Conservation in the Sebasticook River Watershed: Planning for Climate Resilience

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Maine Department of Inland Fisheries and Wildlife

Outline

- Introduction to Beginning with Habitat program and concepts
- Discussion of climate change impacts in Maine
- SRLT region examples and strategies

- *Themes*: Landscape connectivity, climate resilience

Introduction

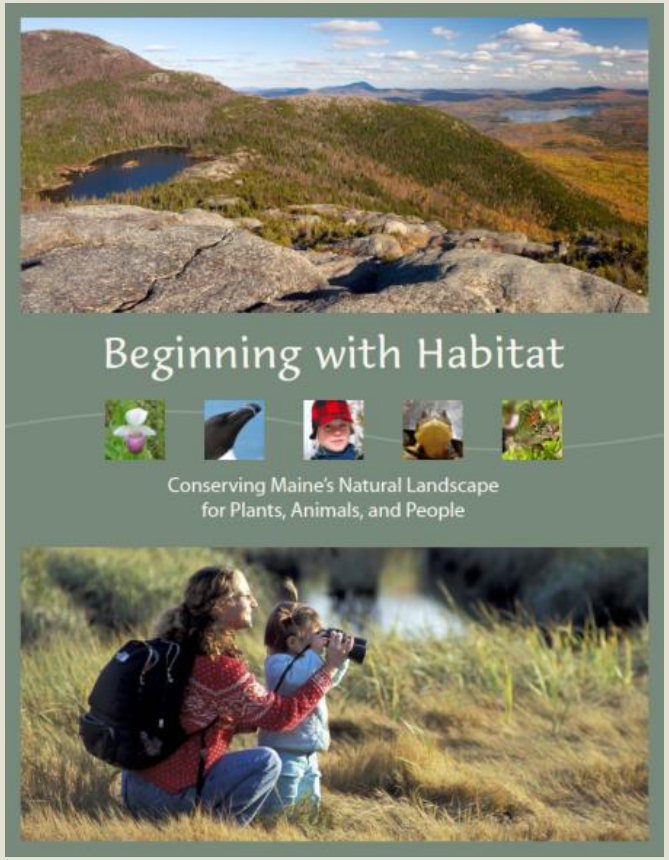
Species

Habitats

Access

BEGINNING WITH HABITAT

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.

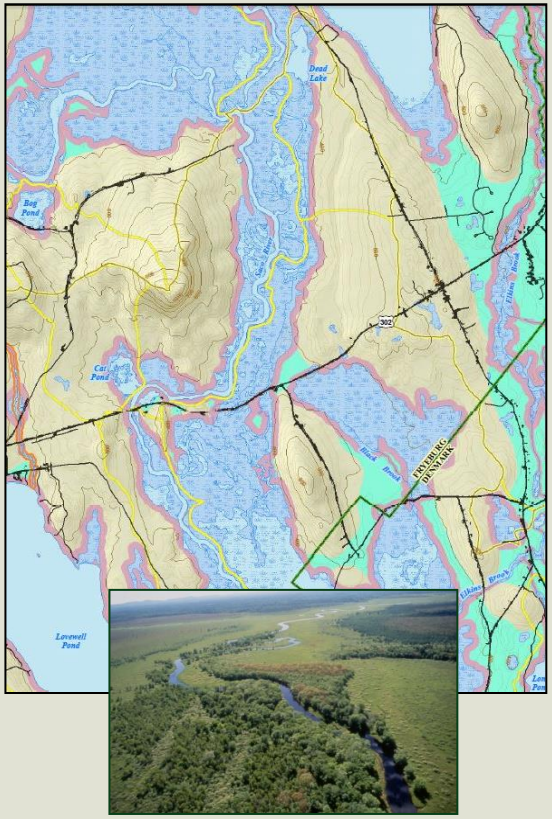
Purpose:

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

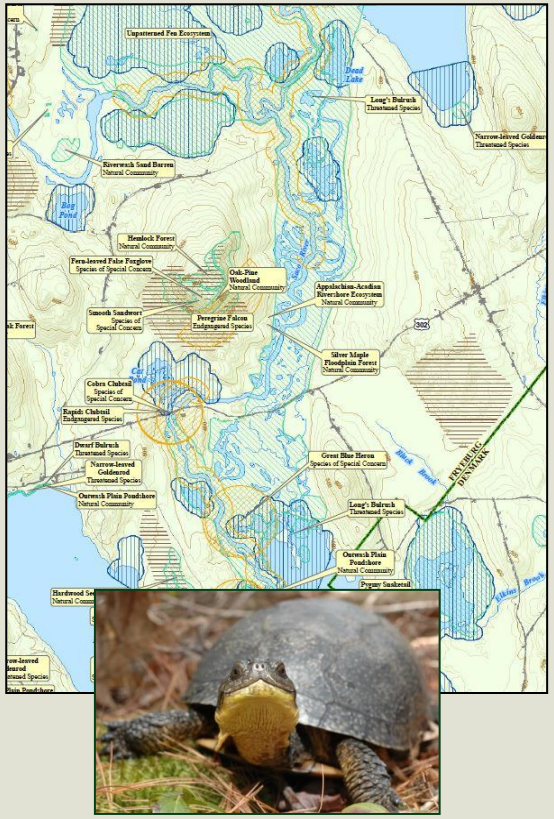
Beginning with Habitat Tools

Print and Digital Maps

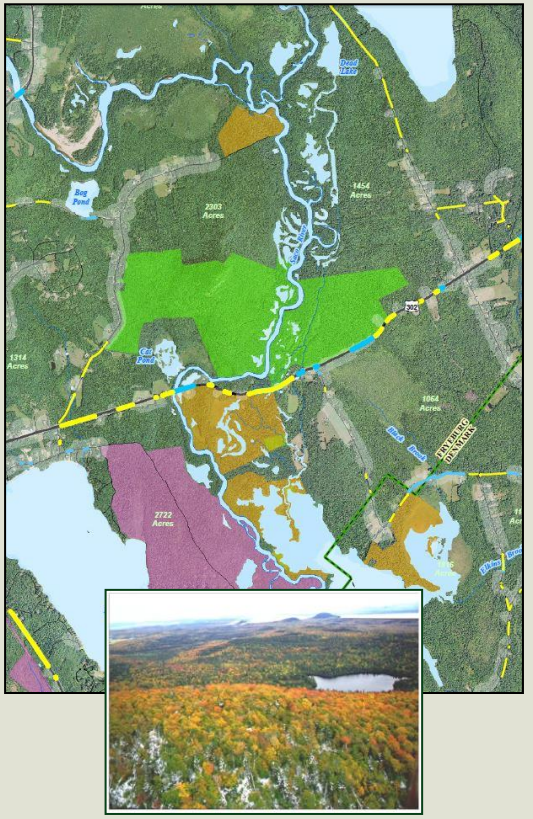
Map 1



Map 2

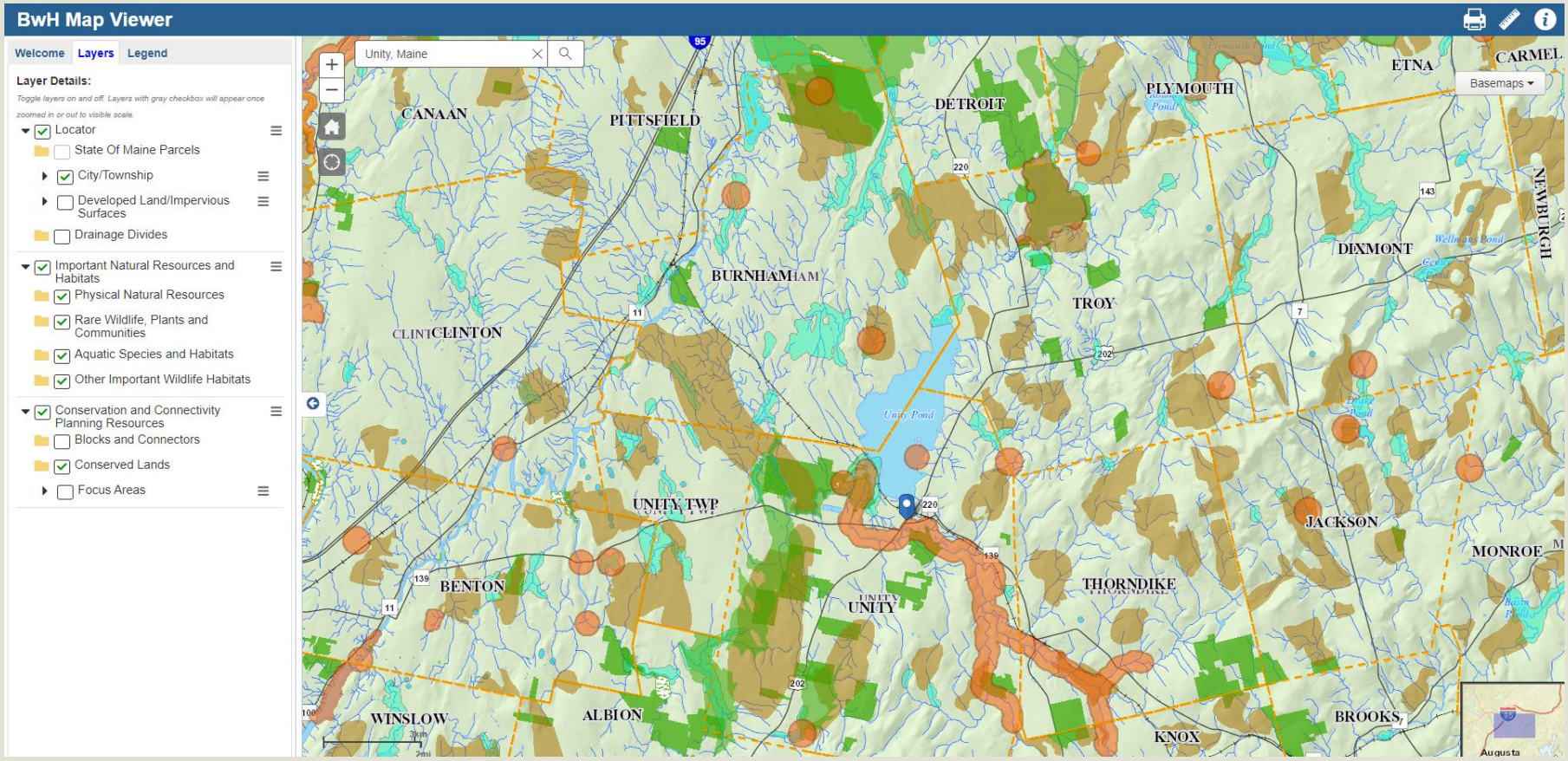


Map 3



Beginning with Habitat Tools

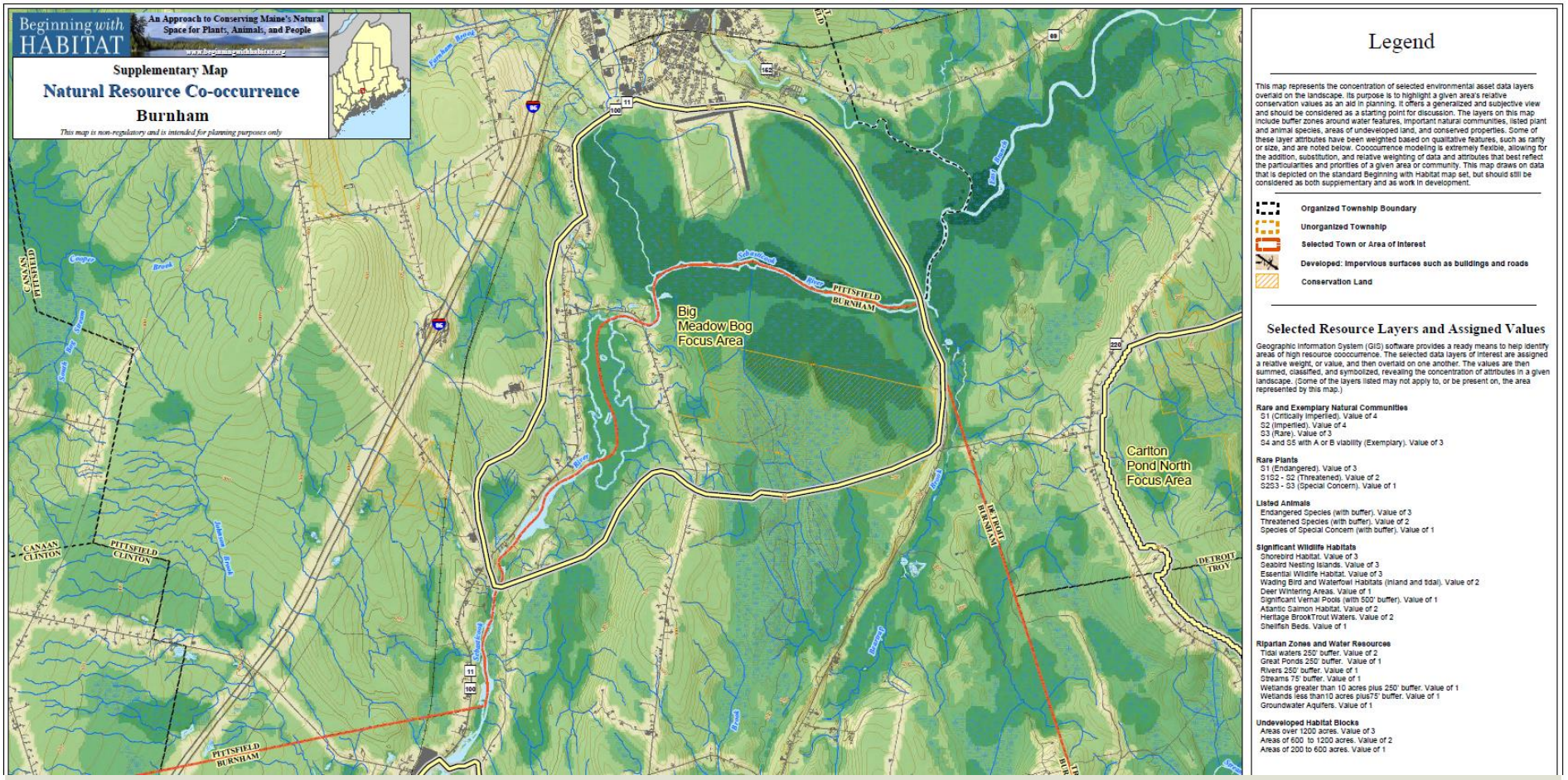
Online Map Viewer



Beginning with Habitat Tools: Co-occurrence Modeling

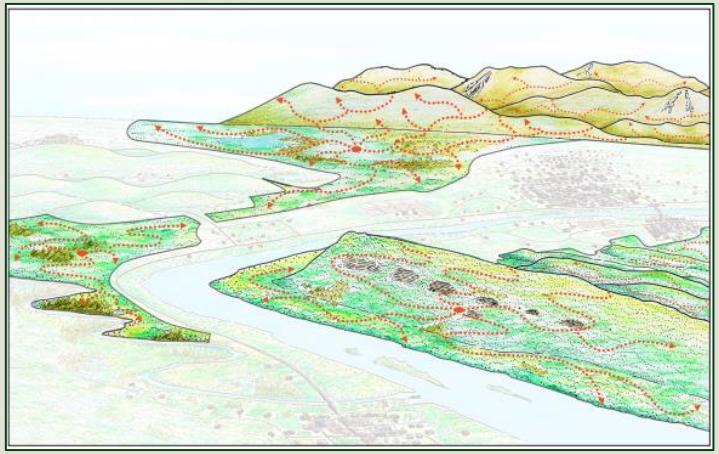
- Purpose: Determine the places with the highest conservation values, helps identify and prioritize conservation efforts
- Identify the land-related attributes for consideration
- Determine a relative value for each attribute with flexibility to adjust based on local priorities and situations

Beginning with Habitat Tools: Co-occurrence Modeling



Conserving Nature's Stage

The Stage



Underlying Geology

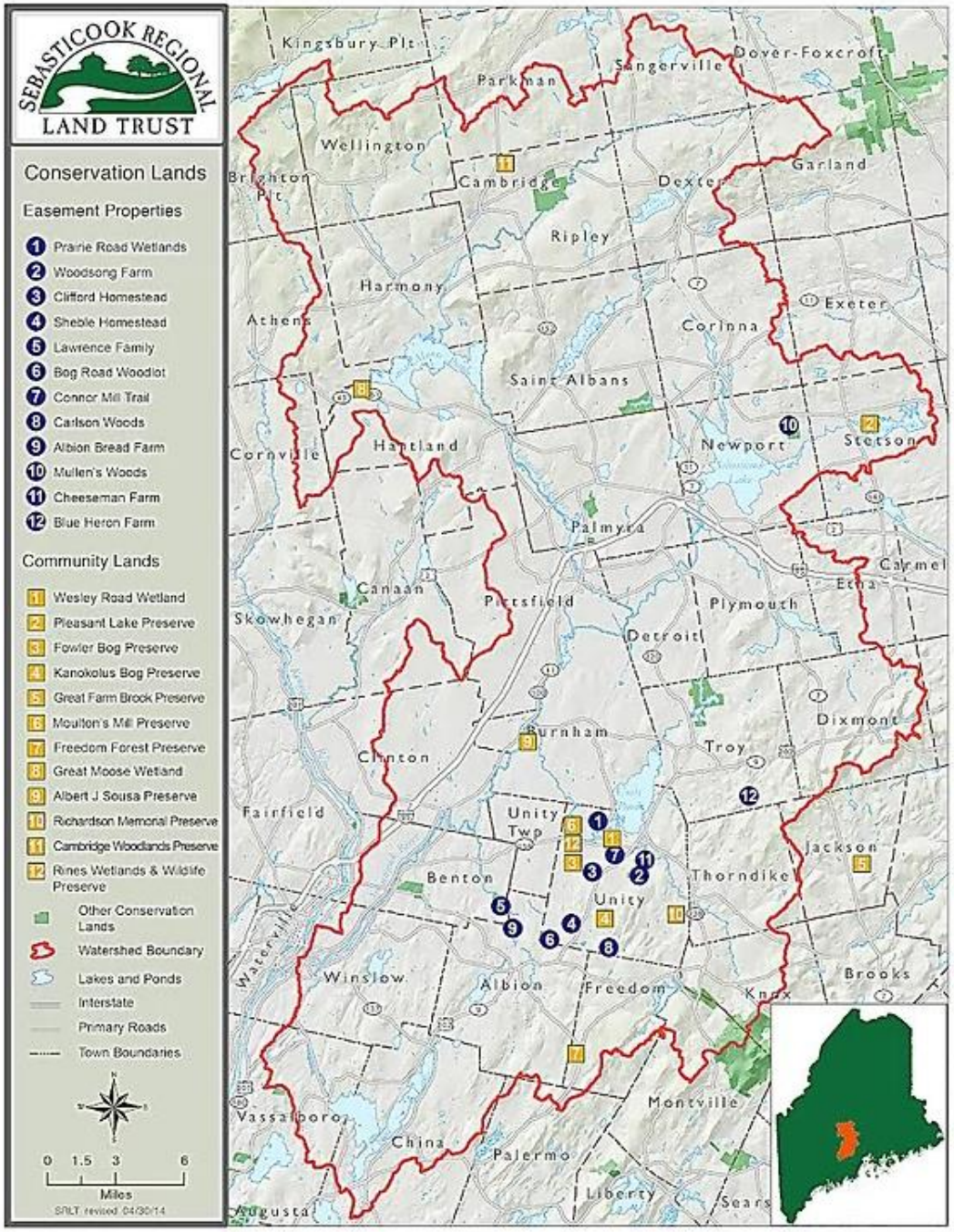
+

Landforms

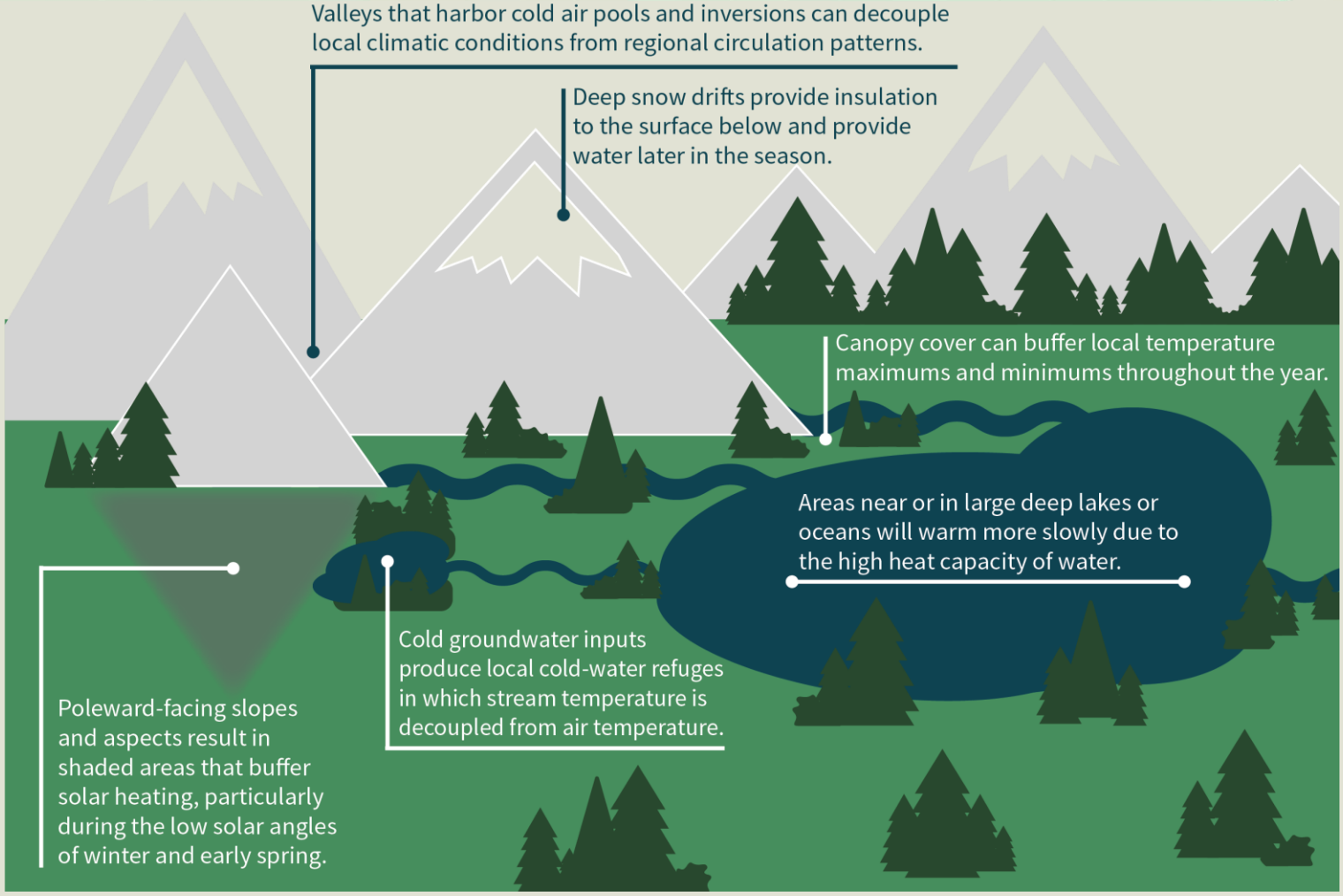
=

Diversity

The Actors


SEBASTICOOK REGIONAL LAND TRUST
Conservation Lands
Easement Properties
1 Prairie Road Wetlands
2 Woodsong Farm
3 Clifford Homestead
4 Sheble Homestead
5 Lawrence Family
6 Bog Road Woodlot
7 Connor Mill Trail
8 Carlson Woods
9 Albion Bread Farm
10 Mullen's Woods
11 Cheeseman Farm
12 Blue Heron Farm
Community Lands
1 Wesley Road Wetland
2 Pleasant Lake Preserve
3 Fowler Bog Preserve
4 Kanokolus Bog Preserve
5 Great Farm Brook Preserve
6 Moulton's Mill Preserve
7 Freedom Forest Preserve
8 Great Moose Wetland
9 Albert J Sousa Preserve
10 Richardson Memorial Preserve
11 Cambridge Woodlands Preserve
12 Rines Wetlands & Wildlife Preserve
Other Conservation Lands
Watershed Boundary
Lakes and Ponds
Interstate
Primary Roads
Town Boundaries
0 1.5 3 6
Miles
SRLT revised 04/30/14
Kingsbury Plt
Parkman
Sangerville
Dover-Foxcroft
Wellington
Brighton Plt
Cambridge
Dexter
Garland
Ripley
Harmony
Athens
Corinna
Exeter
Saint Albans
Cornville
Hartland
Newport
Stetson
Palmyra
Carmel
Canaan
Pittsfield
Etna
Skowhegan
Plymouth
Detroit
Dixmont
Burnham
Clinton
Troy
Fairfield
Unity Twp
Jackson
Benton
Thorndike
Unity
Waterville
Winslow
Albion
Freedom
Knox
Brooks
Vassalboro
Montville
China
Palermo
Liberty
Sears
Augusta
MAINE
DEPT. OF INLAND FISHERIES AND WILDLIFE

Planning for Resilience: Climate Refugia



Toni Lyn Morelli, Northeast Climate Science Center, US Geological Survey Connie Millar, Pacific Southwest Research Station, US Forest Service

Planning for Resilience: Mitigation and Adaptation

Mitigation actions reduce the rate of climate change by avoiding or reducing greenhouse gas emissions, enhancing greenhouse gas storage, and advancing nature-based solutions.

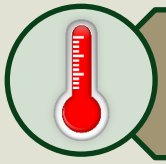
Adaptation actions adjust natural or human systems to prepare for and adjust to both the current and projected impacts of climate change.

Resilience is the capability to prepare for, respond to, and rapidly recover from significant hazard events and stresses imposed by climate change, and to adapt the system to be better prepared for future climate impacts.

What are some observed or 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

Climate Change Impacts: Direct



Air and water temperature changes and extremes

Precipitation changes and extremes

Increased storms and flooding

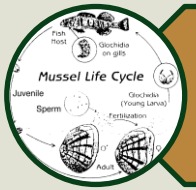
Sea level rise

Near-shore ocean acidification

Climate Change Impacts: Indirect

Longer growing seasons

Habitat changes and alterations



Species interaction changes

Phenology changes and mismatches

Climate Change Impacts: Interactions and Synergistic Effects

Habitat loss and fragmentation → Reduces species and habitat migration corridors

Increased invasive species → Changing thermal conditions support invasive species spread

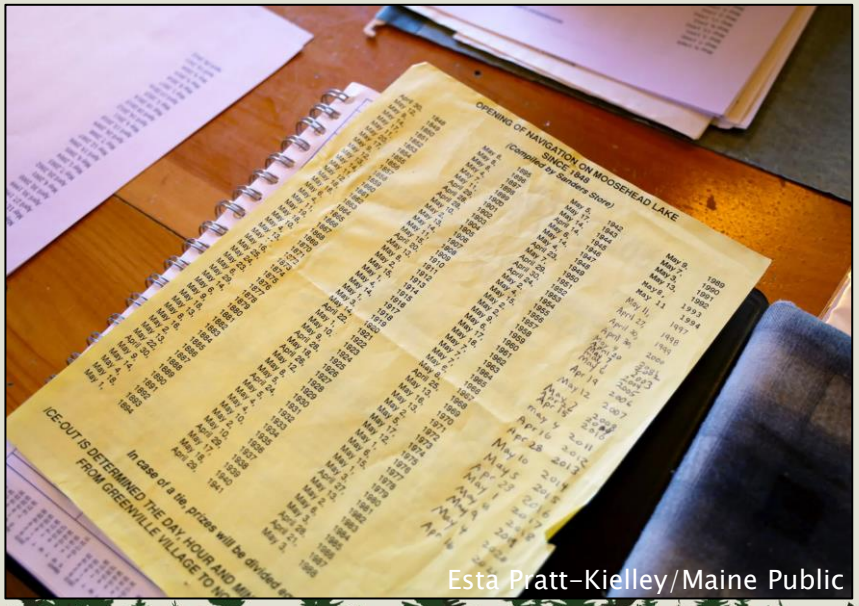
Increased diseases → Less winter die-off of disease organisms

Pollution → Warmer water exacerbates pollution impacts

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.

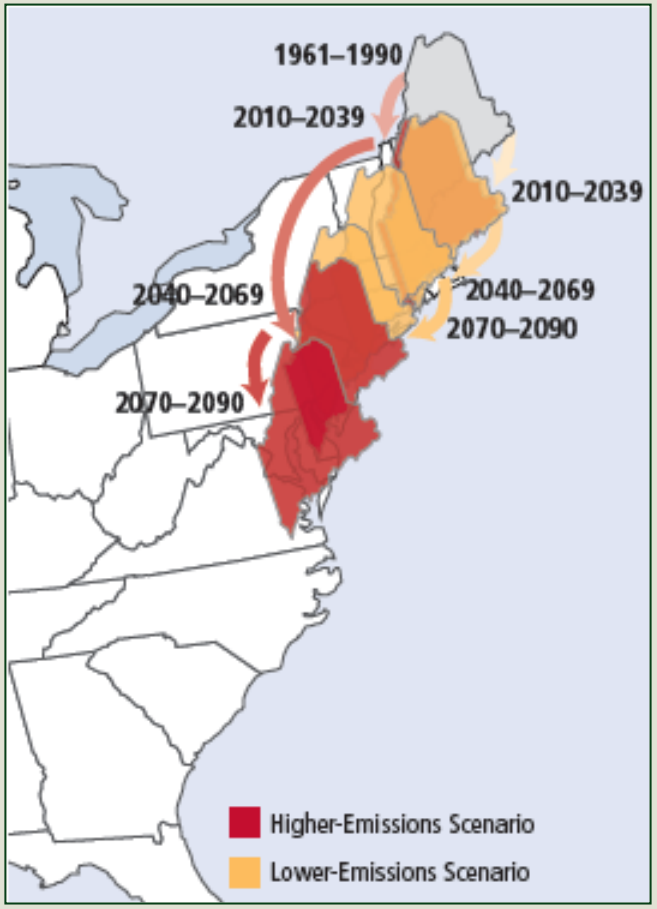
Culvert washout on Route 1 in Cyr Plantation, ME in May 2022 associated with a 50- to 100-year storm event. The washout resulted in road closure and detour and cost $2.8 M to repair.

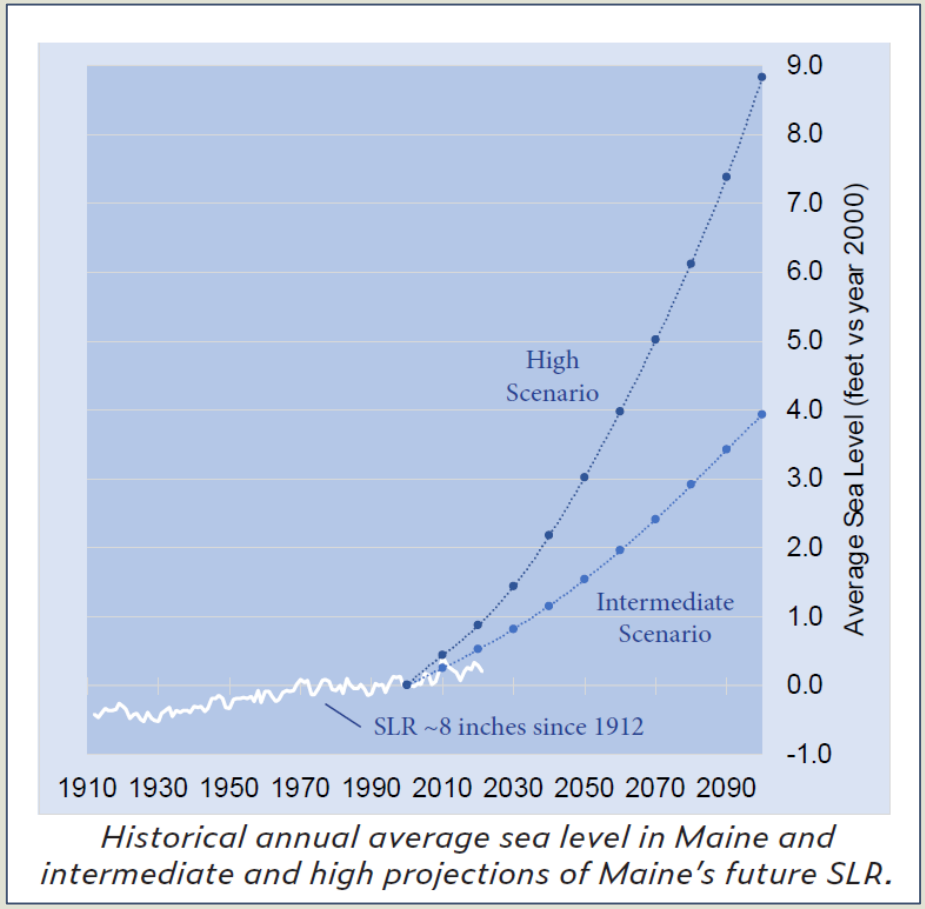
Friends of Lake Winnecook



Esta Pratt-Kielley/Maine Public

Modeling and Research

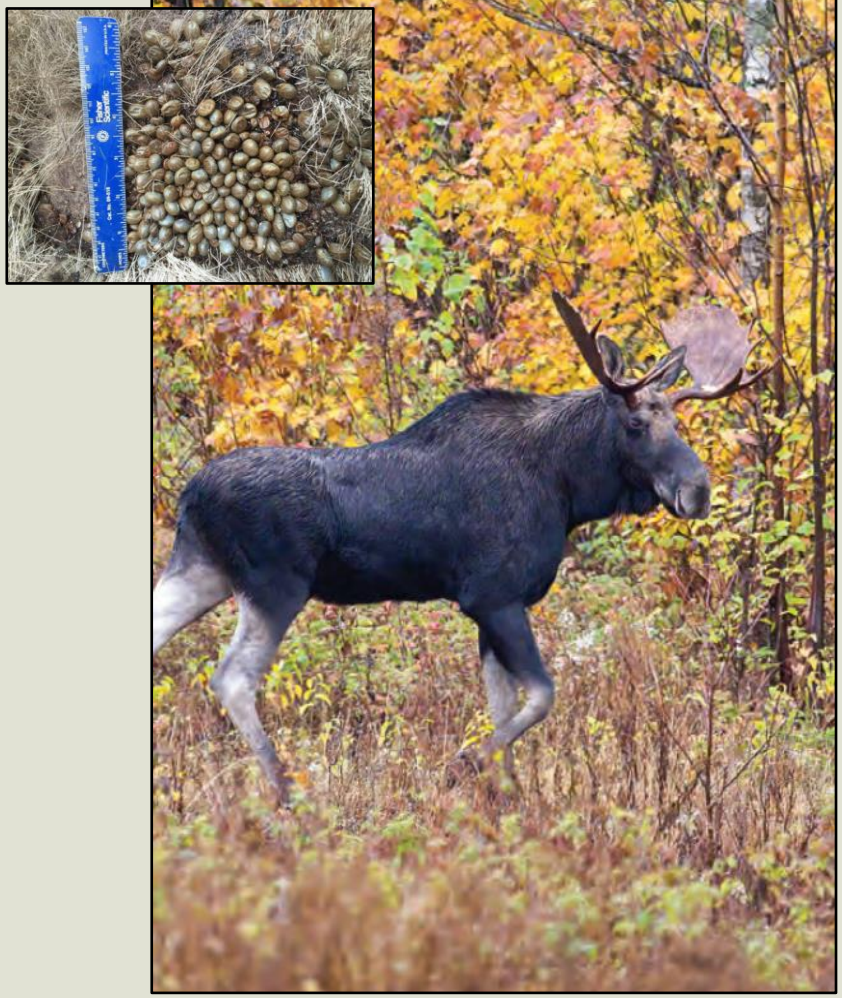


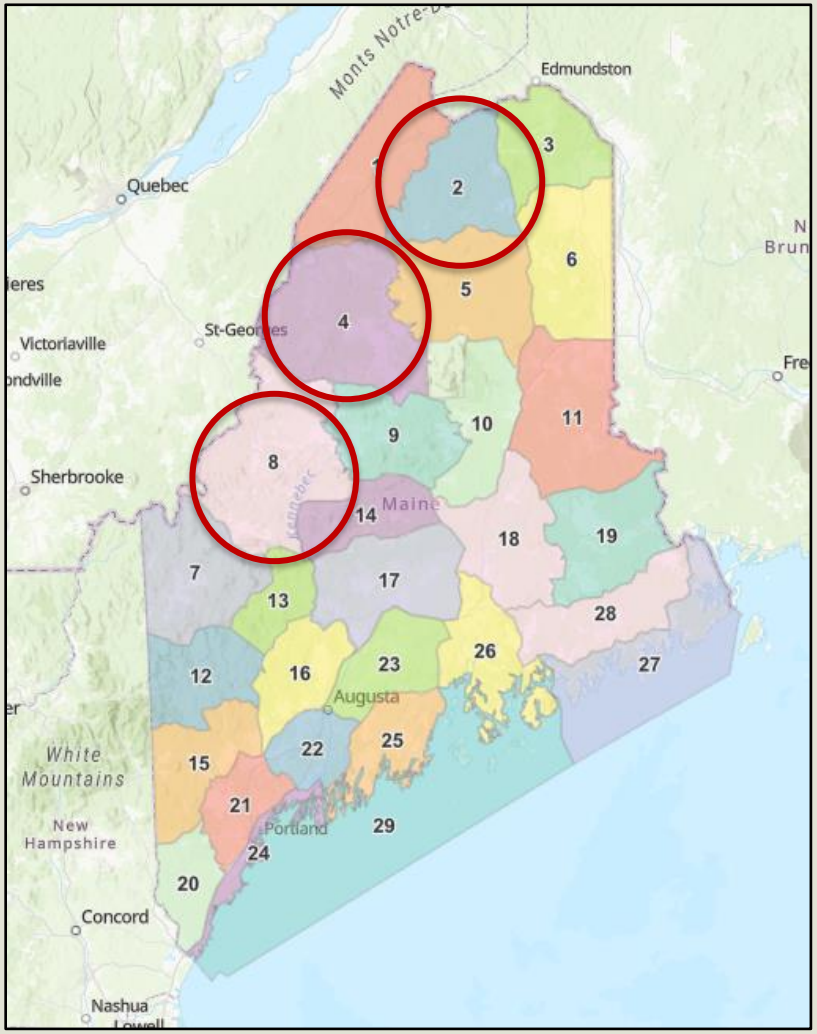


Historical annual average sea level in Maine and intermediate and high projections of Maine's future SLR.

https://climatecouncil.maine.gov/sea-level-rise-maine-accelerating-problem

Case Study: Warming Winters and Moose survival

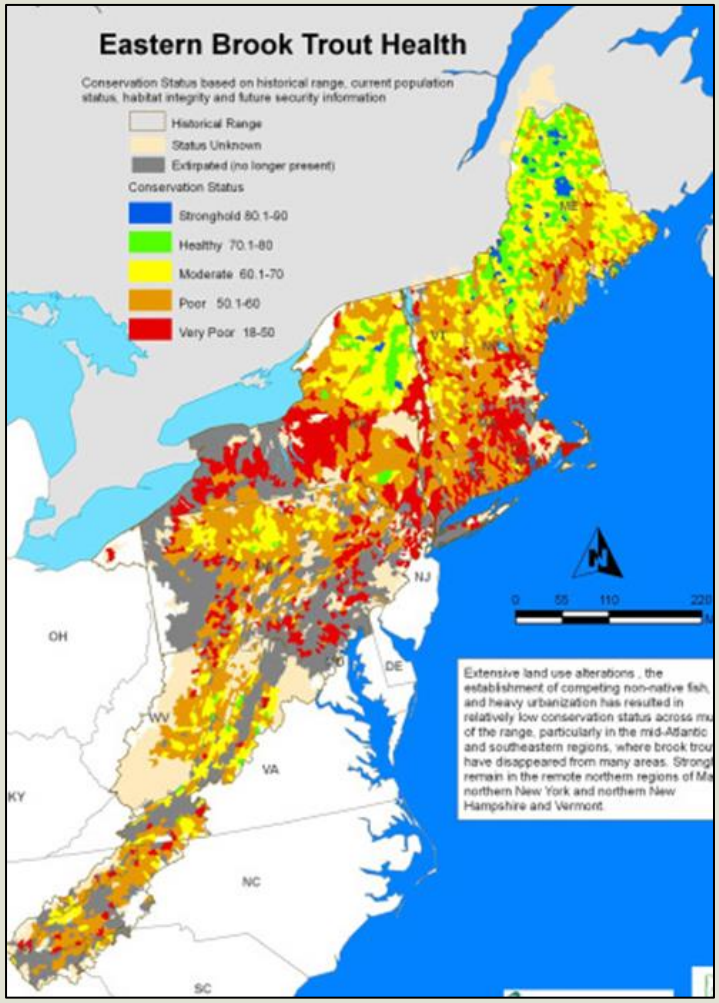




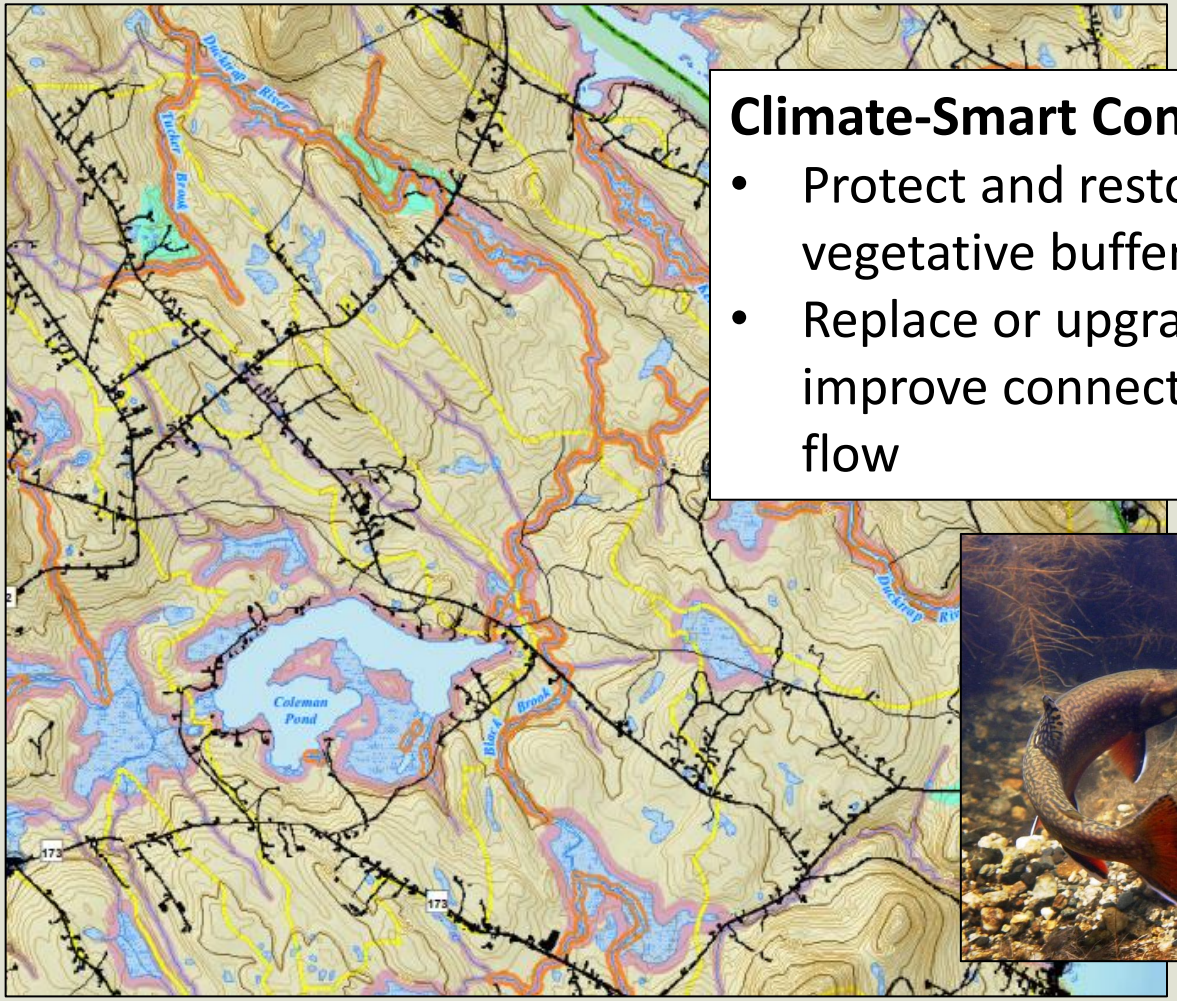
Case Study: Warming Waters and Eastern Brook Trout

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

Case Study: Warming Waters and Eastern Brook Trout



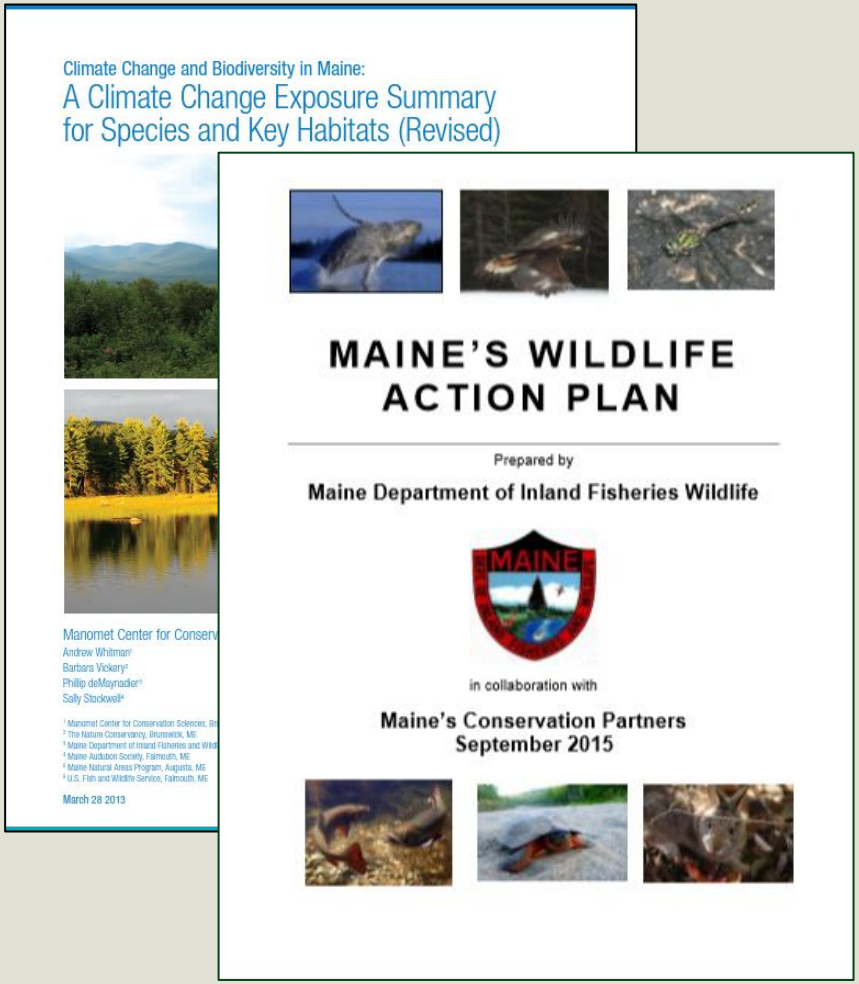
Case Study: Warming Waters and Eastern Brook Trout

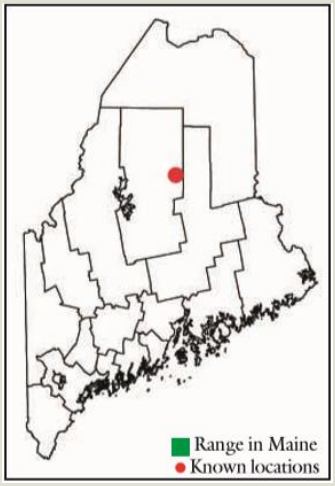


Climate-Smart Conservation Strategies:

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

Changing Our Planning with a Changing Climate





State and Federally Protected Species in the SRLT Region

Black Tern, State Endangered

Atlantic Salmon, Federally Endangered

Least Bittern, State Endangered

Tidewater Mucket, State Threatened

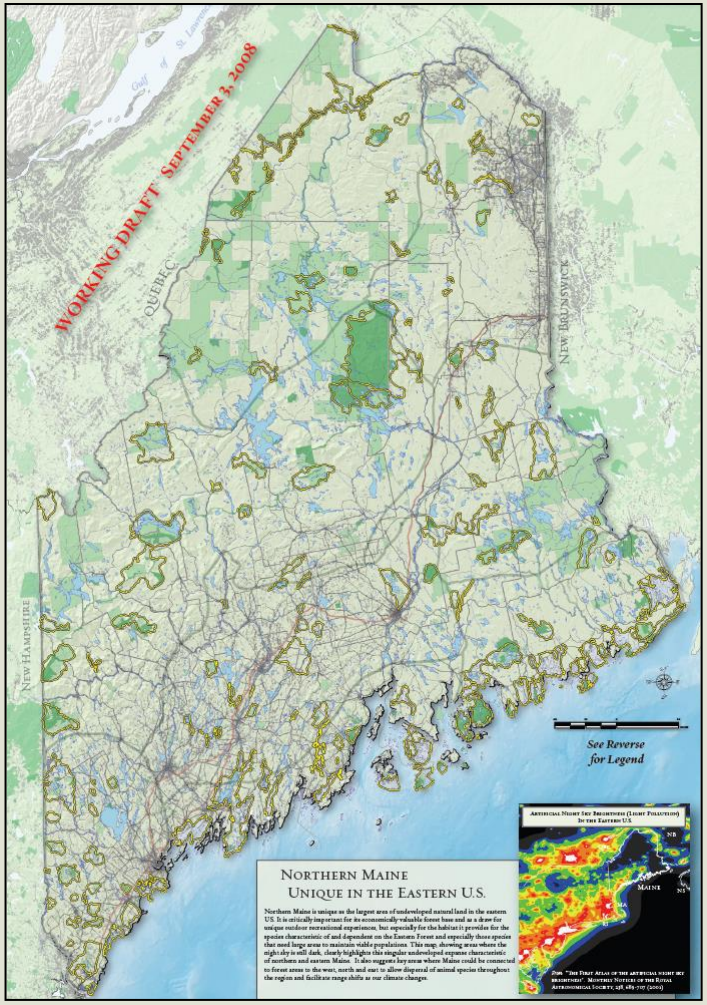
Wood Turtle, State Endangered

Common Gallinule, State Threatened

Photos: https://www.allaboutbirds.org/ ; https://www.maine.gov/ifw/docs/endangered/tidewatermucket_90_91.pdf

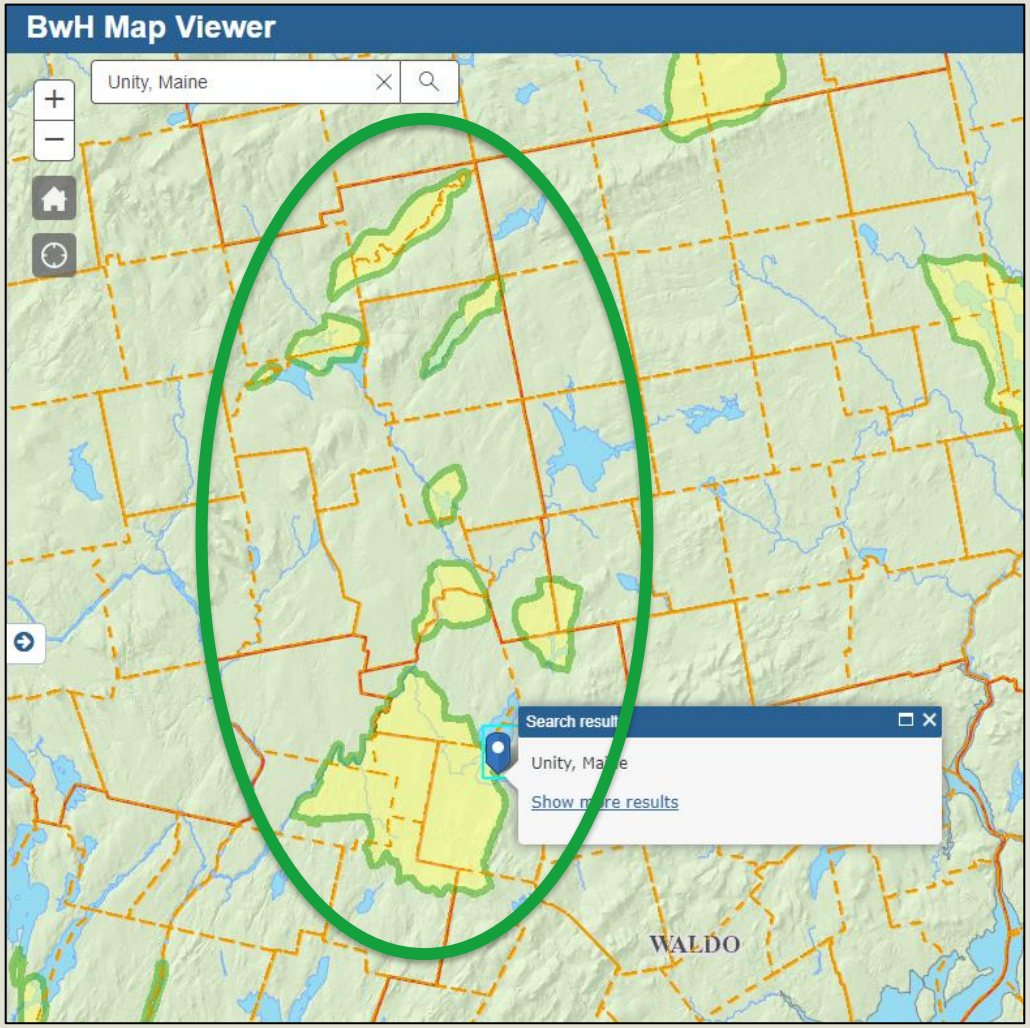
Focus Areas of Statewide Significance

- 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 and other partners can work together to plan and capitalize on opportunities where conservation goals coincide.



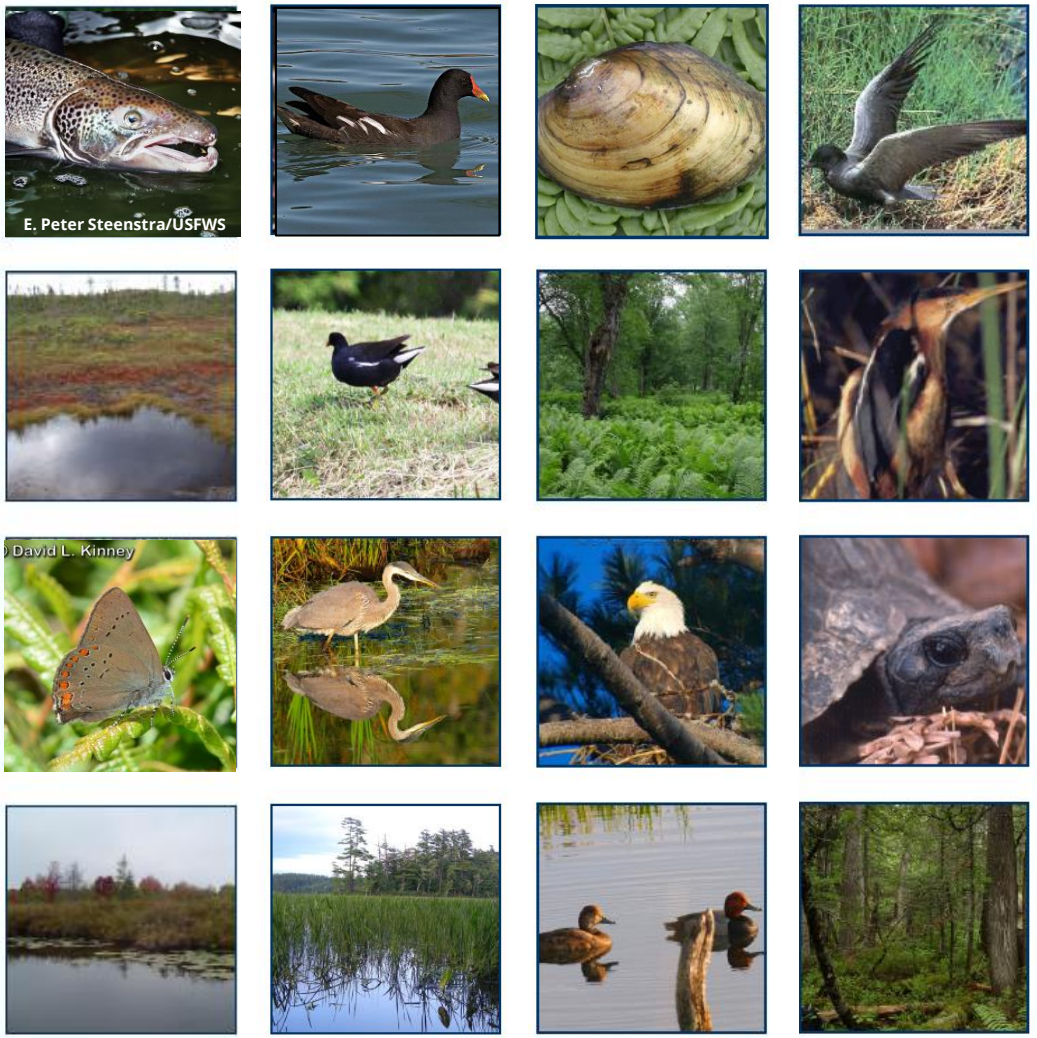
Focus Areas of Statewide Significance

- Upper Sebasticook River Wetlands
- Great Moose Lake
- Indian and Little Indian Ponds
- Douglas Pond and Madawaska Bog
- Big Meadow Bog
- Carlton Pond North
- Unity Wetlands



Focus Areas of Statewide Significance: Conservation Strategies

- Work with willing landowners to secure permanent conservation
- Education and outreach to landowners and communities
- Maintain intact forested buffers along waterbodies and wetlands
- Monitor and remove invasive plants



Conservation in a Changing Climate

- Beginning with Habitat principles increase resiliency!
  - Conservation of unique and biodiverse Focus Areas
  - Municipal tools to protect undeveloped blocks and open spaces
  - Landscape-level connectivity and restoration

Conserving Natural and Working Lands:

An Effective Adaptation and Mitigation Strategy

Sequester 75% Maine's carbon emissions

70% Mainers recreate outdoors

$620 million from forest product industry

$8.2 billion annually in outdoor recreation

Ways You Can Get Involved

- Learning about best management practices for your land
- Visiting and supporting public conserved lands
- Getting involved in conservation efforts with your town or local land trust

Questions?

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