



Conserving Sedgwick's Landscape Functions and Biodiversity in a Changing Climate

Corinne Michaud-LeBlanc

Beginning with Habitat Program Climate Coordinator

Maine Department of Inland Fisheries and Wildlife

Outline



- Introduction to Beginning with Habitat
- Overview of BwH maps, tools, and conservation concepts
- Understanding Sedgwick's natural resources and conservation opportunities
- *Themes:* Landscape connectivity, biodiversity, climate resilience, conservation strategies



Introduction



Species



Habitats



Access



**BEGINNING
WITH HABITAT**



Proactively Planning for a Changing Climate



Climate Change and Biodiversity in Maine:
A Climate Change Exposure Summary
for Species and Key Habitats (Revised)



Manomet Center for Conserv
Andrew Whitman¹
Barbara Vickery²
Philip deMaynadier³
Sally Stockwell⁴

¹ Manomet Center for Conservation Sciences, MA
² The Nature Conservancy, Brunswick, ME
³ Maine Department of Inland Fisheries and Wildlife
⁴ Maine Audubon Society, Falmouth, ME
⁵ Maine Natural Areas Program, Augusta, ME
⁶ U.S. Fish and Wildlife Service, Falmouth, ME
March 28 2013



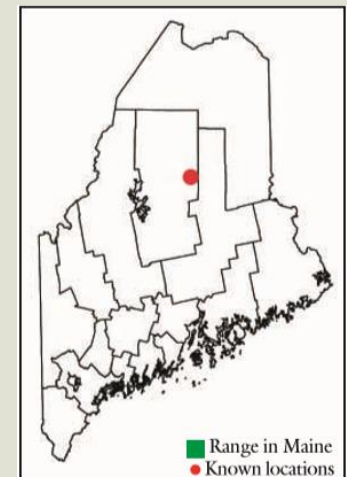
MAINE'S WILDLIFE ACTION PLAN

Prepared by
Maine Department of Inland Fisheries Wildlife



in collaboration with

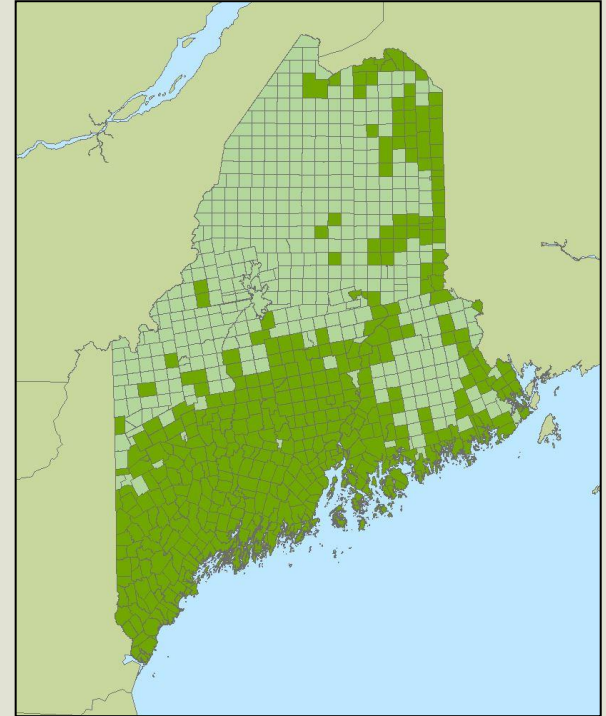
Maine's Conservation Partners
September 2015



Local Conservation Efforts are Essential to Success!



- *Habitat loss is the #1 issue*
- 492 organized towns
 - Independent growth and development visions
- Most land use decisions are made by volunteer boards & Code Enforcement Officers
- Many towns limited to state minimum zoning
- Most local development does not trigger state agency review



Observed and Expected Effects of Climate Change



- Warming temperatures
 - Warmer winters, more extreme heat days, melting glaciers
- Changing precipitation patterns
 - Increased heavy rainstorms and flooding, rain-on-snow events, decreased snowpack, increased drought conditions
- Sea Level Rise
- Ocean acidification
- Warming waters





Culvert washout on Pushaw Rd in Glenburn, ME in October 2022 associated with a 25-year storm event. The washout resulted in a 5-mile detour and cost \$111,000 to repair.



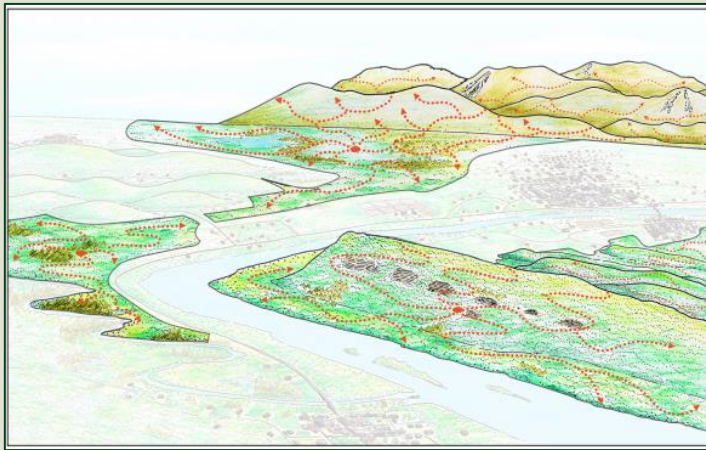
Culvert washout on Route 1 in Cyr Plantation, ME in May 2022 associated with a 50- to 100-year storm event. The washout resulted in road closure and detour and cost \$2.8 M to repair.



Conserving Nature's Stage



The Stage



Underlying Geology



Landforms

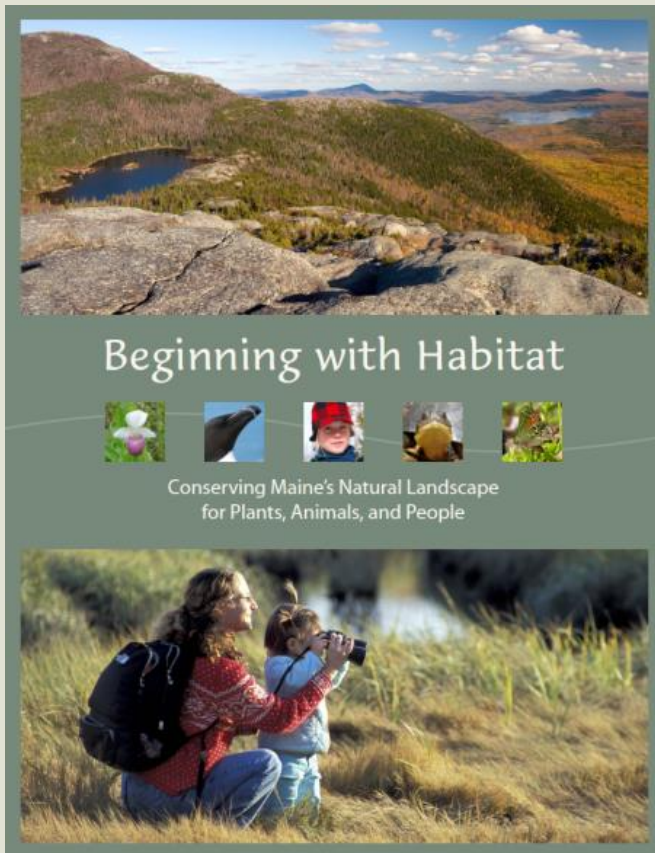


Diversity

The Actors



A Resource for the Public: Beginning with Habitat



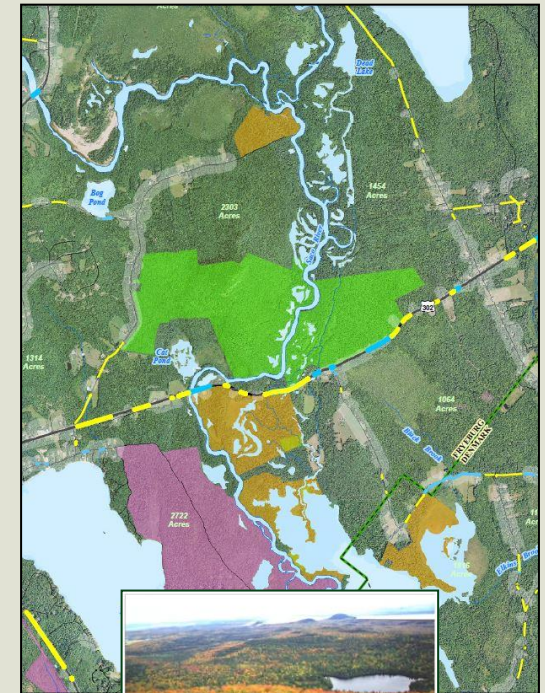
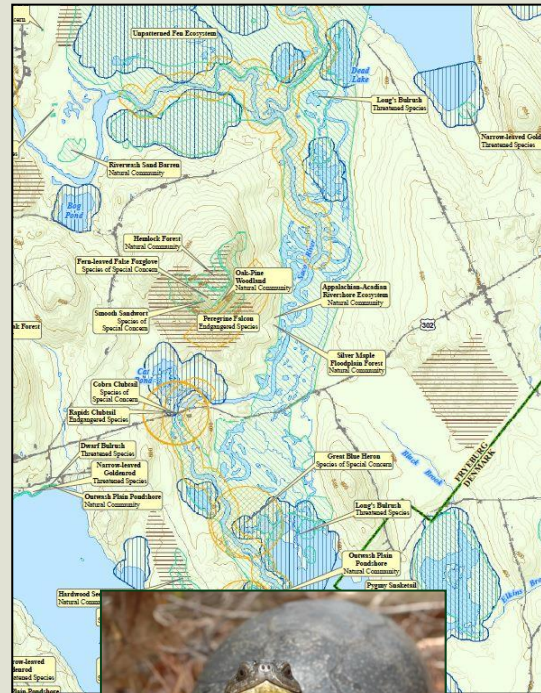
BwH is...

A landscape-based approach to achieve meaningful conservation of all native species on a developing landscape.

Purpose:

To provide the most up-to-date wildlife and plant habitat information available for use in Comprehensive, Open Space, and Conservation Planning.

Map 2

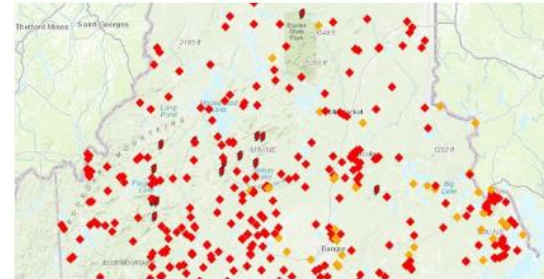


Beginning with Habitat Online Maps



Interactive Map Viewer

This option is the most popular way our users access BwH data. It is best for real-time desktop or mobile browsing. GIS files cannot be downloaded, but maps can be exported as PDFs and printed as 8.5x11 pages.



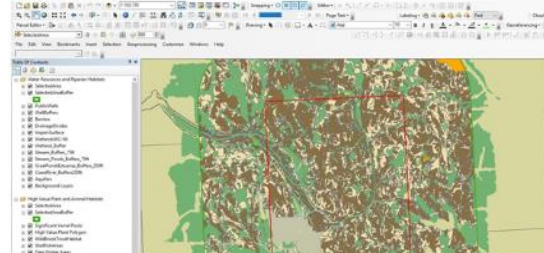
Stream Viewer

The interactive viewer was created to enhance statewide stream restoration and conservation efforts. The Viewer provides a starting point for towns, private landowners and others to learn more about stream habitats across the state.



Online Map Database

Search PDF maps (printable using a large-format printer/plotter) by town.



Digital Data

You can use our GIS data to create your own customized planning maps (GIS software required). [Simply let us know which town or region you'd like data from](#), and we will send you the data via OneDrive or on a CD.

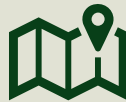
Beginning with Habitat Services



Our Services



Information



Spatial Data



Technical Assistance

- Customized Presentations & Workshops
- Library of ordinance tools, example plans, etc.
- Dedicated landowner biologist for site visits
- Assistance w/ and review of comprehensive plans

Our Users



Municipalities



Landowners



Land Trusts

Comprehensive Planning: Benefits and Opportunities



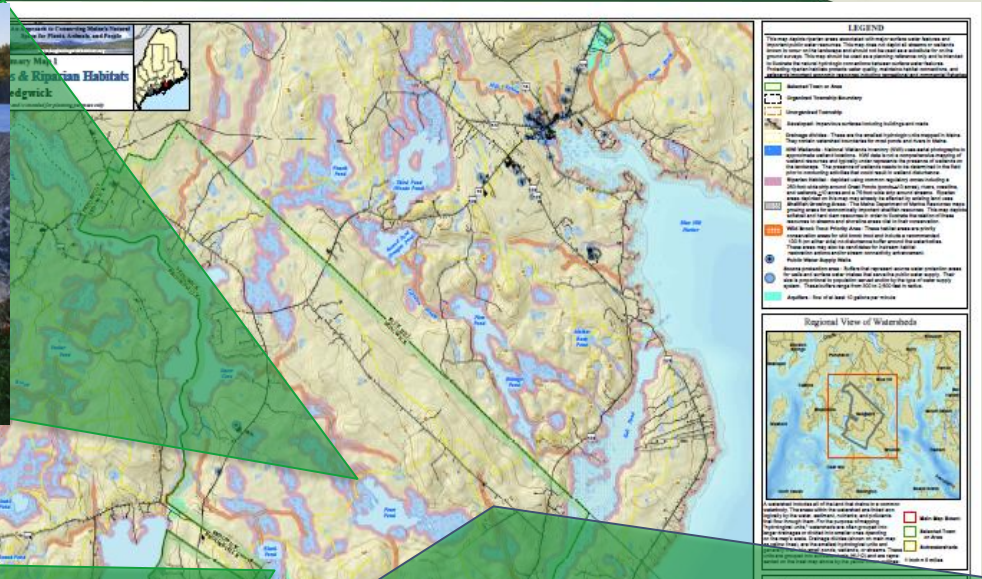
- Defined, shared vision and goals
 - Proactive, long-term planning for balancing conservation and development, protecting landscape functions
 - Based on community-defined priorities and needs
- Greater conservation impact
 - Big picture planning vs. project by project
 - Measurable, coordinated actions and timelines
- Co-benefits to the community
 - Recreational opportunities, preservation of rural and scenic character, improved air and water quality, carbon storage, landscape resiliency...many more!

-
- Beginning with HABITAT**
 Primary Map 1: Water Resources & Riparian Habitats
 Sedgwick
- LEGEND**
- Water Resources**
- Water Bodies: Lakes, Ponds, Reservoirs, Rivers, Streams, Creeks, Canals, Ditches, etc.
 - Water Quality: High, Moderate, Low, Very Low, etc.
 - Water Use: Residential, Commercial, Industrial, Agricultural, etc.
 - Water Rights: Surface, Ground, etc.
- Riparian Habitats**
- Riparian Forest: High, Moderate, Low, etc.
 - Riparian Shrubland: High, Moderate, Low, etc.
 - Riparian Grassland: High, Moderate, Low, etc.
 - Riparian Wetland: High, Moderate, Low, etc.
- Other Features**
- Roads: Major, Minor, etc.
 - Land Use: Residential, Commercial, Industrial, Agricultural, etc.
 - Topography: Elevation, Slope, etc.
- Scale**
- 0 1 2 Miles
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- Map Date:** [Date]
- Map Version:** [Version]
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Comprehensive Planning Data: Water Resources and Riparian Habitats



Frost Pond, Bryan Gagner Photography



Kanokulus Bog, Andy Reed



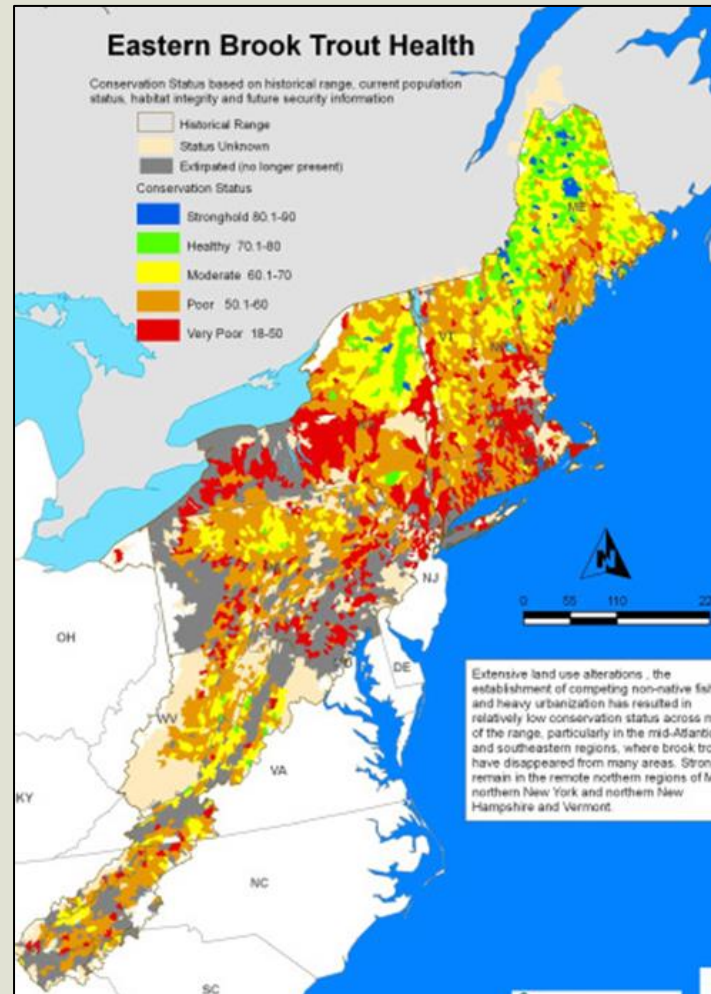
Merry Gallagher

Case Study: Warming Waters and Eastern Brook Trout

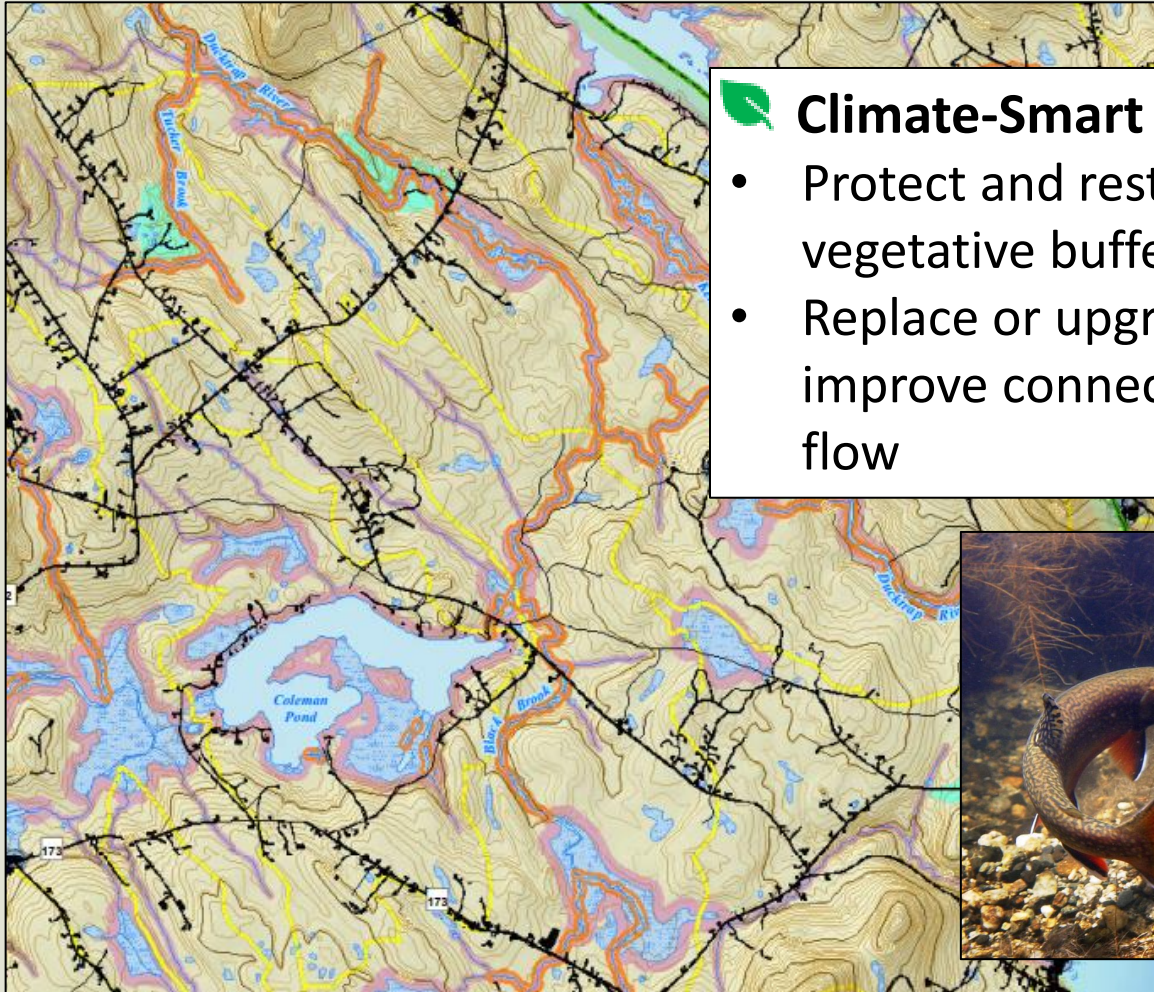


Maine forests are one of the last strongholds for brook trout in the U.S.

Case Study: Warming Waters and Eastern Brook Trout



Case Study: Warming Waters and Eastern Brook Trout



Climate-Smart Conservation Strategies:

- Protect and restore 100-foot wide vegetative buffers along trout streams
- Replace or upgrade undersized culverts to improve connectivity and manage water flow



Strategies for protecting brook trout streams and improving water quality



- Adopt Stream Smart crossing techniques
- Consider expanding Stream Protection Zone to *all* streams
- Consider local development standards that require a 100-foot buffer on known brook trout streams
- Identify grant opportunities for restoration projects and culvert replacement
- Promote voluntary riparian conservation options to landowners

- Primary Map 2
High Value Plant and Animal Habitat
Sedgwick**

The map is a preliminary map and is not a planning instrument.

LEGEND

Map Symbols:

 - Orange line: Significant Terrestrial Boundary
 - Green line: Longitudinal Terrestrial Boundary
 - Green line: River/Town or Line of Interest
 - Green line: River/Town or Line of Interest
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Notes:

Significant Terrestrial Boundary: This boundary is defined by the presence of a significant number of native plant and animal species, and is a key feature of the landscape.

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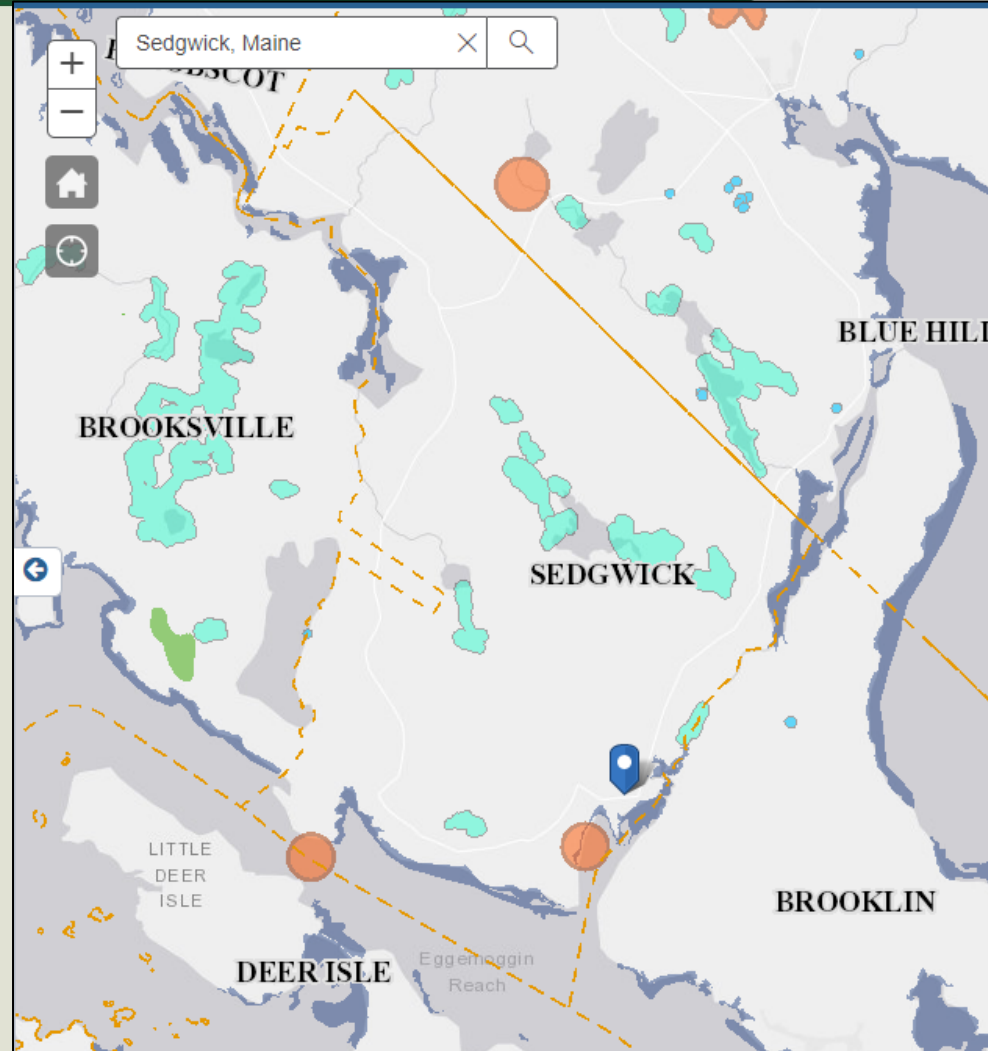
Comprehensive Planning Data: High Value Plant and Animal Habitats



Barrow's Goldeneye, Photo by Blair Dudeck



Peregrine Falcon, Photo by Samuel Paul Galick



Case Study: Sea Level Rise and Salt Marshes

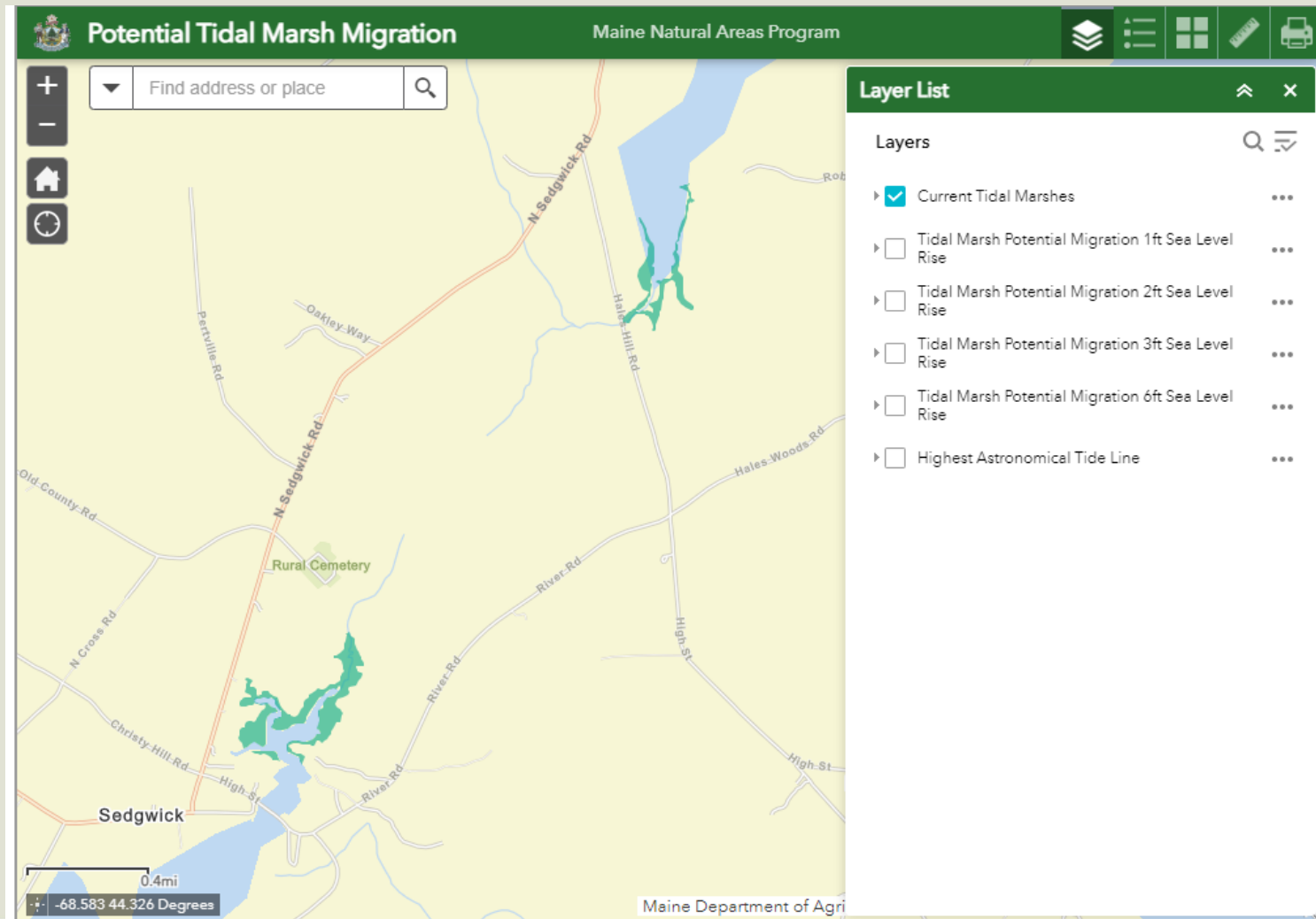


Little River salt marsh, Photo courtesy of Kennebec Estuary Land Trust

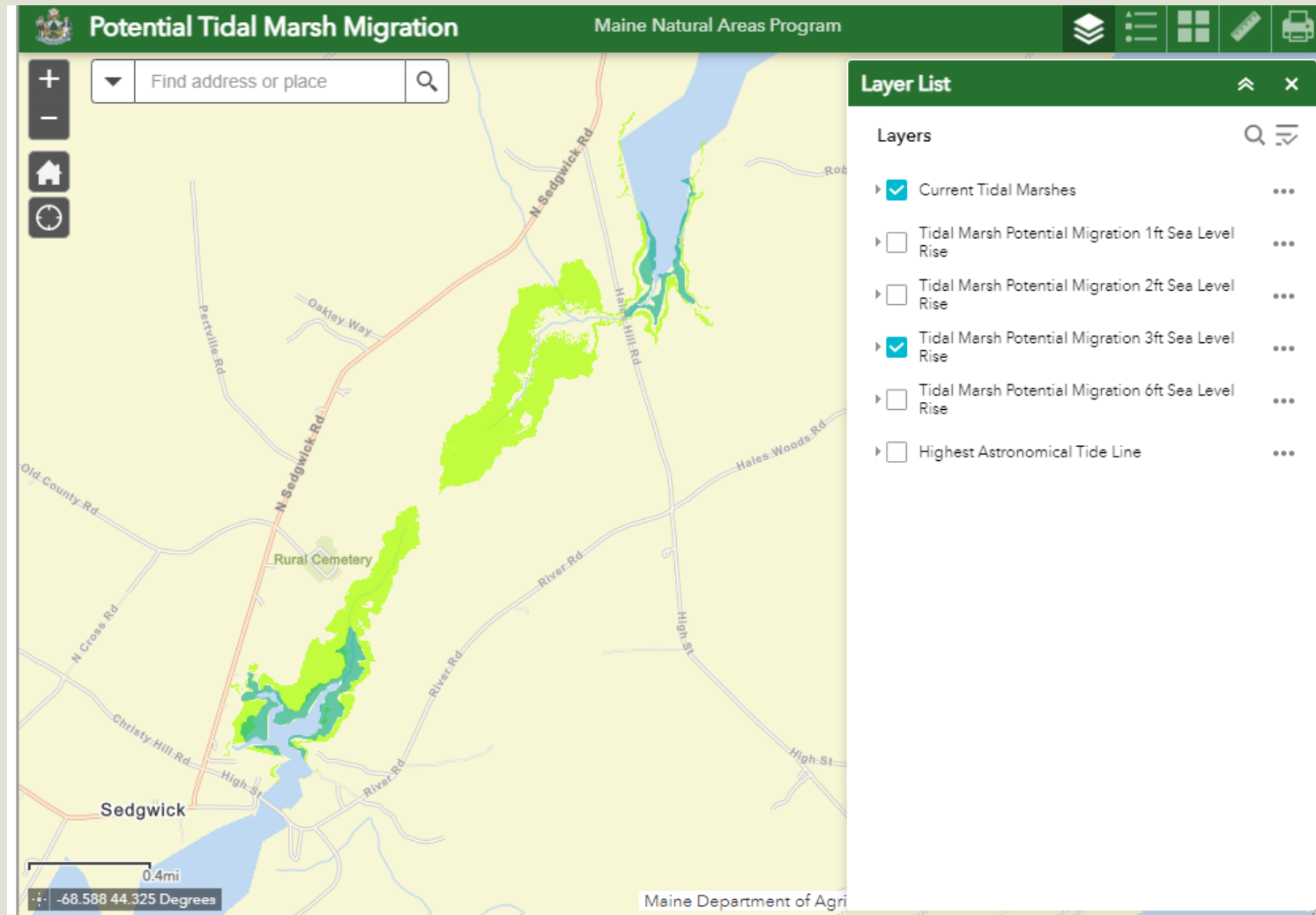


Alewives, Photo by Bridget Edmonds/TNC

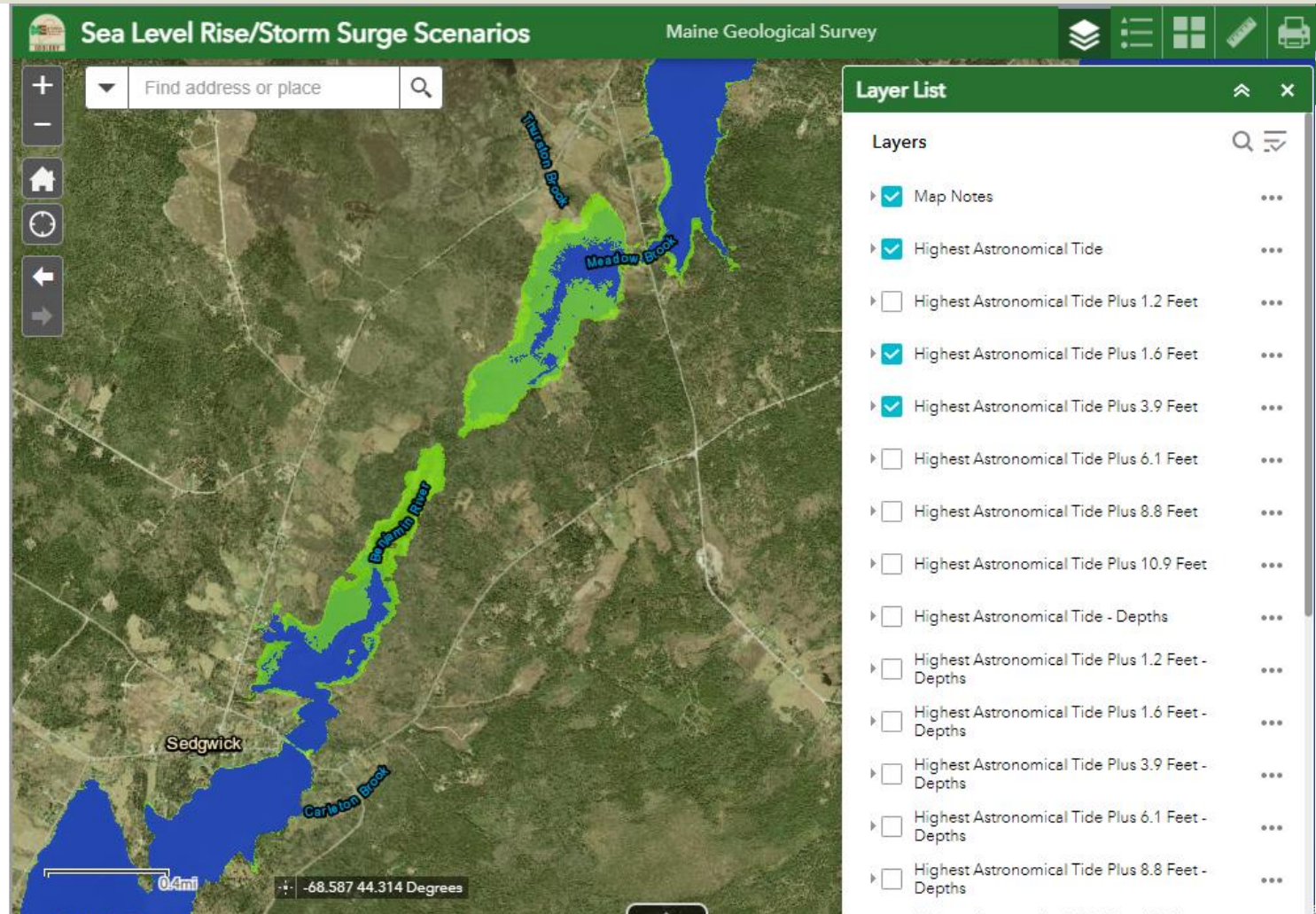
Case Study: Sea Level Rise and Salt Marshes



Case Study: Sea Level Rise and Salt Marshes



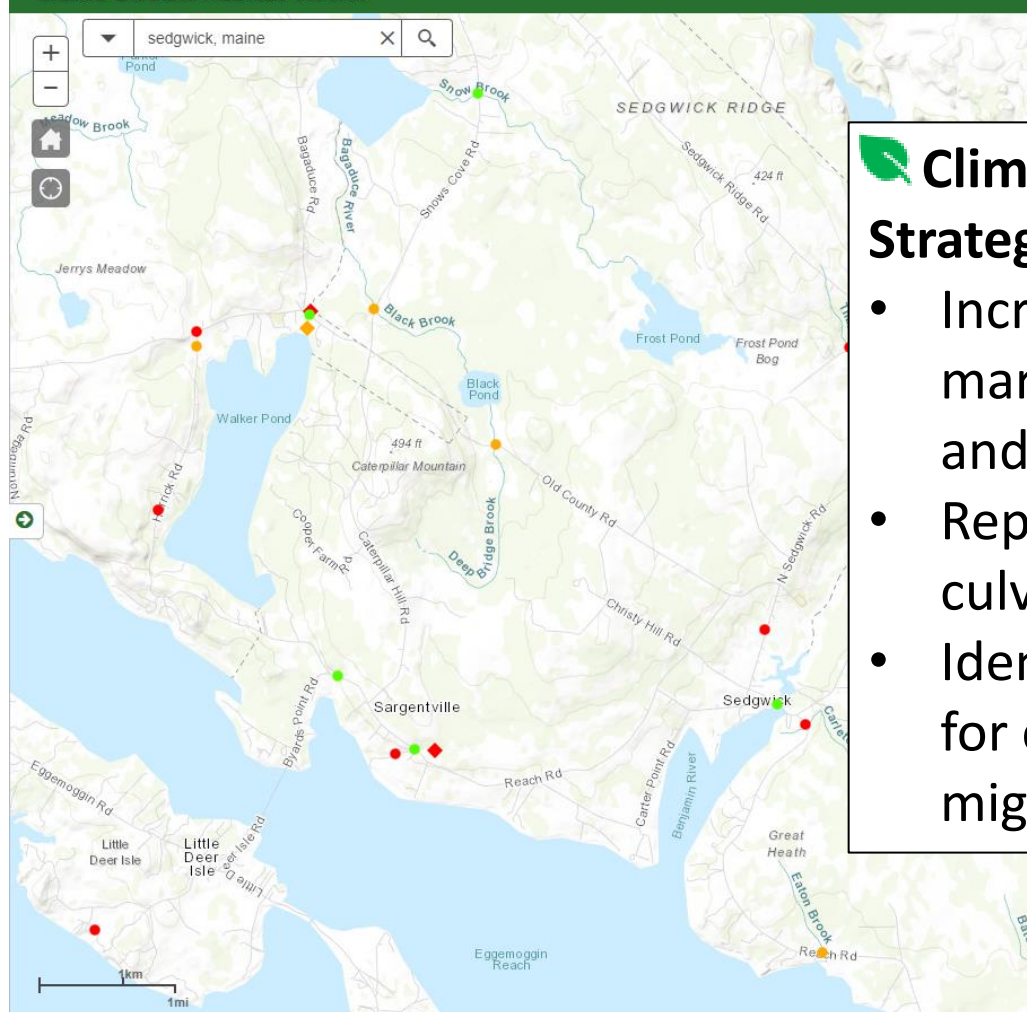
Case Study: Sea Level Rise and Salt Marshes



Case Study: Sea Level Rise and Salt Marshes



Maine Stream Habitat Viewer



Climate-Smart Conservation Strategies:

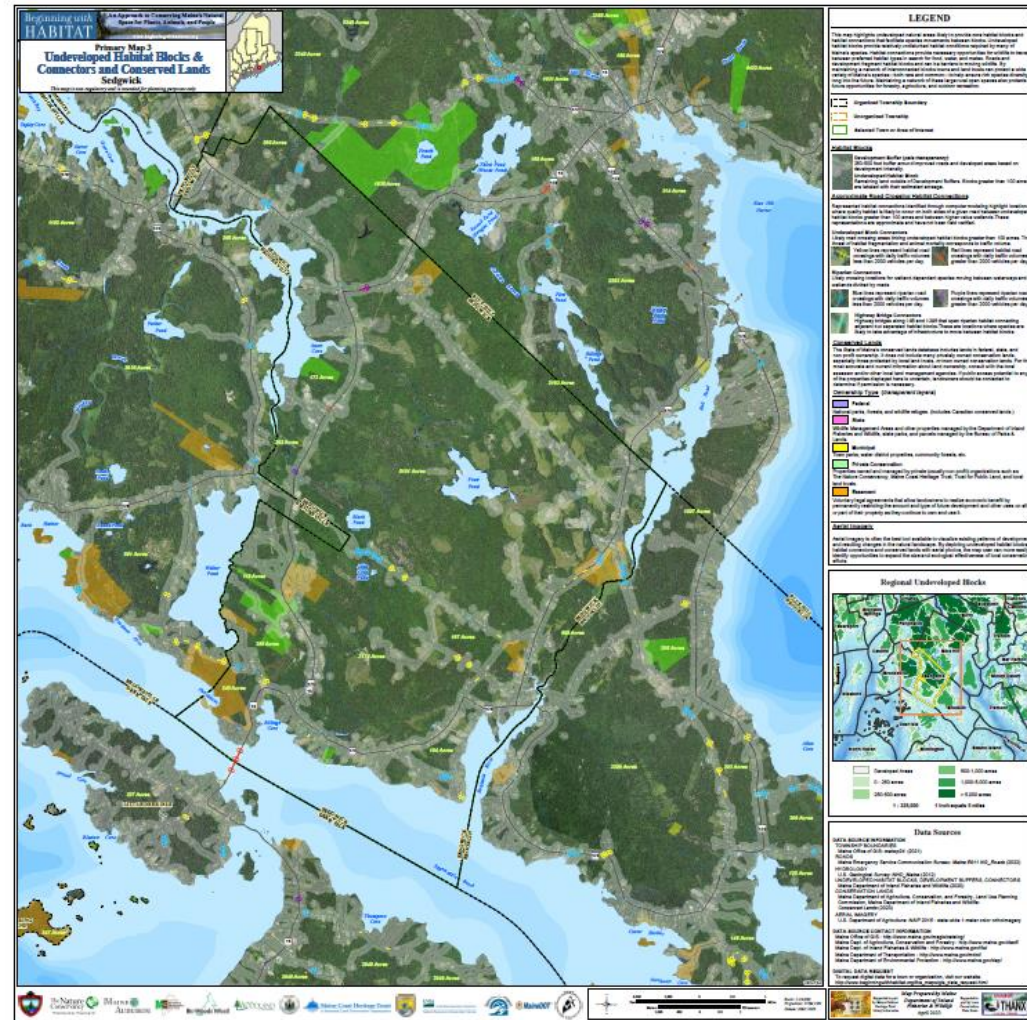
- Increase protections for existing marshes via conservation easements and acquisitions
- Replace or upgrade undersized culverts or barriers to tidal flow
- Identify adjacent undeveloped land for conservation and future marsh migration

Comprehensive Planning Data: Undeveloped Blocks and Connectors



• BwH Map 3

- Large undeveloped blocks *essential for maintaining species diversity, water quality, natural resource industries, and rural character*
- Acreage of large blocks
- Potential habitat connections
- Existing conserved lands



Habitat Block Size Requirements for Wildlife in Maine: **UNDEVELOPED**

RACCOON

HARE

COYOTE

SMALL RODENT

PORCUPINE

BOBCAT

COTTONTAIL

BEAVER

BLACK BEAR

SQUIRREL

WEASEL

MINK

FISHER

WOODCHUCK

DEER

MUSKRAT

MOOSE

RED FOX

SONGBIRDS

SHARP-SHINNED HAWK

BALD EAGLE

SKUNK

COOPER'S HAWK

HARRIER

BROAD-WINGED HAWK

GOSHAWK

KESTREL

RED-TAIL HAWK

HORNED OWL

RAVEN

BARRED OWL

OSPREY

TURKEY VULTURE

TURKEY

MOST REPTILES

GARTER SNAKE

RING-NECK SNAKE

MOST AMPHIBIANS

WOOD FROG

Habitat Block Size Requirements for Wildlife in Maine: 100 -499 ACRES

RACCOON

HARE

SMALL RODENT

PORCUPINE

COTTONTAIL

BEAVER

SQUIRREL

WEASEL

MINK

WOODCHUCK

DEER

MUSKRAT

RED FOX

SONGBIRDS

SHARP-SHINNED HAWK

SKUNK

COOPER'S HAWK

HARRIER

BROAD-WINGED HAWK

KESTREL

HORNED OWL

BARRED OWL

OSPREY

TURKEY VULTURE

TURKEY

MOST REPTILES

GARTER SNAKE

RING-NECK SNAKE

MOST AMPHIBIANS

WOOD FROG



Habitat Block Size Requirements for Wildlife in Maine: **1-19 ACRES**

RACCOON

SMALL RODENT

COTTONTAIL

SQUIRREL

MUSKRAT

RED FOX

SONGBIRDS

SKUNK

MOST REPTILES

MOST AMPHIBIANS



Comprehensive Planning Data: Undeveloped Blocks and Connectors



BwH Map Viewer

Sedgwick, Maine

Conservation Strategies:

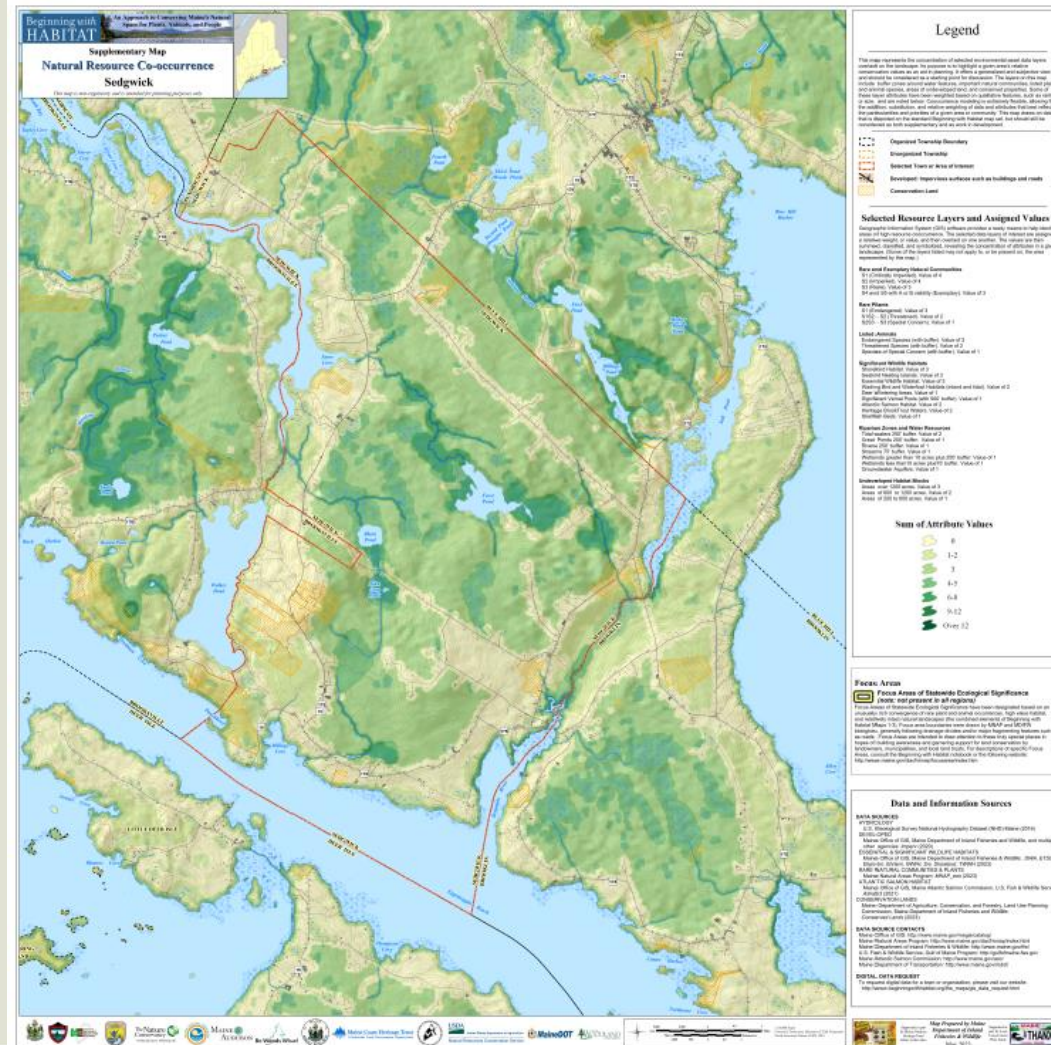
- Promote enrollment in Tree Growth and Open Space Tax Programs
- Overlay Zoning Districts that minimize sprawl/fragmentation
- Clustered or Conservation Subdivision design requirements
- Partnerships with local land trusts



Comprehensive Planning Data: Co-occurrence Modeling Approach



- Purpose: Determine the places with the highest conservation values, helps identify and prioritize conservation efforts
- Identify the land-related attributes for consideration
- Determine a relative value for each attribute with flexibility to adjust based on local priorities and situations



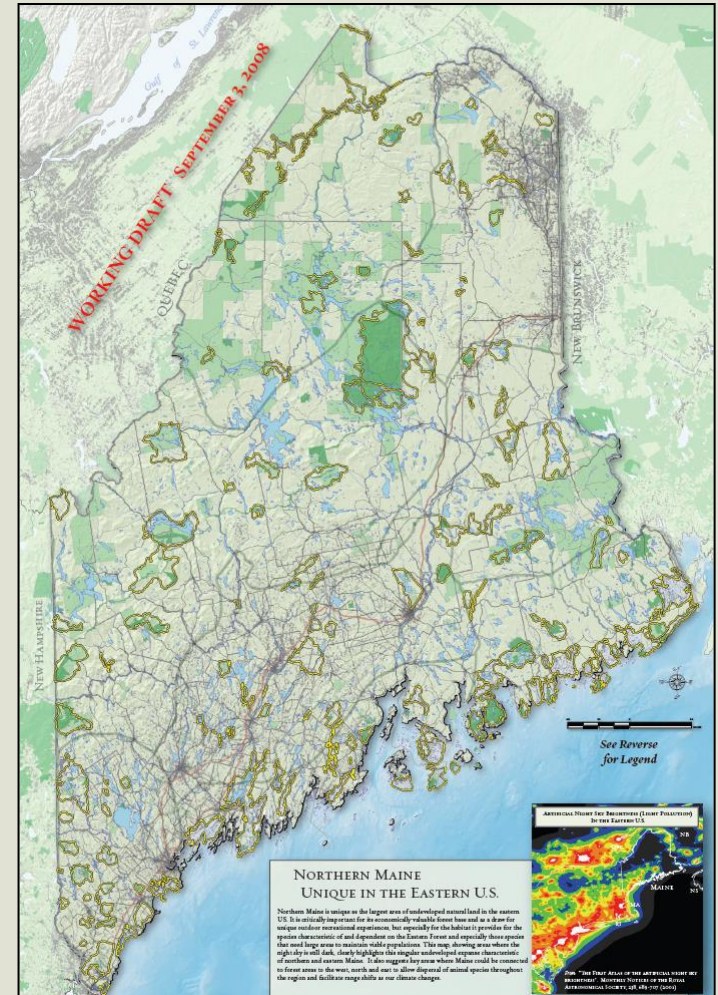
Comprehensive Planning Data: Co-occurrence Modeling



Landscape Level Conservation: Focus Areas of Statewide Significance



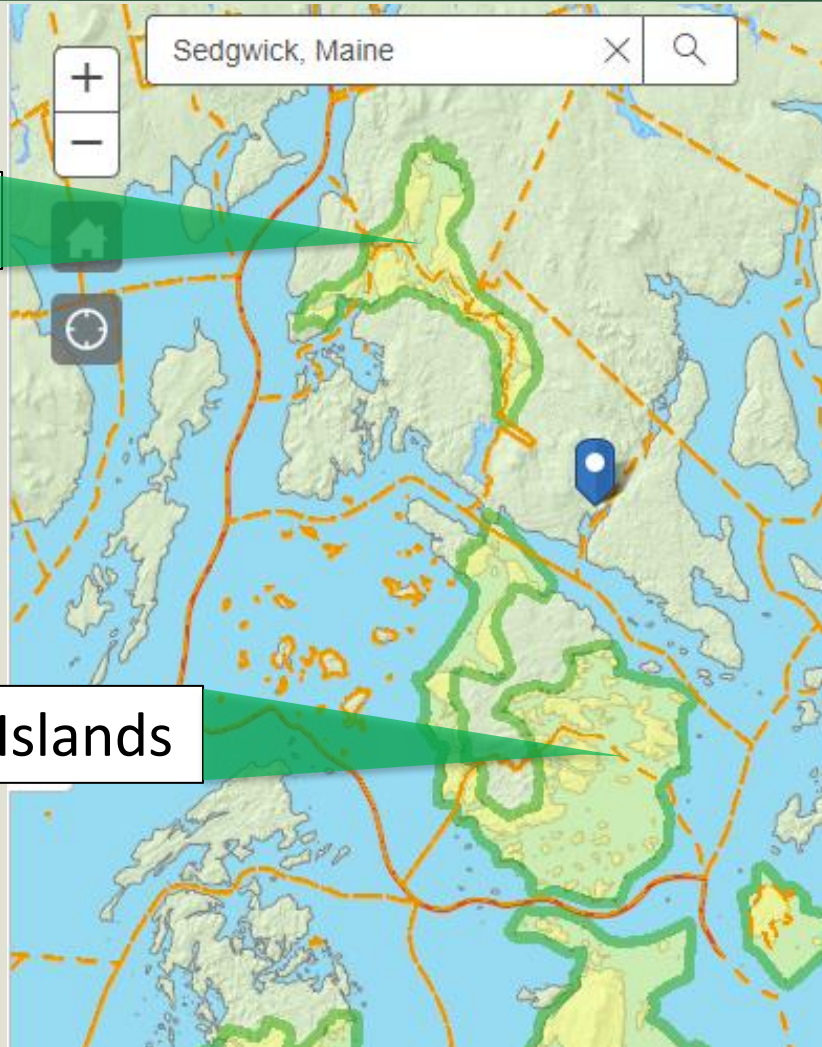
- Natural areas that contain unusually rich concentrations of at-risk species and habitats.
- Focus Areas represent the very highest quality concentrations of important habitats in the state.
- Towns and land trusts can work together on comprehensive and open space plans and capitalize on opportunities where goals coincide.



Landscape Level Conservation: Focus Areas of Statewide Significance



Bagaduce River



Penobscot Bay and Islands

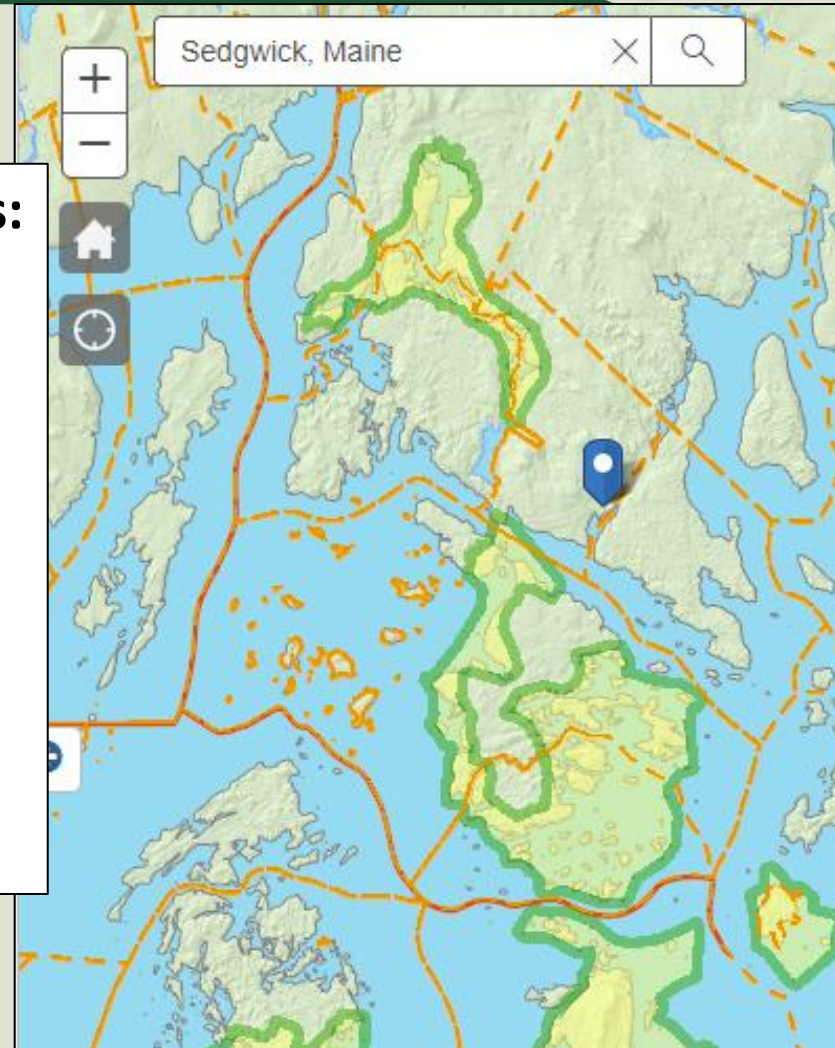


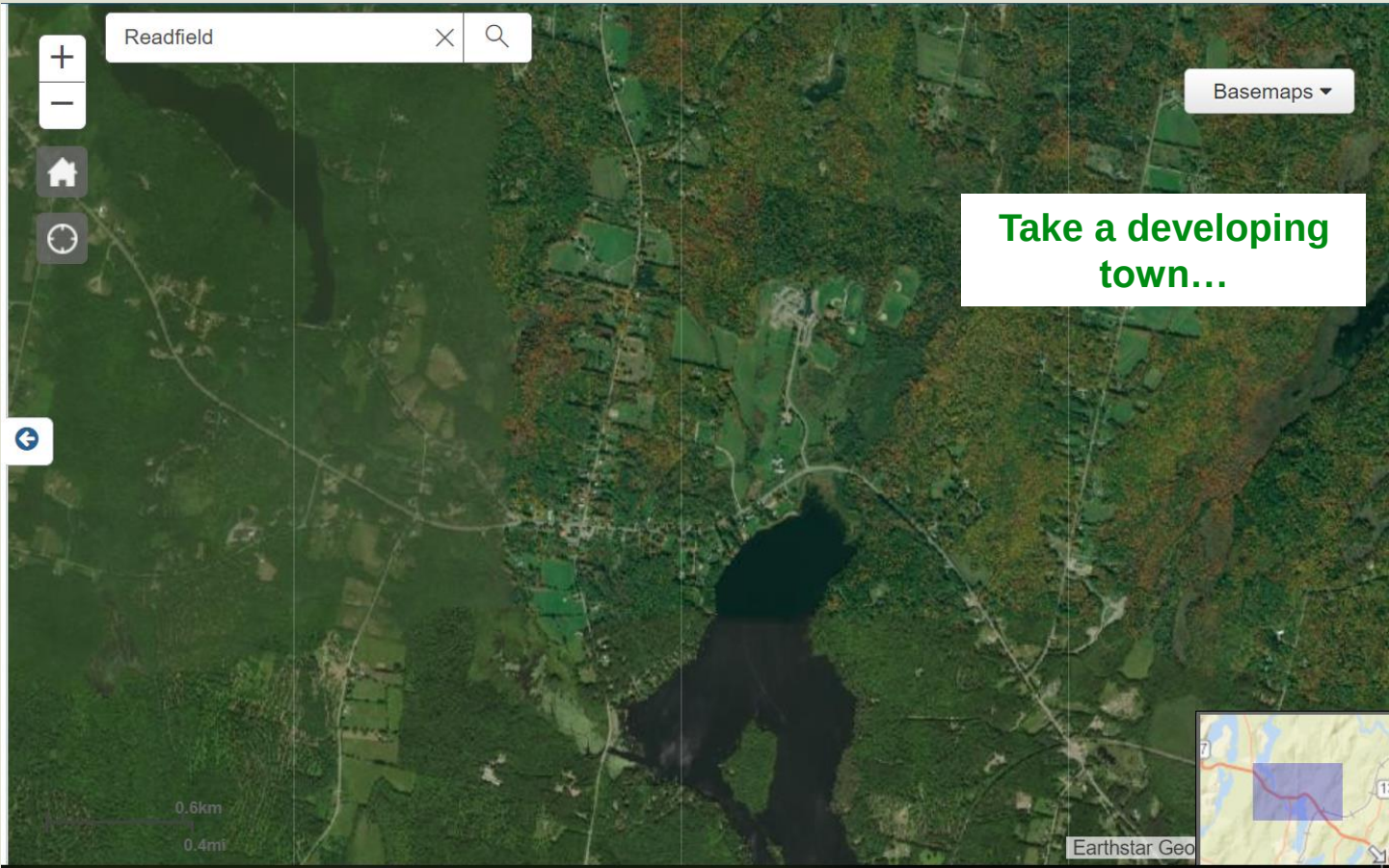
Landscape Level Conservation: Focus Areas of Statewide Significance



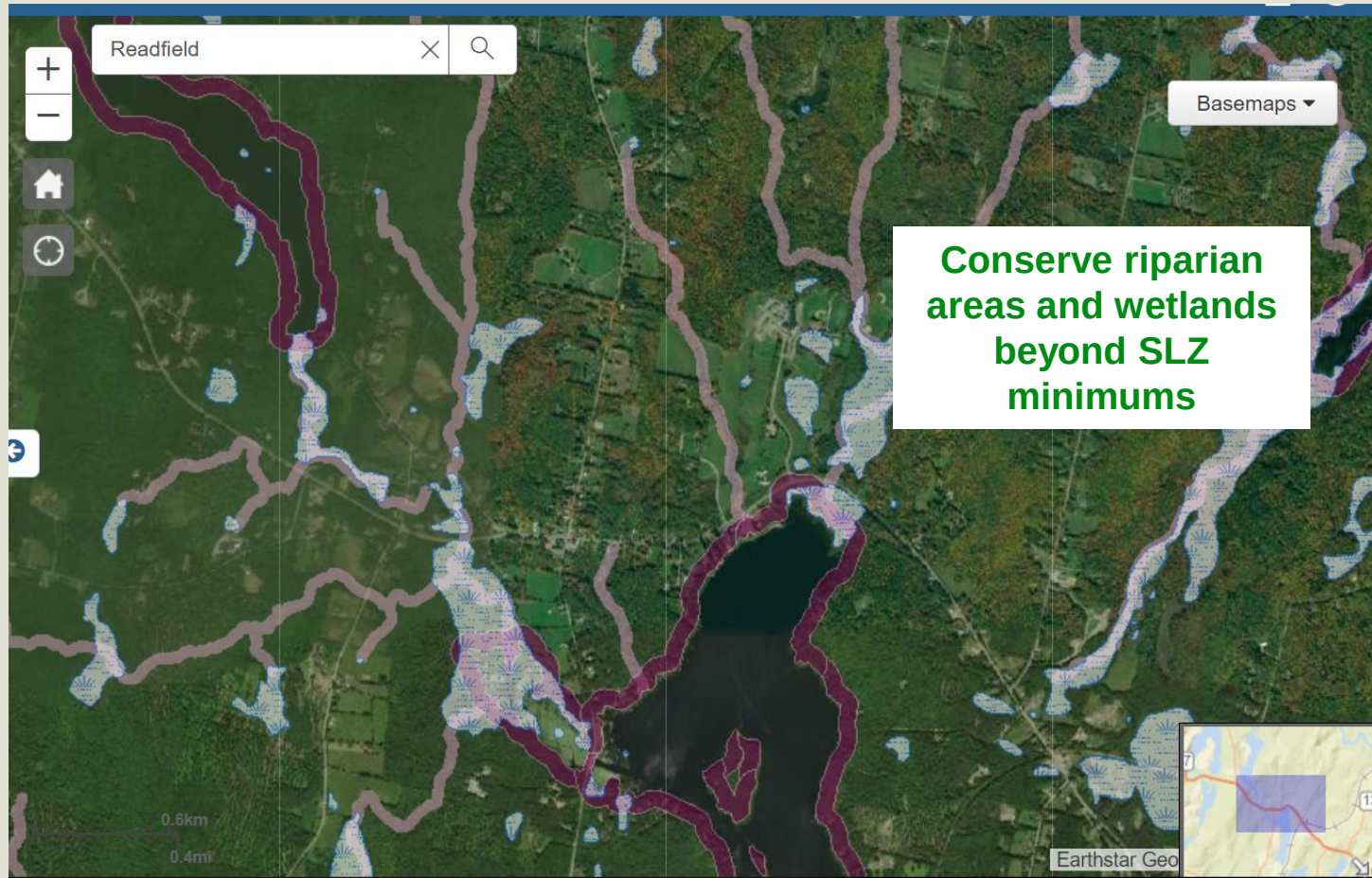
Climate-Smart Conservation Strategies:

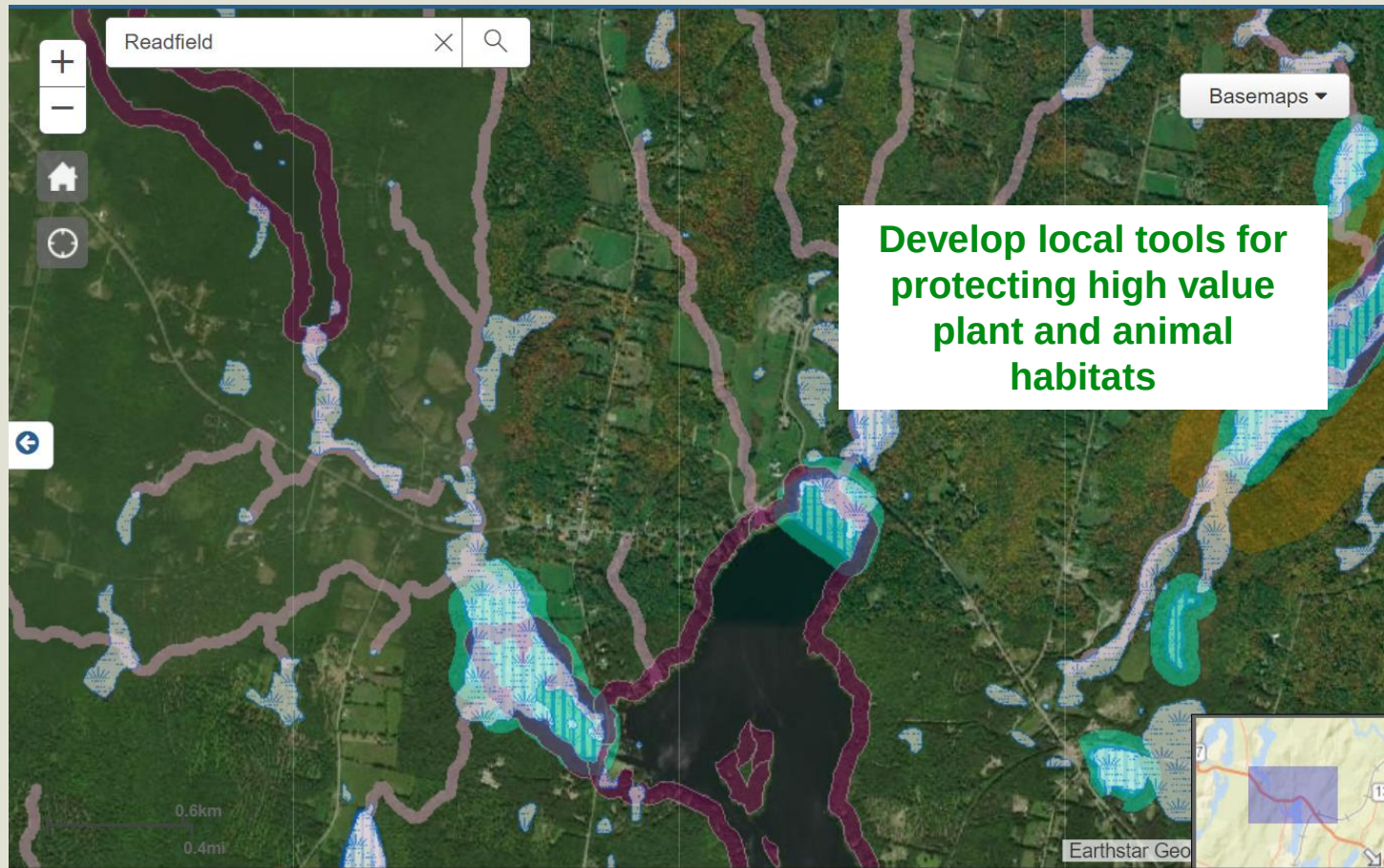
- Permanent conservation of unprotected and undeveloped lands within Focus Areas
- Improved connectivity of conserved parcels and riparian corridors
- Maintain intact forested buffers along water bodies and wetlands
- Identify and restore tidal restrictions and undersized culverts

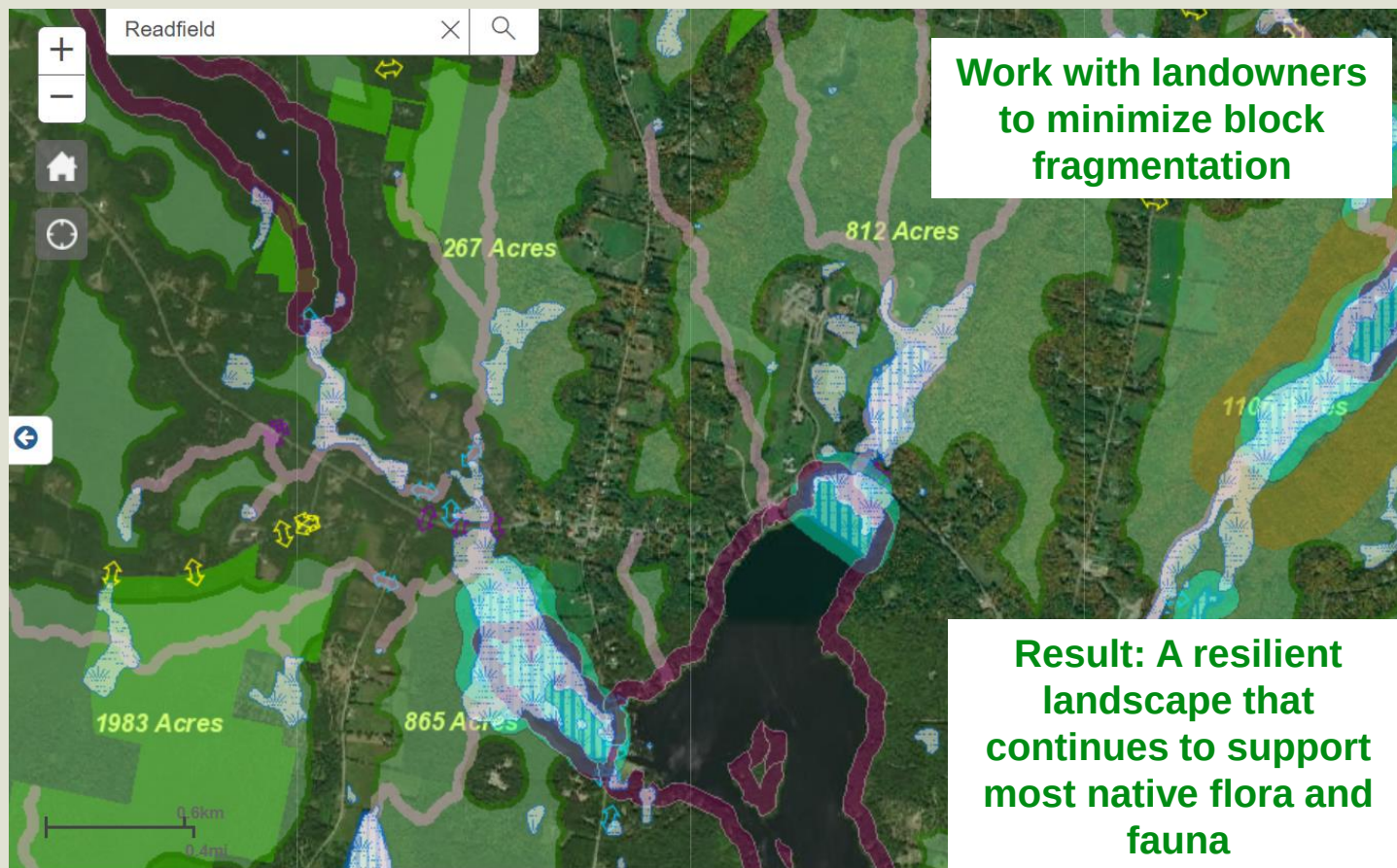




Take a developing
town...







Conservation in a Changing Climate



- Beginning with Habitat principles increase resiliency!
 - Conservation of unique and biodiverse Focus Areas
 - Municipal tools to protect undeveloped blocks, open spaces, and riparian corridors
 - Landscape-level connectivity and restoration
 - Local, Regional, and State collaboration

Questions?



Corinne Michaud-LeBlanc

Beginning with Habitat Program Climate Coordinator

Maine Department of Inland Fisheries and Wildlife

Corinne.L.Michaud-LeBlanc@maine.gov

207-592-5841

PLEASE SUPPORT MAINE'S ENDANGERED & NONGAME WILDLIFE!

Purchase a Loon Plate | Check-off at Tax Time

