



MAINE'S WILDLIFE ACTION PLAN

Prepared by

Maine Department of Inland Fisheries Wildlife



in collaboration with

**Maine's Conservation Partners
September 2015**



MAINE DEPARTMENT OF INLAND FISHERIES AND WILDLIFE

The Department of Inland Fisheries and Wildlife is established to preserve, protect and enhance the inland fisheries and wildlife resources of the State; encourage the wise use of these resources; ensure coordinated planning for the future use and preservation of these resources, and provide for effective management of these resources.

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COVER PHOTO CREDITS

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Brook Trout (*Salvelinus fontinalis*, SGCN Priority 3 + Maine "heritage" species) - © Merry Gallagher, Maine Department of Inland Fisheries and Wildlife

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2015 Maine Wildlife Action Plan Steering Committee

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Members of the Coordination Team served as the principle authors of the Action Plan, taking on the daunting task of filling in the details and share ultimate responsibility for its content. We greatly appreciate their contributions.

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Foreword

It is difficult to believe that it has been 10 years since Maine's first Wildlife Action Plan was written. Initiated in 2001, the State Wildlife Grants Program allocated funds to states that have an approved Plan. These funds, matched by state dollars, provide ongoing support for monitoring, research, management, and habitat protection for Species of Greatest Conservation Need (SGCN), many of which are species of special concern or threatened and endangered. Most of these species lack financial support except through special programs, such as the Federal Endangered Species Act, or state programs such as the Chickadee Check-Off or the Loon Plate, both of which are unpredictable and declining sources of revenue.

Maine contains a wealth of ecosystems from the spruce forests of the north to vast coastal areas; from high mountains to thousands of lakes, ponds, and streams. This diversity of ecosystems supports thousands of associated species. It is the wealth of this diversity and its conservation that this plan addresses in detail.

The climate gradient in Maine, spanning four degrees of latitude, is equal to that extending from Poland to northern Finland, a distance covering 20 degrees of latitude; it is no wonder that we are blessed with such a diversity of species. Numerous species, such as the New England Cottontail, reach their northern range limit in central or southern Maine, while others, such as the Canada Lynx, are restricted to northern Maine.

The leadership of the Maine Department of Inland Fisheries and Wildlife (MDIFW) and its Steering Committee in developing this Plan has been superb. Their ability to bring together scores of participants ranging from state and federal agencies, Native Americans, and a wide diversity of NGOs, testifies to their leadership and the importance of this Plan. The Steering Committee, representing a wide spectrum of interests, contributed countless hours to the success of the Plan and their advisory role should be continued officially throughout the life of the Plan. Their help in guiding priorities, considering emerging issues, and developing partnerships will be essential over the next 10 years.

The 2005 Plan was a giant step in guiding actions to understand and conserve a plethora of species that were poorly understood or lacked funding for effective conservation. It chartered a greatly expanded area of responsibility and action for MDIFW. Citizen scientists participated in numerous statewide surveys covering everything from butterflies and herons to freshwater mussels. Many of these volunteers are state and national experts and the data are excellent. As a result of this information, specific conservation actions are in place for these species and their habitats. The 2005 Plan also highlighted the Beginning with Habitat (BwH) initiative, which is a voluntary, non-regulatory program. More than 100 towns and NGO's have used BwH data compiled by MDIFW and the Maine Natural Areas Program to prioritize and conserve important habitats containing rare ecosystems and associated SGCN. These efforts are concentrated in southern and central regions and have been highly successful.

The 2015 Plan builds on the achievements of the earlier Plan but is much more comprehensive; the number of SGCN species almost doubles in the current Plan. This is partly due to the excellent survey and monitoring that occurred over the past 10 years providing MDIFW with a greater understanding of the status of many poorly understood species. However, the greatest number of new species occurs in marine or estuarine habitats poorly documented in the 2005

Plan. The Maine Department of Marine Resources has statutory responsibility for all marine and estuarine species, including migratory fish. Their participation in the 2005 Plan was limited; however, they have been an integral part of the team developing the current Plan and have provided a wealth of information and conservation needs on numerous poorly known species.

Based on vulnerability, a total of 58 species are designated of highest priority. Timely conservation measures presented in the Plan can avoid further declines in these and other species. The Plan is easy to follow. To check on a species' status, simply click on it in Table 1-3 and all of the data are available, including qualification criteria, habitat associations, stressors, conservation actions, and range maps. The detail is amazing and represents a quantum leap in our understanding of many species. The Plan emphasizes habitat stressors as well as stressors to individual SGCN. In doing this, groups of species and guilds are incorporated into the conservation actions. Although plants are not dealt with individually, conservation actions dealing with habitats and ecosystems will include many of the state's rare plant species.

Finally, there is the issue of funding the key components of this Plan. Currently, there is no long term, predictable funding at the state or federal level that parallels the Federal Aid Programs for harvested species. The Association of Fish and Wildlife Agencies has formed a Blue Ribbon Committee on Sustaining America's Diverse Fish and Wildlife Resources under their Teaming With Wildlife theme to address this important issue. Their success in this effort will influence greatly the ability of Maine and other states to conserve the vast majority of species under their jurisdiction. All of us will need to support this in the future.

In summary, Maine's 2015 Wildlife Action Plan is a tribute to all of the conservation partners and their extraordinary efforts to gather the vast quantities of data on many rare or poorly known species, and chart a path for their conservation. The Plan is exhaustive, well presented, and easy to follow and will guide the state for years to come.

Congratulations are due to everyone who made this Plan a reality.

Ray "Bucky" Owen
Professor Emeritus, University of Maine, Orono
Commissioner, Maine Dept. of Inland Fisheries and Wildlife, 1993-1997

Introduction

WELCOME TO MAINE

Located at the northeast tip of the United States, Maine is a relatively large and very rural state by eastern standards. It spans 320 miles from north-to-south and 210 miles east-to-west at its full extent. Maine lies halfway between the equator and the North Pole. It is the only state in the continental U.S. more connected to Canada than its border with other states. The total area (33,315 square miles) nearly equals that of the other four New England states combined. The 2013 U.S. census reported a human population of only 1.33 million in Maine, or 43 people per square mile: the lowest population density in the East.



Tumbledown Mountain Maine.
© Phillip deMaynadier

Maine is a land rich in contrasts between the boreal and temperate, freshwater and saltwater, upland and wetland, and alpine and lowlands. The predominant feature across this diverse landscape is 17.5 million acres of forests that cover 89% of Maine's land area. Woodlands are interspersed with rugged mountains; more than 5,600 lakes and ponds; 5,000,000 acres of wetlands; 31,800 miles of rivers and streams; 4,100 miles of coastline; and 4,613 coastal islands and ledges (Brandes 2001, Gawler et al. 1996). Maine is the most heavily forested state in the nation, but also boasts some of the most significant grassland and agricultural lands in New England.

This mosaic of diverse physical settings supports a wide diversity of wildlife. Islands in the Gulf of Maine showcase one of the most unique blends of seabird nesting colonies along the East Coast, including rare species such as Roseate and Arctic Terns, Atlantic Puffin, and Razorbill. Maine's relatively clean, free-flowing rivers sustain some of the best remaining populations of rare freshwater mussels and dragonflies in the East; host globally rare endemics, such as the Tomah Mayfly and Roaring Brook Mayfly; and support a distinct population segment of the federally Endangered Atlantic Salmon. Maine's mountains and forested habitats host a significant portion of the global breeding habitat of neotropical migrant birds such as the Bicknell's Thrush and Black-throated Blue Warbler. The state has some of the best examples of Pitch Pine-Scrub Oak forest remaining in New England, which host a suite of globally rare plants and invertebrates.

Maine is in an ecological transition zone, and its wildlife resources are a convergence of species that are at or approaching the northern or southern limit of their ranges. The species most familiar to us – birds (423 species), non-marine mammals (61 species), reptiles (17 species), amphibians (18 species), inland fish (39 species), and marine species (>280 fishes, mammals, and other chordates) – actually comprise less than two percent of the known wildlife species in the state. Experts have documented over 15,000 species of invertebrates, 2,100 species of plants, 310 species of phytoplankton, 271 species of macrophytes, and 3,500 species of fungi,

but they believe many times these numbers actually exist (McCollough et al. 2003, D. Gilbert pers. comm.). This array of flora and fauna is particularly impressive when one considers that only a handful of species were present just 15,000 years ago when a mile-high sheet of ice covered the state.

Fish and wildlife play an important role in the lives of Maine people as they provide a source of enjoyment, recreation, and employment. Maine's quality of life, its traditional "outdoor" values, and its economy, particularly its rural economy, are strongly shaped by the diversity and abundance of its fish and wildlife. The Maine Department of Inland Fisheries and Wildlife (MDIFW) and the Maine Department of Marine Resources (MDMR) are the state agencies in which the public has entrusted its concern for Maine's fish and wildlife.



Birch Point State Park, Maine. © Mark Stadler

STATE AUTHORITY FOR WILDLIFE AND FISHERIES MANAGEMENT

The Maine Department of Inland Fisheries and Wildlife (MDIFW) is responsible for the stewardship of Maine's inland fisheries and wildlife resources. MDIFW conducts its management programs under the guidance of the legislature's Joint Standing Committee on Inland Fisheries and Wildlife and with the advice and consent of the Fish and Wildlife Advisory Council: a ten-member citizen's advisory group whose members are appointed by the governor and subject to legislative confirmation. MDIFW partners with the U.S. Fish and Wildlife Service (USFWS) for management of 'federal trust species:' notably migratory birds, federally-listed Endangered or Threatened (E/T) species, and species that are candidates for E/T listing.



Maine has had laws protecting its fish and wildlife since 1830. This early enforcement effort was the birth of the MDIFW (then Department of Inland Fisheries and Game). Although MDIFW's mission has always included protection of species not pursued for food or sport, there has been a continual shift in its focus from that of a state agency concerned mostly with the administration of laws dealing with hunting and fishing to one with considerable responsibility for the conservation and enhancement of all the inland fisheries and wildlife resources of the state.

During the 1970s, the Maine Legislature broadened the MDIFW mission. It enacted laws pertaining to E/T species and nongame wildlife, which clearly established that MDIFW had the authority to protect, maintain, and enhance all fish and wildlife species in the state, as well as their habitat. To reflect this, the legislature changed the name of the Department from 'Inland Fisheries and Game' to 'Inland Fisheries and Wildlife.' Beginning in the 1990s, MDIFW mainstreamed nongame responsibilities throughout its Bureau of Resource Management and these are now widely integrated throughout MDIFW's work program.

The Maine Department of Marine Resources (MDMR) functions to conserve and manage marine and estuarine resources; to conduct and sponsor scientific research; to promote and develop Maine's coastal fishing industries; to advise and cooperate with local, state, and federal officials concerning activities in coastal waters; and to implement, administer, and enforce the laws and regulations necessary for these purposes. It is responsible for the management of Maine's marine resources from the high-water mark out to three nautical miles from the outermost islands lying offshore in the Gulf of Maine.



Rockport Harbor, Maine. © Mark Stadler

Management responsibilities follow guidance from the state legislature and the MDMR Advisory Council: 15 representatives from coastal fishing industries who are appointed by the governor and subject to legislative confirmation. The legislature directs development of state policy, and through the Joint Standing Committee on Marine Resources, oversees legislation regarding the conservation and development of marine resources. MDMR partners with the National Marine Fisheries Service for management of 'federal trust' fauna: inter-jurisdictional fish, marine mammals, and other species of concern including federally listed E/T species.

THE STATE WILDLIFE GRANT PROGRAM

As the responsibilities of MDIFW have evolved over time so has the method of funding fish and wildlife conservation and management activities. Like other state fish and wildlife agencies, MDIFW programs rely heavily on federal aid distributed to states as established by the Wildlife Restoration (Pittman - Robertson) Act enacted in 1937 and the Sport Fish Restoration (Dingell - Johnson) Act passed in 1950. These funds are derived from federal excise taxes on firearms, ammunition, fishing equipment and tackle. The USFWS Wildlife and Sport Fisheries Restoration program is critical to state agency partners and the conservation of game fish and wildlife species. A traditional emphasis on habitat management has provided numerous secondary benefits to nongame species as well. Federal funding for E/T species are administered under Section 6 of the Endangered Species Act (ESA): often strategic, but funds are limited.

MDMR has fulfilled its charge to conserve and manage marine and estuarine resources and to conduct and sponsor scientific research with the support of funding sources that have also changed over the years. Since 1984, MDMR has complete projects supported by USFWS Wildlife and Sport Fish Restoration funds (Wallop - Breaux Amendment). With the Federal ESA listing of some marine species, MDMR has conducted work with the aid of National Oceanic and Atmospheric Administration Species Recovery Grants to States (ESA, Section 6). Past programs, like the Species of Concern Grant Program, enabled the MDMR to advance research of non-listed species such as Rainbow Smelt. These opportunities have provided the necessary funds for the agency to complete work on non-commercial species; however, work focusing on many species of conservation need have not been eligible for these programs as they are not federally listed or do not support recreational fisheries.



At the state level, it is clear that stable and secure financial support for nongame and E/T wildlife and fish has not developed for MDIFW or MDMR. The legislature established a voluntary income tax donation 'Chickadee Check-off' in 1984 followed by a conservation registration 'Loon

Plate' (1995) and then a 'Sportsman's Plate' (2007) for vehicles as initial sources for program funding. These and other charitable contributions generate >90% of state funds for MDIFW nongame programs and are held in trust as the 'Endangered and Nongame Wildlife Fund'. Profits from a special lottery ticket 'Maine Outdoor Heritage Fund' help support new projects by state resource agencies via a competitive grants program. After 31 years, all state funds reliant on donations have declined, programs for nongame species operate via triage, and the number of E/T species continues to rise.

Recognizing this broad need, Congress created the State Wildlife Grant Program (SWG) in 2002 to help state and tribal resource agencies address conservation for fish and wildlife deemed to be 'Species of Greatest Conservation Need' (SGCN). SWG funds are appropriated annually by Congress and allocated to states by a formula that takes into account each state's size and population.

"Action Plans provide a foundation for the future of wildlife conservation and a stimulus to engage states and federal agencies and other conservation partners to think strategically about their individual and coordinated roles in prioritizing and accomplishing conservation actions."

To be eligible to participate in the SWG program, Congress required all states and territories to develop a statewide Comprehensive Wildlife Conservation Strategy (CWCS), now formally known as a State Wildlife Action Plan (SWAP). Action Plans provide a foundation for the future of wildlife conservation and a stimulus to engage states and federal agencies and other conservation partners to think strategically about their individual and coordinated roles in prioritizing and accomplishing conservation actions. In 2005, states and territories submitted their first round of plans to the U.S. Fish and Wildlife Service (USFWS) for review. Maine's CWCS

(<http://www.maine.gov/ifw/wildlife/reports/wap.html>) was approved as submitted and remains a valuable, comprehensive review.

SWG funds apportioned to Maine totaled \$7.6 million during 2001-2014. Projects undertaken with SWG funds (MDIFW 2014) have addressed many SGCN, all geographic areas of the state, and have ranged in scale from ecosystems to subspecies. Projects have varied in length from one to five years. They include baseline surveys and inventories, research, management, and habitat conservation. SWG funds also help support 10 full-time biologist positions. The SWG program has significantly advanced the conservation of Maine's SGCN and continues to play a critical role in minimizing reliance on E/T listings.

THE VALUE OF MAINE'S WILDLIFE ACTION PLAN

Early successes from the first generation of state Action Plans are widely chronicled (Association of Fish and Wildlife Agencies 2011, Cook et al. 2008). A summary of accomplishments from Maine's 2005 plan (MDIFW 2014) reveals the wide array of conservation

benefits for SGCN: population management, habitat management, research, surveys/monitoring, and outreach. Many ongoing efforts and most new initiatives during the past ten years were enhanced or enabled by SWG funding administered by MDIFW as outlined in the 2005 Plan.

This 2015 Action Plan reflects greater expectations for prioritization, performance monitoring, efficiencies, and overall collaboration with conservation partners (Heinz Center 2008, Lauber et al. 2009, Wilkinson et al. 2009). The full document itself is reduced by 70% in length from our 2005 CWCS, but provides a pathway to detailed reports on 378 SGCN, 42 macrogroups, and 38 stressors evaluated in the 2015 Plan. These linked reports are generated by a database. Thus, their content is not static and can be updated periodically during the ten-year horizon of this Plan.

The value of Maine's 2015 Wildlife Action Plan extends far beyond the requirements of the State Wildlife Grant program and beyond the missions of both MDIFW and MDMR. It is an opportunity and challenge for both agencies and their conservation partners to provide effective and visionary leadership in the conservation of all the state's wildlife. Maine's Action Plan is intended to supplement, not duplicate, existing fish and wildlife programs and to target species in greatest need of conservation - species that are indicative of the diversity and health of wildlife in the state - while keeping "common species common."

The Plan addresses the full array of vulnerable wildlife and their habitats in Maine: vertebrates and invertebrates in both terrestrial and aquatic habitats. Maine law defines 'wildlife' as any species of wild, free-ranging fauna including fish and invertebrates that are absent from the jurisdiction for some state agencies. The Plan builds on a long history of public involvement and collaboration among conservation partners. It is meant to be dynamic, responsive, and adaptive. Hence, Maine's Action Plan serves as a solid foundation for the future of wildlife conservation that will help guide the collaborative efforts of state and federal agencies, tribes, conservation partners, and individuals to ensure success.

Maine's conservation partners developed the Wildlife Action Plan through a lengthy participatory process that included the general public. The Plan is non-regulatory. The suite of voluntary species and habitat conservation actions in the Plan complement, but do not compete with, existing work programs and priorities of state agencies and their partners. Indeed, conservation actions will in most cases supplement existing efforts and inspire new initiatives on behalf of Maine' SGCN.

ROADMAP TO THE PLAN'S EIGHT ELEMENTS

Congress identified eight required elements to be addressed in each state's SWAP (Teaming with Wildlife Committee 2003). Congress also directed that strategies identify and focus on "species of greatest conservation need," yet address the "full array of wildlife" and wildlife-related issues, helping to keep common species common. Wildlife Action Plans must address these eight elements:

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

2. Descriptions of locations and relative condition of key habitats and community types essential to conservation of species identified in (1);
3. Descriptions of problems that may adversely affect species identified in (1) or their habitats, and priority research and survey efforts needed to identify factors that may assist in restoration and improved conservation of these species and habitats;
4. Descriptions of conservation actions proposed to conserve the identified species and habitats and priorities for implementing such actions;
5. Proposed plans for monitoring species identified in (1) and their habitats, for monitoring the effectiveness of the conservation actions proposed in (4), and for adapting these conservation actions to respond appropriately to new information or changing conditions;
6. Descriptions of procedures to review the strategy at intervals not to exceed 10 years;
7. Plans for coordinating the development, implementation, review, and revision of the plan with federal, state, and local agencies and Indian tribes that manage significant land and water areas within the state or administer programs that significantly affect the conservation of identified species and habitats; and
8. Provide an opportunity for public participation in the development of the Wildlife Action Plan.

The founding legislation and subsequent guidance emphasize that broad public participation is an essential element of developing and implementing these plans.

MDIFW led the effort to develop Maine's 2015 Action Plan. The Plan creates a vision for conserving the state's wildlife, and it is much more than an agency plan because of broad participation by dozens of Maine's conservation partners. While each state's strategy will reflect a different set of issues, management needs, and priorities, states are working together to ensure nationwide consistency and a common focus (AFWA 2012, Crisfield et al. 2013).

To facilitate development of Maine's revised Action Plan, MDIFW and partners addressed Elements 1, 2, 3, and 4 in unique chapters. We combined Elements 5 and 6 into a single chapter because of the considerable overlap of monitoring and adaptive management inherent in each. Similarly, we have combined elements 7 and 8 as a single chapter reflecting their mutual emphasis on collaboration and public involvement.

KEY TO ACRONYMS

CWCS	Comprehensive Wildlife Conservation Strategy
ESA	Endangered Species Act
E/T	Endangered and/or Threatened Species
MDIFW	Maine Dept. of Inland Fisheries and Wildlife
MDMR	Maine Dept. of Marine Resources
SGCN	Species of Greatest Conservation Need
SWAP	State Wildlife Action Plan
SWG	State Wildlife Grants (Program)
USFWS	U.S Fish and Wildlife Service

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Executive Summary

INTRODUCTION

Located at the northeast tip of the United States, the State of Maine is approximately 320 miles long and 210 miles wide. It is almost as large (33,315 square miles) as all other New England states combined. Maine is a land rich in contrasts between the boreal and temperate, freshwater and saltwater, upland and wetland, and alpine and lowlands. Maine is a transition area, and its wildlife resources represent a blending of species that are at or approaching the northern or southern limit of their ranges. This mosaic of diverse physical settings supports a wide diversity of wildlife that few other states can equal.

Fish and wildlife play an important role in the lives of Maine people as they provide a source of enjoyment, recreation, and employment -- Maine's quality of life, its traditional "outdoor" values, and its economy, particularly its rural economy, are strongly shaped by the diversity and abundance of its fish and wildlife. The public has entrusted the conservation of Maine's fish and wildlife to the Maine Dept. of Inland Fisheries and Wildlife (MDIFW) and the Maine Dept. of Marine Resources (MDMR).

*Road Map to the
Eight Required Elements*

To facilitate review of Maine's Action Plan, separate chapters address each of the eight required elements.

Elements 1, 2, 3, and 4 each have a unique chapter; we have combined elements 5 and 6 and also 7 and 8 into a single chapter because of their close relationships. Each chapter also addresses differences from Maine's 2005 Comprehensive Wildlife Conservation Strategy.

Maine's 2015 Wildlife Action Plan addresses the full array of wildlife and their habitats in Maine -- vertebrates and invertebrates in terrestrial and aquatic (freshwater, estuarine, and marine) habitats -- and wildlife is defined as any species of wild, free-ranging fauna including fish. It builds on a long history of public involvement and collaboration among conservation partners. The Plan is dynamic, responsive, and adaptive. Hence, Maine's Action Plan serves as a solid foundation for the future of wildlife conservation that will help guide the collaborative efforts of state and federal agencies, tribes, conservation partners, and individuals to ensure success.

The Wildlife Action Plan was developed through a lengthy participatory process with state agencies, targeted conservation partners, and the general public. The Plan is non-regulatory. The suite of voluntary species and habitat scale conservation actions in the Plan complement, but do not compete with, existing work programs and priorities by state agencies and partners. Indeed, conservation actions will in most cases not replace current management strategies, but hopefully supplement existing efforts and inspire new initiatives on behalf of Maine's Species of Greatest Conservation Need.

ELEMENT 1: SPECIES OF GREATEST CONSERVATION NEED

A critical dilemma facing conservation biologists and managers worldwide is the need to allocate limited dollars, staff, and programmatic resources toward a growing list of conservation challenges. Foundational to this prioritization process in Maine's State Wildlife Action Plan is the development of a list of Species of Greatest Conservation Need (SGCN). Biologists from Maine Department of Inland Fisheries and Wildlife (MDIFW) and other state agencies, with cooperation from conservation partners and species experts, developed a suite of objective criteria for designating SGCN that is intended to be transparent and science-based, and recognizes that species conservation concerns can be identified at global, regional, and local scales. The primary themes for SGCN prioritization include risk of extirpation, population trend, endemism, and regional conservation concerns. Secondary themes for SGCN prioritization include climate change vulnerability, survey knowledge, and indigenous cultural significance.

Maine's 2005 list of SGCN totaled 213 species grouped into two priority levels. To help further advance the challenge of species prioritization, Maine's 2015 list of 378 SGCN are assigned to three species priority levels: Priority 1 (Highest; 58 SGCN), Priority 2 (High; 131 SGCN), and Priority 3 (Moderate; 189 SGCN), all of which are eligible for State Wildlife Grant (SWG) assistance from the U.S. Fish and Wildlife Service. The 2015 process for reviewing and identifying Maine SGCN included both species deletions (33) and additions (198) to the 2005 list. The net increase in SGCN is driven primarily from a) additional conservation science designation criteria, b) scrutiny of more invertebrate taxa, c) significantly greater attention to marine fauna in the Gulf of Maine, and d) more explicit recognition of climate change vulnerability. It is our hope that identifying a relatively comprehensive, prioritized suite of SGCN will help MDIFW and conservation partners implement meaningful conservation actions for some of Maine's most vulnerable and valued wildlife resources over the coming decade.

ELEMENT 2: KEY HABITATS AND NATURAL COMMUNITIES

Maine's Wildlife Action Plan employs The Northeast Terrestrial Habitat Classification System (NETHCS), developed by NatureServe and The Nature Conservancy (TNC), to identify the extent of habitats and community types essential to the conservation of Species of Greatest Conservation Need (SGCN). Federal and state agencies in the Northeast have endorsed the NETHCS as a tool for assessing habitat distribution and composition. The specific version of the NETHCS used in Maine includes a number of modifications made by the Maine Dept. of Inland Fisheries and Wildlife (MDIFW) and the Maine Dept. of Marine Resources (MDMR) to reflect Maine's landscape and coastal features. The basic layer within NETHCS is the habitat 'system', which corresponds to the Ecological Systems classification. There are approximately 150 Ecological Systems in Maine. We used the more general 'Macrogroup' level for several of our analyses, and there are 42 habitat macrogroups in Maine.

Maine further consolidated the macrogroups into three broad habitat categories to facilitate development of conservation actions. The broad categories are Coastal and Marine, Terrestrial (including Freshwater Wetlands) and Freshwater Aquatic (Rivers, Lakes, and Ponds). The importance of various habitats to SGCN is not related to their statewide abundance; habitats such as pine barrens, open freshwater wetlands, and rivers and streams are dis-proportionately important compared to many other habitat types. We estimate that there are 3,824,842 acres of conservation land in Maine, accounting for nearly 20% of the State. Much of this conserved

land lies within Focus Areas of Statewide Significance; we identify these focus areas to help prioritize Maine's landscape for SGCN and other habitat values.

ELEMENT 3: PROBLEMS AFFECTING SGCN AND THEIR HABITATS

Maine's State Wildlife Action Plan (SWAP) focuses much attention on the habitats used by Species of Greatest Conservation Need (SGCN). The Plan uses a coarse filter – fine filter approach to conservation to ensure, where possible, that individual conservation initiatives benefit multiple species, while also acknowledging that some species require individualized attention. We assigned stressors to both habitats and to SGCN, in order to clearly identify the issues that should be addressed at each level in the conservation hierarchy. As with most other states in the Northeast, we identified stressors using the International Union for the Conservation of Nature (IUCN) Threat Classification Scheme. While the IUCN system is useful for categorizing stressors to SGCN and their habitats, we found that the system lacks the resolution to clearly identify the specific issues that should be considered for conservation attention. Therefore, when assigning stressors we chose to adopt the primary and secondary IUCN categories, but replaced the tertiary category with a detailed narrative that fully describes the issue and its impact on the species or habitat being considered. In addition, we adapted Table 7 (*Threat characteristics and categorical ratings*) from The Northeast Lexicon to identify characteristics for each stressor assignment.

We assigned stressors to Priority 1 and 2 SGCN, and assigned 'Severity' and 'Actionability' characteristics for each Stressor – SGCN interaction. The concepts of 'Likelihood', 'Certainty' and 'Spatial Extent' were considered implicitly, and only those Stressors that were determined to have a moderate or high Impact for each of these characteristics were assigned. In addition, only those stressors with moderate or high Severity were assigned to SGCN. We developed a simple matrix to prioritize SGCN stressors, using the combination of the Impact scores for 'Severity' and 'Actionability.' We identified stressors for terrestrial and freshwater aquatic habitats using Anderson et al. (2013) as our primary source of reference material. Because no single comprehensive source is available that describes that state of marine habitats along Maine's coast, we used a wide variety of scientific publications, as well as expert opinion of agency staff and partners, to compile information on stressors. We assumed that the habitat systems within each terrestrial and marine macrogroup all faced similar conservation problems; therefore we assigned stressors to each macrogroup, but did not identify stressors separately for each habitat system, with the exception of freshwater aquatic habitats (River and Streams, and Lakes and Ponds) where we identified stressors separately for each of systems. Unlike our approach for SGCN, we assigned all 7 stressor characteristics for each habitat – stressor combination.

We assigned 38 unique stressors to 190 Priority 1 and 2 SGCN species, for a total of 1,099 SGCN – stressor combinations. We assigned 31 unique stressors to 34 habitats macrogroups, for a total of 326 habitat – stressor combinations. Development, including existing and new Roads and Railroads and Housing and Urban Areas, and Invasive Non-native/Alien Species/Diseases, were assigned to the largest number of habitats.

ELEMENT 4: CONSERVATION ACTIONS

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 Coastal Program (MCP), the Maine Natural Areas Program (MNAP), and other conservation partners worked closely to develop a thorough catalog of coarse- and fine-filter conservation actions. We attempted to balance action specificity with flexibility so that actions 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 are not intended to replace current management strategies, but can be used to bolster existing efforts or inspire new ones.

The actions reflect several stages of prioritization. Conservation partners identified a total of 311 actions for Species of Greatest Conservation Need (SGCN). Of these, partners applied 197 actions to individual SGCN, 88 to guilds, and 26 to one or more taxonomic groups. We assigned nine of these actions to all SGCN species. Conservation partners also identified 322 habitat actions, including 165 marine and coastal habitat actions, 54 freshwater aquatic habitat actions, and 103 terrestrial and wetland habitat actions. Given the volume of habitat conservation actions identified, workgroups developed several themes to organize actions into discrete packages of related actions that address common stressors 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. Three 'super-themes' emerged across habitat groups: Connectivity, Invasive Species, and Mapping and Outreach. 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 stressor(s) the action is addressing in a relational database, an idea proposed in the 2005 Comprehensive Wildlife Conservation Strategy (CWCS) and successfully developed as part of this Plan. We also identified 11 programmatic actions to help guide implementation and tracking of the 2015 Action Plan; we have broadly grouped these actions as Outreach and Engagement, Funding and Tracking, Action Development, and Regional Partnerships. In this chapter, we also propose criteria partners may wish to consider if evaluating how best to direct resources to conservation actions in the plan. We also discuss differences from Maine's 2005 CWCS.

ELEMENT 5: MONITORING

ELEMENT 6: PERIODIC REVIEW

In this chapter, we outline the methods we will use to monitor SGCN and their habitats, describe how we will monitor the progress made in implementing the Action Plan over the next ten years, and address the procedures we will use to review and update the Action Plan moving forward. We work closely with federal, state, and private conservation partners to develop and participate in cooperative species monitoring programs. Where possible, monitoring programs target multiple species, usually within the same taxonomic group. We also describe the monitoring programs that are in place for SGCN in Maine. We include a table for each of the five taxonomic groups this plan references.

MDIFW and partners identified habitat-scale survey and monitoring needs during development of conservation actions. We present these actions with examples of existing and general survey and monitoring techniques that partners can use to achieve these habitat-monitoring objectives.

MDIFW and partners developed 11 programmatic actions to help guide Action Plan implementation over the next ten years. Three of these actions address monitoring, which this chapter describes in detail.

MDIFW will use the programmatic actions to monitor conservation action progress at least annually. MDIFW will also establish an Implementation Committee in the Fall 2015 comprised of agency staff and conservation partners. This committee will review Action Plan accomplishments and address emerging issues or adaptive management needs. We will undertake a comprehensive plan review beginning in year eight of the 2015 Action Plan.

ELEMENT 7: COORDINATION WITH PARTNERS

ELEMENT 8: PUBLIC PARTICIPATION

Maine has a long history of successful collaboration among conservation partners -- conducting comprehensive wildlife planning and public involvement for nearly forty years. MDIFW began assembling a SWAP coordination team in January 2014. This planning team developed the strategies necessary to achieve the eight required elements of the 2015 SWAP. In September 2014, the Coordination Team established a SWAP Steering Committee to guide the overall development of the SWAP. The Steering Committee represented the broader partner group by providing regular and timely input into the activities and proposed strategies of the Coordination Team. The Coordination Team and the Steering Committee began preparing Maine's charter early in the update; the Steering Committee officially adopted the charter in November 2014. The Coordination Team invited 158 conservation partners to participate in the preparation of Maine's 2015 SWAP, representing 102 unique organizations and the public from July 2014 – June 2015. The partners attended five, seven-hour "conservation partner" meetings at which they collaborated in the development of Elements 1-5 of the 2015 SWAP.

MDIFW sought to both inform the public of its intent to revise the Action Plan and to encourage public participation. It established a Public Outreach Subcommittee to guide its public participation efforts. The subcommittee identified effective methods for engaging and soliciting input from the public, and the Coordination Team and Steering Committee scaled these methods to make effective use of agency resources and ensure an appropriate level of public participation.

The success of Maine's 2015 Wildlife Action Plan depends on continued partner and public engagement during plan implementation. To help guide implementation of these actions and to encourage continued public involvement, MDIFW and its partners developed six outreach Programmatic Themes that relate to 1. Outreach and Engagement and 2. Program Funding and Tracking.