2019-20 RESEARCH & MANAGEMENT REPORT

Beginning with Habitat

Maine Department of Inland Fisheries and Wildlife protects and manages Maine's fish and wildlife and their habitats, promotes Maine's outdoor heritage, and safely connects people with nature through responsible recreation, sport, and science.

Beginning with Habitat

State Wildlife Action Plan

Download additional sections at mefishwildlife.com/wildlifereport

» Game Species Conservation & Management

» Habitat Conservation and Management

» Regional Wildlife Management

» Endangered and Threatened Species Conservation & Management

» Non-Game Mammals Conservation & Management

» Bird Conservation & Management

» Reptile, Amphibian, and Invertebrate Conservation & Management

MEET THE BEGINNING WITH HABITAT GROUP

Amanda Cross, Ph.D.
Beginning with Habitat Coordinator
State Wildlife Action Plan Coordinator

Amanda supervises the Beginning with Habitat program, coordinates Maine's Wildlife Action Plan, facilitates meetings, provides climate change and landscape planning technical expertise, and engages with the community and conservation partners.

Michele Warner
Cartographer

Michele creates and maintains paper and digital map packages for towns, land trusts and landowners. She also maintains and provides current data to online mapping services and assists staff and the department with GIS-related needs such as digitizing data, technical support, updating databases, updating the statewide conserved lands layer, and making maps for specialized projects.

Andrew Johnson
Interim Private Lands Wildlife Biologist
WMI Contractor

Andrew provides technical assistance to landowners and service providers who manage land for at-risk fish and wildlife.

Bill Hancock
GIS Support, Contractor

Bill retired as the BwH Cartographer in 2019, and now provides supplemental support to staff on projects as needed.

BEGINNING WITH HABITAT

Program Overview

Amanda Cross and Michele Warner

Beginning with Habitat (BwH) is a partnership among public agencies, non-profit organizations, and landowner representatives that provides comprehensive, transparent, and consistent local and landscape-scale natural resource information to Maine's municipalities, landowners, and land trusts.

Maine's premier natural landscape planning entity

The program was created in 2000 to collect, connect, and consolidate the wealth of habitat information being produced by separate federal, state, and local agencies as well as non-governmental organizations. From our office within the Maine Department of Inland Fisheries and Wildlife (MDIFW), we create comprehensive packages for each Maine municipality and regional planning area, as well as landowners and land trusts, with a goal of helping Maine's communities and groups build conservation and management into their long-term plans. Each package includes multi-layer maps, information about native habitats, and localized conservation strategies. We also provide technical assistance to help put this data to use.

Mitigating climate change

Today's land conservation efforts are tightly connected with climate change. Recent estimates from the Maine Climate Council suggest Maine's forests sequester about 75 percent of our state's annual carbon emissions; but unfortunately, we lose around 10,000 acres of natural and working lands every year. When valuable habitats are developed, vulnerable wildlife species find it more difficult to survive now. And when they're developed in a fragmented manner, species lose their ability to move on the landscape in response to climate change.

Smart planning makes a difference

By using best management practices and minimizing development in areas with rare species habitats and large blocks of unfragmented forests, as well as riparian areas along streams and rivers, we can conserve enough habitat to support 80-95% of Maine's vertebrates and numerous other species. BwH helps communities and landowners identify exactly how to make that happen. Ultimately, this empowers decision-makers to guide growth and management in such a way that 50 years from now Maine's quality of place, including fishing, hunting, wildlife watching, and outdoor recreation – and all the economic activity it brings to our state – will endure.

BWH AT A GLANCE IN THE LAST YEAR

Created 220 maps for Municipal Comprehensive Plans

Compiled comprehensive plan data packages for 44 municipalities

Created 134 custom digital map packages

Supported over 530 conservation planning efforts by land trusts, municipalities, and landowners

Led more than 20 community natural resource presentations and workshops

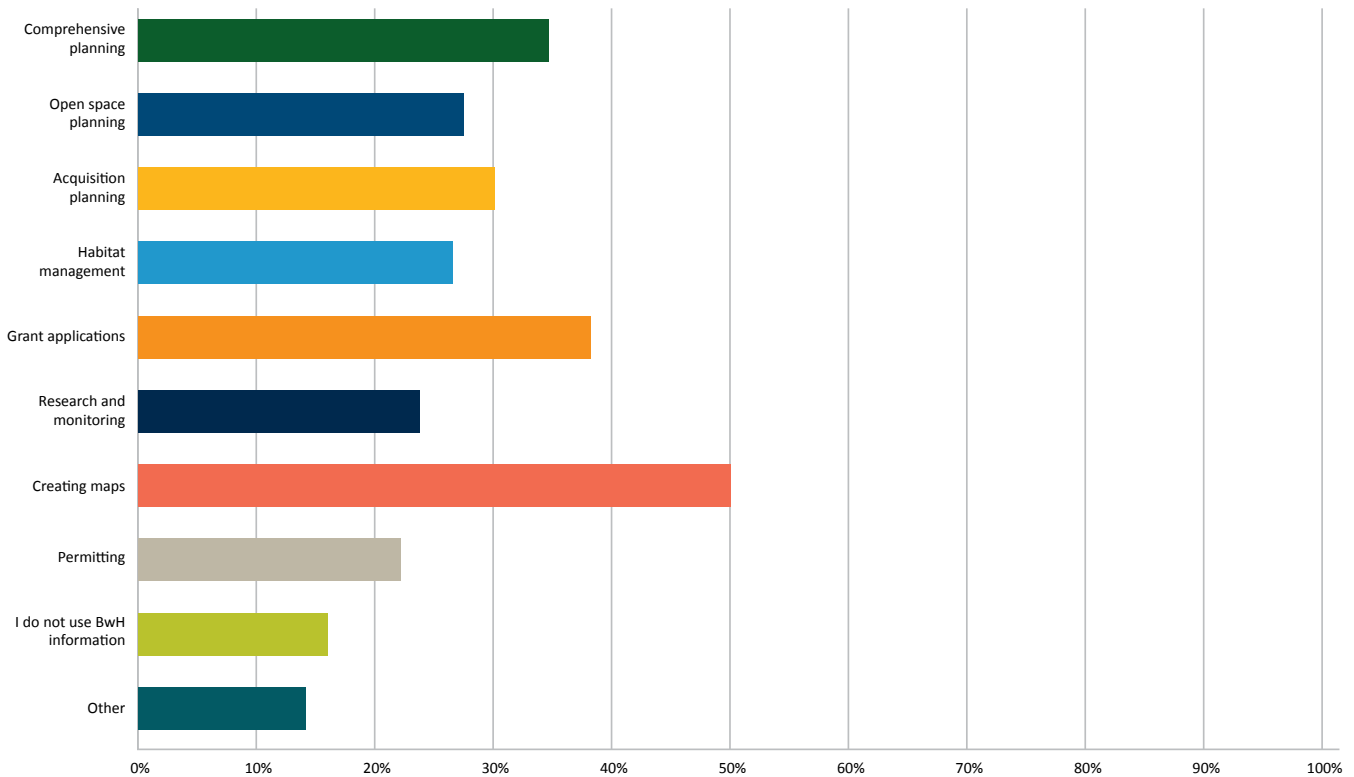Reviewed 10 Municipal Comprehensive Plans

Two busy decades behind us...

This year marks the 20th anniversary of the program, establishing BwH as the longest-running partnership of its kind in the Northeast U.S. In our two decades of work, our small team at MDIFW has provided natural resource information to almost every incorporated municipality in Maine; visited, mapped, identified, and explored local habitats with many land trusts and conservation commissions; and supported numerous local, statewide, and regional planning efforts. A recent survey of our land trust and municipal users highlights the many ways communities use BwH data.

...And big plans ahead

As we enter our next decade, we are updating our website and data packages with new species and climate change information and growing the resources and tools we offer private landowners. While COVID-19 halted our in-person offerings, we are adapting our workshops and presentations to an online format. We hope this will allow us to partner with even more conservation stewards working to ensure a healthy Maine for wildlife and people alike.

HOW DO YOU USE BWH INFORMATION?

Below are some of the projects our team has been leading over the past year. We encourage you to visit our website **beginningwithhabitat.org** for more information. And please reach out to us **Maine.BWH@maine.gov** if we can help you, your community, or your organization with any natural resource planning and mapping needs.

American goldfinch. Photo by Michele Warner.

Child with wood frog mass. Photo by Amanda Cross.

Child with salamander. Photo by Amanda Cross.

Vernal pool presentation. Photo by Chuck Dinsmore.

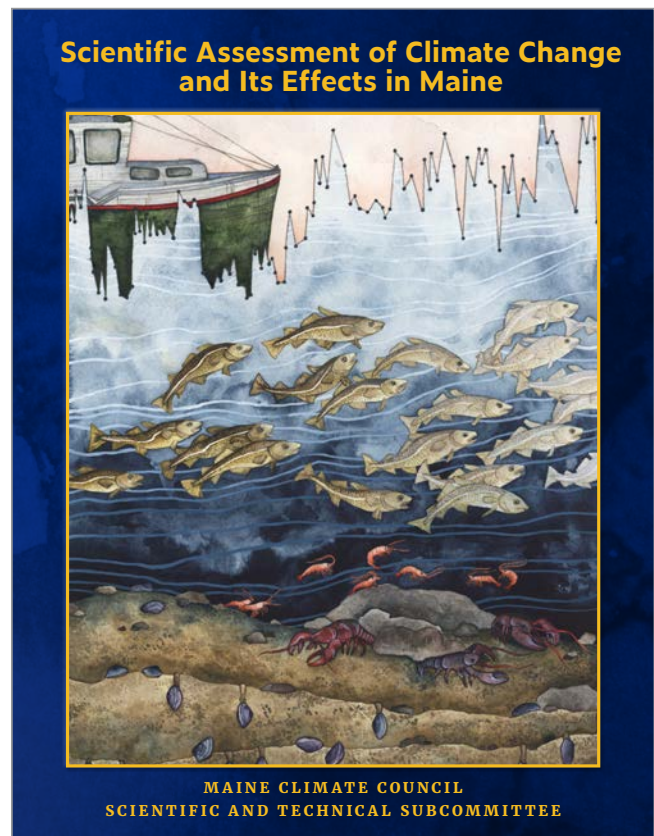# Beginning with Habitat and Climate Change

Amanda Cross

Maine is a biodiverse ecological transition area, where temperate ecosystems characteristic of southern New England give way to northern boreal systems often associated with southern Canada. Climate change is already having dramatic effects on this biodiversity, with nearly one-third of Maine's at-risk species already being affected by warming winters, changing precipitation patterns, and exacerbated disease and pest outbreaks. These factors have presented multiple threats to iconic Maine species such as furbish lousewort, moose, Canada lynx, common loon, boreal chickadee, eastern brook trout, and Atlantic puffin, as well as many other lesser-known species. And climate change has caused other species, including red-bellied woodpeckers, tufted titmice, opossum, gray fox, and arctic fritillary, to expand their ranges in Maine.

Over the last year, BwH has provided our scientific and landscape planning expertise to two major climate change efforts: The Maine Climate Council's Scientific and Technical Subcommittee (STS) and the Coastal and Marine Workgroup and the New England Governors-Eastern Canadian Premiers Connectivity Workgroup.

The **Maine Climate Council** is charged with developing a Climate Action Plan by December 1, 2020 that identifies strategies for achieving state carbon neutrality by 2045, among other goals (see **climatecouncil.maine.gov** for more information).

The Council's Science and Technical Subcommittee (STS), on which we serve, is tasked with providing the latest information on direct and indirect effects of climate change on ecosystems, human communities, and other sectors. This information is used by the Climate Council's six working groups' to inform their consideration of climate mitigation and adaptation recommendations. One of these workgroups on which we serve, the Coastal and Marine Workgroup, identified multiple natural climate solutions (such as conserving eelgrass beds and salt marshes) to store carbon, protect vulnerable human communities and infrastructure, and provide wildlife and plant habitat. We also provided input to the Natural and Working Lands Workgroup on strategies for protecting biodiversity, connecting habitats, and conserving working and natural ecosystems.

The STS also has the unique charge of identifying methods and protocols to mitigate direct and indirect effects of climate change on fish and wildlife species. As co-author with Maine Audubon on the Biodiversity chapter of the recently published STS Report, _Scientific Assessment of Climate Change and Its Effects in Maine,_ we provided a comprehensive assessment of the effects of climate change on Maine's species, from eastern brook trout to moose. Among the methods and protocols recommended in our report are strategies BwH has promoted for two decades, including maintaining forests as forests (both working and natural lands), conserving and connecting large blocks of intact habitat, and supporting community resiliency planning programs.

'Scientific Assessment of Climate Change and Its Effects in Maine'. Cover art by University of Maine alumnus Jill Pelto.

In 2016, the **New England Governors and Eastern Canadian Premiers** signed _Resolution 40-3 on Ecological Connectivity, Adaptation to Climate Change, and Biodiversity Conservation._ Recognizing that 'the rich diversity of forests, waters, and landscapes of this region, as well as the diverse array of fish and wildlife they support, are the foundation to our economic health, cultural identity and way of life, and to our high quality of living,' the Resolution directs states and provinces to form an international Ecological Connectivity Working Group. This Working Group, on which BwH staff have served since 2018, aims to identify ways in which ecological connectivity can be bolstered in transportation and land use planning, scientific research, conservation, and land management. During this past year, we completed recommendations and a final scientific assessment detailing the multiple benefits of habitat connectivity and best practices for supporting a connected landscape.

Above is an example of a wildlife habitat connector installed by the Maine Department of Transportation (MaineDOT) as part of the Caribou Bypass (Route 161) Project. Photo by MaineDOT.
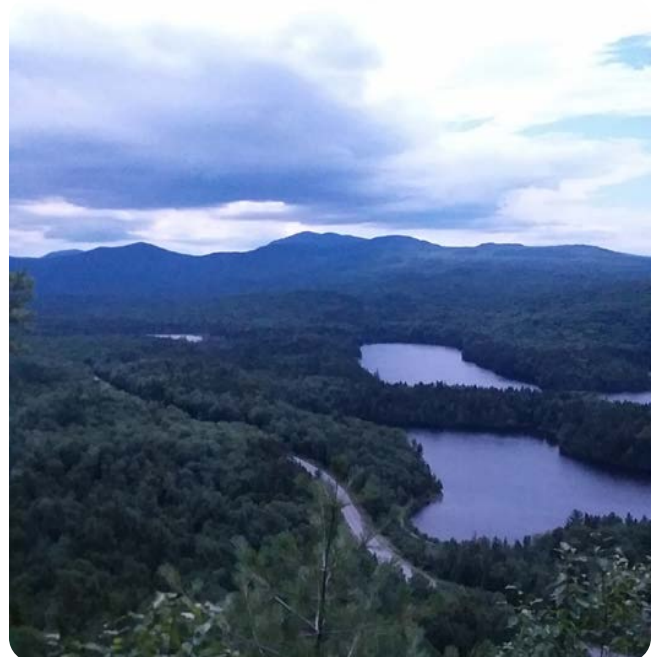
Focus Areas

Amanda Cross

BwH Focus Areas are natural areas of statewide ecological significance that contain unusually rich concentrations of at-risk species and habitats. These areas, identified by biologists from the Maine Natural Areas Program (MNAP), Maine Department of Inland Fisheries and Wildlife (MDIFW), Maine Department of Marine Resources (DMR), U.S. Fish and Wildlife Service (USFWS), The Nature Conservancy (TNC), Maine Audubon, and Maine Coast Heritage Trust (MCHT), support rare plants, animals, and natural communities; high quality common natural communities; significant wildlife habitats; and their intersections with large blocks of undeveloped habitat.

We draw Focus Area boundaries based on the species and natural communities that occur within them and the landscape conditions that support the species, habitat, and community types' long-term viability. To date, collaborative efforts by state, federal, and conservation organization biologists have resulted in the designation of 140 Focus Areas statewide.

Focus Areas help drive conservation in Maine in many ways, from informing land trust acquisition priorities to affecting scoring in land conservation grants (e.g., Land for Maine's Future). However, Focus Areas have not been comprehensively reviewed in close to ten years and may not adequately address current and emerging conservation needs, particularly opportunities for management and restoration on private lands and opportunities to mitigate climate change vulnerability and bolster resiliency. To that end, BwH is working with our conservation partners to review and revise our Focus Areas. This will be a 13-month process conducted in close collaboration with land trusts, municipalities, regional planning organizations, and other stakeholders. Look for the revised Focus Areas on our maps by October 2021.

Looking southeast from the U.S.-Canada border to the 78,600-acre Bigelow Mountain – Flagstaff Lake – North Branch Dead River Focus Area.

Cartography

Michele Warner

BwH is collaborating with MDIFW's Information and Education Division and partners to revise our current website and toolbox of online resources. The new website, featuring easier navigation and additional resources, is scheduled to be launched in November 2020. In the meantime, you can still view all of our current resources at **beginningwithhabitat.org**.

MapViewer

The BwH MapViewer is an online adaptation of BwH's extensive collection of natural resource information generated by various state, federal, and non-profit conservation partners. With all the data sources collected and curated by BwH, this tool can help Maine's land-use decision makers, from municipalities to private landowners, balance their growth and management goals with conservation of fish, wildlife, and natural places.

Currently, we offer three online interactive maps:

- **Map 1** depicts major surface water features and drainage areas, associated shoreline habitats and riparian zones, and aquifers and wells that supply public drinking water.
- **Map 2** depicts known rare, threatened, or endangered plant and animal occurrences, as well as 'Significant Wildlife Habitat', 'Essential Wildlife Habitat', and other important wildlife habitats.
- **Map 3** depicts the State of Maine's conserved lands database including lands in federal, state, and nonprofit ownership.

Our updated MapViewer moves the data and information from the three existing online maps into one map, making it easier for planners to simultaneously view all the resources in an area rather than toggling between multiple online viewers. We are making additional updates to the MapViewer including improved layer organization, a streamlined print map layout, and the ability to take a 'learn how to' tour. The updated version is currently in peer review and will be launched by the end of November 2020.

SCREENSHOT OF DRAFT NEW MAPVIEWER BELOW DEPICTING NATURAL RESOURCES IN THE HARPSWELL/BRUNSWICK AREA

Undeveloped Blocks

Bill Hancock

An updated GIS layer for Maine's undeveloped blocks is now in final peer review. Undeveloped blocks are the areas of habitat left in the state that have not been converted to roads, houses, or other developed surfaces. Upon its last update in 2015, the layer delineated 29,800 square miles as undeveloped. The new layer delineates 28,800 square miles as such. (It is important to note that some of these undeveloped blocks span the border with New Hampshire, Quebec, and New Brunswick, so the total area is not strictly in Maine.)

Some reasons for this 1,000-square-mile decline include the availability of new building footprint and E911 address data layers, the exclusion of gravel pits and other barren areas, and the exclusion of blocks smaller than 10 acres. Further modeling of interior core undeveloped habitat should make this layer even more valuable for conservation planning.

A companion layer showing developed areas in Maine was also updated and is in final review. Both layers are intended for use at the town scale of 1:24000. Look for these layers to join the BwH MapViewer and data packages in late 2020.

Undeveloped blocks surrounding the Madison-Anson town center, delineated below in light green. Further buffering to increase the distance from roads and houses could highlight the interior habitat so important to many wildlife species.

New Private Lands Wildlife Biologist Position

Andrew Johnson

During its first 20 years, BwH primarily worked with municipalities and land trusts to inform conservation planning, but we have always recognized that private landowners are just as important to the conservation of our state's natural resources and our wildlife and fisheries heritage. Over 95% of Maine is privately owned; so if MDIFW is to achieve its wildlife goals, we must help Maine's landowners in their roles as stewards of Maine's fish and wildlife habitats.

BwH is growing to address this need. A Private Lands Wildlife Biologist position was added to the team in Spring 2020, and we are also in the process of revamping and expanding our website to include landowner resources. The BwH MapViewer, which already allows you to see the rare animals, plants, natural communities and habitats known to be in your area, is undergoing updates that will improve user-friendliness and empower and guide landowners in the management of their property.

In addition to our mapped resources, the Private Lands Wildlife Biologist will help connect interested landowners to the many existing resources and programs designed to help our state meet its wildlife conservation goals. Do you own a forest and want to help wildlife? Call your local District Forester at the Maine Forest Service for a free site visit to learn what opportunities your land offers, or explore Maine Audubon's Forestry for Maine Birds materials. Do you have a grassland and want to manage it in a wildlife-friendly manner? There is a program for that too: Ag Allies, based out of the Somerset County Soil and Water Conservation District. MDIFW has helped advise the habitat management that these and other programs promote, and we would love to introduce you to these outstanding resources.

We also encourage you to check out the BwH website regularly for updates. As the new Private Lands Wildlife Biologist position becomes established, they will also be available to match interested landowners with habitat management guidance curated to their lands and goals… so stay tuned!

Photo by Michele Warner

STATE WILDLIFE ACTION PLAN

Program Overview

Maine's 2015-2025 Wildlife Action Plan is our state's blueprint for conserving our most vulnerable fish and wildlife species. MDIFW partnered with over 100 conservation partners in 2014-2015 to develop the Action Plan, and together we identified 378 at-risk species (also known as Species of Greatest Conservation Need) and over 600 conservation actions we can take to help them. At-risk species are those fish and wildlife whose populations are becoming unhealthy or are showing signs of decline due to pressures such as climate change, habitat fragmentation and loss, or disease. Only 51 of our at-risk species are currently listed as Threatened or Endangered under Maine's Endangered Species Act, so the Action Plan is designed to promote voluntary, non-regulatory actions that can be taken now to prevent the 327 remaining species from declining to the point where regulatory intervention is needed.

The Action Plan and BwH are inextricably linked. The Action Plan identifies statewide at-risk species and habitat priorities, and BwH provides landscape and local planning information on these priorities to users across the state. We also track Action Plan implementation, work with MDIFW staff to periodically review and revise Action Plan priorities, coordinate with other Northeastern states to address regional needs, and assist partners in integrating Action Plan objectives with their own project goals.

Wood turtle and tiger cobblestone beetle (both SGCN priority 1 species). Photos by Jonathan Mays.

Species of Greatest Conservation Need Factsheets

Michele Warner

Beginning with Habitat is working with MDIFW's biologists, species specialists, and outreach staff to update our Department's at-risk species (also known as Species of Greatest Conservation Need in our State Wildlife Action Plan – see below) factsheets. These factsheets can assist a wide array of users with conservation and management planning and education, including what each of us can do to help conserve Maine's at-risk species.

Child with Monarch. Photo by Michele Warner.

The SWAP CAT

Maine's State Wildlife Action Plan Conservation Action Tracker (SWAP CAT) was launched in 2019 to track Maine's progress toward fulfilling the Action Plan's goals (see **mainewildlifeactionplan.com**). Since the Action Plan is intended to help guide fish and wildlife conservation across Maine, we wanted to be able to document and give credit to everyone taking action for at-risk species, from landowners removing invasive species to state agencies conducting research. There are two main goals of the SWAP CAT:
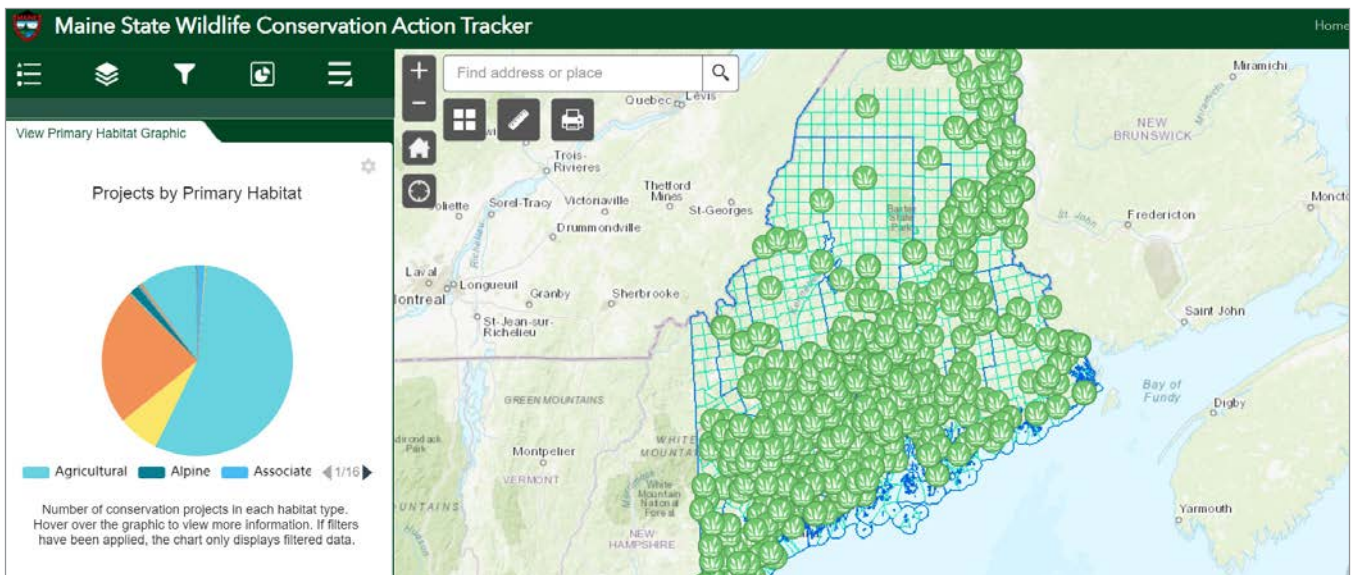
1. Document Action Plan-related conservation measures taken by all partners statewide to help with progress monitoring and reporting
2. Provide Action Plan information to partners so that they can identify synergies to help leverage conservation funding

The SWAP CAT is the first tool of its kind, and was developed over a year-long planning effort with MDIFW staff and partners. Since its launch, over 8,500 projects have been entered into the SWAP CAT. These projects cover nearly every corner of the state and directly address 43 at-risk species and 35 habitats.

Screenshot of the SWAP CAT homepage with tracking dashboard

Several query functions are built into the SWAP CAT, allowing users to quickly determine the habitat types, species, or stressors that projects in the database are addressing (most benefit multiple habitats and species). All data in the SWAP CAT is contributed by willing project partners, and data can be exported and queried further by users on their own. We are always accepting new projects, and each contribution is eligible to be featured in the Project Spotlight portion of the SWAP CAT homepage.

Screenshot of a built-in query depicting projects by primary habitat type they are addressing and spatial distribution of projects across the state.