breeding areas.
Ammospiza nelsoni	Nelson's Sparrow	Research	high	new	Evaluate Nelson's Sparrow response to tidal marsh restoration techniques. Determine how different tidal restoration strategies (e.g., culvert replacement, ditch remediation, hydrologic reconnection) affect occupancy, nesting success, and habitat quality for Nelson's Sparrow.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Ammospiza nelsoni	Nelson's Sparrow	Research	moderate	on-going	Assess mercury exposure risk for Nelson's Sparrows across Maine's tidal marshes and determine whether specific marshes pose a higher contamination threat. Investigate the sources and impacts of mercury (e.g., atmospheric deposition vs. localized inputs) on reproductive success and survival.
Anthus rubescens	American Pipit	Habitat Management	moderate	new	Minimize potential recreational impacts in key breeding area. Katahdin is a popular hiking destination. Signage or trail closures (if warranted) could reduce potential disturbance to nesting birds.
Anthus rubescens	American Pipit	Research	high	on-going	Assess impacts of climate change on alpine habitat. American Pipits rely on treeless alpine tundra, which is shrinking due to upward-moving treeline. Modeling and field studies should be conducted to assess the pace and extent of habitat loss and evaluate long-term habitat viability in Maine.
Anthus rubescens	American Pipit	Survey and Monitoring	high	new	Monitor the Status of Breeding Populations. Due to the species' limited breeding range in Maine and the inaccessibility of alpine habitat, regular monitoring is needed to determine population trends, breeding success, and possible colonization of other high-elevation peaks.
Anthus rubescens	American Pipit	Research	moderate	new	Investigate breeding ecology and limiting factors in Maine. Detailed local data are lacking. Studies should examine nest success, food availability, predator impacts, and habitat use to inform future conservation decisions.
Antrostomus vociferus	Eastern Whip-poor-will	Research	high	new	Support research on key knowledge gaps, including juvenile dispersal, migratory connectivity, food selection, and responses to pesticides.
Antrostomus vociferus	Eastern Whip-poor-will	Survey and Monitoring	high	on-going	Support and targeted survey efforts (e.g., Maine Nightjar Monitoring Project) to better track population trends and breeding distribution of this cryptic species.
Antrostomus vociferus	Eastern Whip-poor-will	Habitat Management	moderate	new	Prioritize management of known breeding sites with prescribed burns or mechanical disturbance to maintain open-canopy forest conditions and preserve pine barrens.
Aquila chrysaetos	Golden Eagle	Species Management	moderate	new	Develop a comprehensive species conservation plan to identify priorities, guide management actions, and address conservation needs.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Aquila chrysaetos	Golden Eagle	Research	high	on-going	Continue and expand community science and research efforts to improve understanding of population status, trends, habitat use, breeding, movements, and threats across age classes and seasons (breeding, migration, wintering) within Maine, while contributing to and collaborating with partners across the broader eastern population.
Aquila chrysaetos	Golden Eagle	Species Management	high	new	Update the MDIFW Environmental Review database to incorporate recent research, including telemetry data and observational records, and revise mapping protocols to reflect broader high-use or high-value areas beyond buffered historic nest sites, improving guidance for development planning.
Aquila chrysaetos	Golden Eagle	Public Outreach	high	on-going	Expand and continue efforts to raise awareness about the presence of Golden Eagles in Maine, promote accurate identification and reporting of observations, and encourage participation in research through the Maine Golden Eagle Study.
Aquila chrysaetos	Golden Eagle	Survey and Monitoring	high	new	Collaborate with the Cornell Lab of Ornithology, the Eastern Golden Eagle Working Group, USFWS, and other relevant partners to update and enhance the Golden Eagle eBird data by integrating confirmed observations that are currently missing from eBird data, which will support various policy and conservation applications.
Aquila chrysaetos	Golden Eagle	Habitat Management	moderate	on-going	Collaborate with landowners and the forest products industry to ensure forestry activities within 1/4 mile of both historic and newly discovered nest sites occur only during the non-nesting season, and that the structural characteristics of these areas are maintained to support potential future use.
Aquila chrysaetos	Golden Eagle	Public Outreach	moderate	on-going	Collaborate with various partners, including the hunting community, to raise awareness about the benefits of using nonlead ammunition and the safe disposal of carcasses and animal parts from animals dispatched with lead ammunition.
Aquila chrysaetos	Golden Eagle	Habitat Management	moderate	on-going	Prevent disturbances within a 1/4 mile of occupied breeding territories, which may be indicated by recent observations or behavior suggesting potential nesting or prospecting. Provide consultations to evaluate site-specific conditions and determine suitable seasonal restrictions and management measures.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Aquila chrysaetos	Golden Eagle	Research	moderate	on-going	Monitor, assimilate, and report on the prevalence of environmental contaminants and disease in Bald Eagles as a surrogate for Golden Eagles, as well as Golden Eagles when opportunities arise, to assess potential impacts.
Aquila chrysaetos	Golden Eagle	Public Outreach	moderate	on-going	Educate trappers on the proper response to incidental trapping of Golden Eagles, such as handling or appropriate contact information.
Aquila chrysaetos	Golden Eagle	Research	high	new	Expand research efforts to understand, minimize, and mitigate the risks of wind energy development to migrating and resident golden eagles, both to inform conservation in Maine and to support regional collaboration and improved understanding of population-level impacts across the eastern golden eagle population.
Aquila chrysaetos	Golden Eagle	Survey and Monitoring	moderate	on-going	Conduct surveys and monitoring to evaluate the potential impacts of wind development on migrants, possible breeders or prospectors, and wintering individuals.
Ardea herodias	Great Blue Heron	Species Management	high	new	Develop and implement a Species Conservation Plan.
Ardea herodias	Great Blue Heron	Survey and Monitoring	high	on-going	Develop a population estimate and methods for detecting trends in the statewide population.
Ardea herodias	Great Blue Heron	Public Outreach	high	new	Develop a suite of BMP documents for various types of landowners and land use activities that can prevent colony loss and abandonment. This includes finalizing draft forestry management guidelines and developing public-facing documents for residential and commercial landowners and land trusts.
Asio flammeus	Short-eared Owl	Survey and Monitoring	moderate	on-going	Review and assimilate confirmed observations to update ETSC Database.
Asio flammeus	Short-eared Owl	Habitat Management	high	on-going	Collaborate with partners to identify, prioritize, and conserve high-quality grassland habitats. These efforts will help ensure the long-term protection of extensive, intact grasslands and prevent losses from development. The availability of high-quality habitats will also assist this species in coping with changing weather patterns by providing areas with abundant prey and reducing mortality risks associated with contaminants and collisions (aircraft, vehicles, utility lines).

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Asio flammeus	Short-eared Owl	Survey and Monitoring	high	on-going	Pursue research to improve understanding of population status, trends, habitat use, seasonal and annual movements, and threats within Maine, while contributing to and collaborating with partners across the eastern range.
Asio flammeus	Short-eared Owl	Research	moderate	new	Collaborate with relevant partners to improve understanding of species presence at airports, including survival rates, movements, and the effectiveness of translocation efforts.
Aythya marila	Greater Scaup	Survey and Monitoring	moderate	on-going	Monitor Through Ebird
Aythya marila	Greater Scaup	Policy	high	on-going	Include species occurrence maps in oil spill response plans
Bartramia longicauda	Upland Sandpiper	Research	critical	new	Investigate the relationship between modern blueberry barren management (wind breaks, land leveling, rock removal, irrigation) and Upland Sandpiper occupancy.
Bartramia longicauda	Upland Sandpiper	Public Outreach	high	new	Improve outreach to commercial blueberry growers regarding BMPs for this species
Bartramia longicauda	Upland Sandpiper	Research	high	new	Initiate effort to estimate population size and examine vital rates especially on commercial blueberry lands.
Bartramia longicauda	Upland Sandpiper	Survey and Monitoring	critical	new	Support state and regional efforts to survey/inventory populations of Upland Sandpiper leading to an estimate of population trend
Bucephala islandica	Barrow's Goldeneye	Policy	critical	on-going	
Calidris canutus rufa	Red Knot	Species Management	high	new	Partner with municipalities and BP&L to develop beach management agreements to minimize impacts to feeding and roosting red knots using beach habitats.
Calidris maritima	Purple Sandpiper	Habitat Management	high	on-going	Continue to survey and map wintering sites for Oil Spill contingency planning. Work with industry to locate shipping lanes away from important wintering areas.
Calidris maritima	Purple Sandpiper	Survey and Monitoring	critical	on-going	Continue annual long term monitoring plan to determine if the Purple Sandpiper population is in severe decline. Combine annual survey with a coastwide survey to be conducted every 5 years.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Calidris maritima	Purple Sandpiper	Habitat Management	critical	on-going	Continue to work with the Maine Department of Marine Resources to coordinate macroalgae harvest in important wintering sites and determine the level of impact on wintering birds
Cardellina canadensis	Canada Warbler	Habitat Management	high	new	Promote forest management practices that retain or regenerate dense understory vegetation in mixedwood and conifer forests. Canada Warblers are strongly associated with dense shrub layers. Practices such as selective harvesting that preserve or encourage understory regrowth can maintain or improve habitat suitability. Include Canada Warbler-specific management guidelines in multi-species outreach materials for landowners and foresters.
Cardellina canadensis	Canada Warbler	Survey and Monitoring	high	new	Coordinate with partners on long-term monitoring. Collaborate with Northeast states and partners (e.g., CWICI, Environment and Climate Change Canada) to share data and support long-term trend tracking. Breeding population declines persist in the Northeast. Data sharing and collaboration can inform regional strategies and fill gaps in understanding causes of decline.
Cardellina canadensis	Canada Warbler	Habitat Management	high	new	Maintain and protect forested wetlands. Identify and prioritize protection of forested wetlands and riparian zones with high Canada Warbler use. Red maple swamps and wet spruce-fir/mixedwood forests are high-quality breeding habitats. Protection can be achieved through conservation easements, town planning, or wetland regulation enforcement.
Cardellina pusilla	Wilson's Warbler	Survey and Monitoring	high	on-going	Conduct targeted surveys in under-sampled wet boreal habitats (e.g., bogs, spruce flats, riparian shrubland) to refine understanding of breeding distribution in Maine.
Cardellina pusilla	Wilson's Warbler	Research	moderate	new	Support research on breeding habitat quality and reproductive success across a gradient of boreal wetland types (e.g., bogs, fens, seepage forests) to inform habitat-specific management.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Cardellina pusilla	Wilson's Warbler	Public Outreach	moderate	new	Assess herbicide usage and conduct targeted outreach to promote understory retention in Wilson's Warbler habitat. Phenoxy herbicides like 2,4-D have been shown to significantly reduce Wilson's Warbler density in treated areas. Although their use has declined, other herbicides (e.g., glyphosate, triclopyr) may also negatively impacted these birds. Develop outreach materials for utility managers, and landowners to encourage practices that retain dense shrub and early-successional habitats in areas overlapping known or potential Wilson's Warbler breeding sites.
Cardellina pusilla	Wilson's Warbler	Research	high	new	Study effects of herbicides on Wilson's Warbler occupancy and habitat quality; quantify the impact of various herbicide types and application regimes on Wilson's Warbler habitat quality, shrub density, and reproductive success. Findings can guide development of best management practices and inform outreach priorities.
Cardellina pusilla	Wilson's Warbler	Habitat Management	high	new	Encourage and evaluate forest management practices that retain or promote dense shrubby understory and regenerating spruce or fir in wet lowland areas and bog margins.
Cardellina pusilla	Wilson's Warbler	Research	high	new	Support research into the causes of Wilson's Warbler population declines in the Northeast.
Catharus bicknelli	Bicknell's Thrush	Species Management	critical	on-going	Prioritize avoidance of permanent habitat loss in development projects. Work with regulators and developers to avoid land clearing and permanent conversion of high-elevation forests (e.g., roads, gravel pads, wind or communications infrastructure) within known or likely Bicknell's Thrush habitat.
Catharus bicknelli	Bicknell's Thrush	Habitat Management	high	new	Promote compatible forest management on private lands. Encourage landowners to rotate harvests, manage pre-commercial thinning carefully, and retain unthinned patches to maintain habitat structure across the landscape. Promote adoption of forestry BMPs that create or maintain suitable breeding conditions for Bicknell's Thrush.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Catharus bicknelli	Bicknell's Thrush	Species Management	high	on-going	Support coordinated international conservation planning and monitoring. Continue active participation in the International Bicknell's Thrush Conservation Group (IBTCG), support the implementation of the Conservation Action Plan (2017), and contribute to long-term population monitoring via Mountain Birdwatch.
Catharus bicknelli	Bicknell's Thrush	Research	high	on-going	Conduct research on climate vulnerability and ecological stressors. Support studies on the impacts of climate change (e.g., range shifts, phenological mismatch, red squirrel dynamics) and legacy stressors like acid rain and calcium depletion on Bicknell's Thrush habitat, reproductive success, and long-term viability.
Catharus bicknelli	Bicknell's Thrush	Policy	high	on-going	Incorporate Bicknell's Thrush BMPs into public land management. On Bureau of Parks and Lands properties and other state-managed lands, incorporate species-specific silvicultural best management practices (BMPs) into stand management to conserve or enhance suitable habitat.
Catharus bicknelli	Bicknell's Thrush	Research	high	on-going	Support research into how Bicknell's Thrush use managed forests, including responses to pre-commercial thinning, patch retention, and stand regeneration, to guide silvicultural practices that support breeding habitat.
Catharus fuscescens	Veery	Habitat Management	moderate	new	Implement invasive shrub removal thoughtfully, ensuring native understory is restored.
Catharus fuscescens	Veery	Research	high	new	Support research and tracking efforts to identify key overwintering areas and migratory stopover sites.
Catharus fuscescens	Veery	Habitat Management	high	new	Promote and evaluate forest management practices aligned with Forestry for Maine Birds (FFMB) to support Veery breeding habitat. Ongoing evaluation of how Veery responds to different harvest techniques, recreational development, and FFMB implementation will help refine best practices and support conservation in working forests.
Catharus fuscescens	Veery	Survey and Monitoring	moderate	new	Support long-term monitoring of Veery populations across habitat gradients in Maine.
Catharus fuscescens	Veery	Habitat Management	moderate	new	Promote management practices that maintain or restore dense understory structure in mesic forests.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Chaetura pelagica	Chimney Swift	Research	high	new	Support collaborative research to identify Chimney Swift wintering areas, monitor migratory pathways, and study diet, prey availability, and use of artificial structures. Prioritize studies that assess impacts of extreme weather, pesticide-driven insect declines, and reasons behind regional variation in artificial tower use.
Chaetura pelagica	Chimney Swift	Habitat Management	high	new	Promote the protection of existing chimneys used by Chimney Swifts through public education and outreach, support anti-capping campaigns, and encourage chimney-friendly building practices. Where suitable chimneys are lacking, install artificial chimney towers in strategic locations, especially near known foraging areas or former breeding concentrations.
Charadrius melodus	Piping Plover	Survey and Monitoring	moderate	on-going	Continue efforts to recruit and provide training sessions for volunteer beach monitors.
Charadrius melodus	Piping Plover	Habitat Management	high	on-going	Identify and prioritize nesting and foraging areas for oil spill contingency planning.
Charadrius melodus	Piping Plover	Survey and Monitoring	high	on-going	Continue efforts to annually monitor abundance, distribution, and productivity.
Charadrius melodus	Piping Plover	Public Outreach	high	on-going	Continue efforts to educate beach recreationalists, landowners and municipal officials regarding ecology and life history requirements.
Charadrius melodus	Piping Plover	Species Management	critical	on-going	Conduct intensive predator management including lethal and nonlethal removal of native and nonnative predators from nesting and brood rearing areas.
Charadrius melodus	Piping Plover	Habitat Management	high	on-going	Develop long-term, non-regulatory habitat protection via management agreements or conservation easements.
Charadrius melodus	Piping Plover	Species Management	critical	on-going	Continue current management activities including: stake and twine symbolic fencing around nesting areas, exclosures around nests, posting signage to identify nesting areas, and locating and monitoring nesting pairs.
Charadrius melodus	Piping Plover	Policy	high	on-going	Comply with and update existing Essential Habitat regulation,s requiring all projects funded, permitted, or carried out by a municipality or state agency to be reviewed by MDIFW.
Chlidonias niger	Black Tern	Habitat Management	moderate	new	Work with conservation partners to secure critical nesting areas in conservation ownership or easements.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Chlidonias niger	Black Tern	Research	high	on-going	Determine factors that influence breeding success and productivity, and annual survival.
Chordeiles minor	Common Nighthawk	Habitat Management	high	new	Maintain or restore open, sparsely vegetated areas (e.g., recent clear-cuts, managed blueberry barrens, sandy outcrops) to provide ground-nesting opportunities in both rural and forested settings.
Chordeiles minor	Common Nighthawk	Survey and Monitoring	high	on-going	Support ongoing monitoring efforts (like the Maine Nightjar Monitoring Project) to track Common Nighthawk distribution, abundance, and breeding activity.
Cistothorus stellaris	Sedge Wren	Survey and Monitoring	high	new	Conduct follow-up monitoring in sites where Sedge Wrens have been detected to evaluate presence and habitat conditions.
Cistothorus stellaris	Sedge Wren	Habitat Management	high	new	Identify, map, and prioritize known or historic Sedge Wren breeding sites for voluntary conservation or protection (e.g., landowner engagement, easements, management plans). Conduct habitat suitability mapping to conserve sites for potential occupancy.
Cistothorus stellaris	Sedge Wren	Species Management	high	on-going	Develop and implement a targeted conservation and monitoring plan for Sedge Wren in Maine. Wren presence in Maine is sporadic and poorly understood. A focused plan is needed to guide future survey efforts, identify and protect occupied habitat, and inform long-term conservation goals.
Coccothraustes vespertinus	Evening Grosbeak	Policy	high	new	Encourage best practices for winter road management to reduce vehicle collisions and salt toxicity in birds.
Coccothraustes vespertinus	Evening Grosbeak	Research	high	new	Support research on population ecology, movement patterns, and habitat use to clarify causes of decline.
Coccothraustes vespertinus	Evening Grosbeak	Habitat Management	critical	new	Promote retention and management of mature conifer stands, especially spruce-fir.
Coccothraustes vespertinus	Evening Grosbeak	Public Outreach	high	new	Promote use of bird-safe glass and window strike prevention measures in areas where Evening Grosbeaks winter near human development.
Coccothraustes vespertinus	Evening Grosbeak	Policy	high	new	Collaborate with state, federal, and private forest pest managers to assess and minimize the non-target impacts of spruce budworm suppression efforts.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Contopus cooperi	Olive-sided Flycatcher	Research	high	new	Support full annual cycle tracking of Maine-breeding individuals. Use nanotags to identify migration routes and wintering grounds of Olive-sided Flycatchers breeding in Maine, helping to clarify threats and inform hemispheric conservation.
Contopus cooperi	Olive-sided Flycatcher	Habitat Management	high	new	Incorporate snag retention into forestry Best Management Practices (BMPs). Encourage inclusion of snag and legacy tree retention tailored to Olive-sided Flycatcher nesting and foraging needs in regenerating coniferous forests and spruce-fir systems. Promote use of Forestry for Maine Birds guidelines, which recommend practices that maintain vertical structure, standing dead trees, and open canopy gaps beneficial to aerial insectivores like Olive-sided Flycatchers.
Contopus cooperi	Olive-sided Flycatcher	Research	moderate	new	Investigate potential ecological traps in managed forests. Support studies evaluating whether birds nesting in harvested or thinned stands have lower productivity or survival.
Contopus virens	Eastern Wood-Pewee	Policy	moderate	new	Encourage retention and protection of forest cover in developing landscapes. Promote conservation easements, zoning, and planning policies that retain forest blocks in suburban and exurban landscapes, especially in areas supporting high Pewee densities.
Contopus virens	Eastern Wood-Pewee	Research	high	new	Support research on annual cycle ecology, including overwintering habitat use and pesticide exposure. Prioritize studies that examine habitat use, mortality sources, pesticide exposure, and reproductive success in managed versus unmanaged forests.
Contopus virens	Eastern Wood-Pewee	Habitat Management	high	new	Promote forest management practices that maintain structurally diverse, intermediate-aged forest. Encourage practices that create and maintain a mosaic of forest age classes with a well-developed canopy and midstory and a mosaic of gaps. Support the use of Forestry for Maine Birds as a tool for landowners and foresters to integrate songbird conservation into harvest planning and management.
Corthylio calendula	Ruby-crowned Kinglet	Research	high	new	Support research on causes of population decline in the Northeast. Prioritize studies of reproductive success, nesting ecology, microhabitat requirements, and movement.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Corthylio calendula	Ruby-crowned Kinglet	Public Outreach	moderate	new	Reduce collision mortality risk near breeding areas. Encourage tower operators to replace steady-burning red lights with flashing lights, which reduce bird mortality. Promote collaboration with landowners, agencies, and the communications industry to implement voluntary lighting changes and increase awareness of bird-safe tower guidelines.
Dolichonyx oryzivorus	Bobolink	Research	high	new	Evaluate the effectiveness of hayfield and pasture management strategies on Bobolink productivity in Maine. Research is needed to assess how different mowing schedules, field compositions (e.g., grass vs. legume content), and field sizes affect Bobolink nesting success and population viability in Maine's landscapes. Findings would directly inform adaptive management and improve landowner outreach.
Dolichonyx oryzivorus	Bobolink	Research	moderate	new	Assess the exposure of Bobolinks in Maine to agricultural chemicals and contaminants. There is a need to assess exposure levels and potential risks from local herbicide and pesticide use in Maine on Bobolink reproductive success. Potential projects could include invertebrate sampling, water quality testing, or feather analysis in conjunction with nest monitoring.
Empidonax flaviventris	Yellow-bellied Flycatcher	Research	moderate	new	Support targeted research on habitat needs, life history, and causes of decline. Prioritize research into fine-scale breeding habitat characteristics, climate sensitivity, and impacts of potential pollutants.
Empidonax flaviventris	Yellow-bellied Flycatcher	Habitat Management	moderate	new	Reduce development pressure from ski resorts in key Yellow-bellied Flycatcher breeding areas. Work with land use planners and ski area developers to avoid or minimize habitat fragmentation in known breeding hotspots
Empidonax minimus	Least Flycatcher	Research	moderate	new	Study the impacts of pesticides and pollutants on breeding populations and insect prey availability.
Empidonax minimus	Least Flycatcher	Research	moderate	new	Conduct long-term demographic and habitat-use studies across the species' range to assess nest success, site fidelity, dispersal, etc.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Empidonax minimus	Least Flycatcher	Habitat Management	high	new	Maintain and restore mid-successional deciduous forests by promoting forestry practices that retain or mimic natural disturbances to support structural complexity and preferred breeding habitat. Prioritize the conservation of large, contiguous forest tracts and reduce fragmentation.
Eremophila alpestris	Horned Lark	Habitat Management	high	new	Promote agricultural practices that maintain patches of bare or sparsely vegetated ground suitable for Horned Lark nesting.
Eremophila alpestris	Horned Lark	Habitat Management	high	new	Prevent or slow the loss of open farmland to reforestation or shrub encroachment by supporting active field management.
Eremophila alpestris	Horned Lark	Public Outreach	moderate	new	Support outreach to Aroostook County landowners to raise awareness about Horned Lark nesting needs and compatible field management.
Eremophila alpestris	Horned Lark	Habitat Management	critical	new	Prioritize the acquisition or conservation easement of key open lands in Aroostook County that can support Horned Larks and other grassland birds.
Euphagus carolinus	Rusty Blackbird	Research	high	on-going	Evaluate how precommercial thinning affects nesting habitat structure and success across different forested wetland landscapes.
Euphagus carolinus	Rusty Blackbird	Research	high	on-going	Support cross-agency data sharing to better understand breeding range-wide survival and fecundity.
Euphagus carolinus	Rusty Blackbird	Research	high	new	Expand landscape-scale mapping of potential breeding habitat. Use remote sensing and predictive models to map potential Rusty Blackbird breeding habitat statewide and identify areas for focused survey or protection.
Euphagus carolinus	Rusty Blackbird	Species Management	high	on-going	Work with partners on wintering grounds to develop a full life cycle model of demography
Euphagus carolinus	Rusty Blackbird	Habitat Management	moderate	new	Promote expanded no-harvest buffers around occupied wetlands. Refine and promote forestry BMPs that include wider no-harvest buffers around occupied wetlands to protect nesting and foraging habitat.
Euphagus carolinus	Rusty Blackbird	Research	high	on-going	Assess the importance of aquatic invertebrates (e.g., Trichoptera, Odonata) and other prey (e.g., spruce budworm) in the Rusty Blackbird breeding season diet to better understand links between food availability and productivity.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Euphagus carolinus	Rusty Blackbird	Research	high	on-going	Quantify the extent to which red squirrel predation limits Rusty Blackbird nesting success across landscapes and years to assess the prevalence of ecological traps.
Euphagus carolinus	Rusty Blackbird	Research	high	on-going	Improve understanding of sublethal levels of Mercury on growth, health and survival, especially for nestlings
Euphagus carolinus	Rusty Blackbird	Research	high	on-going	Examine distribution (site occupancy) of currently occupied sites relative to site specific levels of acidification and microclimate.
Euphagus carolinus	Rusty Blackbird	Research	high	on-going	Map spatial variation in mercury exposure across Maine breeding habitats and relate patterns to wetland, soil, and watershed characteristics to guide mitigation.
Euphagus carolinus	Rusty Blackbird	Research	high	on-going	Investigate how timber harvest practices influence Rusty Blackbird postfledging habitat selection, movement, and survival.
Falco peregrinus	Peregrine Falcon	Survey and Monitoring	high	on-going	Ensure that all new species occurrence data are entered into the state database to support development planning and project review.
Falco peregrinus	Peregrine Falcon	Species Management	moderate	new	Develop a comprehensive species conservation plan to identify priorities, guide management actions, and address conservation needs.
Falco peregrinus	Peregrine Falcon	Research	moderate	on-going	Sample fledgling and rehabilitated adult blood and feathers to gain insight into prevalence of PCB's, PBDE's, mercury, and lead.
Falco peregrinus	Peregrine Falcon	Species Management	moderate	on-going	Prevent seasonal disturbances within 1/4 mile of occupied nests
Falco peregrinus	Peregrine Falcon	Survey and Monitoring	moderate	on-going	Monitor historic and current nesting locations
Falco peregrinus	Peregrine Falcon	Habitat Management	moderate	on-going	Maintain large trees and snags in areas where peregrines nest and feed.
Falco peregrinus	Peregrine Falcon	Species Management	high	on-going	Encourage voluntary trail closures until five weeks after the last bird has fledged
Falco peregrinus	Peregrine Falcon	Species Management	high	on-going	Work with landowners to reduce seasonal disturbances within 1/4 mile of occupied nests
Falco peregrinus	Peregrine Falcon	Public Outreach	high	on-going	Collaborate with partners to limit disturbance at cliff sites through appropriate actions, including outreach, signage, and trail closures.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Falco peregrinus	Peregrine Falcon	Habitat Management	moderate	on-going	Protect wetlands, especially intertidal mudflats, estuaries, and coastal marshes from filling, development, or other disturbance that could alter prey abundance and habitat quality
Falco peregrinus	Peregrine Falcon	Habitat Management	high	on-going	Install nesting structures to improve nesting success in areas where peregrine falcon pairs are present but consistently unproductive or located in unsafe sites vulnerable to disturbance and other threats, which may cause reproductive failure or mortality of adults and young, such as washout, predation, or collision. Where feasible, these structures should also enhance accessibility for monitoring, research, banding, and biomonitoring.
Falco peregrinus	Peregrine Falcon	Species Management	moderate	on-going	Route powerlines and other wires away from eyeries to avoid collisions and electrocution hazards
Falco peregrinus	Peregrine Falcon	Public Outreach	moderate	new	Develop an information pamphlet and website content focused on the importance of hikers and rock climbers limiting disturbance to nesting peregrines.
Falco peregrinus	Peregrine Falcon	Habitat Management	high	on-going	Avoid installation of utility lines and other collision and electrocution hazards adjacent to territories.
Falco peregrinus	Peregrine Falcon	Research	high	new	Update, develop, conduct research, and monitoring efforts that strengthen understanding of population stability, trends, status, and threats, and guide more effective conservation actions.
Falco peregrinus	Peregrine Falcon	Habitat Management	high	on-going	Avoid the construction of permanent access roads within ¼ mile of cliff territories.
Falco peregrinus	Peregrine Falcon	Habitat Management	high	on-going	Avoid forest harvest activities within ¼ mile of cliff territories during the breeding season.
Falco peregrinus	Peregrine Falcon	Habitat Management	moderate	new	Ensure the long-term protection of peregrine falcon cliff sites and adjacent areas hat are currently used, have been used historically, or are suitable for potential breeding from development through land acquisition, conservation easement, or other land protection strategies.
Falco peregrinus	Peregrine Falcon	Habitat Management	high	on-going	Avoid application of herbicides and pesticides or other compounds within ¼ mile of a territory.
Falco peregrinus	Peregrine Falcon	Species Management	moderate	on-going	Use voluntary agreements, conservation easements, conservation tax abatements and incentives and acquisition to protect important habitats.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Falco peregrinus	Peregrine Falcon	Species Management	moderate	on-going	Work with landowners to reduce the application of pesticides around occupied eyeries during the nesting season
Falco peregrinus	Peregrine Falcon	Public Outreach	high	on-going	Collaborate with partners to minimize nest disturbance at urban sites through appropriate actions, such as outreach, signage, nest structure installation, and consultations.
Falco sparverius	American Kestrel	Research	high	new	Expand nest box monitoring and associated research efforts to promote increased collaboration, standardization, and data integration and analysis, thereby enhancing the understanding of potential threats, population status, and trends. This will better inform and focus species conservation at the state, regional, and range-wide levels.
Falco sparverius	American Kestrel	Public Outreach	moderate	new	Develop and implement outreach, partnerships, and other strategies to increase the adoption of practices that minimize the exposure of American Kestrels to environmental contaminants.
Falco sparverius	American Kestrel	Research	moderate	new	Develop and implement monitoring to better document and understand the impacts of window collisions on birds in urban and suburban structures.
Falco sparverius	American Kestrel	Public Outreach	moderate	new	Develop and share guidance through diverse platforms (e.g., social media, presentations, news, webpages, etc.) on what to do if an American Kestrel becomes trapped in a building or injured.
Falco sparverius	American Kestrel	Research	moderate	new	Collaborate with utility companies, transportation agencies, and other relevant industries to document and share data on raptor injuries and mortalities related to power lines, electrocution, vehicle and aircraft collisions, and other infrastructure-related threats. Develop a shared reporting system to analyze spatial and temporal patterns of these incidents, guiding targeted mitigation efforts and informing strategies to reduce future occurrences.
Falco sparverius	American Kestrel	Research	moderate	new	Review and assimilate on updated approaches to minimize mortality and injury risks to American Kestrels from utility lines.
Falco sparverius	American Kestrel	Public Outreach	moderate	new	Develop and expand outreach and partnerships to promote the use of bird-safe building practices, increasing the safety of windows in urban and suburban structures.
Gallinula galeata	Common Gallinule	Species Management	high	new	Develop and implement a Species Conservation Plan.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Geothlypis philadelphia	Mourning Warbler	Habitat Management	moderate	new	Reduce herbicide use in regenerating forest stands - Limit or eliminate herbicide application in early-successional stands used by Mourning Warblers, and encourage best management practices that promote native shrub regeneration.
Geothlypis philadelphia	Mourning Warbler	Public Outreach	high	new	Reduce migration mortality from artificial light and glass collisions. Partner with Lights Out and BirdSafe Maine to reduce Mourning Warbler mortality during migration by addressing light pollution and window collisions in the state. Encourage local governments, institutions, and private landowners to adopt bird-friendly building practices and reduce unnecessary nighttime lighting during peak migration periods. Public education campaigns, building retrofits, and inclusion of bird-safe design in new construction.
Geothlypis philadelphia	Mourning Warbler	Research	high	new	Support research into causes of regional population declines and range shifts. Fund/prioritize research into the factors contributing to recent population declines and range contractions observed in Maine, build research partnerships when possible with conservatin partners in Québec, and the Maritimes seeing similar declines. Understanding these drivers is critical to reversing declines in the northeastern portion of the species' range.
Hirundo rustica	Barn Swallow	Research	moderate	new	Assess nest site competition and disturbance, investigate impacts of House Sparrow on Barn Swallow in Maine.
Hirundo rustica	Barn Swallow	Public Outreach	high	new	Outreach and Engagement - encourage landowners to maintain nests and celebrate the species role in controlling insect pests. Develop citizen science programs to track nesting locations and success.
Hirundo rustica	Barn Swallow	Habitat Management	high	new	Maintain and enhance nesting opportunities, encourage retention of traditional agricultural structures (barns, sheds, culverts, bridges) that support nesting. Promote retrofitting of modern buildings with nest-friendly features (e.g., ledges, artificial nest cups under eaves). Provide guidance to landowners and DOT on protecting active nests during construction, maintenance, or cleaning.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Histrionicus histrionicus	Harlequin Duck	Habitat Management	high	on-going	Continue to survey and map wintering sites for Oil Spill contingency planning. Work with industry to locate shipping lanes away from important wintering areas.
Histrionicus histrionicus	Harlequin Duck	Public Outreach	moderate	on-going	Provide outreach to recreationalists, including bird watcher,s regarding disturbance to harlequins
Histrionicus histrionicus	Harlequin Duck	Research	high	new	Gain a better understanding of the extent and impacts of algae harvesting on wintering Harlequin Ducks. Conduct longterm monitoring of ecosystem-wide impacts of cutting algae to determine potential impacts to Harlequin habitats and invertebrate prey base.
Histrionicus histrionicus	Harlequin Duck	Public Outreach	moderate	on-going	Provide hunter education and identification tips to avoid accidental take of Harlequins
Histrionicus histrionicus	Harlequin Duck	Habitat Management	critical	new	Continue to work with the Maine Department of Marine Resources to coordinate macroalgae harvest in important wintering sites and determine the level of impact on wintering birds
Hylocichla mustelina	Wood Thrush	Species Management	high	new	Develop a Species Conservation Plan for Wood Thrush. Wood Thrush would benefit from a dedicated conservation plan to coordinate research, habitat protection, and management actions.
Hylocichla mustelina	Wood Thrush	Research	high	new	Support full annual cycle research to identify key overwintering areas, stopover sites, and demographic bottlenecks. Population declines may be driven by conditions outside the breeding season. Research into overwinter survival, migratory connectivity, and habitat use will guide international conservation strategies.
Hylocichla mustelina	Wood Thrush	Survey and Monitoring	high	new	Monitor and map Wood Thrush populations in response to forest loss, fragmentation, and management. Tracking population trends in relation to habitat changes and management practices can help identify priority conservation areas and adaptive management needs.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Hylocichla mustelina	Wood Thrush	Habitat Management	high	new	Promote forestry practices that retain native understory, minimize edge effects, and maintain canopy closure. Forestry for Maine Birds (FFMB) provides guidance aligned with Wood Thrush habitat needs. Management should prioritize maintaining moist soil, native shrubs, and moderate subcanopy development. Edge reduction also limits nest predation and cowbird parasitism.
Hylocichla mustelina	Wood Thrush	Habitat Management	high	on-going	Protect and manage large tracts of mature, deciduous or mixed hardwood forest. Wood Thrush are area-sensitive and exhibit higher reproductive success in large, contiguous forests with well-developed understory and leaf litter. Focus protection on parcels ≥100 ha where possible, and maintain forest connectivity to support juvenile dispersal.
Icterus galbula	Baltimore Oriole	Habitat Management	moderate	new	Maintain and enhance riparian and street tree canopy. Promote the retention and planting of native deciduous trees in riparian corridors, urban parks, and residential neighborhoods to provide nesting and foraging habitat.
Icterus galbula	Baltimore Oriole	Public Outreach	moderate	on-going	Participate in collaborative conservation groups like BirdSafe Maine to reduce bird-window collisions and promote bird-safe building practices. This includes advocating for the use of bird-safe glass, window treatments, and lighting designs in both new constructions and retrofits. Support public education campaigns and policy initiatives aimed at reducing bird-window collisions, a significant source of mortality for migratory species
Icterus galbula	Baltimore Oriole	Public Outreach	high	on-going	Support Lights Out initiatives to protect nocturnal migrants. Encourage municipalities, businesses, and residents in Maine to reduce unnecessary nighttime lighting during peak migration periods. Artificial lights can disorient nocturnally migrating birds leading to exhaustion or fatal collisions with illuminated structures.
Icterus galbula	Baltimore Oriole	Public Outreach	moderate	new	Promote integrated pest management and reduce pesticide use in residential and municipal tree care. Support outreach and policy development encouraging reduced pesticide application, especially during the breeding season, and promote bird- and pollinator-friendly pest management practices.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Ixobrychus exilis	Least Bittern	Species Management	high	new	Develop and implement a Species Conservation Plan.
Larus marinus	Great Black-backed Gull	Survey and Monitoring	high	on-going	Conduct coastwide nesting colony surveys every five years to determine population trend.
Leiothlypis peregrina	Tennessee Warbler	Public Outreach	moderate	new	Mitigate migratory collision risk through outreach and infrastructure changes. Partner with organizations such as Bird Safe Maine and participate in Lights Out campaigns to reduce light pollution and collision risk during peak migration periods. Encourage bird-friendly building design and tower lighting modifications in high-risk areas.
Leiothlypis peregrina	Tennessee Warbler	Research	high	new	Assess reproductive success and potential impacts of spruce budworm suppression. Investigate Tennessee Warbler (and other Budworm specialist) nesting success and productivity in areas treated with different budworm response strategies (e.g., Btk, tebufenozide) and control areas. Focus on quantifying sublethal effects and indirect consequences of reduced lepidopteran prey availability during the breeding season. Current studies are limited and small-scale.
Leiothlypis peregrina	Tennessee Warbler	Research	high	new	Clarify Tennessee Warbler diet composition and reliance on spruce budworm in Maine. Conduct research on the dietary composition of Tennessee Warblers in Maine to assess the degree of reliance on spruce budworm and identify alternative prey species used during non-outbreak years. This will improve understanding of food availability as a limiting factor and inform pest management strategies.
Loxia curvirostra	Red Crossbill	Policy	moderate	new	Encourage use of best practices for winter road management to reduce collision risk and minimize chemical exposure.
Loxia curvirostra	Red Crossbill	Survey and Monitoring	high	new	Monitor cone crop variability and link it to Red Crossbill distribution and breeding effort across years.
Loxia curvirostra	Red Crossbill	Research	high	new	Conduct research to assess breeding success, habitat use, and population persistence of Red Crossbill call types in Maine.
Loxia curvirostra	Red Crossbill	Habitat Management	critical	new	Promote forest management practices that retain mature, cone-bearing conifer trees and maintain forest structural diversity.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Melospiza lincolnii	Lincoln's Sparrow	Research	moderate	new	Model climate vulnerability and future habitat availability; project how climate change may affect Maine's peatlands and wet/shrubby subalpine habitats critical to this species' persistence.
Melospiza lincolnii	Lincoln's Sparrow	Research	moderate	new	Assess herbicide use in forestry and its impacts on nesting cover; determine the extent to which chemical vegetation treatments reduce habitat suitability for breeding Lincoln's Sparrows.
Melospiza lincolnii	Lincoln's Sparrow	Research	high	new	Investigate causes of range contraction, especially in Downeast Maine. Explore potential links to climate change, hydrological shifts, or land use history in historically occupied habitats.
Melospiza lincolnii	Lincoln's Sparrow	Survey and Monitoring	moderate	new	Identify and monitor remnant breeding populations in Maine. Target surveys in shrubby bog, fen, and subalpine habitats to track population trends and refine the species' current distribution within the state.
Nannopterum auritum	Double-crested Cormorant	Survey and Monitoring	high	on-going	Conduct coastwide nesting colony surveys every five years to determine population trend.
Numenius phaeopus	Whimbrel	Research	high	new	Determine population status, pre migration body condition, and importance of commercial blueberry barrens to staging whimbrels.
Numenius phaeopus	Whimbrel	Research	high	new	Determine potential impacts from hazing and disturbance occuring on commercial blueberry barrens
Nycticorax nycticorax	Black-crowned Night-heron	Research	high	new	Determine whether prefledging success and productivity rates are contributing to declining numbers.
Nycticorax nycticorax	Black-crowned Night-heron	Species Management	high	new	Develop and implement a Species Conservation Plan.
Nycticorax nycticorax	Black-crowned Night-heron	Research	high	new	Where predation on other SGCN is an issue, investigate effects of lethal control methods on Maine breeding population and develop and test non-lethal control methods.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Passerella iliaca	Fox Sparrow	Habitat Management	high	new	Identify and protect key high-elevation and boreal shrub breeding sites. Prioritize conservation easements or habitat management agreements in regions like the western flanks of Baxter State Park, upper Allagash, and Moosehead region where breeding densities are highest.
Passerella iliaca	Fox Sparrow	Research	moderate	new	Evaluate effects of commercial logging and salvage harvest on boreal breeding habitat. Collaborate with forest managers to study how different harvest intensities and post-logging regeneration strategies affect Fox Sparrow nesting success and habitat suitability.
Passerella iliaca	Fox Sparrow	Research	high	new	Fill critical knowledge gaps in breeding biology and habitat use - support research into nesting habitat preferences, reproductive success, and habitat productivity across different boreal forest types/management types to inform long-term conservation strategies.
Passerella iliaca	Fox Sparrow	Survey and Monitoring	moderate	new	Monitor potential range shifts associated with climate change. Conduct periodic surveys in historic and peripheral breeding areas to track population trends and detect expansions or contractions in range.
Petrochelidon pyrrhonota	Cliff Swallow	Habitat Management	high	new	Develop Nesting Site Best Management Practices (BMPs) for preserving and enhancing Cliff Swallow nesting opportunities on human-made structures (e.g., bridges, barns), including guidance on minimizing disturbance and supporting persistence during routine maintenance.
Petrochelidon pyrrhonota	Cliff Swallow	Research	moderate	new	Support pilot projects testing artificial nest ledges or clay/plaster nests in areas with historic colonies. Evaluate success and develop recommendations for effective installation (ideally coupled with House Sparrow control when appropriate).
Petrochelidon pyrrhonota	Cliff Swallow	Survey and Monitoring	high	new	Investigate impact of House Sparrows on key colonies in Maine. If significant, implement House Sparrow management (e.g., fall and winter nest removal, active deterrence, etc.).
Petrochelidon pyrrhonota	Cliff Swallow	Habitat Management	high	new	Coordinate with DOT and infrastructure managers/engineers to avoid nest destruction during road/bridge maintenance, schedule disruptive work outside nesting periods, etc.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Petrochelidon pyrrhonota	Cliff Swallow	Species Management	critical	new	Develop a comprehensive conservation management plan for Cliff Swallow in Maine to guide coordinated efforts to halt and reverse population declines. The plan should identify key nesting sites, assess habitat availability and use, quantify threats (e.g., nest competition, disturbance, pesticide exposure), and outline best management practices for nest protection on human-made structures. It should also include strategies for monitoring population trends, encouraging landowner participation, and evaluating the effectiveness of targeted actions such as House Sparrow control, artificial nest support, and outreach to infrastructure managers.
Phalacrocorax carbo	Great Cormorant	Species Management	high	new	Develop and implement a Species Conservation Plan.
Phalacrocorax carbo	Great Cormorant	Species Management	high	new	Reduce the impact of bald eagle predation wherever possible
Phalacrocorax carbo	Great Cormorant	Survey and Monitoring	high	new	Initiate annual surveys and evaluate factors which limit population growth.
Phalaropus lobatus	Red-necked Phalarope	Policy	high	new	Develop management practices and avoidance guidelines to manage shipping activities and minimize accidental oil discharges.
Phalaropus lobatus	Red-necked Phalarope	Policy	high	new	Develop management practices to manage garbage and other solid wastes, and eliminate dumping into the marine environment.
Phalaropus lobatus	Red-necked Phalarope	Survey and Monitoring	high	on-going	Coordinate with Environment Canada to identify and monitor key staging sites to determine the true geographical extent of their staging area in the outer Bay of Fundy and the Gulf of Maine.
Picoides arcticus	Black-backed Woodpecker	Habitat Management	high	new	Incorporate stand-level snag retention guidelines into forest management plans. Encourage retention of high densities of large-diameter snags (e.g., ≥23 cm DBH) and clusters of dead trees during harvests in spruce-fir forests to maintain nesting and foraging substrate for Black-backed Woodpeckers.
Picoides arcticus	Black-backed Woodpecker	Public Outreach	moderate	new	Develop Best Management Practices (BMPs) for managing unburned source habitats. Prioritize the conservation of older conifer stands with legacy features (e.g., snags, downed wood), particularly in landscapes where natural disturbance is rare and may be insufficient to maintain habitat mosaics.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Picoides arcticus	Black-backed Woodpecker	Research	moderate	new	Conduct spatial modeling of habitat suitability and disturbance-dependent occupancy to guide conservation planning. Use recent forest disturbance and harvest data to model where and when suitable post-disturbance habitats exist.
Picoides arcticus	Black-backed Woodpecker	Habitat Management	moderate	new	Pilot use of prescribed fire and/or mechanical disturbance to simulate natural disturbance where safe and ecologically appropriate. Support experimental/small-scale efforts to evaluate feasibility and effectiveness.
Picoides dorsalis	American Three-toed Woodpecker	Habitat Management	high	new	Protect and manage post-disturbance forest stands. Prioritize the retention of recently disturbed forest stands (e.g., windthrow, beetle or worm kill, fire, ice damage) that support high densities of bark-foraging species. Where possible, exclude these areas from salvage logging to maintain standing deadwood and decaying trees critical for nesting and foraging.
Pinicola enucleator	Pine Grosbeak	Habitat Management	high	new	Site/area protection - Protect remaining mature and subalpine spruce-fir forest stands in northern and high-elevation areas through conservation easements or land acquisition.
Pinicola enucleator	Pine Grosbeak	Habitat Management	high	new	Site/area management - Work with public and private landowners to incorporate high-elevation spruce-fir conservation into forest management plans, particularly in areas near known or potential breeding habitat.
Pinicola enucleator	Pine Grosbeak	Public Outreach	high	new	Outreach and conservation partnerships with landowners - Promote uneven-aged management or retention of older forest patches in commercial forestry landscapes to maintain structurally suitable habitat.
Pinicola enucleator	Pine Grosbeak	Research	high	new	Support surveys and research to better document breeding locations, population size, and irruption dynamics in Maine. Investigate how climate-driven habitat shifts and forest composition changes are affecting Pine Grosbeak nesting ecology in Maine.
Poecile hudsonicus	Boreal Chickadee	Habitat Management	moderate	new	Ensure retention of snags and deadwood in managed spruce-fir stands to support foraging and nesting.
Poecile hudsonicus	Boreal Chickadee	Habitat Management	moderate	new	Identify and protect winter habitat strongholds, including old black spruce stands that may be critical for overwinter survival.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Poecile hudsonicus	Boreal Chickadee	Survey and Monitoring	high	new	Incorporate Boreal Chickadee into year-round boreal bird monitoring efforts, with targeted surveys during winter. Support use of passive acoustic monitoring (e.g., ARUs) to detect Boreal Chickadees, especially in low-density or remote areas.
Pooecetes gramineus	Vesper Sparrow	Habitat Management	moderate	on-going	Identify and protect priority grassland habitats from development. Purchase land, use conservation easements, or zoning incentives to protect high-value grassland sites from residential or commercial development.
Pooecetes gramineus	Vesper Sparrow	Habitat Management	high	new	Maintain and restore large grassland blocks. Promote maintenance of ≥20 ha grassland patches and restore early-successional habitat through mowing, grazing, or prescribed fire.
Pooecetes gramineus	Vesper Sparrow	Public Outreach	high	on-going	Incentivize wildlife-friendly agricultural practices, encourage delayed mowing, reduced pesticide use, no-till planting, and maintenance of field margins and hedgerows.
Pooecetes gramineus	Vesper Sparrow	Habitat Management	high	on-going	Use prescribed fire, managed grazing, or manual removal to reduce shrub encroachment on managed lands.
Pooecetes gramineus	Vesper Sparrow	Public Outreach	high	on-going	Promote grassland bird conservation programs with landowners. Provide technical support and recognition programs for private landowners, especially blueberry growers, who manage habitat for grassland birds.
Progne subis	Purple Martin	Habitat Management	high	on-going	Support further development, and increase awareness of, existing BMPs for purple martin colony management in concert with Purple Martin Conservation Association
Progne subis	Purple Martin	Species Management	critical	new	Implement the newly developed Purple Martin Conservation Management Plan in coordination with conservation partners.
Progne subis	Purple Martin	Research	high	on-going	Support Purple Martin Nest Cavity Research Project which uses mini martin cams to monitor nestling development and engage volunteers; consider a live web cam
Progne subis	Purple Martin	Survey and Monitoring	high	on-going	Support Project Martinwatch, a weekly nest monitoring program, through Purple Martin Conservation Association
Progne subis	Purple Martin	Research	high	new	Support research to better understand region-specific drivers of Purple Martin declines.
Progne subis	Purple Martin	Survey and Monitoring	high	on-going	Promote the registration of existing colonies through Purple Martin Conservation Association

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Progne subis	Purple Martin	Species Management	high	on-going	Support and promote the Purple Martin landlord mentor program, with an emphasis on recruiting new and younger participants to sustain colony management into the future.
Progne subis	Purple Martin	Research	high	on-going	Support Scout Arrival Study, monitoring of arrival times, through Purple Martin Conservation Association
Progne subis	Purple Martin	Public Outreach	high	on-going	Increase public awareness of the Purple Martin Conservation Association and its activities
Riparia riparia	Bank Swallow	Research	high	new	Investigate ecological and demographic limiting factors for Bank Swallows in Maine. Determine causes of observed population declines and clarify habitat, prey availability, and site fidelity requirements to inform conservation priorities.
Riparia riparia	Bank Swallow	Species Management	critical	new	Draft and implement a statewide conservation management plan for Bank Swallows that identifies key nesting areas, assesses habitat availability and threats (including industrial and natural sites), and outlines strategies for long-term habitat protection and population recovery.
Riparia riparia	Bank Swallow	Research	critical	new	Develop reclamation guidance for disused or abandoned gravel pits that prioritizes Bank Swallow nesting habitat.
Riparia riparia	Bank Swallow	Research	high	new	Assess the impacts of pesticide use, including neonicotinoids and other systemic insecticides, on aerial insectivore prey abundance and Bank Swallow populations.
Riparia riparia	Bank Swallow	Public Outreach	high	new	Develop and promote Best Management Practices (BMPs) for gravel pit operators to minimize nesting disturbance and support colony persistence.
Scolopax minor	American Woodcock	Habitat Management	moderate	on-going	Forest Management Plans and Incentives to cut trees to allow for early successional growth
Setophaga castanea	Bay-breasted Warbler	Research	high	new	Research habitat use and breeding ecology in Maine. Conduct targeted studies to better understand Bay-breasted Warbler habitat preferences, nesting ecology, and productivity in Maine, particularly in years of low spruce budworm abundance. Nests are notoriously difficult to locate, and much remains unknown about their reproductive biology in the state. Filling these knowledge gaps is critical to assessing conservation needs and potential vulnerabilities.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Setophaga castanea	Bay-breasted Warbler	Survey and Monitoring	moderate	new	Improve population trend estimates through focused monitoring. Enhance monitoring of Bay-breasted Warbler presence and abundance in Maine by using methods suited to low-density and cryptic species (e.g., ARUs, playback surveys, and long-term site occupancy monitoring). Current BBS trend estimates are imprecise due to low abundance, making it difficult to detect true population trends.
Setophaga castanea	Bay-breasted Warbler	Research	high	new	Assess dietary dependence on Spruce Budworm and response to pest management. Investigate the extent to which Bay-breasted Warblers rely on spruce budworm during breeding in Maine and assess how populations respond to different pest management regimes (e.g., B.t.k., tebufenozide). This will help determine whether suppression of future outbreaks could result in long-term population declines or shifts in distribution.
Setophaga striata	Blackpoll Warbler	Research	moderate	new	Study the quality and use of regenerating forests and clearcuts as potential breeding habitat. While Blackpolls have been found in regenerating spruce-fir stands, habitat quality varies and may influence recruitment and survival. Further study is needed to inform forest management decisions.
Setophaga striata	Blackpoll Warbler	Public Outreach	high	on-going	Work with partners to reduce collision risks during migration by promoting Lights Out initiatives and bird-friendly infrastructure. Blackpolls are among the most frequently killed migrants at towers and lit structures. Supporting statewide efforts such as BirdSafe Maine and the national Lights Out program will help reduce unnecessary mortality during migration.
Setophaga tigrina	Cape May Warbler	Research	high	new	Study habitat use, productivity, and management sensitivity in Maine. Evaluate Cape May Warbler's breeding habitat selection, nest success, and site fidelity in Maine under varying forest management regimes and in both outbreak and non-outbreak years. Assess how different silvicultural practices and pest suppression efforts influence warbler use and reproductive output.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Setophaga tigrina	Cape May Warbler	Research	high	new	Investigate drivers of range retraction in Downeast Maine. Conduct targeted research to identify ecological and environmental factors contributing to the species' disappearance from previously occupied breeding habitat in Downeast Maine. This could include examining changes in forest composition, climate impacts, insect prey availability, or competition with other species.
Somateria mollissima	Common Eider	Survey and Monitoring	high	on-going	Model Population Trends using existing data sets (survevy and citizen science)
Somateria mollissima	Common Eider	Species Management	high	on-going	Develop a harvest stratgey for annual hunting season recommendations
Somateria mollissima	Common Eider	Survey and Monitoring	high	on-going	Aerial Survey of Male Eiders around nesting islands in early to mid May
Somateria mollissima	Common Eider	Policy	high	new	Develop BMPs for aquaculture
Spizella pusilla	Field Sparrow	Habitat Management	moderate	new	Encourage rotational or periodic management (e.g., selective thinning, etc.) of old fields and overgrown pastures to maintain a mosaic of successional stages that include scattered woody vegetation, which Field Sparrows require for nesting and singing perches.
Spizella pusilla	Field Sparrow	Habitat Management	moderate	new	Work with landowners and municipalities to identify and manage low-use or idle areas (e.g., field borders, retired agricultural land, utility corridors) where suitable habitat for Field Sparrows can be maintained or restored through low-cost, low-disturbance methods.
Spizella pusilla	Field Sparrow	Public Outreach	high	new	Promote inclusion of Field Sparrow habitat in grassland-friendly landowner incentiv programs by highlighting the value of maintaining old fields and lightly shrubby areas for them.
Spizella pusilla	Field Sparrow	Policy	moderate	new	Support land-use planning and zoning policies that minimize conversion of early successional habitat to development, especially in southern and central Maine where Field Sparrows are most common.
Sterna dougallii	Roseate Tern	Species Management	high	on-going	Increase breeding population distribution and productivity

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Sternula antillarum	Least Tern	Habitat Management	high	on-going	Develop long-term, non-regulatory habitat protection via management agreements or conservation easements.
Sternula antillarum	Least Tern	Public Outreach	high	on-going	Continue efforts to educate beach recreationalists, landowners and municipal officials regarding ecology and life history requirements.
Sternula antillarum	Least Tern	Survey and Monitoring	moderate	on-going	Continue efforts to recruit and provide training sessions for volunteer beach monitors.
Sternula antillarum	Least Tern	Survey and Monitoring	high	on-going	Continue efforts to annually monitor abundance, distribution, and productivity.
Sternula antillarum	Least Tern	Species Management	critical	on-going	Continue current management activities including: stake and twine symbolic fencing around nesting areas, exclosures around colonies, posting signage to identify nesting areas, and locating and monitoring nesting pairs.
Sternula antillarum	Least Tern	Policy	high	on-going	Comply with and update existing Essential Habitat regulation,s requiring all projects funded, permitted, or carried out by a municipality or state agency to be reviewed by MDIFW.
Sternula antillarum	Least Tern	Habitat Management	high	on-going	Identify and prioritize nesting and foraging areas for oil spill contingency planning.
Sternula antillarum	Least Tern	Species Management	critical	on-going	Continue targeted management of native and nonnative predators at nesting and brood rearing areas, including lethal and nonlethal methods
Sturnella magna	Eastern Meadowlark	Species Management	critical	on-going	Establish or expand monitoring of Eastern Meadowlark populations in core breeding areas to assess population trends and evaluate conservation success. Regular monitoring is essential to track changes in population size and distribution, assess effectiveness of habitat management, and guide adaptive conservation strategies.
Sturnella magna	Eastern Meadowlark	Habitat Management	high	new	Promote delayed mowing or no-mow zones specifically within fields known to support multi-brood Eastern Meadowlark nesting. Meadowlarks are more likely to attempt second broods than many grassland birds, so protecting habitat longer into the summer is key.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Sturnella magna	Eastern Meadowlark	Habitat Management	critical	on-going	Identify and prioritize large grassland patches (>20 ha) for targeted Eastern Meadowlark conservation and outreach efforts. Meadowlarks are more area-sensitive than other grassland species like Bobolink and may require larger, more contiguous fields.
Tachycineta bicolor	Tree Swallow	Research	moderate	new	Support research into causes of declines and identification of ecological limiting factors
Tachycineta bicolor	Tree Swallow	Survey and Monitoring	high	new	Support and expand efforts to document insect availability across habitats and seasons
Tachycineta bicolor	Tree Swallow	Survey and Monitoring	high	on-going	Monitor population trends using targeted surveys and in collaboration with existing programs, support nest box monitoring efforts, encourage landowners with nest boxes to participate in monitoring.
Toxostoma rufum	Brown Thrasher	Habitat Management	moderate	new	Integrate shrubland bird needs into Right-of-Way management. Powerline ROWs and roadsides are key surrogate habitats for thrashers, develop partnerships with utility companies, transportation departments, and landowners to develop management plans that retain native shrubs and prevent premature forest regrowth in ROWs and roadside corridors.
Toxostoma rufum	Brown Thrasher	Public Outreach	moderate	new	Promote shrub retention in agricultural and exurban landscapes. Thrashers will use hedgerows, field margins, and brushy pathces around farms and rural residences so encouraging landowners to retain or plant dense, native, shrubs along field edges and avoid frequent mowing of fallow or abandoned fields during nesting season would be beneficial for shrubland birds that are fairly human-tolerant like Thrasher.
Toxostoma rufum	Brown Thrasher	Survey and Monitoring	moderate	new	Monitor population trends and habitat use via shrubland bird surveys and integrated monitoring.
Toxostoma rufum	Brown Thrasher	Habitat Management	high	new	Identify and prioritize key habitat blocks for protection. Research suggests Thrashers may require larger habitat patches than other shrubland birds so conservation efforts for this species should be focused on large, contiguous shrubland patches or complexes of old field and early successional habitat. It would also be helpful to identify habitat corridors connecting suitable patches in fragmented landscapes.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Tringa flavipes	Lesser Yellowlegs	Research	high	new	To determine if recent population declines are due to impacts occurring in Maine, conduct research to: identify food quality and quantity at lesser yellowleg staging areas; assess premigration body condition; length of stay; other potential limiting factors.
Tringa flavipes	Lesser Yellowlegs	Survey and Monitoring	high	new	Survey inland wetlands to identify and map important inland staging areas.
Tringa solitaria	Solitary Sandpiper	Survey and Monitoring	high	new	Survey inland wetlands to identify and map important inland staging areas.
Tringa solitaria	Solitary Sandpiper	Policy	moderate	new	Include important solitary sandpiper inland staging areas in existing Significant Wildlife Habitat provisions under NRPA.
Tyrannus tyrannus	Eastern Kingbird	Habitat Management	high	new	Protect and maintain open mixed-use farmlands and pasture with scattered trees and hedgerows. Work with landowners and agricultural partners to conserve or restore habitat mosaics that include fencerows, shelterbelts, scattered trees, and small orchards. Promote habitat-friendly agricultural practices that support aerial insectivores.
Tyrannus tyrannus	Eastern Kingbird	Public Outreach	moderate	new	Encourage compatible residential development practices in rural areas. Work with municipalities and developers to conserve open space and maintain hedgerows or riparian buffers during new residential development.
Tyrannus tyrannus	Eastern Kingbird	Research	high	new	Develop and implement research to assess causes of population decline, join collaborative efforts/support studies examining migratory connectivity, winter survival, pesticide exposure, and food limitation. Prioritize tracking studies of females to fill sex-specific data gaps.
Tyrannus tyrannus	Eastern Kingbird	Habitat Management	moderate	new	Identify and manage sites at risk of forest succession (e.g., old fields, abandoned farms, etc.) to maintain open habitats. Use mowing, brush clearing, or fire where and when appropriate to sustain breeding conditions for Kingbirds.
Tyrannus tyrannus	Eastern Kingbird	Public Outreach	moderate	new	Promote reduced pesticide use in orchards and adjacent foraging habitat. Encourage integrated pest management (IPM) practices in orchards and other working lands used by Kingbirds to reduce pesticide exposure during breeding.

Appendix Table 4- 8 Conservation Actions assigned to Amphibian and Reptile SGCN.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Ambystoma laterale	Blue-spotted Salamander	Survey and Monitoring	high	on-going	Pure diploid (and non-hybrid) populations of Ambystoma laterale are believed to be rare in Maine and throughout their range. Systematic tissue sampling is needed to document the extent and distribution of all genotypes within the species complex, with a focus on identifying cryptic diploid populations requiring potential targeted conservation attention.
Ambystoma laterale	Blue-spotted Salamander	Research	high	on-going	Develop an improved understanding of habitat and movement ecology to help develop Best Management Practices and other targeted species conservation actions
Ambystoma laterale	Blue-spotted Salamander	Habitat Management	high	new	Research and coordinate the development of a publically available Potential Vernal Pool map product that covers the entire State, or at least all organized townships
Ambystoma laterale	Blue-spotted Salamander	Policy	moderate	on-going	Cooperate with University of Maine and the Maine Department of Environmental Protection to research and implement a voluntary Special Area Management Program (SAMP) by towns that want greater flexibility in the implementation of Significant Vernal Pool rules in designated growth areas.
Gyrinophilus porphyriticus porphyriticus	Northern Spring Salamander	Habitat Management	high	on-going	Continue to share and disseminate forestry BMPs for this species so that riparian habitat integrity and water quality can be maintained
Gyrinophilus porphyriticus porphyriticus	Northern Spring Salamander	Species Management	high	on-going	Continue to review development proposals that may impact populations of this species and use the best available science to advocate for avoidance, minimization, and mitigation efforts which preserve or enhance viable sites.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Clemmys guttata	Spotted Turtle	Species Management	high	on-going	Address illegal commercial and casual collection. Continue to engage with the Maine Warden Service to educate staff and inform them about poaching so that they may be better positioned to identify and stop it in the state. Deter casual collection by educating the public on the importance of leaving turtles where they find them
Clemmys guttata	Spotted Turtle	Habitat Management	high	new	Research and coordinate the development of a publically available Potential Vernal Pool map product that covers the entire State, or at least all organized townships
Clemmys guttata	Spotted Turtle	Policy	moderate	on-going	Cooperate with University of Maine and the Maine Department of Environmental Protection to research and implement a voluntary Special Area Management Program (SAMP) by towns that want greater flexibility in the implementation of Significant Vernal Pool rules in designated growth areas.
Clemmys guttata	Spotted Turtle	Habitat Management	high	on-going	Manage and where necessary create nesting habitat to improve viability of high-priority Spotted turtle populations. Work with conservation partners to monitor the use and effectiveness of these actions.
Clemmys guttata	Spotted Turtle	Public Outreach	high	on-going	Continue to build public awareness of risks posed by roadways with seasonally appropriate press release that also warns motorists to be on the lookout for turtles during spring/early summer.
Clemmys guttata	Spotted Turtle	Species Management	critical	on-going	Identify potential road crossing hotspots using GIS and monitor mortality at those locations with road surveys to prioritize the most problematic road segments for mitigation measures such as cautionary signage, exclusionary fencing, and under-road passages.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Clemmys guttata	Spotted Turtle	Species Management	high	on-going	Continue the cautionary road crossing signage program, and expand the number of locations with signs as additional road crossing hotspots are identified.
Clemmys guttata	Spotted Turtle	Species Management	high	on-going	Continue to review development proposals that may impact populations of this species and use the best available science to advocate for avoidance, minimization, and mitigation efforts which preserve or enhance viable sites.
Clemmys guttata	Spotted Turtle	Species Management	critical	new	Install road crossing structures consisting of under-road passageways and guidance fencing where high-mortality road segments bisect habitat that hosts high priority populations
Coluber constrictor constrictor	Northern Black Racer	Species Management	high	on-going	Continue to review development proposals that may impact populations of this species and use the best available science to advocate for avoidance, minimization, and mitigation efforts which preserve or enhance viable racer sites.
Coluber constrictor constrictor	Northern Black Racer	Survey and Monitoring	moderate	new	Identify potential road crossing hotspots using GIS and monitor mortality at those locations with road surveys to prioritize the most problematic road segments for mitigation measures such as cautionary signage, exclusionary fencing, and under-road passages.
Coluber constrictor constrictor	Northern Black Racer	Habitat Management	critical	on-going	Manage black racer habitat to improve and expand upon habitat that is available where populations occur.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Coluber constrictor constrictor	Northern Black Racer	Survey and Monitoring	high	on-going	Continue to study the effects of solar development on Maine racer populations and habitat suitability. Work to date indicates that this species likely avoids the areas where arrays are constructed and may be displaced by this type of development. Further work is needed to evaluate this over the long-term and determine population level impacts and population persistence. Also, the range of onsite mitigation that has been used should be evaluated to gauge effectiveness.
Emydoidea blandingii	Blanding's Turtle	Policy	moderate	on-going	Cooperate with University of Maine and the Maine Department of Environmental Protection to research and implement a voluntary Special Area Management Program (SAMP) by towns that want greater flexibility in the implementation of Significant Vernal Pool rules in designated growth areas.
Emydoidea blandingii	Blanding's Turtle	Species Management	high	on-going	Continue the cautionary road crossing signage program, and expand the number of locations with signs as additional road crossing hotspots are identified.
Emydoidea blandingii	Blanding's Turtle	Research	critical	on-going	Identify potential road crossing hotspots using GIS and monitor mortality at those locations with road surveys to prioritize the most problematic road segments for mitigation measures such as cautionary signage, exclusionary fencing, and under-road passages.
Emydoidea blandingii	Blanding's Turtle	Species Management	critical	on-going	Install road crossing structures consisting of under-road passageways and guidance fencing where high-mortality road segments bisect habitat that hosts high priority populations

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Emydoidea blandingii	Blanding's Turtle	Species Management	high	on-going	Continue to review development proposals that may impact populations of this species and use the best available science to advocate for avoidance, minimization, and mitigation efforts which preserve or enhance viable sites.
Emydoidea blandingii	Blanding's Turtle	Habitat Management	high	on-going	Manage and where necessary create nesting habitat to improve viability of high-priority Blanding's turtle populations. Work with conservation partners to monitor the use and effectiveness of these actions.
Emydoidea blandingii	Blanding's Turtle	Species Management	high	on-going	Address illegal commercial and casual collection. Continue to engage with the Maine Warden Service to educate staff and inform them about poaching so that they may be better positioned to identify and stop it in the state. Deter casual collection by educating the public on the importance of leaving turtles where they find them
Emydoidea blandingii	Blanding's Turtle	Habitat Management	high	new	Research and coordinate the development of a publically available Potential Vernal Pool map product that covers the entire State, or at least all organized townships
Emydoidea blandingii	Blanding's Turtle	Public Outreach	high	on-going	Continue to build public awareness of risks posed by roadways with seasonally appropriate press release that also warns motorists to be on the lookout for turtles during spring/early summer.
Glyptemys insculpta	Wood Turtle	Species Management	high	on-going	Address illegal commercial and casual collection. Continue to engage with the Maine Warden Service to educate staff and inform them about poaching so that they may be better positioned to identify and stop it in the state. Deter casual collection by educating the public on the importance of leaving turtles where they find them

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Glyptemys insculpta	Wood Turtle	Public Outreach	moderate	on-going	Continue to build public awareness of risks to wood turtles posed by roadways with seasonally appropriate press release that also warns motorists to be on the lookout for turtles during spring/early summer.
Glyptemys insculpta	Wood Turtle	Species Management	high	new	Install road crossing structures consisting of under-road passageways and guidance fencing where high-mortality road segments bisect habitat that hosts high priority populations
Glyptemys insculpta	Wood Turtle	Species Management	high	on-going	Identify potential road crossing hotspots using GIS and monitor mortality at those locations with road surveys to prioritize the most problematic road segments for mitigation measures such as cautionary signage, exclusionary fencing, and under-road passages.
Glyptemys insculpta	Wood Turtle	Species Management	moderate	on-going	Expand cautionary road crossing signage program to include wood turtle as important road crossing hotspots are identified for this species.
Glyptemys insculpta	Wood Turtle	Habitat Management	moderate	on-going	Manage and where necessary create nesting habitat to improve viability of high-priority wood turtle populations. Work with conservation partners to monitor the use and effectiveness of these actions.
Glyptemys insculpta	Wood Turtle	Habitat Management	moderate	new	Seek opportunities to remove dams in order to restore stream habitat for wood turtle and other SGCN.
Glyptemys insculpta	Wood Turtle	Species Management	high	on-going	Continue to review development proposals that may impact populations of this species and use the best available science to advocate for avoidance, minimization, and mitigation efforts which preserve or enhance viable sites.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Storeria dekayi	Dekay's Brownsnake	Survey and Monitoring	moderate	new	Implement targeted professional surveys to better understand the distribution and status of this species and to help direct conservation actions to newly documented populations
Terrapene carolina	Eastern Box Turtle	Survey and Monitoring	moderate	on-going	continue to evaluate reports of box turtles to determine if there is any potential of an actual extant population (more than one individual), whether naturally ocurring or not
Thamnophis saurita	Eastern Ribbonsnake	Research	high	new	Develop an improved understanding of habitat, movement ecology, and overwintering sites to help develop Best Management Practices and other targeted species conservation actions
Thamnophis saurita	Eastern Ribbonsnake	Policy	moderate	on-going	Cooperate with University of Maine and the Maine Department of Environmental Protection to research and implement a voluntary Special Area Management Program (SAMP) by towns that want greater flexibility in the implementation of Significant Vernal Pool rules in designated growth areas.
Thamnophis saurita	Eastern Ribbonsnake	Species Management	high	on-going	Continue to review development proposals that may impact populations of this species and use the best available science to advocate for avoidance, minimization, and mitigation efforts which preserve or enhance viable sites.

Table 4-10. Conservation Actions assigned to Terrestrial and Freshwater Invertebrate SGCN.

Appendix Table 4- 9 Conservation Actions assigned to Terrestrial and Freshwater Invertebrates SGCN.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Alasmidonta varicosa	Brook Floater	Species Management	critical	new	Draft a statewide species assessment and conservation plan, including recovery goals, as well as site-specific conservation plans for each occupied waterbody.
Alasmidonta varicosa	Brook Floater	Survey and Monitoring	critical	on-going	Develop and implement a systematic and cost-efficient protocol for determining and monitoring population size, demographics, trends, and status over the long-term.
Atlanticoncha ochracea	Tidewater Mucket	Survey and Monitoring	critical	new	Develop and implement a systematic and cost-efficient protocol for determining and monitoring population size, demographics, trends, and status over the long-term.
Atlanticoncha ochracea	Tidewater Mucket	Habitat Management	high	new	Work with hydropower companies to cooperatively develop protocols and best management practices in managed impoundments where species is present. (HM/high/new – RRHM/Dams)
Atlanticoncha ochracea	Tidewater Mucket	Species Management	critical	new	Draft a statewide species assessment and conservation plan, including recovery goals, as well as site-specific conservation plans for each occupied waterbody.
Lampsilis cariosa	Yellow Lampmussel	Survey and Monitoring	critical	new	Develop and implement a systematic and cost-efficient protocol for determining and monitoring population size, demographics, trends, and status over the long-term.
Lampsilis cariosa	Yellow Lampmussel	Species Management	critical	new	Draft a statewide species assessment and conservation plan, including recovery goals, as well as site-specific conservation plans for each occupied waterbody.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Lampsilis cariosa	Yellow Lampmussel	Habitat Management	high	new	Work with hydropower companies to cooperatively develop protocols and best management practices in managed impoundments where species is present.
Arrhoges occidentalis	American Pelican Foot	Public Outreach	high	new	Education to increase awareness of how the shell trade can reduce the economic value of natural systems.
Ladislavella mighelsi	Bigmouth Pondsnail	Research	high	new	Examine effects water quality changes from residential and agricultural pollutant and nutrient runoff on bigmouth pondsnail populations
Ladislavella mighelsi	Bigmouth Pondsnail	Research	high	on-going	Develop an improved understanding of habitat and movement ecology to help develop Best Management Practices and other targeted species conservation actions
Vertigo morsei	Six-whorl Vertigo	Survey and Monitoring	critical	new	Engage in comprehensive survey and monitoring effort to address general lack of knowledge regarding this species and to better understand population status & trends and ID any potential for additional occurrences
Anax longipes	Comet Darner	Public Outreach	high	new	Develop outreach materials for land managers and the general public to prevent accidental or illegal fish introductions into fishless ponds.
Anax longipes	Comet Darner	Policy	high	new	Develop a list of fishless ponds where species is documented and provide to MDIFW Fisheries Biologists for use during selection of stocking sites.
Atrytonopsis hianna hianna	Dusted Skipper	Survey and Monitoring	moderate	on-going	More populations are likely to be detected with directed survey effort

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Atrytonopsis hianna hianna	Dusted Skipper	Research	high	on-going	Complete a statewide butterfly atlas and use it to increase public and partner awareness of the state's Lepidoptera and their conservation challenges
Boloria chariclea grandis	Arctic Fritillary	Policy	high	on-going	Communication with Maine Forest Service and Bureau of Pest Control are necessary to prevent unintended mortality from aerial pesticide spraying (e.g., for spruce budworm)
Boloria chariclea grandis	Arctic Fritillary	Policy	critical	new	MDIFW needs greater staff capacity for survey and conservation of SGCN invertebrates
Boloria chariclea grandis	Arctic Fritillary	Habitat Management	high	new	A concerted effort should be made to protect (via aquisition or easement) this dually rare boreal forest ecosystem and butterfly
Boloria chariclea grandis	Arctic Fritillary	Species Management	high	on-going	Develop forestry Best Management Practices for distribution to cooperative landowners and forest management community
Boloria chariclea grandis	Arctic Fritillary	Research	high	on-going	Complete a statewide butterfly atlas and use it to increase public and partner awareness of the state's Lepidoptera and their conservation challenges
Boloria frigga saga	Frigga Fritillary	Survey and Monitoring	moderate	on-going	More populations are likely to be detected with directed survey effort
Bombus affinis	Rusty-patched Bumble Bee	Survey and Monitoring	critical	on-going	Conduct targeted, statewide surveys to determine if species is still extant in Maine.
Bombus ashtoni	Ashton's Cuckoo Bumble Bee	Species Management	high	new	Draft a species assessment and conservation plan, including recovery goals.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Bombus ashtoni	Ashton's Cuckoo Bumble Bee	Survey and Monitoring	critical	on-going	Conduct intensive surveys in northern Aroostook County to further determine occurrence, distribution, habitat use, and status.
Bombus fervidus	Yellow Bumble Bee	Habitat Management	high	new	Develop/distribute habitat management guidelines for land managers to avoid/minimize impacts of land use activities (i.e., intensive agricultural, development, renewable energy facilities) and lack of management in grassland/field habitat, which this species prefers.
Bombus insularis	Indiscriminate Cuckoo Bumble Bee	Survey and Monitoring	high	on-going	Conduct intensive surveys in northern Aroostook and Washington Counties, where most records are from, to further determine occurrence, distribution, habitat use, and status.
Callophrys gryneus gryneus	Juniper Hairstreak	Policy	high	new	MDIFW needs greater staff capacity for survey and conservation of SGCN invertebrates
Callophrys gryneus gryneus	Juniper Hairstreak	Research	high	on-going	Complete a statewide butterfly atlas and use it to increase public and partner awareness of the state's Lepidoptera and their conservation challenges
Callophrys gryneus gryneus	Juniper Hairstreak	Survey and Monitoring	moderate	on-going	More populations are likely to be detected with directed survey effort
Callophrys gryneus gryneus	Juniper Hairstreak	Habitat Management	moderate	new	Proactive communication with ROW owner/manager is needed to prevent unintended mortality from cutting and herbicide spraying of host plant (red cedar)
Callophrys gryneus gryneus	Juniper Hairstreak	Habitat Management	high	new	Research host tree regeneration ecology and develop site restoration management strategies for distribution to cooperative landowners.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Callophrys hesseli hesseli	Hessel's Hairstreak	Habitat Management	critical	on-going	A concerted effort should be made to conserve as much of the remaining Atlantic White Cedar communities as possible
Callophrys hesseli hesseli	Hessel's Hairstreak	Habitat Management	moderate	new	Conduct a comprehensive review of silvicultural effects on Atlantic White Cedar habitat (e.g., regeneration, composition, structure)
Callophrys polios polios	Hoary Elfin	Policy	high	new	MDIFW needs greater staff capacity for survey and conservation of SGCN invertebrates
Callophrys polios polios	Hoary Elfin	Habitat Management	critical	on-going	A concerted effort should be made to conserve as much of the remaining unprotected sandplain grasslands and PP/SO barrens as possible
Callophrys polios polios	Hoary Elfin	Research	high	on-going	Complete a statewide butterfly atlas and use it to increase public and partner awareness of the state's Lepidoptera and their conservation challenges
Callophrys polios polios	Hoary Elfin	Policy	moderate	new	Communication with Maine Forest Service and Bureau of Pest Control are necessary to prevent unintended mortality from aerial pesticide spraying (e.g., for spongy moth)
Callophrys polios polios	Hoary Elfin	Survey and Monitoring	moderate	on-going	More populations are likely to be detected with directed survey effort
Callophrys polios polios	Hoary Elfin	Habitat Management	critical	new	Prescribed fire and mechanical cutting should be regularly employed to prevent ecological succession to more common and mesic forest types
Catocala similis	Similar Underwing	Public Outreach	moderate	new	Develop/distribute outreach materials to inform the general public about the impacts of artificial light on nocturnal insects and to promote the use of Dark Sky lighting practices.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Catocala similis	Similar Underwing	Survey and Monitoring	high	new	Conduct surveys to document potential new occurrences and extent of habitat use outside of pitch pine - scrub oak barrens where host plant (scrub oak) is present.
Cicindela ancocisconensis	Appalachian Tiger Beetle	Survey and Monitoring	high	new	Initiate comprehensive survey and monitoring effort to understand population status & trends and ID additional occurrences of this globally rare tiger beetle
Cicindela marginipennis	Cobblestone Tiger Beetle	Survey and Monitoring	critical	on-going	Develop and implement a systematic protocol for monitoring population size, demographics, and trends.
Cicindela marginipennis	Cobblestone Tiger Beetle	Research	high	new	Develop an improved understanding of habitat and movement ecology to help develop Best Management Practices and other targeted species conservation actions
Cicindela marginipennis	Cobblestone Tiger Beetle	Public Outreach	moderate	new	develop and disseminate messaging to educate public about illegal collection and its harm for this and other SGCN
Ellipsoptera marginata	Margined Tiger Beetle	Survey and Monitoring	critical	on-going	Develop and implement a systematic protocol for monitoring population size, demographics, and trends.
Ellipsoptera marginata	Margined Tiger Beetle	Policy	high	new	MDIFW needs greater staff capacity for survey and conservation of SGCN invertebrates
Epeorus frisoni	Roaring Brook Mayfly	Survey and Monitoring	high	new	Develop and implement a systematic protocol for determining and monitoring population size, trends, and status over the long-term.
Epeorus frisoni	Roaring Brook Mayfly	Species Management	high	new	Draft a statewide species assessment and conservation plan, including recovery goals, as well as site-specific conservation plans for each occupied waterbody.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Epeorus frisoni	Roaring Brook Mayfly	Research	moderate	new	Work with conservation partners (e.g., University of Maine, taxa experts) to improve understanding of life history.
Epeorus frisoni	Roaring Brook Mayfly	Research	critical	new	Confirm taxonomic validity via DNA barcoding and comparison to closely related species to support morphological diagnostic characteristics.
Erora laeta	Early Hairstreak	Research	high	new	Prepare a statewide atlas and conservation assessment.
Erynnis brizo brizo	Sleepy Duskywing	Research	high	on-going	Complete a statewide butterfly atlas and use it to increase public and partner awareness of the state's Lepidoptera and their conservation challenges
Erynnis brizo brizo	Sleepy Duskywing	Survey and Monitoring	moderate	on-going	More populations are likely to be detected with directed survey effort
Gomphus quadricolor	Rapids Clubtail	Survey and Monitoring	high	new	Conduct surveys to determine the status of the historic population(s) on the Saco River.This species may no longer be extant in Maine.
Hemileuca maia maia	Eastern Buckmoth	Policy	moderate	on-going	Work with conservation partners to control introductions of biocontrol agents/parasitoids that are specific to Saturniidae species (e.g., past introductions of Comsilura concinnata potentially contributed to the decline of this species in some parts of its range)
Hemileuca maia maia	Eastern Buckmoth	Survey and Monitoring	high	new	Conduct comprehensive surveys to determine if species is still extant at previously reported sites and to document potential new occurrences and extent of habitat use outside of pitch pine - scrub oak barrens where host plant (scrub oak) is present.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Lithophane lepida lepida	Pine Pinion	Survey and Monitoring	high	new	Conduct surveys to document if species is still extant and extent of potential habitat use outside of pitch pine - scrub oak barrens where extensive tracts of host plant (hard pines) are present, including in northern and eastern Maine.
Lycia rachelae	Twilight Moth	Survey and Monitoring	high	new	Conduct surveys to document potential new occurrences and extent of habitat use outside of pitch pine - scrub oak barrens.
Lycia rachelae	Twilight Moth	Survey and Monitoring	high	new	Develop and implement a systematic protocol for monitoring population size, status, and trends at each occupied site.
Lycia rachelae	Twilight Moth	Species Management	high	new	Draft a species assessment and conservation plan, including recovery goals, as well as site-specific conservation plans for each occupied site.
Lycia rachelae	Twilight Moth	Public Outreach	moderate	new	Develop/distribute outreach materials to inform the general public about the impacts of artificial light on nocturnal insects and to promote the use of Dark Sky lighting practices.
Macaria exonerata	Barrens Itame	Survey and Monitoring	high	new	Conduct surveys to document potential new occurrences and extent of habitat use outside of pitch pine - scrub oak barrens where host plant (scrub oak) is present.
Macaria exonerata	Barrens Itame	Public Outreach	moderate	new	Develop/distribute outreach materials to inform the general public about the impacts of artificial light on nocturnal insects and to promote the use of Dark Sky lighting practices.
Metarranthis apiciaria	Barrens Metarranthis Moth	Research	high	new	Document life history, host plants, extent of habitat use outside pitch pine - scrub oak barrens.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Metarranthis apiciaria	Barrens Metarranthis Moth	Survey and Monitoring	high	new	Conduct comprehensive surveys to determine if species is still extant in Maine, its distribution and status.
Oeneis polixenes katahdin	Katahdin Arctic	Public Outreach	moderate	new	Work with Baxter State Park to develop outreach and informational materials to raise public awareness and appreciation of the ecology, threats and conservation needs of the Katahdin Arctic and its fragile alpine habitat.
Oeneis polixenes katahdin	Katahdin Arctic	Species Management	high	new	Prepare a comprehensive species assessment and conservation plan.
Oeneis polixenes katahdin	Katahdin Arctic	Habitat Management	high	new	Work with Baxter State Park and Maine Natural Areas Program to develop tundra habitat monitoring procedures for assessing potential impacts from off-trail recreation.
Oeneis polixenes katahdin	Katahdin Arctic	Survey and Monitoring	high	new	Work with Baxter State Park to develop species monitoring protocols that are robust enough to detect potential trends in population size.
Oeneis polixenes katahdin	Katahdin Arctic	Research	moderate	new	Work with conservation partners (e.g., Baxter State Park, University of Maine, taxa experts) to improve understanding of life history.
Oeneis polixenes katahdin	Katahdin Arctic	Policy	critical	new	Increase MDIFW staff capacity for survey, research, and conservation of SGCN invertebrates.
Oeneis polixenes katahdin	Katahdin Arctic	Survey and Monitoring	moderate	new	Conduct intensive surveys of Maine's limited alpine tundra habitat for potential undiscovered populations, especially within Baxter State Park.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Papilio brevicauda gaspeensis	Short-tailed Swallowtail	Research	high	on-going	Complete a statewide butterfly atlas and use it to increase public and partner awareness of the state's Lepidoptera and their conservation challenges
Papilio brevicauda gaspeensis	Short-tailed Swallowtail	Survey and Monitoring	moderate	on-going	More populations are likely to be detected with directed survey effort
Papilio brevicauda gaspeensis	Short-tailed Swallowtail	Policy	moderate	on-going	Proactive communication with Maine Forest Service and Bureau of Pest Control are necessary to prevent unintended mortality from aerial pesticide spraying (e.g., for spruce budworm)
Papilio brevicauda gaspeensis	Short-tailed Swallowtail	Policy	high	new	MDIFW needs greater staff capacity for survey and conservation of SGCN invertebrates
Plebejus idas empetri	Crowberry Blue	Habitat Management	critical	on-going	A concerted effort should be made to conserve as much of the remaining unprotected coastal peatlands as possible
Plebejus idas scudderii	Northern Blue	Policy	moderate	new	Communication with Maine Forest Service and Bureau of Pest Control are necessary to prevent unintended mortality from aerial pesticide spraying (e.g., for spruce budworm)
Plebejus idas scudderii	Northern Blue	Survey and Monitoring	moderate	on-going	More populations are likely to be detected with directed survey effort
Plebejus idas scudderii	Northern Blue	Policy	critical	new	MDIFW needs greater staff capacity for survey and conservation of SGCN invertebrates
Plebejus idas scudderii	Northern Blue	Research	high	on-going	Complete a statewide butterfly atlas and use it to increase public and partner awareness of the state's Lepidoptera and their conservation challenges

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Rhionaeschna mutata	Spatterdock Darner	Policy	high	new	Develop a list of fishless ponds where species is documented and provide to MDIFW Fisheries Biologists for use during selection of stocking sites.
Rhionaeschna mutata	Spatterdock Darner	Public Outreach	high	new	Develop outreach materials for land managers and the general public to prevent accidental or illegal fish introductions into fishless ponds.
Satyrium edwardsii edwardsii	Edwards' Hairstreak	Research	high	on-going	Complete a statewide butterfly atlas and use it to increase public and partner awareness of the state's Lepidoptera and their conservation challenges
Satyrium edwardsii edwardsii	Edwards' Hairstreak	Survey and Monitoring	moderate	on-going	More populations are likely to be detected with directed survey effort
Siphlonisca aerodromia	Tomah Mayfly	Species Management	critical	on-going	Update statewide species assessment and draft a conservation plan, including recovery goals, as well as site-specific conservation plans for each occupied waterbody.
Siphlonisca aerodromia	Tomah Mayfly	Survey and Monitoring	critical	on-going	Develop and implement a systematic protocol for determining and monitoring population size, trends, and status over the long-term.
Siphlonisca aerodromia	Tomah Mayfly	Habitat Management	high	new	Work with landowners and hydropower companies to cooperatively develop protocols and best management practices in managed river systems where species is present.
Siphlonurus demarayi	Demaray's Primitive Minnow Mayfly	Research	moderate	new	investigate habitat use by this species to determine if it is tied to lotic or specialized lentic habitat, or both

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Tharsalea dorcas claytoni	Clayton's Copper	Species Management	high	new	Update the existing statewide species assessment and draft a conservation plan, including recovery goals, as well as site-specific conservation plans for each occurrence.
Tharsalea dorcas claytoni	Clayton's Copper	Habitat Management	high	on-going	Develop/distribute Best Management Practices for landowners, land managers and conservation partners to avoid and minimize impacts of intensive land use activities (e.g., forestry, stream crossings, development, water manipulation).
Tharsalea dorcas claytoni	Clayton's Copper	Survey and Monitoring	critical	on-going	Develop and implement a systematic protocol for determining and monitoring population size, trends, and status over the long term at each occupied site.
Tharsalea dorcas claytoni	Clayton's Copper	Habitat Management	high	new	Evaluate each occupied site and develop/implement a forest harvest plan where needed to manage forest succession if host plants are being shaded out.
Williamsonia lintneri	Ringed Boghaunter	Research	high	on-going	Conduct research on movement ecology, habitat use, emergence phenology, population density, and eDNA to help inform surveys and management actions.
Xylotype capax	Broad Sallow	Public Outreach	moderate	new	Develop/distribute outreach materials to inform the general public about the impacts of artificial light on nocturnal insects and to promote the use of Dark Sky lighting practices. (PO/mod/new – Other Threat/EO)
Xylotype capax	Broad Sallow	Survey and Monitoring	moderate	new	Conduct surveys to document potential new occurrences and extent of habitat use outside of pitch pine - scrub oak barrens.
Xystopeplus rufago	Red-winged Sallow	Public Outreach	moderate	new	Develop/distribute outreach materials to inform the general public about the impacts of artificial light on nocturnal insects and to promote the use of Dark Sky lighting practices.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Xystopeplus rufago	Red-winged Sallow	Survey and Monitoring	high	new	Conduct comprehensive surveys to document the extent of habitat use outside of pitch pine - scrub oak barrens, where host plant (scrub oak and possibly other woody plants) is present.
Zale lunifera	Bold-based Zale Moth	Public Outreach	moderate	new	Develop/distribute outreach materials to inform the general public about the impacts of artificial light on nocturnal insects and to promote the use of Dark Sky lighting practices.
Zale lunifera	Bold-based Zale Moth	Survey and Monitoring	high	new	Conduct surveys to document potential new occurrences and extent of habitat use outside of pitch pine - scrub oak barrens where host plant (scrub oak) is present.
Zale obliqua	Oblique Zale	Public Outreach	moderate	new	Develop/distribute outreach materials to inform the general public about the impacts of artificial light on nocturnal insects and to promote the use of Dark Sky lighting practices.
Zale obliqua	Oblique Zale	Survey and Monitoring	moderate	new	Conduct surveys to document potential new occurrences and extent of habitat use outside of pitch pine - scrub oak barrens where host plant (hard pines) is present.
Zanclognatha martha	Pine Barrens Zanclognatha	Species Management	high	new	Draft a species assessment and conservation plan, including recovery goals, as well as site-specific conservation plans for each occupied site.
Zanclognatha martha	Pine Barrens Zanclognatha	Survey and Monitoring	high	new	Develop and implement a systematic protocol for monitoring population size, status, and trends at each occupied site.
Zanclognatha martha	Pine Barrens Zanclognatha	Survey and Monitoring	high	new	Conduct surveys to document potential new occurrences and extent of habitat use outside of pitch pine - scrub oak barrens.
Zanclognatha martha	Pine Barrens Zanclognatha	Public Outreach	moderate	new	Develop/distribute outreach materials to inform the general public about the impacts of artificial light on nocturnal insects and to promote the use of Dark Sky lighting practices.

Appendix Table 4- 10 Conservation Actions assigned to Inland Fish SGCN.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Esox americanus americanus	Redfin Pickerel	Habitat Management	moderate	on-going	Work with agricultural landowners to restrict or eliminate livestock access to streams occupied by redfin pickerel.
Esox americanus americanus	Redfin Pickerel	Habitat Management	critical	on-going	Work with landowners to enhance and restore riparian buffers on redfin pickerel occupied streams within agricultural and developed lands.
Esox americanus americanus	Redfin Pickerel	Habitat Management	critical	on-going	Enhance and improve fish passage to proximal habitats so redfin pickerel can migrate to and colonize new habitats as necessary.
Esox americanus americanus	Redfin Pickerel	Survey and Monitoring	critical	on-going	Implement targeted professional surveys to better understand the distribution and status of this species and to help direct conservation actions to newly documented populations
Esox americanus americanus	Redfin Pickerel	Research	moderate	new	Revisit the development of eDNA technology to document and monitor RPK populations and identify occupied habitats.
Etheostoma fusiforme	Swamp Darter	Habitat Management	critical	on-going	Some Darter populations occur in intensivley managed public water supply reservoirs. Work with appropriate public water districts on BMP's, maintaining 250 ft riparian/shorline buffers surrounding darter habitats, and other strategies to minimize stressors on Darter populations when water quality issues arise and when new plans or strategies are developed.
Etheostoma fusiforme	Swamp Darter	Survey and Monitoring	high	on-going	Implement targeted professional surveys to better understand the distribution and status of this species and to help direct conservation actions to newly documented populations
Etheostoma fusiforme	Swamp Darter	Research	high	new	Conduct research to develop an improved understanding of spawning ecology

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Etheostoma fusiforme	Swamp Darter	Research	high	new	Conduct research to develop an improved understanding of seasonal habitat requirements for all size and age classes
Etheostoma fusiforme	Swamp Darter	Research	high	new	Conduct research to develop an improved understanding of trophic ecology
Notropis bifrenatus	Bridle Shiner	Habitat Management	critical	on-going	Continue efforts to protect occupied habitats through improved riparian and shoreline stewardship, BMPs, land conservation, and cooperative conservaiton with landowners.
Notropis bifrenatus	Bridle Shiner	Survey and Monitoring	high	on-going	Continue efforts to monitor existing populations and search for new ones using eDNA or other survey methodology
Salmo salar sebago	Landlocked Atlantic Salmon	Habitat Management	moderate	on-going	Review existing data or collect data if necessary to determine if barriers are problematic.
Salmo salar sebago	Landlocked Atlantic Salmon	Research	critical	on-going	Pursue genetic analysis of LLS populations to assess genetic integrity.
Salvelinus alpinus oquassa	Arctic Charr	Habitat Management	high	on-going	Identify key aquatic habitats such as spawning sites and coordinate protection with federal, state, or NGOs and willing private landowners
Salvelinus alpinus oquassa	Arctic Charr	Species Management	high	new	Pursue translocation as a conservation measure for most at-risk populations.
Salvelinus alpinus oquassa	Arctic Charr	Species Management	critical	on-going	Assess population status at each location where the species is present
Salvelinus alpinus oquassa	Arctic Charr	Research	high	on-going	Assess the influence that rainbow smelt may have on charr populations

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Salvelinus alpinus oquassa	Arctic Charr	Habitat Management	high	on-going	Identify key terrestrial habitats connected or adjacent to aquatic habitats that are essential to maintaining viability of populations
Salvelinus alpinus oquassa	Arctic Charr	Survey and Monitoring	critical	on-going	Monitor the fish assemblage of each lake, in particular the existence of invasive species
Salvelinus alpinus oquassa	Arctic Charr	Research	high	on-going	Investigate and describe all life history and life cycle requirements of each population to provide for maximum protection of each population
Salvelinus alpinus oquassa	Arctic Charr	Species Management	high	on-going	Assess the utilization of charr by recreational anglers, including harvest rates and the attitudes of participating anglers
Salvelinus fontinalis	Brook Trout	Habitat Management	critical	on-going	Continue to improve fish passage and ecological connectivity where possible
Salvelinus fontinalis	Brook Trout	Species Management	critical	on-going	Expand invasive species mitigation and control where possible
Salvelinus fontinalis	Brook Trout	Habitat Management	high	on-going	Expand wood addition in headwater streams where appropriate such as in cooperation with MFS C&D program.
Salvelinus fontinalis	Brook Trout	Habitat Management	critical	on-going	Strive for at minimum 100 ft ft riparian and shoreline buffers of intact, mature forest or appropriate vegetation proximal to BKT habitats
Salvelinus fontinalis	Brook Trout	Survey and Monitoring	critical	on-going	Continue efforts to identify and protect thermal refuge areas

Appendix Table 4- 11 Conservation Actions assigned to Mammal SGCN.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Alces alces americanus	Moose	Research	high	new	Investigate and explore how land-use and forest management practices, intersect with a changing climate, and better understand how these will impact moose populations.
Alces alces americanus	Moose	Research	high	new	Investigate the relationship between a changing climate, winter tick populations, and the impacts on first-year moose calf overwitner survival.
Canis lupus	Gray Wolf	Survey and Monitoring	high	new	Monitor for immigration of individuals into Maine and hybridization with Canis latrans through genetic analysis of large canids encountered in Maine. Coordinate with USFWS on issues related to genetic and taxonomic uncertainty of individuals discovered in Maine.
Canis lupus	Gray Wolf	Species Management	high	new	Participate in regional and national discussions related to wolf management with other state and federal wildlife management agencies and partners.
Canis lupus	Gray Wolf	Public Outreach	high	new	Public outreach about the potential for immigration of individuals into Maine, and identification of Canis lupus. Request biological samples from hunters and trappers who encounter large canids weighing >50 lbs and measuring >5 feet in length.
Lynx canadensis	Canada Lynx	Survey and Monitoring	high	on-going	Develop and implement a systematic protocol for monitoring population size and trends
Lynx canadensis	Canada Lynx	Habitat Management	high	new	Work with cooperators to map the distribution of spruce/fir forest and their successional stages to monitor changes in abundance and distribution.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Lynx canadensis	Canada Lynx	Species Management	moderate	new	Map road crossing mortalities using GIS and and prioritize the most problematic road segments. This information would be available to partners (e.g. MDOT) to assess if mitigation measures such as cautionary signage, exclusionary fencing, under-road passage should be considered.
Lynx canadensis	Canada Lynx	Habitat Management	moderate	on-going	Develop Forest Management Guidelines/Recommendations for distribution to cooperative landowners and forest management community.
Lynx canadensis	Canada Lynx	Policy	high	new	Provide assistance to the USFWS on developing a Post-Delisting Monitoring Plan
Lynx canadensis	Canada Lynx	Research	high	on-going	Conduct research to identify the range of habitats that can support lynx
Lynx canadensis	Canada Lynx	Survey and Monitoring	moderate	on-going	Continue to track lynx sightings, vehicle strikes and other incidental or illegal take
Lynx canadensis	Canada Lynx	Research	moderate	on-going	Conduct genomic research to assess whether Maine's lynx are genetically distint from other populations in North America or function as part of a larger metapopulation to direct conservation efforts.
Lynx canadensis	Canada Lynx	Policy	moderate	on-going	As necessary, reduce take through outreach and education and/or regulatory changes
Lynx canadensis	Canada Lynx	Survey and Monitoring	moderate	on-going	Monitor distribution, population trend or status through periodic surveys

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Sylvilagus transitionalis	New England Cottontail	Survey and Monitoring	critical	on-going	Conduct active restoration of shrubland and young forest habitat on both private and public lands in southern Maine, and monitor the success of restoration using methodologies identified in the Rangewide Conservation Strategy.
Sylvilagus transitionalis	New England Cottontail	Survey and Monitoring	moderate	on-going	Conduct early detection monitoring for Rabbit Hemorragic Disease Virus 2 (and other diseases that could effect NEC) and work with partners to minimize risk to NEC populations.
Sylvilagus transitionalis	New England Cottontail	Survey and Monitoring	high	on-going	Monitor individuals released from the captive breeding and translocation program using radio telemetry and genetic analyses from fecal samples collected at release sites.
Sylvilagus transitionalis	New England Cottontail	Public Outreach	high	on-going	Improve public perception of the value of early successional habitat following guidance in the New England Cottontail Conservation Strategy.
Sylvilagus transitionalis	New England Cottontail	Research	moderate	new	Conduct research and monitoring to evaluate the risk of hybridization between New England cottontails and eastern cottontails.
Sylvilagus transitionalis	New England Cottontail	Species Management	critical	on-going	Conduct a captive breeding and translocation program following guidance in the New England Cottontail Conservation Strategy
Sylvilagus transitionalis	New England Cottontail	Species Management	high	new	Evaluate the impact of eastern cottontails on NEC, and implement management actions that could minimize the impact or that make New England cottontails more competitive (e.g., habitat management that favors NEC over EC).
Synaptomys borealis sphagnicola	Northern Bog Lemming	Policy	moderate	on-going	Develop a policy where the Maine Forest Service or LURC would notify IFW of forest management plans where cutting was planned on high elevation sites (above 2,700 feet)

Appendix Table 4- 12 Conservation Actions assigned to Marine SGCN.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Acipenser brevirostrum	Shortnose sturgeon	Research	moderate	on-going	Investigate possibility of shortnose and Atlantic sturgeon scute elemental analysis as indicator of river of origin
Acipenser brevirostrum	Shortnose sturgeon	Species Management	high	on-going	Determine sex and stage of maturity of shortnose and Atlantic sturgeon
Acipenser brevirostrum	Shortnose sturgeon	Research	moderate	on-going	Determine feeding habitat and trophic position of shortnose and Atlantic sturgeon in each system
Acipenser brevirostrum	Shortnose sturgeon	Research	high	on-going	Characterize intersystem movements of shortnose and Atlantic sturgeon (e.g., which systems used, paths taken, timing and duration of movements).
Acipenser brevirostrum	Shortnose sturgeon	Species Management	high	new	Estimate current population size of shortnose and Atlantic sturgeon in major river systems in Maine.
Acipenser oxyrinchus	Atlantic Sturgeon	Research	moderate	on-going	Determine feeding habitat and trophic position of shortnose and Atlantic sturgeon in each system
Acipenser oxyrinchus	Atlantic Sturgeon	Research	high	on-going	Characterize intersystem movements of shortnose and Atlantic sturgeon (e.g., which systems used, paths taken, timing and duration of movements).
Acipenser oxyrinchus	Atlantic Sturgeon	Species Management	high	on-going	Determine sex and stage of maturity of shortnose and Atlantic sturgeon
Acipenser oxyrinchus	Atlantic Sturgeon	Research	moderate	on-going	Investigate possibility of shortnose and Atlantic sturgeon scute elemental analysis as indicator of river of origin

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Acipenser oxyrinchus	Atlantic Sturgeon	Species Management	high	new	Estimate current population size of shortnose and Atlantic sturgeon in major river systems in Maine.
Alosa aestivalis	Blueback Herring	Research	moderate	new	Monitor multiple life stages of river herring to understand which stages may be experiencing high mortality
Alosa aestivalis	Blueback Herring	Research	high	on-going	Continue collecting biological samples to understand how age distribution, length at age, and repeat spawning ratios differ between long-term, recently restored, and rebuilding runs
Alosa aestivalis	Blueback Herring	Research	high	on-going	Increase understanding of fish passage efficiency in different fish passage designs including pool and weir, nature-like, Denil, and Alaskan steeppass
Alosa aestivalis	Blueback Herring	Public Outreach	high	on-going	Identify priority locations for connectivity restoration and work with municipalities, local groups, and state and federal partners to restore access to historical habitat or improve access at partial barriers, including at hydroelectric dams.
Alosa aestivalis	Blueback Herring	Survey and Monitoring	moderate	on-going	Update current and historical habitat maps representing spawning locations for alewife and blueback herring.
Alosa pseudoharengus	Alewife	Research	high	on-going	Increase understanding of fish passage efficiency in different fish passage designs including pool and weir, nature-like, Denil, and Alaskan steeppass
Alosa pseudoharengus	Alewife	Survey and Monitoring	moderate	on-going	Update current and historical habitat maps representing spawning locations for alewife and blueback herring.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Alosa pseudoharengus	Alewife	Research	high	on-going	Continue collecting biological samples to understand how age distribution, length at age, and repeat spawning ratios differ between long-term, recently restored, and rebuilding runs
Alosa pseudoharengus	Alewife	Public Outreach	high	on-going	Identify priority locations for connectivity restoration and work with municipalities, local groups, and state and federal partners to restore access to historical habitat or improve access at partial barriers, including at hydroelectric dams.
Alosa pseudoharengus	Alewife	Habitat Management	moderate	on-going	Monitor multiple life stages of river herring to understand which stages may be experiencing high mortality
Alosa sapidissima	American Shad	Research	critical	new	Conduct population estimates for Saco, Androscoggin, Kennebec/Sebasticook, and Penobscot rivers
Alosa sapidissima	American Shad	Survey and Monitoring	moderate	on-going	Monitor water chemistry (DO, turbidity, pH, temperature, conductivity) at known spawning grounds during May-July
Alosa sapidissima	American Shad	Survey and Monitoring	moderate	new	Determine locations beyond those regularly monitored where American shad passage may be limited by human-made obstructions
Alosa sapidissima	American Shad	Survey and Monitoring	moderate	new	Map young-of-year habitat based on existing beach seine and in-river trawl surveys in the Kennebec River/Merrymeeting Bay estuary complex and Penobscot River
Alosa sapidissima	American Shad	Survey and Monitoring	moderate	new	Ground-truth assumed current spawning habitat state-wide
Alosa sapidissima	American Shad	Species Management	high	on-going	Increase access to historical spawning habitat through effective fish passage or dam removal

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Alosa sapidissima	American Shad	Research	high	on-going	Conduct fishway efficiency studies that focus on shad passage at existing fishways
Anguilla rostrata	American Eel	Habitat Management	high	on-going	Identify priority locations to reduce injury and mortality during downstream migration, including at hydroelectric dams.
Anguilla rostrata	American Eel	Species Management	critical	on-going	Identify priority locations to improve upstream passage efficiency and to restore access to historical habitat.
Gadus morhua	Atlantic Cod	Survey and Monitoring	moderate	on-going	Continue long-term monitoring surveys (multispecies and species specifc).
Gadus morhua	Atlantic Cod	Research	moderate	on-going	Continue investigation of potential spawning cod in eastern Gulf of Maine to understand where this distinct population is coming from.
Osmerus mordax	Rainbow Smelt	Survey and Monitoring	high	on-going	Continuing monitoring of smelt populations through fyke net sampling, creel surveys, the inshore trawl survey, and the juvenile abundance survey
Osmerus mordax	Rainbow Smelt	Species Management	critical	on-going	Restoring stream connectivity and access to historical spawning grounds with monitoring to assess pre- and post-construction conditions and smelt populations
Osmerus mordax	Rainbow Smelt	Research	high	on-going	Assessing threats to smelt habitat and evaluating connections between degraded habitat and local smelt population decline
Osmerus mordax	Rainbow Smelt	Species Management	moderate	on-going	Stocking rainbow smelt larvae marked with oxytetracycline into historical smelt spawning streams that maintain good habitat, while maintaining the genetic structure as identified by this project and annually monitoring stocking success.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Osmerus mordax	Rainbow Smelt	Research	high	new	Developing a mark-recapture study to estimate the current extraction rate of recreational ice fishing on the Kennebec River and Merrymeeting Bay and other rivers and embayments that support recreational ice fishing
Pseudopleuronectes americanus	Winter Flounder	Survey and Monitoring	High	on-going	Monitor water quality at winter flounder habitats to determine effect of changing water quality on winter flounder biology and survivability (e.g. temperature and sex ratio relationships).
Pseudopleuronectes americanus	Winter Flounder	Research	moderate	new	Identify areas where winter flounder spawn and the important areas for young of the year and juvenile winter flounder.
Pseudopleuronectes americanus	Winter Flounder	Research	moderate	on-going	Conduct research regarding winter flounder habitat needs for various life stages and determine the importance of unique habitat systems such as eelgrass on survivability
Salmo salar	Atlantic Salmon	Survey and Monitoring	critical	on-going	Continue to monitor the abundance and status of juvenile and adult salmon throughout the geographic range of the GOM DPS.
Salmo salar	Atlantic Salmon	Research	critical	on-going	Continue to assess the causes of the precipitous decline in Atlantic salmon returning to Maine waters.
Salmo salar	Atlantic Salmon	Species Management	high	on-going	Further develop the habitat restoration and connectivity program for Atlantic salmon.
Salmo salar	Atlantic Salmon	Species Management	high	on-going	Continue to collaborate with NOAA on the Atlantic Salmon Recovery Framework and all recovery activities.
Salmo salar	Atlantic Salmon	Public Outreach	high	on-going	Continue to work with the recreational angling community to prevent take of Atlantic salmon.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Salmo salar	Atlantic Salmon	Public Outreach	high	on-going	Continue to work with landowners and municipalities to encourge the removal of remnant dams and under preforming hydroelectric dams.
Amblyraja radiata	Thorny Skate	Research	critical	new	Develop an improved understanding of discard mortality rates
Amblyraja radiata	Thorny Skate	Research	critical	new	Determine the location and timing of important habitat use at different life history stages
Amblyraja radiata	Thorny Skate	Research	critical	new	Update life history data across species range
Dipturus laevis	Barndoor Skate	Research	high	new	Update life history data across species range
Dipturus laevis	Barndoor Skate	Research	high	new	Develop an improved understanding of discard mortality rates
Dipturus laevis	Barndoor Skate	Research	moderate	new	Determine the location and timing of important habitat use at different life history stages
Isurus oxyrinchus	Shortfin Mako	Research	high	new	Determine the location and timing of important habitat use at different life history stages
Isurus oxyrinchus	Shortfin Mako	Research	high	new	Develop an improved understanding of discard mortality rates
Isurus oxyrinchus	Shortfin Mako	Research	high	new	Identify methods to reduce incidental bycatch by recreational anglers
Lamna nasus	Porbeagle	Research	critical	new	Develop an improved understanding of discard mortality rates

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Lamna nasus	Porbeagle	Research	critical	new	Identify methods to reduce incidental bycatch by recreational anglers
Lamna nasus	Porbeagle	Research	critical	new	Determine the location and timing of important habitat use at different life history stages
Leucoraja ocellata	Winter Skate	Research	high	new	Update life history data across species range
Malacoraja senta	Smooth Skate	Research	critical	new	Develop an improved understanding of discard mortality rates
Malacoraja senta	Smooth Skate	Research	critical	new	Determine the location and timing of important habitat use at different life history stages
Strongylocentrotus droebachiensis	Green Sea Urchin	Research	moderate	new	Determine the feasibility of reseeding programs
Strongylocentrotus droebachiensis	Green Sea Urchin	Research	high	new	Assess the feasibility and advantages of local or area species management approaches
Strongylocentrotus droebachiensis	Green Sea Urchin	Species Management	high	on-going	Support community engagement in developing a fisheries management plan
Strongylocentrotus droebachiensis	Green Sea Urchin	Public Outreach	high	on-going	Design and encourage the use of more size-selective fishing gear
Strongylocentrotus droebachiensis	Green Sea Urchin	Research	high	new	Determine the relative roles of natural predation, fishing mortality, and climate change in stock dynamics
Strongylocentrotus droebachiensis	Green Sea Urchin	Research	high	on-going	Conduct research to support stock assessment and population dynamics modeling

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Strongylocentrotus droebachiensis	Green Sea Urchin	Survey and Monitoring	critical	on-going	Monitor stock status through surveys and sampling programs
Cucumaria frondosa	Orange-footed Sea Cucumber	Survey and Monitoring	high	new	Monitor stock status through surveys and sampling programs
Cucumaria frondosa	Orange-footed Sea Cucumber	Research	moderate	new	Assess the feasibility and advantages of local or area species management approaches
Cucumaria frondosa	Orange-footed Sea Cucumber	Research	high	new	Conduct research to support management, including stock assessments, e.g. development of predation, reproduction, growth and aging data and habitat mapping
Cucumaria frondosa	Orange-footed Sea Cucumber	Public Outreach	high	on-going	Design and encourage the use of more size-selective fishing gear
Cucumaria frondosa	Orange-footed Sea Cucumber	Species Management	moderate	new	Support community engagement in developing a fisheries management plan
Pandalus borealis	Northern Shrimp	Public Outreach	high	on-going	Design and encourage the use of more size-selective fishing gear
Pandalus borealis	Northern Shrimp	Research	high	on-going	Determine the relative roles of natural predation, fishing mortality, and climate change in stock dynamics
Pandalus borealis	Northern Shrimp	Research	high	new	Conduct research to support stock assessment and population dynamics modeling

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Pandalus borealis	Northern Shrimp	Survey and Monitoring	critical	on-going	Monitor stock status through surveys and sampling programs
Phocoena phocoena	Harbor Porpoise	Public Outreach	moderate	on-going	Continue to work with the fishing industry to develop gear modifications that reduce the risk of entanglement and conduct outreach on gear best practices to use
Limulus polyphemus	Horseshoe Crab	Research	moderate	on-going	Identify areas where degraded water quality may adversely impact horseshoe crabs
Limulus polyphemus	Horseshoe Crab	Survey and Monitoring	high	new	Conduct surveys to monitor and better understand distribution and abundance
Limulus polyphemus	Horseshoe Crab	Research	high	on-going	Promote research to fill data gaps and inform managers
Limulus polyphemus	Horseshoe Crab	Public Outreach	high	on-going	Encourage use of selective fishing gear that minimizes bycatch and impacts to habitat.
Limulus polyphemus	Horseshoe Crab	Habitat Management	high	on-going	Purchase or protect undeveloped shoreline and adjacent areas that is known or potential habitat for horseshoe crab

Appendix Table 4- 13 Conservation Actions assigned to Plant SGCN.

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Betula pumila	Swamp Birch	Species Management	moderate	on-going	Identify and protect populations at northern edge of range or that are large and healthy, to protect viability of species even if peatlands experience more drying

Scientific Name	Common Name	Category	Biological Priority	Type	Description
Liatris novae-angliae	Northern Blazing Star	Species Management	critical	on-going	Maintain suitable habitat through prescribed fire to reduce risk of catastrophic wildfire or fire during growing season if droughts occur
Pedicularis furbishiae	Furbish's Lousewort	Survey and Monitoring	critical	on-going	Maintain regular survey efforts to document population shifts or response to any changes in river scour / ice dynamics
Diphasiastrum sitchense	Alaskan Clubmoss	Habitat Management	high	on-going	Establish or reroute trails to avoid populations.
Diphasiastrum sitchense	Alaskan Clubmoss	Survey and Monitoring	moderate	on-going	Surveys required prior to construction.
Diphasiastrum sitchense	Alaskan Clubmoss	Habitat Management	high	new	Avoid construction of within 250' of populations.
Isoetes riparia var. canadensis	Shore Quillwort	Species Management	high	on-going	Encourage BMPs to avoid siltation and nutrient inputs and promote retention of vegetated buffers.
Agrostis mertensii	Boreal Bentgrass	Species Management	high	on-going	Protect populations that are in good-excellent condition, robust, or in potential cold refugia
Carex capillaris	Capillary Sedge	Species Management	high	on-going	Maintain cool, shaded conditions at population sites to retain moisture and prevent dessication/loss of habitat
Carex vacillans	Salt Marsh Sedge	Habitat Management	critical	on-going	Protect areas that could serve as marsh migration corridors as sea level rises
Heteranthera dubia	Water Stargrass	Survey and Monitoring	high	new	Establish regular survey intervals for high-ranked occurrences.
Ophioglossum pusillum	Adder's Tongue Fern	Species Management	moderate	on-going	Encourage BMPs to avoid siltation and nutrient inputs and promote retention of vegetated buffers.

Appendix Table 4- 14 2025 Maine Wildlife Action Plan Habitat Conservation Actions for Freshwater Aquatic Habitat Groups. Actions are sorted by Habitat Grouping (see Table 4-18), Action Category, then by Biological Priority (Critical, High, Moderate).

*Threat names are from Level 2 of the IUCN Threat Classification Scheme; these are broad categories that may not capture all the nuances of stressor-SGCN-habitat interactions, including beneficial effects. Readers are urged to refer to species and habitat reports for more details on interactions among stressors, habitats, and SGCN.

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Streams, Rivers, Lakes, and Ponds	Habitat Management	Bolster enforcement of current shoreland zoning laws statewide by supporting local CEOs and DEP shoreland zoning staff. Pursue more protective class of shoreland zoning protections for high-quality, rare, or sensitive aquatic habitats.	Annual and Perennial Non-timber crops, Commercial and Industrial Areas , Housing and Urban Areas, Livestock Farming and Ranching, Tourism and Recreational Areas, Wood and Pulp Plantations	critical	on-going
Streams, Rivers, Lakes, and Ponds	Habitat Management	Continue efforts to balance potential conflicts between restoring aquatic connectivity while mitigating the potential expansion of invasive species	Dams and Water Management-Use, Invasive Non-native-Alien Species-Diseases, Lack of knowledge	critical	on-going
Streams, Rivers, Lakes, and Ponds	Habitat Management	Identify, map, and protect critical thermal refugia in coldwater systems using whatever methods are appropriate and feasible for the area.	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes	critical	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Streams, Rivers, Lakes, and Ponds	Habitat Management	Develop better methods to map ephemeral streams	Agricultural and Forestry Effluents, Annual and Perennial Non-timber crops, Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Logging and Wood Harvesting, Other Ecosystem Modifications, Storms and Severe Weather, Wood and	high	new
Streams, Rivers, Lakes, and Ponds	Habitat Management	Construct crossings to pass storm flows using climate informed precipitation and flooding models to ensure enduring aquatic SGCN organism passage.	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Logging and Wood Harvesting, Roads and Railroads, Storms and Severe Weather	high	on-going
Streams, Rivers, Lakes, and Ponds	Habitat Management	Encourage implementation of the Standards for Placing Wood Into Stream Channels to Enhance Cold Water Fisheries Habitat, also known as the Chop and Drop Rule, to replace lost natural habitat structure in streams and lakes	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Logging and Wood Harvesting	high	on-going
Streams, Rivers, Lakes, and Ponds	Habitat Management	Encourage green infrastructure practices in developed areas adjacent to aquatic habitats to reduce stormwater impacts and thermal pollution.	Commercial and Industrial Areas , Domestic and Urban Waste Water, Housing and Urban Areas, Tourism and Recreational Areas	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Streams, Rivers, Lakes, and Ponds	Habitat Management	Encourage implementation of engineered instream structures such as isolated logs, boulder clusters, boulder-supported log jams, and individual boulder palcement for instream restoration to replace lost natural habitat structure in streams and lakes	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Dams and Water Management-Use, Other Ecosystem Modifications	high	on-going
Streams, Rivers, Lakes, and Ponds	Habitat Management	Encourage riparian and lakeshore protection and restoration programs among any land use or ownership type to target degraded shorelines for improving habitat and reducing erosion.	Annual and Perennial Non-timber crops, Commercial and Industrial Areas , Housing and Urban Areas, Tourism and Recreational Areas, Wood and Pulp Plantations	high	on-going
Streams, Rivers, Lakes, and Ponds	Habitat Management	Encourage use of nature-based solutions for shoreland stabilization and expanded vegetated buffers in shoreland zones through DEP OURSHORE program and BwH program	Annual and Perennial Non-timber crops, Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Habitat Shifting or Alteration, Housing and Urban Areas, Logging and Wood Harvesting, Mining and Quarrying, Other Ecosystem Modificat	high	on-going
Streams, Rivers, Lakes, and Ponds	Habitat Management	Identify and conserve coldwater resilient areas, refugia, and waterbodies that are less vulnerable to the spread of invasive species.	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Invasive Non-native-Alien Species-Diseases	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Streams, Rivers, Lakes, and Ponds	Habitat Management	Promote planting of native species and sustainable harvests to practitioners and public	Annual and Perennial Non-timber crops, Gathering Terrestrial Plants, Wood and Pulp Plantations	high	on-going
Streams, Rivers, Lakes, and Ponds	Habitat Management	Restore ecological processes that will make stream habitats resilient to extreme weather events such as restoration of wetlands and floodplains, addition of large wood to streams, engineered log jam designs were appropriate, etc.		high	on-going
Streams, Rivers, Lakes, and Ponds	Habitat Management	Support land management activities that protect the riparian areas of rivers and streams, especially those that are key tributaries to lakes, ponds, and other waterbodies that have been identified as especially sensitive to the effects of climate cha	Annual and Perennial Non-timber crops, Housing and Urban Areas, Livestock Farming and Ranching, Tourism and Recreational Areas, Wood and Pulp Plantations	high	on-going
Streams, Rivers, Lakes, and Ponds	Habitat Management	Complete a statewide/watershed scale planning effort to identify resilient and vunerable habitats	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes	moderate	new

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Streams, Rivers, Lakes, and Ponds	Habitat Management	Encourage installation of constructed wetlands to buffer waterways from wastewater contamination.	Agricultural and Forestry Effluents, Changes in Precipitation and Hydrological Regimes, Domestic and Urban Waste Water, Industrial and Military Effluents	moderate	new
Streams, Rivers, Lakes, and Ponds	Habitat Management	Encourage use of nature-based solutions for shoreland stabilization and expanded vegetated buffers in shoreland zones through DEP OURSHORE program and BwH program	Changes in Precipitation and Hydrological Regimes, Housing and Urban Areas, Storms and Severe Weather	moderate	new
Streams, Rivers, Lakes, and Ponds	Habitat Management	Integrate aquatic habitat connectivity into BwH focus areas and other landscape connectivity mapping initiatives	Changes in Precipitation and Hydrological Regimes, Dams and Water Management-Use, Housing and Urban Areas	moderate	new
Streams, Rivers, Lakes, and Ponds	Habitat Management	Pursue continued refinement of the Aquatic Habitat Classification System as needs arise, data gaps are filled, or new information warrants revision.		moderate	new
Streams, Rivers, Lakes,	Habitat Management	Use habitat modifications to reduce the vulnerability of habitats to species invasions, such	Changes in Precipitation and Hydrological Regimes, Changes in	moderate	new

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
and Ponds		as returning impoundments to free-flowing river conditions.	Temperature Regimes, Invasive Non-native-Alien Species-Diseases		
Streams, Rivers, Lakes, and Ponds	Policy	Provide incentives for landowners to maintain riparian buffers	Agricultural and Forestry Effluents, Annual and Perennial Non-timber crops, Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Domestic and Urban Waste Water, Housing and Urban Areas, Logging and Wood Harvesting, Tourism an	critical	new
Streams, Rivers, Lakes, and Ponds	Policy	Expand targeted inspections of boats and the pet trade in order to reduce the spread of invasives and raise awareness.	Invasive Non-native-Alien Species-Diseases	critical	on-going
Streams, Rivers, Lakes, and Ponds	Policy	Improve enforcement of existing laws related to the transport of invasive species by boats, anglers, and through the pet trade.	Invasive Non-native-Alien Species-Diseases	critical	on-going
Streams, Rivers, Lakes,	Policy	Provide technical assistance, financial incentives, and other support for municipalities	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Logging and	critical	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
and Ponds		implementing road stream crossing improvements.	Wood Harvesting, Roads and Railroads		
Streams, Rivers, Lakes, and Ponds	Policy	Collaborate with partners to develop a state road stream crossing restoration program with dedicated staff.	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Logging and Wood Harvesting, Roads and Railroads, Storms and Severe Weather	high	new
Streams, Rivers, Lakes, and Ponds	Policy	Collaborate with partners to develop incentives to encourage homeowners near lake/river shores to replace their old septic systems.	Domestic and Urban Waste Water	high	new
Streams, Rivers, Lakes, and Ponds	Policy	Collaborate with partners to develop monitoring standards for SGCN fish passage efficiency	Dams and Water Management-Use, Roads and Railroads	high	new
Streams, Rivers, Lakes, and Ponds	Policy	Encourage septic inspections when a house sells to ensure that it is functioning properly.	Domestic and Urban Waste Water	high	new

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Streams, Rivers, Lakes, and Ponds	Policy	Facilitate monitoring for stream flow standards on rivers with dam and water extraction concerns.	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Dams and Water Management-Use	high	new
Streams, Rivers, Lakes, and Ponds	Policy	Collaborate with partners to develop standards for new/replacement road stream crossings.	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Logging and Wood Harvesting, Roads and Railroads	high	on-going
Streams, Rivers, Lakes, and Ponds	Policy	Conduct statewide/watershed scale connectivity planning.	Changes in Temperature Regimes, Logging and Wood Harvesting, Roads and Railroads, Storms and Severe Weather	high	on-going
Streams, Rivers, Lakes, and Ponds	Policy	Enhance coordination of agencies, tribal nations and NGOs to facilitate road stream crossing improvements	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Logging and Wood Harvesting, Roads and Railroads	high	on-going
Streams, Rivers, Lakes,	Policy	Identify funding to address connectivity constraints such as dam removal, constructing	Changes in Precipitation and Hydrological Regimes, Changes in	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
and Ponds		passage structures at dams and to implement these solutions.	Temperature Regimes, Dams and Water Management-Use		
Streams, Rivers, Lakes, and Ponds	Policy	Encourage municipalities to increase the capacity of their treatment facilities.	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Domestic and Urban Waste Water, Storms and Severe Weather	moderate	new
Streams, Rivers, Lakes, and Ponds	Policy	Provide outreach to practitioners on technologies that are effective at passing fish	Dams and Water Management-Use, Roads and Railroads	moderate	new
Streams, Rivers, Lakes, and Ponds	Policy	Maintain and expand efforts to identify barriers to aquatic organism passage and keep data updated, relevant and accessible.	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Dams and Water Management-Use, Logging and Wood Harvesting, Roads and Railroads	moderate	on-going
Streams, Rivers, Lakes, and Ponds	Public Outreach	Support educational programs and citizen-scientist based initiatives like LakeSmart that serve to educate and protect shorelands. Support a comparable program for lotic waters, such as "Forestry for Maine Fish".	Annual and Perennial Non-timber crops, Housing and Urban Areas, Livestock Farming and Ranching, Logging and Wood Harvesting,	critical	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
			Tourism and Recreational Areas, Wood and Pulp Plantations		
Streams, Rivers, Lakes, and Ponds	Public Outreach	Provide outreach and education to code enforcement officers and town planners on wastewater discharge.	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Domestic and Urban Waste Water	high	new
Streams, Rivers, Lakes, and Ponds	Public Outreach	Provide outreach and education to dam operators and owners on ways to facilitate SGCN fish passage or barrier removal.	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Dams and Water Management-Use	high	new
Streams, Rivers, Lakes, and Ponds	Public Outreach	Provide outreach and education to residents living on lake or river shores on the importance of maintaining riparian buffers, including options that allow water views (i.e. unmowed grass, shrubs)	Agricultural and Forestry Effluents, Annual and Perennial Non-timber crops, Domestic and Urban Waste Water, Housing and Urban Areas, Tourism and Recreational Areas, Wood and Pulp Plantations	high	new
Streams, Rivers, Lakes, and Ponds	Public Outreach	Work with municipalities to increase treatment capacity of wastewater facilities to reduce wastewater impacts to aquatic habitats	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Domestic and Urban Waste Water, Storms and Severe Weather	high	new

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Streams, Rivers, Lakes, and Ponds	Public Outreach	Continue advanced aquatic SGCN organism passage training.	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Dams and Water Management-Use, Housing and Urban Areas, Logging and Wood Harvesting, Roads and Railroads, Tourism and Recreational Areas	high	on-going
Streams, Rivers, Lakes, and Ponds	Public Outreach	Encourage alternative road routes that do not interfere with streams or riparian areas.	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Housing and Urban Areas, Logging and Wood Harvesting, Roads and Railroads, Tourism and Recreational Areas	high	on-going
Streams, Rivers, Lakes, and Ponds	Public Outreach	Encourage information exchange forums such as Fisheries Improvement Network (FIN), Maine Water Temperature Working Group (MWTWG), Maine Riverscape Restoration Network (MRRN), Maine Stream Connectivity Work Group (MSCWG) and Maine Woodlot Owners (MWO)	Annual and Perennial Non-timber crops, Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Dams and Water Management-Use, Domestic and Urban Waste Water, Housing and Urban Areas, Invasive Non-native-Alien Species-Diseases, L	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Streams, Rivers, Lakes, and Ponds	Public Outreach	Encourage the use of temporary and permanent bridges rather than culverts.	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Logging and Wood Harvesting, Roads and Railroads	high	on-going
Streams, Rivers, Lakes, and Ponds	Public Outreach	Expand Stream Smart general and technical training and increase outreach through BwH and other venues to land mangers and to the public	Logging and Wood Harvesting, Roads and Railroads	high	on-going
Streams, Rivers, Lakes, and Ponds	Public Outreach	Provide muncipalities and tribal nations with appropriate training and equipment to mitigate effluents such as oil spills	Commercial and Industrial Areas , Industrial and Military Effluents	high	on-going
Streams, Rivers, Lakes, and Ponds	Public Outreach	Provide online tools to prioritize road crossing upgrades	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Logging and Wood Harvesting, Roads and Railroads	high	on-going
Streams, Rivers, Lakes,	Public Outreach	Provide outreach and education to landowners and service contractors, such as maintence providers, horticulturalists and landscape architects, on the importance of maintaining	Domestic and Urban Waste Water, Housing and Urban Areas, Logging	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
and Ponds		riparian vegetation during the course of their property maintenance or wor	and Wood Harvesting, Tourism and Recreational Areas		
Streams, Rivers, Lakes, and Ponds	Public Outreach	Provide outreach and education to town planning boards, farmers, foresters and the general public on the importance of maintaining riparian vegetation to prevent declines in water quality	Agricultural and Forestry Effluents, Annual and Perennial Non-timber crops, Domestic and Urban Waste Water, Industrial and Military Effluents, Logging and Wood Harvesting	high	on-going
Streams, Rivers, Lakes, and Ponds	Public Outreach	Collaborate with partners to develop best management practices for development near waterways.	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Domestic and Urban Waste Water, Housing and Urban Areas, Tourism and Recreational Areas	moderate	new
Streams, Rivers, Lakes, and Ponds	Public Outreach	Find ways to support communities addressing combined sewer overflow (e.g., treat storm water differently than sewage where appropriate)	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Domestic and Urban Waste Water	moderate	new
Streams, Rivers, Lakes,	Public Outreach	Train new and existing engineers on proper ways to design fish passage structures through universities and training programs.	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Dams and	moderate	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
and Ponds			Water Management-Use, Roads and Railroads		
Streams, Rivers, Lakes, and Ponds	Research	Solicit help from experts in septic system design to determine cost effective solutions to septic seepage into waterways.	Domestic and Urban Waste Water	high	new
Streams, Rivers, Lakes, and Ponds	Research	Conduct research on the economic impact of invasive species, mitigation strategies, and containment strategies in aquatic ecosystems.	Invasive Non-native-Alien Species-Diseases	high	on-going
Streams, Rivers, Lakes, and Ponds	Research	Investigate alternative technologies to promote passage of aquatic organisms.	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Dams and Water Management-Use, Habitat Shifting or Alteration	high	on-going
Streams, Rivers, Lakes, and Ponds	Research	Research fish behavior and movement to identify ways to improve the design of fish passage structures.	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Dams and Water Management-Use, Habitat Shifting or Alteration	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Streams, Rivers, Lakes, and Ponds	Research	Increase understanding of climate change/infrastructure threats to freshwater aquatic ecosystems.	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Dams and Water Management-Use, Habitat Shifting or Alteration, Roads and Railroads	moderate	on-going
Streams, Rivers, Lakes, and Ponds	Species Management	Expand efforts to suppress, mitigate or control invasive species, including chemical reclamation, active species removal or others to minimize effects on native species and habitats.	Invasive Non-native-Alien Species-Diseases	critical	on-going
Streams, Rivers, Lakes, and Ponds	Species Management	Promote native species abundance in aquatic SGCN habitats in order to foster competition that may reduce or slow the spread of invasives	Invasive Non-native-Alien Species-Diseases	moderate	on-going
Streams, Rivers, Lakes, and Ponds	Survey and Monitoring	Support continuous temperature state-wide monitoring network to monitor existing thermal regimes, track changes, and identify themal refuge habitats.	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes	critical	on-going
Streams, Rivers, Lakes,	Survey and Monitoring	Identify priority locations for ecological flow management in aquatic habitats.	Changes in Precipitation and Hydrological Regimes, Changes in	high	new

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
and Ponds			Temperature Regimes, Dams and Water Management-Use		
Streams, Rivers, Lakes, and Ponds	Survey and Monitoring	Prioritize areas where riverine and estuarine habitats meet for high concentration SGCN and their habitats for conservation or restoration.	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Domestic and Urban Waste Water, Invasive Non-native-Alien Species-Diseases	high	new
Streams, Rivers, Lakes, and Ponds	Survey and Monitoring	Support statewide monitoring and assessment to determine if waters of the State attain all standards and criteria, including aquatic life criteria, for their legislatively assigned water quality classes described in Maine's W	Agricultural and Forestry Effluents, Domestic and Urban Waste Water, Industrial and Military Effluents, Other Ecosystem Modifications, Unknown	high	on-going
Streams, Rivers, Lakes, and Ponds	Survey and Monitoring	Complete a statewide inventory of the status and condition of railroad and trail crossings, including on headwater streams.	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Recreational Activities, Roads and Railroads	moderate	completed
Streams, Rivers, Lakes, and Ponds	Survey and Monitoring	Continue efforts to track completed road stream crossing projects and update connectivity metrics.	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Dams and Water Management-Use, Housing and Urban Areas, Logging and Wood Harvesting, Roads and	moderate	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
			Railroads, Tourism and Recreational Areas		
Streams, Rivers, Lakes, and Ponds	Survey and Monitoring	Share tools to help prioritize connectivity barriers across Maine.	Dams and Water Management-Use, Roads and Railroads	moderate	on-going

Appendix Table 4- 15 2025 Maine Wildlife Action Plan Habitat Conservation Actions for Coastal and Marine Habitat Groups. Actions are sorted by Habitat Grouping (see Table 4-18), Action Category, then by Biological Priority (Critical, High, Moderate).

**Threat names are from Level 2 of the IUCN Threat Classification Scheme; these are broad categories that may not capture all the nuances of stressor-SGCN-habitat interactions, including beneficial effects. Readers are urged to refer to species and habitat reports for more details on interactions among stressors, habitats, and SGCN.*

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Coastal	Habitat Management	Develop and implement best management practices or beach management agreements with municipalities and beach managers	Commercial and Industrial Areas , Housing and Urban Areas, Other Ecosystem Modifications, Recreational Activities, Roads and Railroads, Tourism and Recreational Areas	critical	on-going
Coastal	Habitat Management	Implement predator control programs near SGCN nesting areas in coastal habitats	Commercial and Industrial Areas , Housing and Urban Areas, Other Ecosystem Modifications, Roads and Railroads, Tourism and Recreational Areas	critical	on-going
Coastal	Habitat Management	Use voluntary agreements and incentives to conserve important coastal SGCN habitats	Commercial and Industrial Areas , Housing and Urban Areas, Other Ecosystem Modifications, Roads and Railroads, Tourism and Recreational Areas	high	new
Coastal	Habitat Management	Assist municipalities in identifying areas that will allow coastal habitats to migrate inland as sea level rise occurs	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Habitat Shifting or Alteration	moderate	on-going
Coastal	Public Outreach	Provide outreach to recreationalists regarding effects of human disturbance on beach nesting birds and roosting/feeding shorebirds	Recreational Activities	critical	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Coastal	Research	Research and identify management actions that may minimize impacts to coastal SGCN habitats from climate change	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Habitat Shifting or Alteration	moderate	new
Coastal	Survey and Monitoring	Work with municipalities to identify important SGCN nesting and migratory areas in coastal habitats during comprehensive planning	Commercial and Industrial Areas , Housing and Urban Areas, Other Ecosystem Modifications, Roads and Railroads, Tourism and Recreational Areas	high	on-going
Intertidal	Habitat Management	Find ways to support culvert and tide gate replacement and dam removal in or near intertidal, subtidal, and tidal marsh habitats using best management practices.	Dams and Water Management-Use, Roads and Railroads, Shipping Lanes, Utility and Service Lines	critical	new
Intertidal	Habitat Management	Remove/Decommission remnant or unused dams, tide gates, roads and other structures in or near tidal marsh, intertidal, and subtidal habitats.	Dams and Water Management-Use, Roads and Railroads, Shipping Lanes, Utility and Service Lines	critical	on-going
Intertidal	Habitat Management	Encourage partnership projects among transportation agencies, utility companies, etc. to facilitate fish passage and maintain connectivity in or near subtidal, intertidal, and tidal marsh habitats especially in cases where structures have different purpo	Dams and Water Management-Use, Roads and Railroads, Shipping Lanes, Utility and Service Lines	critical	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Intertidal	Habitat Management	Assess new aquaculture sites for potential positive, benign, or negative species interactions with the surrounding habitat and ecological systems	Marine and Freshwater Aquaculture	high	on-going
Intertidal	Habitat Management	Increase riparian and coastal buffer zones by limiting development in these areas to minimize damage to these properties due to flooding/waves and to maintain pervious surfaces for improved water management	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Habitat Shifting or Alteration	high	on-going
Intertidal	Habitat Management	Investigate the effects of commercial trawling within the intertidal zone.	Fishing and Harvesting of Aquatic Resources	high	on-going
Intertidal	Habitat Management	Mitigate coastal acidification of intertidal and subtidal habitats using strategies similar to those for reducing effects of effluents/wastewater	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Habitat Shifting or Alteration	high	on-going
Intertidal	Habitat Management	Promote voluntary baywide (or scale of ecological relevance) coordination of shared resources and education addressing the impacts of fishing and harvesting aquatic resources on SGCN intertidal and subtidal habitats	Fishing and Harvesting of Aquatic Resources	high	on-going
Intertidal	Habitat Management	Restore and improve conservation management at state and municipal levels to reduce impacts of	Agricultural and Forestry Effluents, Domestic and Urban Waste Water, Industrial and Military Effluents	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
		effluents and wastewater on intertidal and subtidal SGCN habitats			
Intertidal	Habitat Management	Use technology to reduce discharge of wastewater and effluents into intertidal and subtidal SGCN habitats	Agricultural and Forestry Effluents, Domestic and Urban Waste Water, Industrial and Military Effluents	high	on-going
Intertidal	Habitat Management	Reduce point and non-source point pollution to mitigate nearshore acidification	Changes in Geochemical Regimes, Changes in Precipitation and Hydrological Regimes, Habitat Shifting or Alteration	moderate	new
Intertidal	Habitat Management	Research and explore management pathways for assisted migration/gene flow of climate resilient Zostera marina (eelgrass) populations both within Maine and across states. Currently faces regulatory challenges.	Changes in Geochemical Regimes, Changes in Temperature Regimes, Habitat Shifting or Alteration, Intrinsic Biological Limitations, Other Ecosystem Modifications	moderate	new
Intertidal	Habitat Management	Research and explore management pathways for oyster reef restoration in Maine.	Changes in Geochemical Regimes, Changes in Temperature Regimes, Habitat Shifting or Alteration, Storms and Severe Weather	moderate	new
Intertidal	Habitat Management	Alter shipping lanes and dredging plans in intertidal and subtidal habitats to minimize biological and ecological impacts to SGCN	Agricultural and Forestry Effluents, Domestic and Urban Waste Water, Industrial and Military Effluents	moderate	new

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Intertidal	Habitat Management	Increase pH of mudflats (e.g., using harvested shell waste) to restore more favorable habitat conditions for intertidal and subtidal SGCN	Fishing and Harvesting of Aquatic Resources	moderate	new
Intertidal	Habitat Management	Conduct training and workshops to support knowledge of SGCN and their habitats	Recreational Activities	moderate	on-going
Intertidal	Habitat Management	Improve response plans for industrial spills (e.g., oil spills) in intertidal and subtidal habitats and support research on oil dispersants and short and long term effect of oil spills	Agricultural and Forestry Effluents, Domestic and Urban Waste Water, Industrial and Military Effluents	moderate	on-going
Intertidal	Policy	Provide incentives for building Coast Wise and Stream Smart structures and road crossings in or near intertidal, subtidal, and tidal marsh habitats that allow for changing environmental conditions such as sea level rise and increased flooding.	Dams and Water Management-Use, Roads and Railroads, Shipping Lanes, Utility and Service Lines	high	new
Intertidal	Policy	Increase awareness about invasive species and problems following the introduction of invasive species in the shipping, transportation, and other industries to prevent introductions and spread of invasive species in intertidal and subtidal habitats	Invasive Non-native-Alien Species-Diseases, Problematic Native Species-Diseases	high	on-going
Intertidal	Policy	Increase capacity for enforcement of current laws and regulations regarding proper infrastructure (e.g., roads, dams, utility lines, shipping lanes) construction, maintenance, water	Dams and Water Management-Use, Roads and Railroads, Shipping Lanes, Utility and Service Lines	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
		quality, and fish passage in tidal marsh, intertidal, and subtidal SGCN			
Intertidal	Policy	Increase enforcement for dumping/litter/gear abandonment in intertidal and subtidal habitats	Garbage and Solid Waste	high	on-going
Intertidal	Policy	Explore value of utilizing conservation leases to limit uses/stresses in intertidal and subtidal habitats	Fishing and Harvesting of Aquatic Resources	moderate	new
Intertidal	Policy	Update permit requirements for new and retrofitted developments in, near, or adjacent to intertidal habitats with up-to-date data/models of climate predictions	Commercial and Industrial Areas , Housing and Urban Areas, Livestock Farming and Ranching	moderate	new
Intertidal	Policy	Provide incentives for and education on using nature-based design infrastructure for preventing erosion, maintaining the land-sea connection, and avoiding loss/damage of property near intertidal habitats.	Commercial and Industrial Areas , Housing and Urban Areas, Livestock Farming and Ranching	moderate	on-going
Intertidal	Policy	Expand existing education and incentive programs for lawn care companies, homeowners, and municipalities to reduce wastewater and effluent inputs and effects on intertidal and subtidal SGCN habitats	Agricultural and Forestry Effluents, Domestic and Urban Waste Water, Industrial and Military Effluents	moderate	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Intertidal	Policy	Increase capacity for municipal planning to reduce wastewater and effluent effects on intertidal and subtidal SGCN habitats while also accounting for future environmental change	Agricultural and Forestry Effluents, Domestic and Urban Waste Water, Industrial and Military Effluents	moderate	on-going
Intertidal	Policy	Provide stewardship/conservation incentives to harvesters working in intertidal and subtidal SGCN habitats	Fishing and Harvesting of Aquatic Resources	moderate	on-going
Intertidal	Policy	Retrofit existing effluent and wastewater treatment infrastructure and plan for sea level rise by providing economic incentives and education	Agricultural and Forestry Effluents, Domestic and Urban Waste Water, Industrial and Military Effluents	moderate	on-going
Intertidal	Public Outreach	Improve knowledge of effects of renewable energy on intertidal and subtidal SGCN habitats	Renewable Energy	high	new
Intertidal	Public Outreach	Provide education and outreach through local meetings and trainings (e.g., Stream Smart, Coast Wise, SMARTeams) on techniques, problems and ecological effects of dams, roads, shipping lanes, and utility corridors on intertidal, subtidal, and tidal ma	Dams and Water Management-Use, Roads and Railroads, Shipping Lanes, Utility and Service Lines	high	on-going
Intertidal	Public Outreach	Continue/expand litter reduction programs/public education in intertidal and subtidal habitats	Garbage and Solid Waste	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Intertidal	Public Outreach	Continue/expand marine debris recovery programs in intertidal and subtidal habitats and education to fishermen	Garbage and Solid Waste	high	on-going
Intertidal	Public Outreach	Increase capacity for local engagement in data collection, surveys, and management of intertidal and subtidal SGCN and their habitats that fosters partnerships among harvesters, citizens, scientists, and managers	Fishing and Harvesting of Aquatic Resources	high	on-going
Intertidal	Public Outreach	Increase leadership opportunities and education regarding climate change mitigation and adaptation in intertidal and subtidal habitats	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Habitat Shifting or Alteration	high	on-going
Intertidal	Public Outreach	Increase outreach and education on preventing the spread of invasive/problematic species and diseases in intertidal, subtidal, and tidal marsh habitats	Invasive Non-native-Alien Species-Diseases, Problematic Native Species-Diseases	high	on-going
Intertidal	Public Outreach	Reduce wastewater and effluent inputs into intertidal and subtidal SGCN habitats. Expand education and technical assistance at the management level.	Agricultural and Forestry Effluents, Domestic and Urban Waste Water, Industrial and Military Effluents	moderate	new
Intertidal	Public Outreach	Develop best management practices for maintaining energy facilities in intertidal and subtidal habitats	Renewable Energy	moderate	new

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Intertidal	Public Outreach	At popular sites, increase education and outreach on the effects of recreation on sensitive intertidal ecosystems, spread of invasive species, etc.	Recreational Activities	moderate	on-going
Intertidal	Public Outreach	Post signs describing specific usage constraints (e.g. avoid certain areas during breeding seasons, pick up dog waste, don't disturb flora and fauna) to minimize impacts of recreational activities on intertidal SGCN habitats	Recreational Activities	moderate	on-going
Intertidal	Public Outreach	Promote use of more targeted fishing techniques in intertidal and subtidal habitats (e.g., bycatch reduction and not disturbing habitat) by encouraging discussions between harvesters, ecologists, and managers	Fishing and Harvesting of Aquatic Resources	moderate	on-going
Intertidal	Research	Create a coastal acidification budget to determine which factors (i.e. point, non-point source pollution, atmospheric CO2, etc.) are most important in driving acidification nearshore in intertidal and subtidal habitats	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Habitat Shifting or Alteration	critical	new
Intertidal	Research	Identify local intertidal and subtidal ocean acidification and sea surface temperature refuges and resilient species	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Habitat Shifting or Alteration	critical	new

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Intertidal	Research	Encourage installation of lower cost SGCN-friendly infrastructure in and near subtidal, intertidal, and tidal marsh habitats through technology development and transfer of technology. Encourage dam removal, culvert replacement, and tide gate removal	Dams and Water Management-Use, Roads and Railroads, Shipping Lanes, Utility and Service Lines	high	new
Intertidal	Research	Improve knowledge of intertidal and subtidal SGCN habitat use and migration patterns to better inform renewable energy project siting.	Renewable Energy	high	on-going
Intertidal	Research	Research the feasibility of and create opportunities around diversifying Maine's marine fisheries of SGCN in response to changing environmental variables.	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Habitat Shifting or Alteration	high	on-going
Intertidal	Research	Develop better understanding of climate change effects on intertidal and subtidal SGCN and ecosystem interactions	Lack of knowledge	high	on-going
Intertidal	Research	Improve mapping of intertidal and subtidal habitats and include information on SGCN movements	Renewable Energy	high	on-going
Intertidal	Research	Improve modeling (at local and Gulf of Maine scales) of sea level rise effects on intertidal and subtidal SGCN habitats and incorporate into planning	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Habitat Shifting or Alteration	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Intertidal	Research	Improve understanding of distribution, biology, and ecology of non-commercially harvested intertidal and subtidal SGCN	Lack of knowledge	high	on-going
Intertidal	Research	Monitor coastal streams, rivers, and sediments for excessive nutrients and chemical therapeutants	Agricultural and Forestry Effluents, Changes in Precipitation and Hydrological Regimes, Domestic and Urban Waste Water, Industrial and Military Effluents	high	on-going
Intertidal	Research	Improve understanding of intertidal and subtidal SGCN distributions especially in regards to ecosystem interactions and predator prey relationships. Map out intertidal habitats to provide accurate estimates of acreage of each of the SWAP habitat macr	Lack of knowledge	moderate	on-going
Intertidal	Research	Work with fisheries managers and fishing industry to reduce bycatch.	Fishing and Harvesting of Aquatic Resources	moderate	on-going
Intertidal	Research	Continue to work with industry to minimize escape of aquaculture-raised individuals	Marine and Freshwater Aquaculture	moderate	on-going
Intertidal	Research	Improve understanding of effects of energy development on bird and other SGCN use of migration corridors in intertidal and subtidal habitats	Renewable Energy	moderate	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Intertidal	Research	Investigate the effects of various harvesting practices on intertidal and subtidal SGCN habitats and on trophic and ecological processes	Fishing and Harvesting of Aquatic Resources	moderate	on-going
Intertidal	Survey and Monitoring	Continue monitoring potential and active aquaculture sites with a focus on SGCN and important habitats	Fishing and Harvesting of Aquatic Resources	high	on-going
Intertidal	Survey and Monitoring	Develop monitoring systems and rapid response plans to prevent the colonization of invasive/problematic species and diseases in intertidal, subtidal, and tidal marsh habitats	Invasive Non-native-Alien Species-Diseases, Problematic Native Species-Diseases	high	on-going
Intertidal	Survey and Monitoring	More frequently update intertidal and subtidal SGCN habitat maps and compare to historical maps to monitor changes in distribution over time	Fishing and Harvesting of Aquatic Resources	moderate	on-going
Rocky Coast	Habitat Management	Implement predator control programs near SGCN nesting areas in rocky coast habitats	Commercial and Industrial Areas , Housing and Urban Areas	critical	on-going
Rocky Coast	Habitat Management	Deploy armoring structures on state-owned lands at high value nesting areas along the rocky coast where migration of nesting habitat is not possible	Changes in Precipitation and Hydrological Regimes, Habitat Shifting or Alteration	moderate	new
Rocky Coast	Habitat Management	Identify conservation and restoration opportunities that allow for rocky coast habitats to persist with sea level rise	Changes in Precipitation and Hydrological Regimes, Habitat Shifting or Alteration	moderate	new

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Rocky Coast	Habitat Management	Minimize disturbances around rocky coast SGCN nesting and roosting habitat through voluntary agreements	Fishing and Harvesting of Aquatic Resources, Marine and Freshwater Aquaculture	moderate	new
Rocky Coast	Habitat Management	Identify conservation and restoration opportunities at historic but currently unused nesting sites in rocky coast habitats	Changes in Precipitation and Hydrological Regimes, Habitat Shifting or Alteration	moderate	on-going
Rocky Coast	Habitat Management	Implement invasive species eradication programs where appropriate (e.g., not in areas where invasive plants provide cover for SGCN and reestablishment of native plants is unlikely), and encourage growth of native species	Invasive Non-native-Alien Species-Diseases	moderate	on-going
Rocky Coast	Policy	Conduct periodic training to promote the most effective and safe operational procedures during oil spill clean-up and rehabilitation of SGCN	Industrial and Military Effluents, Shipping Lanes	high	on-going
Rocky Coast	Policy	Enhance oil spill contingency planning and response efforts in coastal habitats including purchasing survey and hazing equipment	Industrial and Military Effluents, Shipping Lanes	high	on-going
Rocky Coast	Policy	Seasonally close rocky coast SGCN nesting and roosting areas to foot traffic on state-owned lands	Recreational Activities	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Rocky Coast	Policy	Use voluntary agreements, conservation easements, and tax abatements and incentives to conserve important coastal SGCN habitats	Commercial and Industrial Areas , Housing and Urban Areas	moderate	new
Rocky Coast	Public Outreach	Erect signage at important nesting and roosting areas in rocky coast habitats to discourage destructive effects of human recreation	Recreational Activities	high	on-going
Rocky Coast	Public Outreach	Provide outreach to recreationalists regarding effects of human disturbance on nesting colonies and roosting shorebirds	Recreational Activities	moderate	on-going
Rocky Coast	Survey and Monitoring	Identify and prioritize significant nesting, migratory, and wintering areas in rocky coast habitats for contingency oil spill planning	Industrial and Military Effluents, Shipping Lanes	high	on-going
Rocky Coast	Survey and Monitoring	Work with municipalities to identify important SGCN nesting and migratory areas in rocky coast and coastal habitats during comprehensive planning	Commercial and Industrial Areas , Housing and Urban Areas	high	on-going
Rocky Coast	Survey and Monitoring	Identify invasive plant hot spots in rocky coast habitats	Invasive Non-native-Alien Species-Diseases	moderate	on-going
Subtidal	Habitat Management	Find ways to support culvert replacement in or near intertidal, subtidal, and tidal marsh habitats using best management practices	Dams and Water Management-Use, Roads and Railroads, Shipping Lanes, Utility and Service Lines	critical	new

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Subtidal	Habitat Management	Encourage partnership projects among transportation agencies, utility companies, etc. to facilitate fish passage and maintain connectivity in or near subtidal, intertidal, and tidal marsh habitats especially in cases where structures have diffe	Dams and Water Management-Use, Roads and Railroads, Shipping Lanes, Utility and Service Lines	critical	on-going
Subtidal	Habitat Management	Decommission remnant or unused roads and other structures in or near tidal marsh, intertidal, and subtidal habitats	Dams and Water Management-Use, Roads and Railroads, Shipping Lanes, Utility and Service Lines	critical	on-going
Subtidal	Habitat Management	Assess new aquaculture sites for potential positive, benign, or negative species interactions with the surrounding habitat and ecological systems	Marine and Freshwater Aquaculture	high	on-going
Subtidal	Habitat Management	Mitigate coastal acidification of intertidal and subtidal habitats using strategies similar to those for reducing effects of effluents/wastewater	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Habitat Shifting or Alteration	high	on-going
Subtidal	Habitat Management	Model effects of sea level rise and other climate change factors on subtidal SGCN patterns including physiology, migration patterns, and trophic changes	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Habitat Shifting or Alteration	high	on-going
Subtidal	Habitat Management	Promote voluntary baywide (or scale of ecological relevance) coordination of shared	Fishing and Harvesting of Aquatic Resources	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
		resources and education addressing the impacts of fishing and harvesting aquatic resources on SGCN intertidal and subtidal habitats			
Subtidal	Habitat Management	Restore and improve conservation management at state and municipal levels to reduce impacts of effluents and wastewater on intertidal and subtidal SGCN habitats	Agricultural and Forestry Effluents, Domestic and Urban Waste Water, Industrial and Military Effluents	high	on-going
Subtidal	Habitat Management	Use technology to reduce discharge of wastewater and effluents into intertidal and subtidal SGCN habitats	Agricultural and Forestry Effluents, Domestic and Urban Waste Water, Industrial and Military Effluents	high	on-going
Subtidal	Habitat Management	Research and explore management pathways for assisted migration/gene flow of climate resilient Zostera marina (eelgrass) populations both within Maine and across states. Currently faces regulatory challenges.	Changes in Geochemical Regimes, Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Habitat Shifting or Alteration, Intrinsic Biological Limitations	moderate	new
Subtidal	Habitat Management	Research and explore management pathways for oyster reef restoration in Maine.	Changes in Geochemical Regimes, Changes in Temperature Regimes, Habitat Shifting or Alteration, Storms and Severe Weather	moderate	new
Subtidal	Habitat Management	Alter shipping lanes and dredging plans in intertidal and subtidal habitats to minimize biological and ecological impacts to SGCN	Agricultural and Forestry Effluents, Domestic and Urban Waste Water, Industrial and Military Effluents	moderate	new

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Subtidal	Habitat Management	Expand research and pilot studies to test the efficacy of increasing pH of mudflats (e.g., using harvested shell waste) to restore more favorable habitat conditions for intertidal and subtidal SGCN	Fishing and Harvesting of Aquatic Resources	moderate	new
Subtidal	Habitat Management	Conduct training and workshops to support knowledge of SGCN and their habitats	Recreational Activities	moderate	on-going
Subtidal	Habitat Management	Improve response plans for industrial spills (e.g., oil spills) in intertidal and subtidal habitats and support research on oil dispersants and short and long term effect of oil spills	Agricultural and Forestry Effluents, Domestic and Urban Waste Water, Industrial and Military Effluents	moderate	on-going
Subtidal	Policy	Provide incentives for building Coast Wise and Stream Smart structures and road crossings in or near intertidal, subtidal, and tidal marsh habitats that allow for changing environmental conditions such as sea level rise and increased flooding.	Dams and Water Management-Use, Roads and Railroads, Shipping Lanes, Utility and Service Lines	high	new
Subtidal	Policy	Increase awareness about invasive species and problems following the introduction of invasive species in the shipping, transportation, and other industries to prevent introductions and spread of invasive species in intertidal and subtidal habitats	Invasive Non-native-Alien Species-Diseases, Problematic Native Species-Diseases	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Subtidal	Policy	Increase capacity for enforcement of current laws and regulations regarding proper infrastructure (e.g., roads, dams, utility lines, shipping lanes) construction, maintenance, water quality, and fish passage in tidal marsh, intertidal, and subtidal SGCN	Dams and Water Management-Use, Roads and Railroads, Shipping Lanes, Utility and Service Lines	high	on-going
Subtidal	Policy	Time dredging projects in subtidal and tidal marsh habitats to minimize harm to SGCN based on migration and spawning cycles	Mining and Quarrying, Shipping Lanes	high	on-going
Subtidal	Policy	Explore value of utilizing conservation leases to limit uses/stresses in intertidal and subtidal habitats	Fishing and Harvesting of Aquatic Resources	moderate	new
Subtidal	Policy	Expand existing education and incentive programs for lawn care companies, homeowners, and municipalities to reduce wastewater and effluent inputs and effects on intertidal and subtidal SGCN habitats	Agricultural and Forestry Effluents, Domestic and Urban Waste Water, Industrial and Military Effluents	moderate	on-going
Subtidal	Policy	Increase capacity for municipal planning to reduce wastewater and effluent effects on intertidal and subtidal SGCN habitats while also accounting for future environmental change	Agricultural and Forestry Effluents, Domestic and Urban Waste Water, Industrial and Military Effluents	moderate	on-going
Subtidal	Policy	Increase enforcement for dumping/litter/gear abandonment in intertidal and subtidal habitats	Garbage and Solid Waste	moderate	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Subtidal	Policy	Provide stewardship/conservation incentives to harvesters working in intertidal and subtidal SGCN habitats	Fishing and Harvesting of Aquatic Resources	moderate	on-going
Subtidal	Policy	Site shipping lanes and dredging projects to minimize negative impacts to intertidal and subtidal SGCN and their habitats	Mining and Quarrying, Shipping Lanes	moderate	on-going
Subtidal	Policy	Support communities with retrofitting existing effluent and wastewater treatment infrastructure and plan for sea level rise by providing economic incentives and education	Agricultural and Forestry Effluents, Domestic and Urban Waste Water, Industrial and Military Effluents	moderate	on-going
Subtidal	Public Outreach	Continue/expand litter reduction programs/public education in intertidal and subtidal habitats	Garbage and Solid Waste	critical	on-going
Subtidal	Public Outreach	Improve knowledge of effects of renewable energy on intertidal and subtidal SGCN habitats	Renewable Energy	high	new
Subtidal	Public Outreach	Provide education and outreach through local meetings and trainings (e.g., Stream Smart, Coast Wise) on techniques, problems and ecological effects of dams, roads, shipping lanes, and utility corridors on intertidal, subtidal, and tidal marsh habitat	Dams and Water Management-Use, Roads and Railroads, Shipping Lanes, Utility and Service Lines	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Subtidal	Public Outreach	Continue/expand marine debris recovery programs in intertidal and subtidal habitats and education to fishermen	Garbage and Solid Waste	high	on-going
Subtidal	Public Outreach	Increase capacity for local engagement in data collection, surveys, and management of intertidal and subtidal SGCN and their habitats that fosters partnerships among harvesters, citizens, scientists, and managers	Fishing and Harvesting of Aquatic Resources	high	on-going
Subtidal	Public Outreach	Increase leadership opportunities and education regarding climate change mitigation and adaptation in intertidal and subtidal habitats	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Habitat Shifting or Alteration	high	on-going
Subtidal	Public Outreach	Increase outreach and education on preventing the spread of invasive/problematic species and diseases in intertidal, subtidal, and tidal marsh habitats	Invasive Non-native-Alien Species-Diseases, Problematic Native Species-Diseases	high	on-going
Subtidal	Public Outreach	Develop best management practices for maintaining energy facilities in intertidal and subtidal habitats	Renewable Energy	moderate	new
Subtidal	Public Outreach	Expand existing education and research at the management level to improve understanding and management ability to reduce wastewater and	Agricultural and Forestry Effluents, Domestic and Urban Waste Water, Industrial and Military Effluents	moderate	new

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
		effluent inputs and effects into intertidal and subtidal SGCN habitats			
Subtidal	Public Outreach	Continue partnerships between anglers, guides, scientists, and managers to collect biological information and catch data to use in population assessments and identifying species habitat use and behavior	Recreational Activities	moderate	on-going
Subtidal	Public Outreach	Continue to work with recreational marine charter captains to collect accurate data that can be used to assess SGCN populations	Recreational Activities	moderate	on-going
Subtidal	Public Outreach	Promote use of more targeted fishing techniques in intertidal and subtidal habitats (e.g., bycatch reduction and not disturbing habitat) by encouraging discussions between harvesters, ecologists, and managers	Fishing and Harvesting of Aquatic Resources	moderate	on-going
Subtidal	Public Outreach	Provide outreach and education to recreational marine harvesters on proper catch and release methods to minimize trauma (including barotrauma)	Recreational Activities	moderate	on-going
Subtidal	Research	Identify local intertidal and subtidal ocean acidification and water temperature refuges and resilient species.	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Habitat Shifting or Alteration	critical	new

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Subtidal	Research	Create a coastal acidification budget to determine which factors (i.e. point, non-point source pollution, atmospheric CO2, etc.) are most important in driving acidification nearshore in intertidal and subtidal habitats	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Habitat Shifting or Alteration	critical	new
Subtidal	Research	Investigate offshore changes in circulation patterns, plankton distribution and abundance, and other bio-chemical and physical processes	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Habitat Shifting or Alteration	critical	new
Subtidal	Research	Improve mapping of intertidal and subtidal habitats and include information on SGCN movements	Renewable Energy	critical	on-going
Subtidal	Research	Encourage SGCN-friendly infrastructure through culvert and tide gate replacement and dam removal in and near subtidal, intertidal, and tidal marsh habitats through technology development and transfer of technology.	Dams and Water Management-Use, Roads and Railroads, Shipping Lanes, Utility and Service Lines	high	new
Subtidal	Research	Develop better understanding of climate change effects on intertidal and subtidal SGCN and ecosystem interactions	Lack of knowledge	high	on-going
Subtidal	Research	Improve knowledge of intertidal and subtidal SGCN habitat use and migration patterns to better inform renewable energy project siting	Renewable Energy	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Subtidal	Research	Improve modeling (at local and Gulf of Maine scales) of sea level rise effects on intertidal and subtidal SGCN habitats and incorporate into planning	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Habitat Shifting or Alteration	high	on-going
Subtidal	Research	Improve understanding of distribution, biology, and ecology of non-commercially harvested intertidal and subtidal SGCN	Lack of knowledge	high	on-going
Subtidal	Research	Research the feasibility of diversifying Maine's marine fisheries of SGCN in response to changing environmental variables	Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Habitat Shifting or Alteration	high	on-going
Subtidal	Research	Improve the understanding of intertidal and subtidal habitats in the Gulf of Maine through increased benthic habitat mapping. Increased data collection will provide better estimates of interdial and subtidal habitat acreage and location, ecosystem in	Lack of knowledge	moderate	on-going
Subtidal	Research	Continue to work with industry to minimize escape of aquaculture-raised individuals	Marine and Freshwater Aquaculture	moderate	on-going
Subtidal	Research	Determine accuracy of commercial harvester- and dealer-reported landings and recreational fishing reports and surveys for target intertidal and subtidal SGCN and bycatch	Fishing and Harvesting of Aquatic Resources	moderate	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Subtidal	Research	Improve understanding of effects of energy development on bird and other SGCN use of migration corridors in intertidal and subtidal habitats	Renewable Energy	moderate	on-going
Subtidal	Research	Investigate the effects of various harvesting practices on intertidal and subtidal SGCN habitats and on trophic and ecological processes	Fishing and Harvesting of Aquatic Resources	moderate	on-going
Subtidal	Survey and Monitoring	Continue monitoring potential and active aquaculture sites with a focus on SGCN and important habitats	Fishing and Harvesting of Aquatic Resources	high	on-going
Subtidal	Survey and Monitoring	Develop monitoring systems and rapid response plans to prevent the colonization of invasive/problematic species and diseases in intertidal, subtidal, and tidal marsh habitats	Invasive Non-native-Alien Species-Diseases, Problematic Native Species-Diseases	high	on-going
Subtidal	Survey and Monitoring	Continue to improve rapid response for oil and gas spills in intertidal and subtidal habitats, including state agencies efforts to have most up-to-date species maps, rapid response protocols in place, and regular scenario training	Mining and Quarrying, Shipping Lanes	moderate	on-going
Subtidal	Survey and Monitoring	Develop coastal focus areas encompassing marine habitats with high concentrations of SGCN using improved species occurrence maps	Fishing and Harvesting of Aquatic Resources	moderate	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Subtidal	Survey and Monitoring	Expand surveys of recreational fishing efforts to include SGCN that are not targeted in current survey efforts	Recreational Activities	moderate	on-going
Subtidal	Survey and Monitoring	More frequently update intertidal and subtidal SGCN habitat maps and compare to historical maps to monitor changes in distribution over time	Fishing and Harvesting of Aquatic Resources	moderate	on-going
Tidal Marsh	Habitat Management	Find ways to support dam removal, tide gate removal, and culvert replacement in or near intertidal and tidal marsh habitats.	Dams and Water Management-Use, Roads and Railroads	critical	new
Tidal Marsh	Habitat Management	Conserve lands that are upland and inland of marshes to allow for marsh migration and maintain habitat connectivity	Habitat Shifting or Alteration	critical	on-going
Tidal Marsh	Habitat Management	Work with land conservation organizations and private landowners to conserve tidal marshes, adjacent uplands, and marsh migration corridors	Annual and Perennial Non-timber crops, Commercial and Industrial Areas , Housing and Urban Areas, Livestock Farming and Ranching, Utility and Service Lines	critical	on-going
Tidal Marsh	Habitat Management	Encourage installation of lower cost SGCN-friendly infrastructure in and near subtidal, intertidal, and tidal marsh habitats through technology development and transfer of technology	Dams and Water Management-Use, Roads and Railroads	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Tidal Marsh	Habitat Management	Time dredging projects in subtidal and tidal marsh habitats to minimize harm to SGCN based on breeding, migration and spawning cycles	Shipping Lanes	high	on-going
Tidal Marsh	Habitat Management	Encourage use of nature-based solutions for shoreland stabilization and expanded vegetated buffers in shoreland zones through DEP OURSHORE program and BwH program	Changes in Precipitation and Hydrological Regimes, Housing and Urban Areas, Storms and Severe Weather	moderate	new
Tidal Marsh	Habitat Management	Employ technology to reduce nutrient discharge adjacent to tidal marshes, e.g. storm water remediation measures including SmartSponge, infiltration chambers, and storm water settling areas	Agricultural and Forestry Effluents, Changes in Precipitation and Hydrological Regimes, Domestic and Urban Waste Water, Industrial and Military Effluents	moderate	new
Tidal Marsh	Habitat Management	Maintain or create corridors between tidal marshes and other habitats used by tidal marsh SGCN	Annual and Perennial Non-timber crops, Commercial and Industrial Areas , Housing and Urban Areas, Livestock Farming and Ranching, Utility and Service Lines	moderate	new
Tidal Marsh	Habitat Management	Decommission remnant or unused roads and other structures in or near tidal marsh, intertidal, and subtidal habitats	Dams and Water Management-Use, Roads and Railroads	moderate	on-going
Tidal Marsh	Habitat Management	Re-route existing trails and/or boardwalks around tidal marshes to minimize foot traffic and disturbance to SGCN habitats	Recreational Activities	moderate	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Tidal Marsh	Policy	Promote voluntary best standards for road/stream crossings in or near tidal marshes	Dams and Water Management-Use, Roads and Railroads	high	new
Tidal Marsh	Policy	Provide incentives for building "Coast Wise" structures and road crossings in or near intertidal, and tidal marsh habitats that allow for changing environmental conditions such as sea level rise and increased flooding	Dams and Water Management-Use, Roads and Railroads	high	new
Tidal Marsh	Policy	Site shipping lanes and dredging projects to minimize negative impacts to intertidal and subtidal SGCN and their habitats	Shipping Lanes	high	new
Tidal Marsh	Policy	Continue to improve rapid response for oil and gas spills in intertidal and subtidal habitats, including state agencies efforts to have most up-to-date species maps, rapid response protocols in place, and regular scenario training	Shipping Lanes	high	on-going
Tidal Marsh	Policy	Increase capacity for enforcement of current laws and regulations regarding proper infrastructure (e.g., roads, dams, utility lines, shipping lanes) construction, maintenance, water quality, and fish passage in tidal marsh, intertidal, and subtidal SGCN	Dams and Water Management-Use, Roads and Railroads	high	on-going
Tidal Marsh	Policy	Develop and provide model best practice maintenance and operating procedures (e.g.,	Dams and Water Management-Use, Roads and Railroads	moderate	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
		maintenance frequency, replacement schedules) for municipal, state, and private managers of infrastructure in tidal marshes			
Tidal Marsh	Policy	Increase awareness about invasive species and problems following the introduction of invasive species in the shipping, transportation, and other industries to prevent introductions and spread of invasive species in intertidal and subtidal habitats	Invasive Non-native-Alien Species-Diseases, Problematic Native Species-Diseases	moderate	on-going
Tidal Marsh	Public Outreach	Provide outreach and education to planners, developers, and homeowners about best management practices for site design, property maintenance, and landscaping adjacent to tidal marshes and their buffers	Annual and Perennial Non-timber crops, Commercial and Industrial Areas , Housing and Urban Areas, Livestock Farming and Ranching, Utility and Service Lines	high	new
Tidal Marsh	Public Outreach	Encourage partnership projects among transportation agencies, utility companies, municipalities, etc. to facilitate fish passage, nutrient exchange, and habitat forming processes in or near subtidal, intertidal, and tidal marsh habitats especially in	Dams and Water Management-Use, Roads and Railroads	high	on-going
Tidal Marsh	Public Outreach	Provide education and outreach through local meetings and trainings (e.g., "Coast Wise") on techniques, problems and ecological effects of dams, roads, shipping lanes, and utility corridors	Dams and Water Management-Use, Roads and Railroads	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
		on intertidal, subtidal, and tidal marsh habitats and publicize c			
Tidal Marsh	Public Outreach	Support and research landscape-scale land use planning connecting marsh migration, affordable housing, habitat corridors, and getting out of harm's way.	Annual and Perennial Non-timber crops, Commercial and Industrial Areas , Housing and Urban Areas, Livestock Farming and Ranching, Utility and Service Lines	moderate	new
Tidal Marsh	Public Outreach	Provide incentives for allowing marsh migration or protecting existing tidal marsh	Annual and Perennial Non-timber crops, Commercial and Industrial Areas , Housing and Urban Areas, Livestock Farming and Ranching, Utility and Service Lines	moderate	new
Tidal Marsh	Public Outreach	Deploy signage to notify recreationalists to the sensitivity of tidal marsh habitat	Recreational Activities	moderate	on-going
Tidal Marsh	Public Outreach	Increase outreach and education on preventing the spread of invasive/problematic species and diseases in intertidal, subtidal, and tidal marsh habitats	Invasive Non-native-Alien Species-Diseases, Problematic Native Species-Diseases	moderate	on-going
Tidal Marsh	Public Outreach	Provide outreach and education to homeowners and businesses on the use of buffers and less fertilizers to reduce their wastewater and storm water inputs into tidal marshes	Agricultural and Forestry Effluents, Changes in Precipitation and Hydrological Regimes, Domestic and Urban Waste Water, Industrial and Military Effluents	moderate	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Tidal Marsh	Public Outreach	Provide outreach and education to homeowners and municipalities regarding proper installation, maintenance, and removal of septic systems	Agricultural and Forestry Effluents, Changes in Precipitation and Hydrological Regimes, Domestic and Urban Waste Water, Industrial and Military Effluents	moderate	on-going
Tidal Marsh	Research	Research and model marsh migration scenarios resulting from sea level rise	Habitat Shifting or Alteration	moderate	on-going
Tidal Marsh	Survey and Monitoring	Build upon and coordinate with existing monitoring efforts to establish a long term tidal marsh monitoring program, with emphasis on assessing sediment dynamics in the context of sea level rise	Annual and Perennial Non-timber crops, Commercial and Industrial Areas , Housing and Urban Areas, Livestock Farming and Ranching, Utility and Service Lines	high	on-going
Tidal Marsh	Survey and Monitoring	Develop monitoring systems and rapid response plans to minimize the colonization of invasive/problematic species and diseases in intertidal, subtidal, and tidal marsh habitats	Invasive Non-native-Alien Species-Diseases, Problematic Native Species-Diseases	high	on-going
Tidal Marsh	Survey and Monitoring	Continue and expand monitoring programs that track tidal marsh changes over time	Habitat Shifting or Alteration	moderate	on-going

Appendix Table 4- 16 2025 Maine Wildlife Action Plan Habitat Conservation Actions for Terrestrial and Freshwater Wetland Habitat Groups. Actions are sorted by Habitat Grouping (see Table 4-18), Action Category, then by Biological Priority (Critical, High, Moderate).

*Threat names are from Level 2 of the IUCN Threat Classification Scheme; these are broad categories that may not capture all the nuances of stressor-SGCN-habitat interactions, including beneficial effects. Readers are urged to refer to species and habitat reports for more details on interactions among stressors, habitats, and SGCN.

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Coastal and Interior Pine Barrens	Habitat Management	Initiate/expand prescribed burn programs	Fire and Fire Suppression	critical	on-going
Coastal and Interior Pine Barrens	Habitat Management	Encourage conservation of pine barrens through a variety of voluntary approaches, including fee and easement land acquisition and landowner outreach	Annual and Perennial Non-timber crops, Recreational Activities	high	on-going
Coastal and Interior Pine Barrens	Habitat Management	Incentivize and recognize good private landowner stewardship of pine barrens.	Fire and Fire Suppression, Invasive Non-native-Alien Species-Diseases, Recreational Activities	moderate	new
Coastal and Interior Pine Barrens	Habitat Management	Provide support for property tax incentives that are contingent upon the use of management practices that promote pine barren habitat on private land	Annual and Perennial Non-timber crops, Recreational Activities	moderate	on-going
Coastal and Interior Pine Barrens	Habitat Management	Use a variety of incentives to conserve buffers surrounding pine barrens, including fee and easement land acquisition and landowner outreach	Commercial and Industrial Areas , Housing and Urban Areas, Mining and Quarrying, Roads	moderate	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
			and Railroads, Utility and Service Lines		
Coastal and Interior Pine Barrens	Policy	Promote inter-agency prescribed fire training to provide more staff and equipment to aid in conducting prescribed fire in pine barrens	Fire and Fire Suppression	critical	on-going
Coastal and Interior Pine Barrens	Policy	Provide cost-share for mechanical treatments where fire management is not practical in pine barrens	Fire and Fire Suppression	critical	on-going
Coastal and Interior Pine Barrens	Policy	Secure stable funding for fire management in pine barrens	Fire and Fire Suppression	critical	on-going
Coastal and Interior Pine Barrens	Policy	Use sharing agreements (e.g., MOU's) and partnerships to increase fire management capacity for pine barrens via the availability of trained staff and equipment	Fire and Fire Suppression	critical	on-going
Coastal and Interior Pine Barrens	Public Outreach	Work with local communties to help address safety and property damage concerns related to prescribed fire.	Fire and Fire Suppression	high	on-going
Coastal and Interior Pine Barrens	Public Outreach	Develop outreach approaches and materials for municipal planners and land trusts on the important wildlife values of pine barrens and the need for fire or mechanical management	Fire and Fire Suppression, Invasive Non-native-Alien Species-Diseases, Recreational Activities, Utility and Service Lines	moderate	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
		to perpetuate these habitats, through programs such as beginning with habitat			
Freshwater Marshes	Habitat Management	Develop a community of practice to identify and prioritize freshwater marsh and other wetland restoration priorities	Other Ecosystem Modifications	high	new
Freshwater Marshes	Habitat Management	Work with MDOT to implement safe road passage for herps at high priority sites	Roads and Railroads	high	new
Freshwater Marshes	Habitat Management	Support implementation of forestry Best Management Practices around freshwater marshes to slow and limit erosion and prevent invasive species introductions.	Invasive Non-native-Alien Species-Diseases	high	on-going
Freshwater Marshes	Habitat Management	During review of development projects and forest management plans, recommend the use of adequate buffers.	Commercial and Industrial Areas , Housing and Urban Areas, Logging and Wood Harvesting	high	on-going
Freshwater Marshes	Habitat Management	Conserve freshwater marsh buffers using a variety of voluntary approaches such as acquisitions, easements, and monetary incentives	Agricultural and Forestry Effluents, Commercial and Industrial Areas , Domestic and Urban Waste Water, Housing and Urban Areas, Roads and Railroads, Utility and Service Lines	high	on-going
Freshwater Marshes	Habitat Management	Encourage conservation of freshwater marshes and their buffers, and other high value SGCN wetland habitats using a variety of approaches	Commercial and Industrial Areas , Housing and Urban Areas,	moderate	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
		such as acquisitions, easements, and incentives	Roads and Railroads, Utility and Service Lines		
Freshwater Marshes	Habitat Management	Target invasive plant species control at high value wetlands on public and other conservation lands	Invasive Non-native-Alien Species-Diseases	moderate	on-going
Freshwater Marshes	Habitat Management	Work collaboratively with partners to develop water control level standards for all priority freshwater marshes that support SGCN in wildlife management areas	Annual and Perennial Non-timber crops, Habitat Shifting or Alteration, Livestock Farming and Ranching	moderate	on-going
Freshwater Marshes	Policy	Support and implement incentives for agricultural practices that benefit freshwater marshes such as conserving buffers and using conservation tillage	Annual and Perennial Non-timber crops, Livestock Farming and Ranching	moderate	on-going
Freshwater Marshes	Public Outreach	Support public education to minimize pollution and runoff	Domestic and Urban Waste Water	high	on-going
Freshwater Marshes	Public Outreach	Provide information to municipalities and land trusts through Beginning with Habitat and other programs on high priority freshwater wetlands for aquatic/riparian organism passage near or bisected by roads	Agricultural and Forestry Effluents, Commercial and Industrial Areas , Domestic and Urban Waste Water, Livestock Farming and Ranching, Roads and Railroads, Utility and Service Lines	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Freshwater Marshes	Public Outreach	Support placement of watershed boundary signs.	Domestic and Urban Waste Water	moderate	on-going
Freshwater Marshes	Survey and Monitoring	Identify high priority road segments/culverts for organism passage among freshwater wetlands	Roads and Railroads	high	new
Grasslands-Shrublands-Right of way vegetation	Habitat Management	Support use of controlled burning for invasive species control and management of vegetation structure, especially in sandplain grasslands.	Fire and Fire Suppression, Invasive Non-native-Alien Species-Diseases	high	on-going
Grasslands-Shrublands-Right of way vegetation	Habitat Management	Encourage landowners and land managers to conserve grassland/shrub habitats through voluntary approaches such as fee or easement acquisition using state and federal grant programs.	Annual and Perennial Non-timber crops, Commercial and Industrial Areas , Housing and Urban Areas, Utility and Service Lines	high	on-going
Grasslands-Shrublands-Right of way vegetation	Habitat Management	Promote and conduct management of grasslands, shrublands, and early successional SGCN habitats on public conservation lands including wildlife management areas where appropriate.	Annual and Perennial Non-timber crops, Other Ecosystem Modifications	high	on-going
Grasslands-Shrublands-Right of way vegetation	Habitat Management	Target conservation of grassland, shrub, and early successional SGCN habitats in areas where conservation is not in conflict with landowner interests and where maintaining	Commercial and Industrial Areas , Housing and Urban Areas, Annual and Perennial Non-timber crops	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
		these habitats is compatible with existing management practices			
Grasslands-Shrublands-Right of way vegetation	Habitat Management	Promote Integrated Pest Management to reduce pesticide use in blueberry barrens	Annual and Perennial Non-timber crops	moderate	on-going
Grasslands-Shrublands-Right of way vegetation	Habitat Management	Work with partners to develop best management practices for retaining a shrub component around agricultural fields	Annual and Perennial Non-timber crops	moderate	on-going
Grasslands-Shrublands-Right of way vegetation	Policy	Research the feasibility of term easements for grassland, shrub, and early-successional SGCN habitats	Annual and Perennial Non-timber crops, Housing and Urban Areas, Utility and Service Lines	high	new
Grasslands-Shrublands-Right of way vegetation	Policy	Work with patners including NRCS, FSA, Ag Allies and others to provide habitat management incentives and technical assistance to land managers and landowners for SGCN habitat management in grasslands, shrublands, and early-successional habitats	Annual and Perennial Non-timber crops, Housing and Urban Areas, Utility and Service Lines	high	on-going
Grasslands-Shrublands-Right of way vegetation	Policy	Establish formal assurance agreements for landowners managing for endangered or threatened SGCN (e.g., Safe Harbor	Annual and Perennial Non-timber crops, Housing and Urban Areas, Utility and Service Lines	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
		Agreements) in grassland, shrub, and early successional habitats			
Grasslands-Shrublands-Right of way vegetation	Policy	Expand 'forgone income' incentives program(e.g., deferred harvest of hay, deferred grazing of portions of pasture, harvest trees earlier than usual) to encourage grassland, shrub, and early successional habitat management practices beneficial to SGCN	Annual and Perennial Non-timber crops	high	on-going
Grasslands-Shrublands-Right of way vegetation	Policy	Work with municipalities/towns to reduce or remove challenges (i.e. zoning district regulations, liability concerns, etc) that impede needed habitat management in grasslands, shrublands, and early successional SGCN habitat.	Annual and Perennial Non-timber crops, Commercial and Industrial Areas , Housing and Urban Areas, Utility and Service Lines	moderate	new
Grasslands-Shrublands-Right of way vegetation	Public Outreach	Train staff that are mowing grasslands and ROWs on invasive plant identification, removal, and best practices when mowing such as avoid cutting invasives when seeds present and cleaning equipment between job sites.	Invasive Non-native-Alien Species-Diseases	critical	on-going
Grasslands-Shrublands-Right of way vegetation	Public Outreach	Broaden public outreach to include information on suites of SGCN species (e.g., not just New England Cottontail) that are	Annual and Perennial Non-timber crops, Commercial and Industrial Areas , Housing and Urban Areas, Roads and	moderate	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
		declining due to lack of suitable grassland, shrub, or early successional habitat	Railroads, Utility and Service Lines		
Grasslands-Shrublands-Right of way vegetation	Public Outreach	Establish and promote demonstration areas highlighting habitat management for grassland, shrub, and early successional SGCN	Annual and Perennial Non-timber crops, Commercial and Industrial Areas , Housing and Urban Areas, Utility and Service Lines	moderate	on-going
Grasslands-Shrublands-Right of way vegetation	Public Outreach	Identify key organizations (& stakeholders) to focus on for promoting the wildlife values of grasslands, shrublands, and early successional SGCN habitats such as Soil Water Conservation Districts, Maine Farmland Trust, farmers and other large landowners,	Annual and Perennial Non-timber crops, Housing and Urban Areas	moderate	on-going
Grasslands-Shrublands-Right of way vegetation	Public Outreach	Increase postings of well designed signage in habitat management demonstration areas that educates readers regarding the important wildlife values of grassland, shrub, early successional habitats, and associated SGCN species	Annual and Perennial Non-timber crops, Housing and Urban Areas	moderate	on-going
Grasslands-Shrublands-Right of way vegetation	Public Outreach	Promote and acknowledge the use of management practices beneficial to grasslands, shrublands, and early successional SGCN habitats on utility corridors	Utility and Service Lines	moderate	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Grasslands-Shrublands-Right of way vegetation	Public Outreach	Promote better communication tools and training on grassland/shrub habitat conservation	Annual and Perennial Non-timber crops, Commercial and Industrial Areas , Housing and Urban Areas, Roads and Railroads, Utility and Service Lines	moderate	on-going
Grasslands-Shrublands-Right of way vegetation	Public Outreach	Promote community and land trust stewardship of grassland, shrub, and early-successional SGCN habitats through outreach programs	Commercial and Industrial Areas , Housing and Urban Areas	moderate	on-going
Grasslands-Shrublands-Right of way vegetation	Survey and Monitoring	Research and identify how much grassland, shrub, and early successional habitat for targeted SGCN species is needed and conduct an assessment of habitat availability on an ecoregional basis	Annual and Perennial Non-timber crops, Commercial and Industrial Areas , Housing and Urban Areas, Utility and Service Lines	critical	on-going
Grasslands-Shrublands-Right of way vegetation	Survey and Monitoring	Map potential grassland, shrublands, and early successional high value SGCN habitats of highest conservation priority	Annual and Perennial Non-timber crops, Commercial and Industrial Areas , Housing and Urban Areas, Roads and Railroads, Utility and Service Lines	high	new
Grasslands-Shrublands-Right of way vegetation	Survey and Monitoring	Provide information to municipalities, landowners, and conservation organizations on important grassland/shrubland habitats through the Beginning with Habitat Program	Annual and Perennial Non-timber crops, Commercial and Industrial Areas , Housing and	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
			Urban Areas, Utility and Service Lines		
Intensive Human Land Use	Habitat Management	Support initiatives that minimize bird collisions with windows.	Housing and Urban Areas	critical	on-going
Intensive Human Land Use	Public Outreach	Support municipal and urban open space planning efforts, through programs such as Beginning with Habitat.	Other Threat	critical	on-going
Lakeshore or Pondshore	Habitat Management	Limit ATV access to pond and lake shorelines/beaches on public lands.	Recreational Activities	critical	on-going
Lakeshore or Pondshore	Survey and Monitoring	Train boat launch stewards in terrestrial invasive plant ID, removal, and map/document infestations at or near boat launches	Invasive Non-native-Alien Species-Diseases	critical	on-going
Northern Floodplain and Swamp Forests	Habitat Management	Work with willing landowners/sellers on fee and easement land acquisition.	Habitat Shifting or Alteration	critical	on-going
Northern Floodplain and Swamp Forests	Habitat Management	Host public workdays to remove invasive plants and surveys to detect new invasions (prevention), and, possibly, plant native species. Determine which are at highest risk of invasion and of highest ecological value and also prioritize prevention.	Invasive Non-native-Alien Species-Diseases	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Northern Floodplain and Swamp Forests	Habitat Management	Conserve at-risk high value floodplain forests using a variety of voluntary approaches, including fee and easement land acquisition and landowner outreach	Annual and Perennial Non-timber crops, Commercial and Industrial Areas , Housing and Urban Areas, Logging and Wood Harvesting, Roads and Railroads, Utility and Service Lines	high	on-going
Northern Floodplain and Swamp Forests	Habitat Management	Encourage conservation owners to address floodplain forests in management plans, such as through Maine's Beginning with Habitat Program (BwH)	Dams and Water Management-Use, Invasive Non-native-Alien Species-Diseases, Logging and Wood Harvesting	high	on-going
Northern Floodplain and Swamp Forests	Habitat Management	Support efforts to restore hydrologic connections to floodplain forests isolated by roads	Roads and Railroads	high	on-going
Northern Floodplain and Swamp Forests	Habitat Management	Support the development of silvicultural guidance for stem density management in response to severe weather events, especially wind.	Storms and Severe Weather	moderate	new
Northern Floodplain and Swamp Forests	Habitat Management	Advocate for floodplain forest protection in forest certification programs	Logging and Wood Harvesting	moderate	new
Northern Floodplain	Habitat Management	Review the current Maine Forestry Best Management Practices to determine if floodplain forest SGCN are adequately	Logging and Wood Harvesting	moderate	new

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
and Swamp Forests		considered; if not work, with the MFS and other stakeholders to incoporate SGCN into outreach materials			
Northern Floodplain and Swamp Forests	Habitat Management	Work with forest landowners to implement the revised Habitat Management Guidelines for floodplain forests.	Logging and Wood Harvesting	moderate	new
Northern Floodplain and Swamp Forests	Habitat Management	Work with the Maine Forest Service and other partners to develop wood harvesting Habitat Management Guidelines for sensitive floodplain forest SGCN	Logging and Wood Harvesting	moderate	new
Northern Floodplain and Swamp Forests	Habitat Management	Support statewide invasive species education programs and monitoring and control of invasives in floodplain forests	Invasive Non-native-Alien Species-Diseases	moderate	on-going
Northern Floodplain and Swamp Forests	Policy	Provide financial and technical assistance to restore floodplain habitats at highest priority sites, including floodplains that protect critical infrastructure, provide habitat connectivity, and habitat for SGCN	Changes in Precipitation and Hydrological Regimes, Invasive Non-native-Alien Species-Diseases, Storms and Severe Weather	critical	on-going
Northern Floodplain and Swamp Forests	Policy	Reduce the amount of match needed for federally-funded floodplain forest conservation projects.	Annual and Perennial Non-timber crops, Commercial and Industrial Areas , Housing and	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
			Urban Areas, Logging and Wood Harvesting		
Northern Floodplain and Swamp Forests	Policy	Support and or develop incentives that promote keeping floodplain forest as floodplain forest.	Annual and Perennial Non-timber crops, Logging and Wood Harvesting	high	on-going
Northern Floodplain and Swamp Forests	Policy	Support habitat stewardship incentive programs by providing needed technical assistance for SGCN habitat management in floodplain forests, such as NRCS projects.	Annual and Perennial Non-timber crops, Logging and Wood Harvesting	high	on-going
Northern Floodplain and Swamp Forests	Policy	Work with partners to develop a state sponsored landowner incentive program for the good stewardship of floodplain forests	Annual and Perennial Non-timber crops, Housing and Urban Areas, Logging and Wood Harvesting	high	on-going
Northern Floodplain and Swamp Forests	Policy	Account for the negative impacts to SGCN habitats caused by deer in southern Maine floodplains when doing deer management planning.	Problematic Native Species-Diseases	moderate	on-going
Northern Floodplain and Swamp Forests	Policy	Find sources of non-federal match for federal programs offering riparian easements (e.g., USDA-Conservation Reserve Enhancement Program) especially for floodplain forests	Agricultural and Forestry Effluents, Annual and Perennial Non-timber crops, Logging and Wood Harvesting	moderate	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Northern Floodplain and Swamp Forests	Policy	Include buffers to floodplain forests when prioritizing conservation opportunities, incuding fee and easement land acquisition.	Agricultural and Forestry Effluents, Annual and Perennial Non-timber crops	moderate	on-going
Northern Floodplain and Swamp Forests	Public Outreach	Provide floodplain forest location information to landowners, municipalities, and land trusts, through programs such as the Beginning with Habitat Program	Annual and Perennial Non-timber crops, Commercial and Industrial Areas , Domestic and Urban Waste Water, Housing and Urban Areas, Industrial and Military Effluents, Logging and Wood Harvesting, Roads and Railroads, Utility and Service Lines	high	on-going
Northern Floodplain and Swamp Forests	Public Outreach	Develop outreach materials on the community benefits derived from floodplain forests, such as floodflow retention.	Commercial and Industrial Areas , Housing and Urban Areas	moderate	new
Northern Floodplain and Swamp Forests	Public Outreach	Map SGCN habitats within floodplains, such as MNAP's floodplain forest inventory.	Annual and Perennial Non-timber crops, Commercial and Industrial Areas , Housing and Urban Areas, Logging and Wood Harvesting, Roads and Railroads, Utility and Service Lines	moderate	on-going
Northern Floodplain	Survey and Monitoring	Do early detection and control of invasive plants in floodplain forests to prevent spread,	Invasive Non-native-Alien Species-Diseases	moderate	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
and Swamp Forests		including on public lands and with voluntary agreements from private landowners.			
Northern Peatlands	Habitat Management	Support restoration of historic peat mines.	Mining and Quarrying	high	new
Northern Peatlands	Policy	In review of development or water extraction projects, recommend minimizing activities that will alter the hydrology of peatlands.	Changes in Precipitation and Hydrological Regimes	high	on-going
Northern Upland Forests	Habitat Management	Support collection of seeds for plants threatened by non-native pests.	Invasive Non-native-Alien Species-Diseases	critical	new
Northern Upland Forests	Habitat Management	Support initiatives for cleaning harvest or road maintenance equipment between harvest/job sites.	Invasive Non-native-Alien Species-Diseases	critical	new
Northern Upland Forests	Habitat Management	Support management to accelerate or increase old growth structural characteristics.	Logging and Wood Harvesting	critical	new
Northern Upland Forests	Habitat Management	Support measures promoting ecological forestry in conservation easements.	Logging and Wood Harvesting	critical	new
Northern Upland Forests	Habitat Management	Work with forest landowners and managers to integrate SGCN habitat conservation actions into outcome-based forestry practices	Logging and Wood Harvesting	critical	new

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Northern Upland Forests	Habitat Management	Support ongoing forest pest monitoring and treatment programs.	Invasive Non-native-Alien Species-Diseases	critical	on-going
Northern Upland Forests	Habitat Management	Offer technical expertise to to landowners enrolled in third party sustainable forest certification systems for best management of forest habitats that benefit SGCN.	Logging and Wood Harvesting	critical	on-going
Northern Upland Forests	Habitat Management	Encourage conservation of northern forest and swamp habitats, especially late successional forests, including through fee and easement land acquisition, leases, and landowner outreach	Commercial and Industrial Areas , Housing and Urban Areas, Logging and Wood Harvesting, Roads and Railroads, Tourism and Recreational Areas, Utility and Service Lines	critical	on-going
Northern Upland Forests	Habitat Management	Support incentives for landowners to manage for the retention of SGCN habitat in forests and swamps statewide, such as SGCN habitat tax reduction.	Commercial and Industrial Areas , Logging and Wood Harvesting, Roads and Railroads, Tourism and Recreational Areas, Utility and Service Lines	critical	on-going
Northern Upland Forests	Habitat Management	Support incentives that promote carbon-sequestering silvicultural practices while not diminishing fiber supply to mills	Logging and Wood Harvesting	high	new
Northern Upland Forests	Habitat Management	Support initiatives that lead to retention of tree species impacted by invasive pests (i.e. alternatives to salvage).	Invasive Non-native-Alien Species-Diseases	high	new

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Northern Upland Forests	Habitat Management	Support retention of beech resistant to multiple impactful tree pests.	Invasive Non-native-Alien Species-Diseases	high	new
Northern Upland Forests	Habitat Management	Adopt climate-friendly forest management practices such as those recommended by the Northern Institute of Applied Climate Science	Habitat Shifting or Alteration	high	new
Northern Upland Forests	Habitat Management	Promote natural regeneration through retention of seed trees, placement and retention of coarse woody material, scarification and other measures.	Habitat Shifting or Alteration, Invasive Non-native-Alien Species-Diseases, Logging and Wood Harvesting	high	on-going
Northern Upland Forests	Habitat Management	Conduct surveys of SGCN species that may be impacted by aerial spraying or broad scale pesticide appications for budworm or other forest pests.	Invasive Non-native-Alien Species-Diseases, Problematic Native Species-Diseases	high	on-going
Northern Upland Forests	Habitat Management	Support/promote early detection and treatment of new invasive plant infestations along logging roads, culverts etc. Address invasive plants in forest management plans.	Invasive Non-native-Alien Species-Diseases	high	on-going
Northern Upland Forests	Habitat Management	Support use of locally sourced gravel used in woods roads and road stream crossings.	Invasive Non-native-Alien Species-Diseases	moderate	new
Northern Upland Forests	Policy	Provide incientives for forest management workforce development, essential for keeping forest as forest.	Other Threat	critical	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Northern Upland Forests	Policy	Support initiatives to attract low grade markets or other financial opportunities to keep forest as forest.	Logging and Wood Harvesting, Renewable Energy	critical	on-going
Northern Upland Forests	Policy	Provide support for the existing tree growth tax law which discourages the conversion of forest and swamp SGCN habitats to other non-forested land uses.	Commercial and Industrial Areas , Housing and Urban Areas, Logging and Wood Harvesting, Roads and Railroads, Utility and Service Lines	critical	on-going
Northern Upland Forests	Public Outreach	Continue outreach to recreational users on firewood movement.	Invasive Non-native-Alien Species-Diseases	critical	on-going
Northern Upland Forests	Public Outreach	Conduct outreach to private landowners and the public on the importance of terrestrial habitat connectivity and the impacts of roads on SGCN habitats, through programs such as Beginning with Habitat	Roads and Railroads	critical	on-going
Northern Upland Forests	Public Outreach	Provide outreach to the public on how a viable forest products industry is integral in keeping forest as forest.	Logging and Wood Harvesting	critical	on-going
Northern Upland Forests	Public Outreach	Support outreach about local wood markets which help keep forest as forest.	Housing and Urban Areas	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Northern Upland Forests	Public Outreach	Increase outreach to the public and landowners on the role of fire red pine forests, jack pine forests and black spruce barrens.	Fire and Fire Suppression, Habitat Shifting or Alteration	moderate	on-going
Northern Upland Forests	Public Outreach	Provide outreach to recreationalists on avoiding and reducing impacts to SGCN habitats in northern forest and swamp SGCN habitats	Recreational Activities, Tourism and Recreational Areas	moderate	on-going
Northern Upland Forests	Research	Continue research to better understand predicted impacts of climate change on northern forest and swamp SGCN habitats	Habitat Shifting or Alteration	critical	on-going
Northern Upland Forests	Survey and Monitoring	Assess conserved northern forests and swamps for climate change resiliency and use this information to help capture under-represented resilient settings in future conservation projects.	Habitat Shifting or Alteration	critical	on-going
Northern Upland Forests	Survey and Monitoring	Identify and conserve through a variety of voluntary approaches boreal forest refugia (associated with SGCN), including fee and easement land acquisition and landowner outreach	Habitat Shifting or Alteration	critical	on-going
Northern Upland Forests	Survey and Monitoring	Support the continuation of monitoring for invasive and problematic species and diseases in northern forest	Invasive Non-native-Alien Species-Diseases, Problematic Native Species-Diseases	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Northern Upland Forests	Survey and Monitoring	Continue the stewardship and habitat monitoring of conserved forest and swamp lands, such as ecological reserve management and monitoring.	Recreational Activities	high	on-going
Northern Upland Forests	Survey and Monitoring	Support the continuation of long-term monitoring of SGCN habitat condition and forest structure in northern forests and swamps through programs such as the annual Forest Inventory and Analysis, and MNAP's ecological reserve continuing forest inventory.	Commercial and Industrial Areas , Housing and Urban Areas, Logging and Wood Harvesting, Roads and Railroads, Utility and Service Lines	high	on-going
Northern Upland Forests	Survey and Monitoring	Assess impacts of browse pressure from moose and deer on SGCN species.	Problematic Native Species-Diseases	moderate	new
Quarries and Mines	Habitat Management	Limit recreational use of sites important to SGCN	Invasive Non-native-Alien Species-Diseases, Recreational Activities	critical	on-going
Quarries and Mines	Public Outreach	Provide signage indicating importance to SGCN species	Invasive Non-native-Alien Species-Diseases, Recreational Activities	moderate	on-going
Rocky Summits-Outcrops-Mountaintops	Policy	Site renewable energy development to avoid or minimize impacts to ecologically sensitive areas.		critical	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Rocky Summits-Outcrops-Mountaintops	Policy	Develop time of year or other access restrictions for cliffs within climbing or other recreational management plans on public lands, especially for cliffs providing SGCN habitat.	Recreational Activities	high	new
Rocky Summits-Outcrops-Mountaintops	Public Outreach	Provide outreach and education to recreationalists on avoiding and reducing impacts to SGCN habitats on rocky summits, outcrops, and open mountaintops	Recreational Activities	high	on-going
Rocky Summits-Outcrops-Mountaintops	Research	Continue research to better understand predicted impacts of climate change on rocky summits, outcrops, and mountaintop SGCN habitats, and identify possible mitigation strategies	Habitat Shifting or Alteration	critical	on-going
Rocky Summits-Outcrops-Mountaintops	Survey and Monitoring	Assess conserved lands, especially northern forests and swamps and rocky summits/outcrops/mountaintops, for climate change resiliency and use this information to guide future conservation efforts	Habitat Shifting or Alteration	critical	on-going
Rocky Summits-Outcrops-Mountaintops	Survey and Monitoring	Continue assessing SGCN habitats and monitoring relevant recreational and climate impacts on conserved rocky summit, outcrop, and open mountaintop sites.	Recreational Activities	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
South Central Upland Forests	Habitat Management	Support outreach about local wood markets as a tool to help keep forest as forest.	Housing and Urban Areas, Logging and Wood Harvesting	high	new
South Central Upland Forests	Policy	Incentivize renewable energy development in impacted habitats, such as contaminated fields, roadsides, and old landfills instead of forests and other natural areas	Renewable Energy	high	new
South Central Upland Forests	Public Outreach	Promote invasive plants being addressed in all forest management plans. Support initiatives for cleaning harvest or road maintenance equipment between harvest/job sites. Construction projects (roads,culverts) being revisited following growing season	Invasive Non-native-Alien Species-Diseases	critical	new
South Central Upland Forests	Public Outreach	Support transfer of ownership opportunities for landowners interested in sustainable forest management (farm link equivalent).	Housing and Urban Areas	moderate	new
South Central Upland Forests	Species Management	Minimize deer impacts to SGCN habitats in south-central forests through management, exclusion, or other means, to improve forest regeneration	Habitat Shifting or Alteration, Problematic Native Species-Diseases	critical	on-going
South-Central Floodplains and Swamps	Habitat Management	Identify lingering ash trees or stands on the landscape for potential biological resistance and application of EAB control measures.	Invasive Non-native-Alien Species-Diseases	critical	new

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
South-Central Floodplains and Swamps	Habitat Management	Support collection of ash seed and planting of diverse tree species in areas of high Emerald Ash Borer impact	Invasive Non-native-Alien Species-Diseases	critical	new
South-Central Floodplains and Swamps	Habitat Management	Support opportunities for Wabanaki land stewardship and cultural harvest to increase habitat resilience, responding to threats of climate change and invasive species.	Changes in Precipitation and Hydrological Regimes, Habitat Shifting or Alteration	critical	new
South-Central Floodplains and Swamps	Habitat Management	Provide financial and technical assistance to restore floodplain habitats at highest priority sites, including floodplains that protect critical infrastructure, provide habitat connectivity, and habitat for SGCN		critical	on-going
South-Central Floodplains and Swamps	Habitat Management	Provide landowner incentives for SGCN habitat management in forests and swamps statewide, such as NRCS or other government programs.	Commercial and Industrial Areas , Housing and Urban Areas, Roads and Railroads, Utility and Service Lines	critical	on-going
South-Central Floodplains and Swamps	Habitat Management	Work with partners to develop and distribute habitat management guidelines for south-central forests and swamp SGCN habitats	Commercial and Industrial Areas , Housing and Urban Areas, Logging and Wood Harvesting, Roads and Railroads, Utility and Service Lines	high	new
South-Central Floodplains and Swamps	Habitat Management	Identify and map SGCN habitats in forests and swamps, and provide information on these	Commercial and Industrial Areas , Housing and Urban Areas,	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
		features to the public through the Beginning With Habitat Program	Roads and Railroads, Utility and Service Lines		
South-Central Floodplains and Swamps	Habitat Management	Encourage conservation of south-central forest and swamp habitats using a variety of approaches, including fee and easement land acquisition, leases, and landowner outreach	Commercial and Industrial Areas , Housing and Urban Areas, Recreational Activities, Roads and Railroads, Utility and Service Lines	moderate	on-going
South-Central Floodplains and Swamps	Habitat Management	Work with partners to continue on-going invasive species eradication/early identification efforts in south central forest and swamp SGCN habitats	Invasive Non-native-Alien Species-Diseases	moderate	on-going
South-Central Floodplains and Swamps	Public Outreach	Increase outreach and education to landowners, municipal staff, town council/selectman, and the public on the effects of development (e.g., housing, roads, utility lines) on south-central forest and swamp SGCN habitats, such as through the Beginning with	Commercial and Industrial Areas , Housing and Urban Areas, Roads and Railroads, Utility and Service Lines	critical	on-going
South-Central Floodplains and Swamps	Public Outreach	Develop and provide outreach and location information for SGCN habitats in forests and swamps to land trusts, municipalities, and landowners, such as through programs including the Beginning with Habitat Program.	Commercial and Industrial Areas , Housing and Urban Areas, Roads and Railroads, Utility and Service Lines	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
South-Central Floodplains and Swamps	Public Outreach	Increase outreach to the public, landowners, and hunters and trappers on the impacts of over-abundant native species (e.g., deer) on south-central forest and swamp SGCN habitats.	Problematic Species-Diseases of Unknown Origin	high	on-going
South-Central Floodplains and Swamps	Public Outreach	Support placement of informational signs discouraging discarding of earthworm bait.	Invasive Non-native-Alien Species-Diseases	moderate	new
South-Central Floodplains and Swamps	Public Outreach	Provide spatial information and management guidance for invasive species management priorities to relevant landowners, towns, land trusts, etc., especially for south-central forest and swamp SGCN habitats, including providing support to MNAP's invasive pl	Invasive Non-native-Alien Species-Diseases	moderate	new
South-Central Floodplains and Swamps	Species Management	Increase deer hunting opportunities in order to reduce the impacts of these species on south-central forest and swamp SGCN habitats	Problematic Native Species-Diseases	critical	on-going
South-Central Floodplains and Swamps	Species Management	Account for deer impacts to SGCN habitats in south-central forests and swamps during the management planning process for these two species.	Problematic Native Species-Diseases	high	on-going
South-Central Floodplains and Swamps	Survey and Monitoring	Continue monitoring for invasive and problematic species and diseases in forests and swamps statewide.	Invasive Non-native-Alien Species-Diseases, Problematic Native Species-Diseases	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
South-Central Floodplains and Swamps	Survey and Monitoring	Undertake long-term monitoring of SGCN and their habitats in south-central forests and swamps, such as continuing forest inventory in ecological reserves, and inventory and monitoring on other public and private lands.	Commercial and Industrial Areas , Housing and Urban Areas, Roads and Railroads, Utility and Service Lines	high	on-going
South-Central Floodplains and Swamps	Survey and Monitoring	Conduct earthworm sampling to identify the distribution of different earthworm species and their impacts.	Invasive Non-native-Alien Species-Diseases	moderate	on-going
South-Central Floodplains and Swamps	Survey and Monitoring	Partner with state and local agencies to identify and map invasive plant targets for inventory or control, such as bridge or culver crossings, new road construction, or other disturbances.	Invasive Non-native-Alien Species-Diseases	moderate	on-going
Tree Plantations	Habitat Management	Support mixed species and mixed age class plantings to benefit SGCN.	Logging and Wood Harvesting	moderate	new
Tree Plantations	Public Outreach	Developing local sources for native seed to prevent disease and invasive species spread	Invasive Non-native-Alien Species-Diseases	moderate	new
Tree Plantations	Species Management	Support development of genetically diverse planting stock in tree nurseries.	Invasive Non-native-Alien Species-Diseases	moderate	new
Vernal Pools	Habitat Management	During review of development projects, recommend continuity of forest cover linking vernal pools with other wetlands and upland habitats.	Commercial and Industrial Areas , Housing and Urban Areas, Roads and Railroads	critical	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Vernal Pools	Habitat Management	Encourage conservation of high value vernal pool complexes using a variety of voluntary approaches through Beginning with Habitat, fee and easement acquisition, and Public Lands management	Commercial and Industrial Areas , Habitat Shifting or Alteration, Housing and Urban Areas, Logging and Wood Harvesting, Roads and Railroads, Utility and Service Lines	critical	on-going
Vernal Pools	Habitat Management	In collaboration with forestry community, update and implement vernal pool Habitat Management Guidelines	Logging and Wood Harvesting	high	on-going
Vernal Pools	Habitat Management	Identify ongoing opportunities/partnerships for invasive plant species management in vernal pools	Invasive Non-native-Alien Species-Diseases	moderate	new
Vernal Pools	Policy	Develop and implement vernal pool organism passage recommendations for new and existing road crossing structures	Roads and Railroads	critical	new
Vernal Pools	Policy	During review of development projects, recommend that locations of detention ponds should be sited far from vernal pools.	Problematic Native Species-Diseases	moderate	new
Vernal Pools	Public Outreach	With partners such as Maine Big Night, sponsor/support community big night activities, without causing detrimental effects to pools and populations of vernal pool species.	Housing and Urban Areas, Roads and Railroads	critical	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
Vernal Pools	Public Outreach	Clearly articulate the co-benefits of vernal pools (e.g., economic benefits, ecosystem services, and relation to game species) into vernal pool outreach messaging	Commercial and Industrial Areas, Housing and Urban Areas, Roads and Railroads, Utility and Service Lines	moderate	new
Vernal Pools	Public Outreach	Identify problematic road crossing connectivity areas for vernal pool obligate species.	Commercial and Industrial Areas, Habitat Shifting or Alteration, Housing and Urban Areas, Roads and Railroads, Utility and Service Lines	moderate	on-going
Vernal Pools	Research	Research vernal pool remote sensing techniques and field verify on public lands	Commercial and Industrial Areas, Habitat Shifting or Alteration, Housing and Urban Areas, Logging and Wood Harvesting, Roads and Railroads, Utility and Service Lines	high	completed
Vernal Pools	Research	Identify and map locations of vernal pools, vernal pool hotspots and important upland habitat for vernal pool SGCN.	Commercial and Industrial Areas, Habitat Shifting or Alteration, Logging and Wood Harvesting, Roads and Railroads	high	new
Vernal Pools	Research	Identify gaps in our understanding of vernal pool taxa ecosystem requirements; implement research strategies to address these gaps	Changes in Geochemical Regimes, Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Commercial and Industrial Areas, Habitat Shifting or	high	on-going

Habitat Group	Action Category	Conservation Action Description	Threats Addressed*	Biological Priority	Action Type
			Alteration, Housing and Urban Areas, Roads and Railroads, Utility and Service Lines		
Vernal Pools	Research	Research likely climate change impacts to high value vernal pools and provide habitat management and land use recommendations on reducing negative impacts to land managers and landowners	Changes in Geochemical Regimes, Changes in Precipitation and Hydrological Regimes, Changes in Temperature Regimes, Habitat Shifting or Alteration	moderate	new
Vernal Pools	Research	Research the effects of invasive species on vernal pool organisms and hydrology and provide results as management and land use recommendations to land managers and landowners through Beginning with Habitat and other programs	Invasive Non-native-Alien Species-Diseases, Roads and Railroads	moderate	new

Appendix Table 4- 17 Crosswalk developed to connect the 2025 Wildlife Action Plan conservation actions to the priority actions identified in the Maine Won't Wait climate action plan.

Alignment of Actions in the 2024 Maine Won't Wait Climate Action Plan with the 2025 SWAP Revision					
MWW Strategy	**MWW Sub-strategy**		**MWW Recommended Action**	**Connections with SWAP Conservation Actions**	**MWW Page Reference**
E: Protect the Environment and Natural and Working Lands and Waters in Maine	E.1	Increase the total acreage of conserved natural and working lands in the state to 30 percent by 2030	Focus land conservation on areas that are richly biodiverse, connect to other conserved areas, have high potential to draw back and store carbon, are culturally and economically important, and that expand equitable access and use for underserved communities.	Landscape level actions; BwH related statewide mapping and outreach actions; efforts to expand forest, stream, and lake monitoring, and assess resilience of conserved lands to identify conservation gaps	MWW 2024, page 109
			Restore and increase the resilience of coastal, marine, and inland habitats, prioritizing areas that connect to already conserved lands and waters, promote ecosystem connectivity and health, and allow for upland migration of saltwater marshes as sea levels rise.	Numerous conservation actions related to marsh connectivity and conservation; inland and coastal culverts/aquatic connectivity; continued mapping and outreach efforts to promote connectivity and conservation of habitats statewide	MWW 2024, page 109
			Expand public and private capacity to support conservation acquisition and stewardship.	SWAP helps public and private partners statewide with prioritization and identification of implementation actions for habitat conservation and stewardship	MWW 2024, page 109
	E.5	Support farming, forestry, and fisheries industries in Maine in adapting to climate change	Promote stewardship of ecosystems that support innovative markets that are resilient to climate change, and grow opportunities in fisheries, aquaculture, forest products, and agriculture.	Expanded monitoring of intertidal and subtidal habitats, grassland/agricultural practices, pilot studies on adaptation measures, outreach to harvesters and landowners about stewardship	MWW 2024, page 121

Alignment of Actions in the 2024 Maine Won't Wait Climate Action Plan with the 2025 SWAP Revision					
MWW Strategy	**MWW Sub-strategy**		**MWW Recommended Action**	**Connections with SWAP Conservation Actions**	**MWW Page Reference**
	E.6	Better monitor inland and coastal and marine ecosystems to increase resilience	Improve tracking and decision-making by creating new monitoring programs to fill data gaps, including capturing changes occurring in ecosystems and the effects of extreme weather events on people and natural resources.	Expanded monitoring efforts of environmental variables across many habitats; updated vulnerability assessment; assessment of cold water refugia and conserved lands resilience; continued support for long term monitoring across ecosystems such as with the Ecological Reserves and salt marsh sentinel site monitoring, and identification of avenues for summarizing and distributing results to inform conservation and management planning	MWW 2024, page 122
			Increase technical assistance and capacity to provide guidance on climate solutions to communities and natural resources industries, including through nature-based solutions.	Outreach and technical assistance related to Stream Smart, BwH Focus Areas, nature-based solutions, riparian buffers and shoreland stabilization practices.	MWW 2024, page 122
F: Build Healthy and Resilient Communities	F.2	Improve Maine's preparation for and recovery from natural disasters	Support planning and decision-making that reduces exposure to natural hazards and climate vulnerabilities.	Mapping and outreach initiatives re: inland and coastal culverts; statewide mapping and outreach re: undeveloped habitat, terrestrial and aquatic connectivity; nature-based solutions and shoreland stabilization practices	MWW 2024, page 132
	F.8	Promote and incentivize land use strategies that help communities avoid future transportation emissions, conserve natural and working lands, create affordable	Expand capacity at the state, regional, and local level to provide technical expertise to support communities in effective land use planning. Utilize the new Maine Office of Community Affairs to help communities align local land use policies with state priorities, including housing and climate goals.	Outreach and technical assistance related to Stream Smart, BwH Focus Areas, nature-based solutions, riparian buffers and shoreland stabilization practices.	MWW 2024, page 147

Alignment of Actions in the 2024 Maine Won't Wait Climate Action Plan with the 2025 SWAP Revision					
MWW Strategy	**MWW Sub-strategy**		**MWW Recommended Action**	**Connections with SWAP Conservation Actions**	**MWW Page Reference**
		housing, and meet the state's clean energy goals	Avoid growth in areas at risk of flooding, sea-level rise, storm surge, or other climate-affected hazards. Provide support for local planning processes that protect sensitive natural areas and habitats to ensure Maine's natural systems remain healthy and resilient.	Outreach and technical assistance related to Stream Smart, BwH Focus Areas, nature-based solutions, tidal marshes, riparian buffers and shoreland stabilization practices.	MWW 2024, page 147
			Support state and regional tools and resources that provide accurate and detailed data to support planning and inform decision-making; for example, high-resolution data for conservation, land use types, and demographic information or data about economic and community benefits to inform siting decisions.	Landscape level actions; BwH related statewide mapping and outreach actions; outreach and planning assistance re: resilience to storms and flooding via Stream Smart, culverts/aquatic connectivity, Coast Wise, and identification of marsh migration corridors	MWW 2024, page 147
G: Engage with Maine People on Climate Action	G.2	Broaden climate and energy education and outreach to individuals, businesses, local governments, and nonprofit organizations	Raise public awareness and understanding about climate change in Maine, the state's climate actions, and climate-related programs and opportunities.	Throughout SWAP revision process, updated SWAP narrative, and implementation actions	MWW 2024, page 160
			Build a network of trusted partners that can help relay key messages about climate impacts and opportunities, including municipal and tribal governments, community organizations, and other engaged groups.	Throughout SWAP revision process, updated SWAP narrative, and implementation actions	MWW 2024, page 160

Appendix Table 4- 18 Primary and secondary threats to Maine's habitats and conservation actions associated with climate change.

Habitat Group	Primary Threats	Secondary Threats	Conservation Actions
Freshwater Aquatic Habitats	• Changes in Precipitation and Hydrological Regimes • Changes in Temperature Regimes • Invasive Nonnative – Alien Species – Diseases • Lack of Knowledge	• Habitat Shifting or Alteration	• Improve enforcement of existing laws related to the transport of invasive species by boats, anglers, and through the pet trade • Conduct statewide/watershed scale connectivity planning • Conduct research on the economic impact of invasive species, mitigation strategies, and containment strategies in aquatic ecosystems • Construct crossings to pass storm flows and ensure enduring aquatic SGCN organism passage
Marine and Coastal Habitats	• Changes in Precipitation and Hydrological Regimes • Changes in Temperature Regimes • Changes in Geochemical Regimes • Habitat Shifting or Alteration	• Invasive Nonnative – Alien Species – Diseases • Lack of Knowledge	• Encourage partnership projects among transportation agencies, utility companies, etc. to facilitate fish passage and maintain connectivity in or near subtidal, intertidal, and tidal marsh habitats especially in cases where structures have different purposes • Develop better understanding of climate change effects on intertidal and subtidal SGCN and ecosystem interactions • Research and identify management actions that may minimize impacts to coastal SGCN habitats from climate change • Update permit requirements for new and retrofitted developments in, near,

Habitat Group	Primary Threats	Secondary Threats	Conservation Actions
			or adjacent to intertidal habitats with up-to-date data/models of climate predictions • Conserve lands that are upland and inland of marshes to allow for marsh migration and maintain habitat connectivity
Terrestrial and Freshwater Wetland Habitats	• Changes in Temperature Regimes • Habitat Shifting or Alteration • Housing and Urban Areas • Invasive Nonnative – Alien Species – Diseases • Logging and Wood Harvesting	• Changes in Precipitation and Hydrological Regimes • Lack of Knowledge	• Assess conserved northern forests and swamps and other habitat types for climate change resiliency and use this information to help capture under-represented resilient settings in future conservation projects • Target invasive plant species control at high value wetlands on public and other conservation lands and address other invasive plants and pests through early detection and rapid response • NEW: Adopt more climate-friendly forest management practices
Landscape	• Invasive Non-native-Alien Species-Diseases • Habitat Shifting or Alteration		• Collaborate with regional partners to track and monitor invasive species coming into Maine using early detection and rapid response. Target invasive plant species control at boat launches and other high traffic waterways, high value forests, wetlands, and SGCN habitats – especially on public and other conservation lands. • Integrate aquatic habitat connectivity into BwH focus areas and other landscape connectivity mapping initiatives

Habitat Group	Primary Threats	Secondary Threats	Conservation Actions
			• Assess currently conserved lands for climate change resiliency and use this information to help inform future conservation projects to protect under-represented, resilient habitats • Conduct an updated climate change vulnerability assessment of habitat groups in Maine • Continue and expand long-term monitoring stations for air and water quality, snowpack, and weather data, to better assess climate change impacts at statewide and regional scales. • Incorporate information from regional climate change vulnerability assessments into SGCN and habitat management plans • Collaborate with regional partners to track and monitor invasive species coming into Maine