



Welcome

Tonight's informal meeting is to increase awareness and understanding for developing a General Conservation Plan for the Penobscot River and listen to your ideas, comments and concerns.

For more information, please see the Website;

http://www.nero.noaa.gov/prot_res/altsalmon/conservationplan/index.html

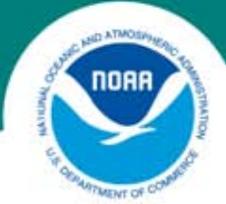
Science, Service, Stewardship



Building partnerships through a General Conservation Plan for the Penobscot River

Public Meeting
Penobscot SHRU
August 10, 2011

**NOAA
FISHERIES
SERVICE**



A Gulf of Maine Distinct Population Segment (GOM DPS) of Atlantic salmon was first listed as endangered in 2000.

In 2009 the GOM DPS range was expanded to include other large rivers in Maine including the Penobscot, Kennebec and Androscoggin.

NOAA identified separate geographic areas called Salmon Habitat Recovery Units (SHRUs) for establishing recovery goals.

Background



Salmon Habitat Recovery Units



Aquatic Ecosystems

Ecosystems evolve through interactions with the natural environment that shape the survival of any species or size of the population (ex. predators, quantity or quality of essential habitat, food availability)

Species will occupy less than favorable habitats only after quality habitat is over populated, modified or destroyed

However, human caused activities increase the rate of change and affects both:

- the number and frequency of limiting factors
- the range and distribution of marginal habitats



Factors limiting population growth



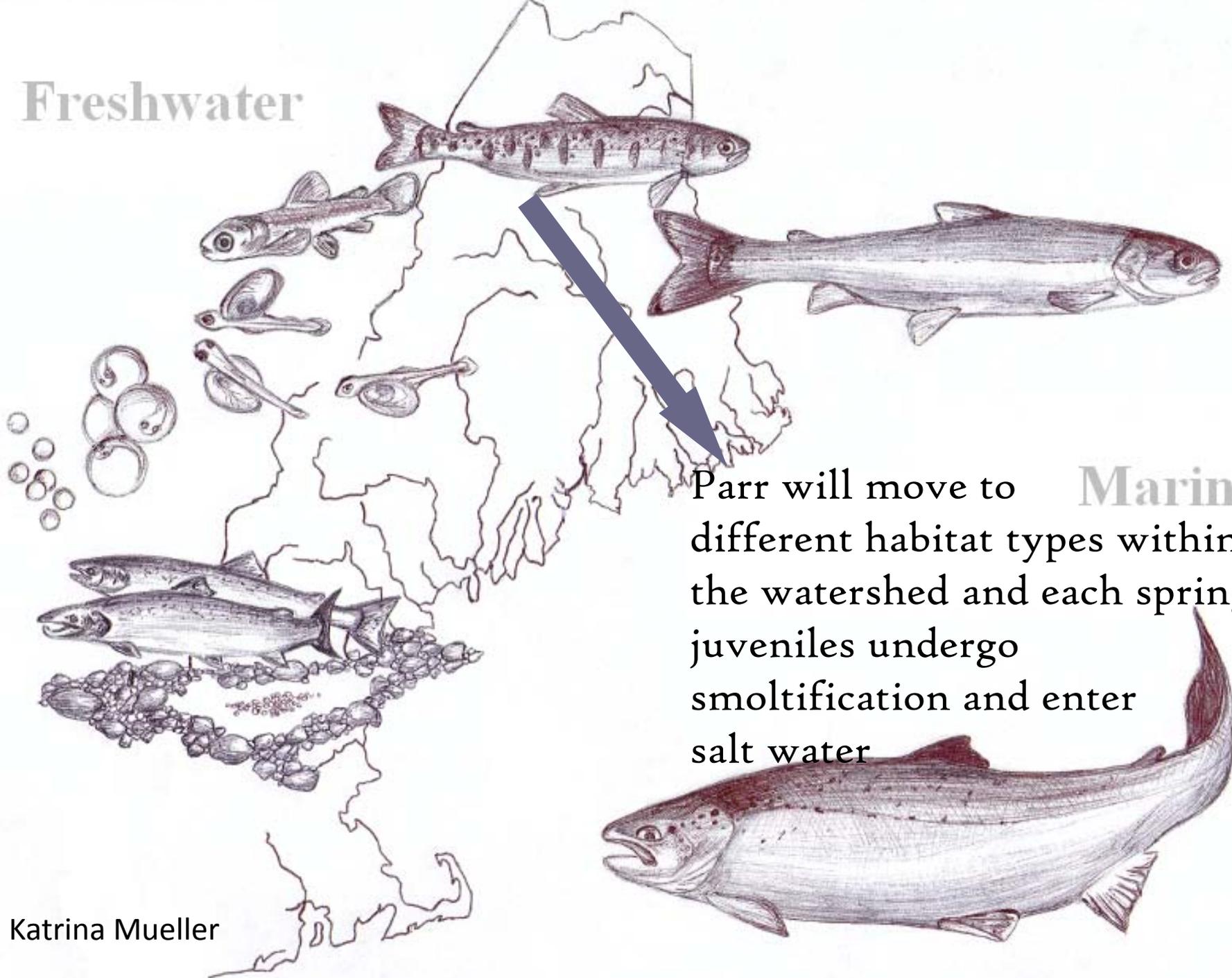
- Obstructed access to essential habitat from man-made barriers (dams and culverts)
- Essential habitat quality and quantity
 - Water temperature, flow and dissolved oxygen levels, impacted substrate
- Introduced non-native species
 - Competition for Food and Space
 - Predation and Disease
- Marine Environment



What do salmon need?

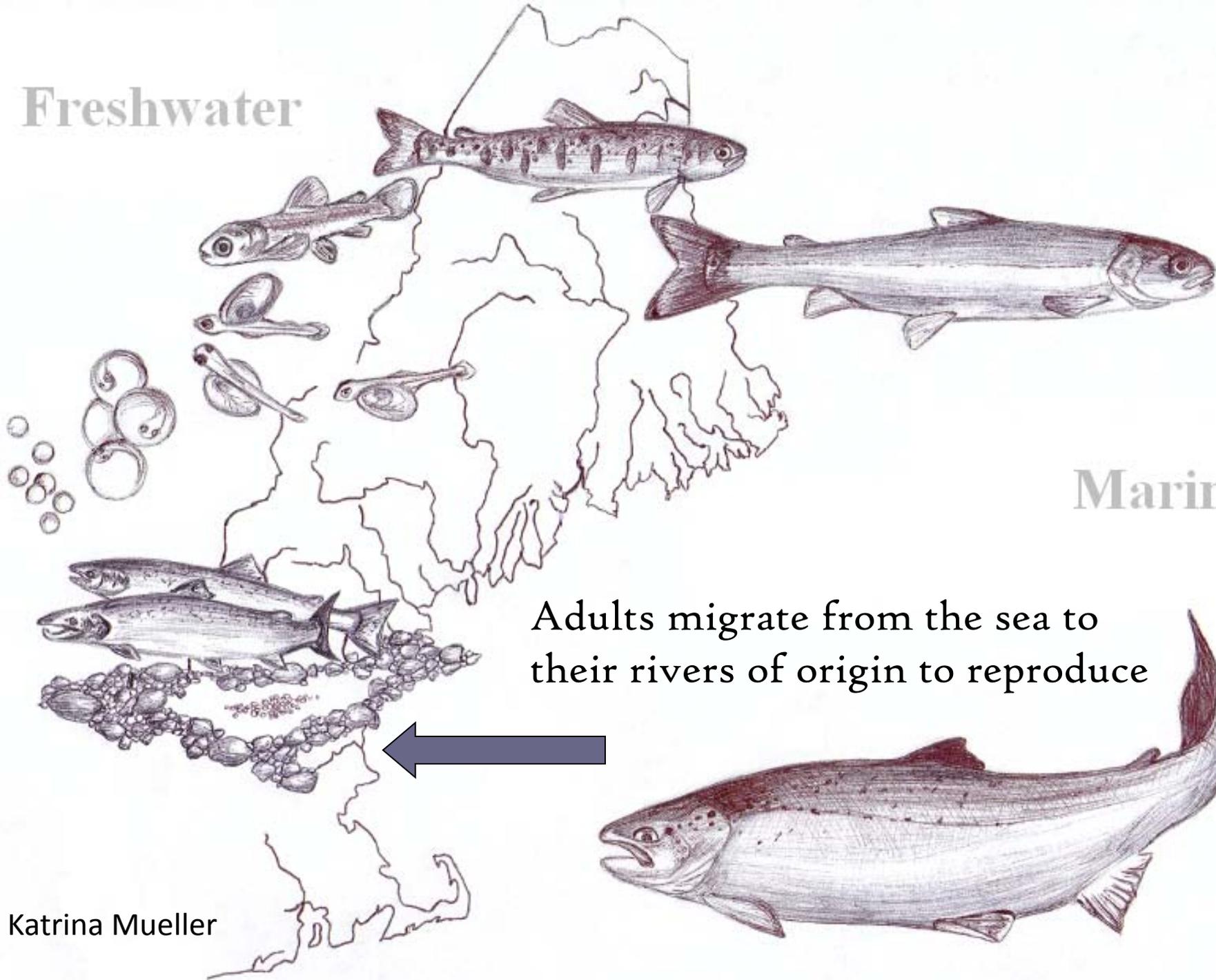
- Access to essential habitat through an open corridor that provides;
 - **adults** timely access to spawning habitats
 - **smolts** timely access to the marine environment
 - **parr** access to freshwater sites for feeding and refuge
- Well oxygenated gravel/cobble substrate for spawning
- Diverse, abundant habitats for juvenile feeding and growth
- An ocean full of food to support maturation and extensive marine migrations

Freshwater



Parr will move to **Marine** different habitat types within the watershed and each spring juveniles undergo smoltification and enter salt water

Freshwater



Marine

Adults migrate from the sea to their rivers of origin to reproduce

Katrina Mueller



Where do salmon live?

In freshwater, juvenile Atlantic salmon can live anywhere they can successfully compete for food and space

- Rivers and streams
- Lakes and ponds
- Beaver bogs
- Estuaries





Habitat Diversity

Atlantic salmon require diverse habitat types which includes in stream structure such as; pools and riffles, gravel bars, boulders, undercut banks, large woody debris

- Promotes genetic diversity through natural selection
 - Increases salmons ability to cope with environmental variability
- Provides salmon with options to maximize survival

Diverse stream habitat in Maine



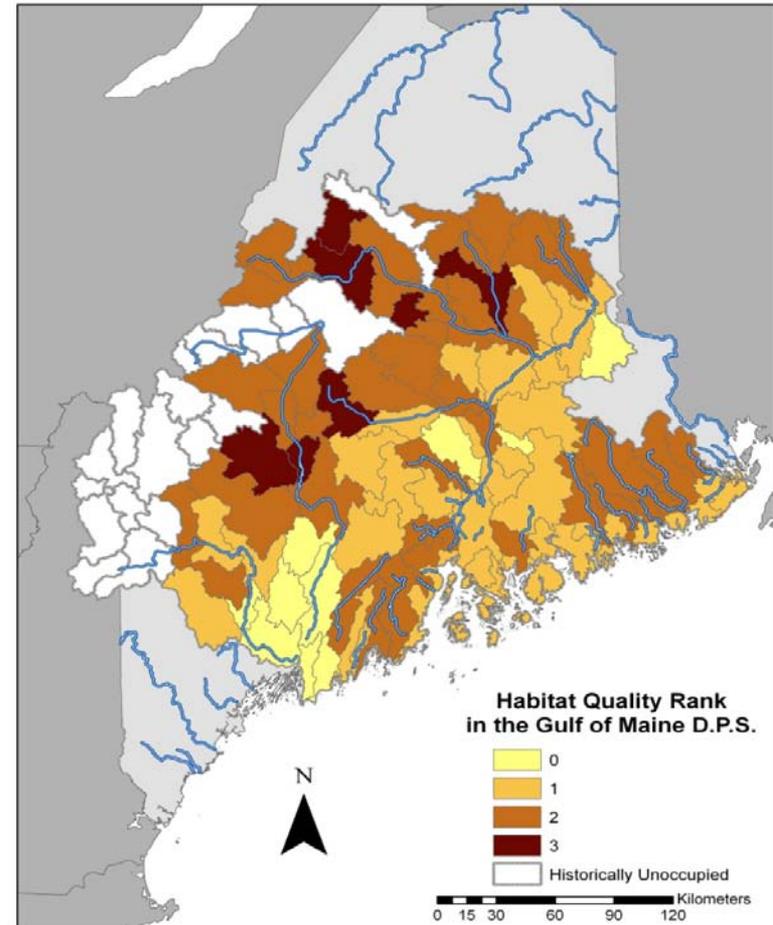


Habitat Accessibility in the GOM DPS

Of the 700,000 units of historic salmon habitat (1 unit = 100m²) within the GOM DPS, there are currently 414,000 units upstream of barriers to fish passage, including culverts and dams.

467 documented dams account for:
~ 414,000 inaccessible habitat units
~ 212,000 units with impaired access

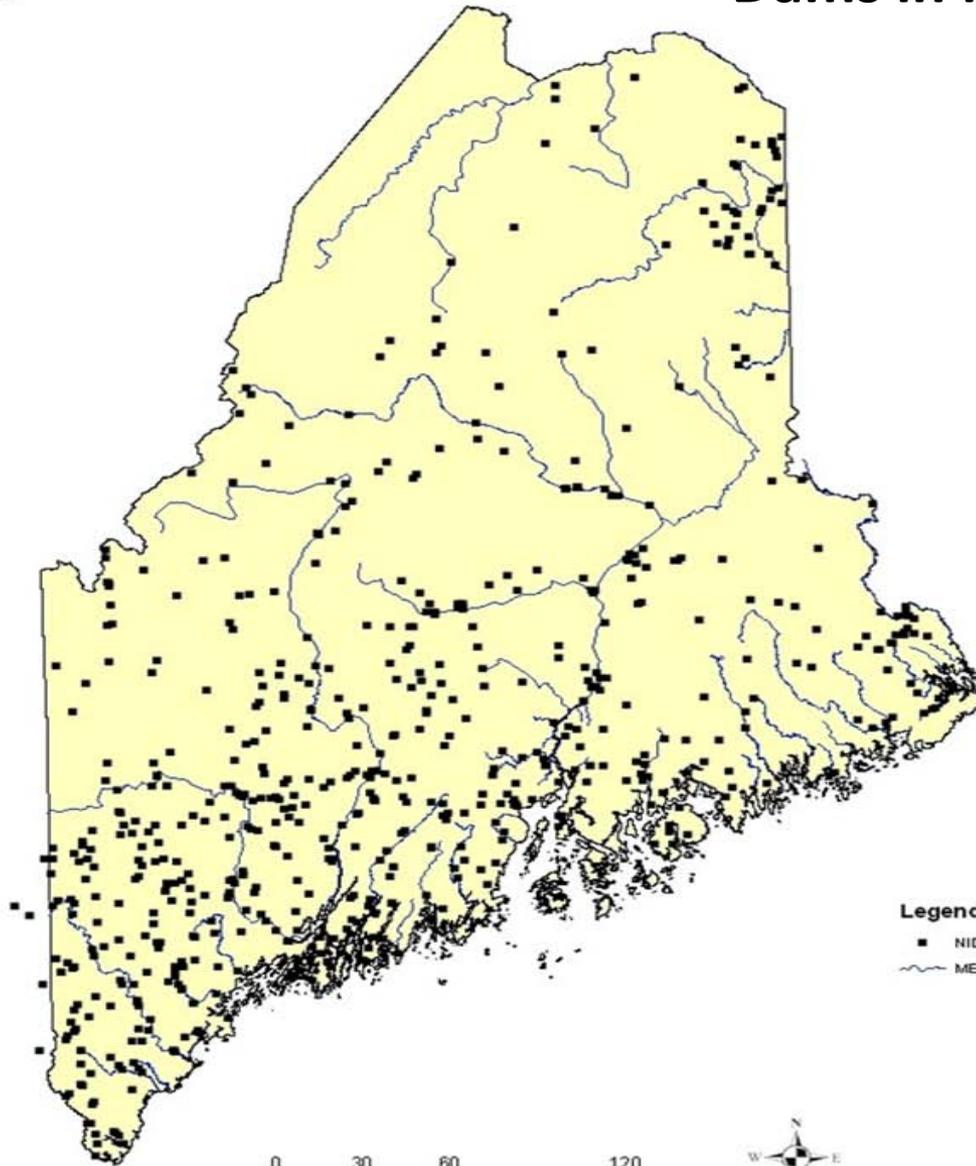
87,000 fully accessible units:
~ 48,000 units of marginal habitat
~ 39,000 units of quality habitat



Map prepared by:
BO AA
B. Peter Cushing

Data Source:
-http://dams.hec.ca/my.html/webpage.html.cfm-
State of New York
BO Fish & Wildlife Center
11/02/2005

Dams in Maine



Legend

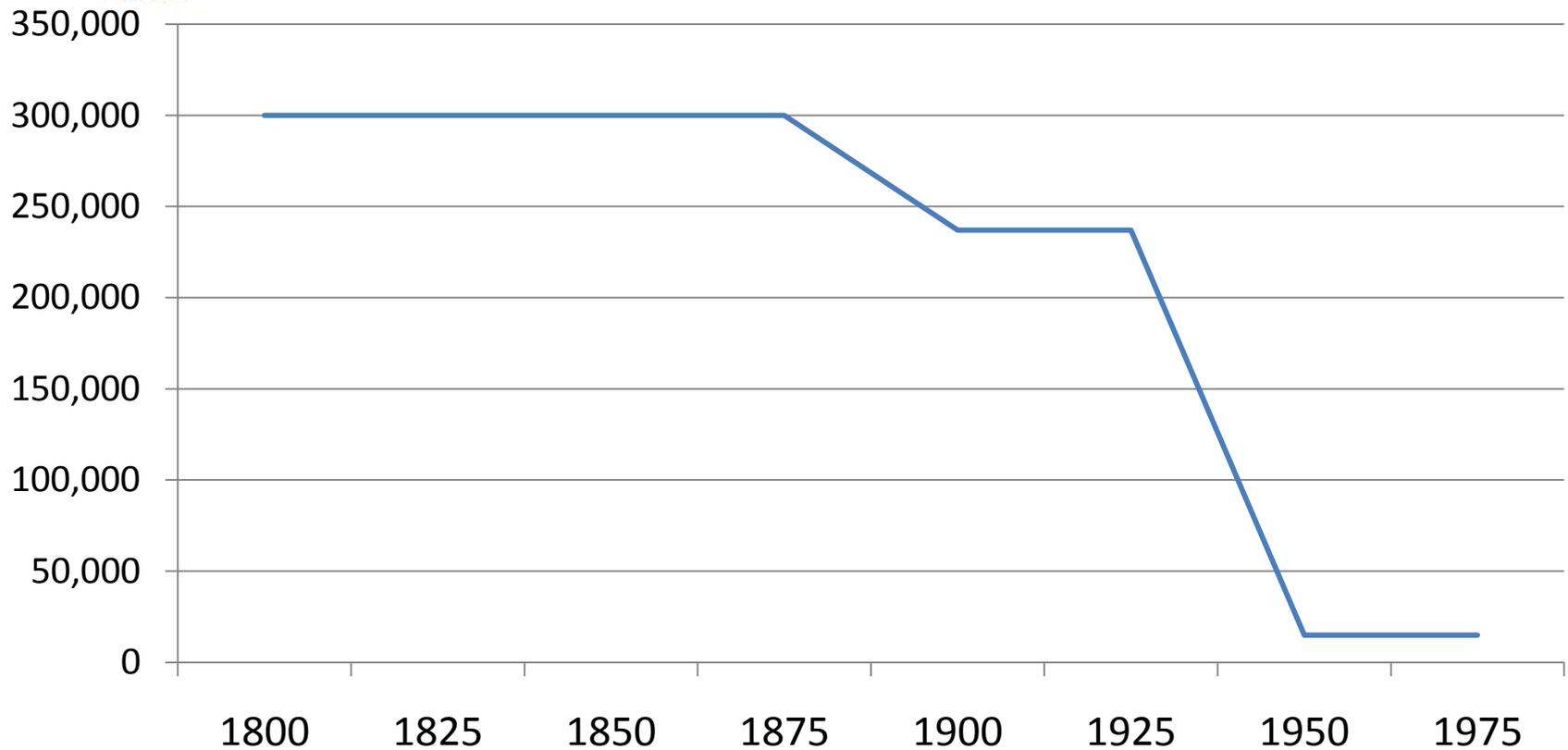
- NID ME Dams
- ~ ME Salmon Rivers

0 30 60 120
Kilometers

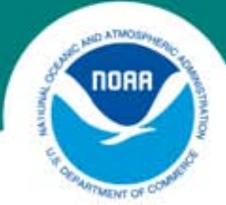




Penobscot SHRU Fully Accessible Habitat Units



Currently less than 4% of high quality habitat is fully accessible



Connectivity

Merriam-Webster's definition states “ the quality, state or ability to be connective or connected”

Placed within the context of watershed restoration applies to;

- intrinsic, cultural, spiritual and emotional values that affect the people and communities along the river, and;
- physical habitat (ex. connectivity between river reaches, tributaries, or rivers and oceans)



Why Conservation Plans?

Private lands comprise a large portion of available habitat utilized by threatened or endangered species in the U.S.

A way to engage private landowners, communities and local governments in conservation planning

Serves as a cooperative agreement between federal agencies and private landowners to manage activities that may harm endangered species on their land



General Conservation Plan

- Provides guidance to minimize and mitigate the impacts of any take of Atlantic salmon
 - Avoiding peak spawning and migration periods
 - Reduce project footprint and intensity
 - Reduce sedimentation, noise and disturbance
 - Identify mitigation approach
- Facilitates coordination between state and federal agencies, stakeholders, local and tribal governments
- Promotes long term conservation of species and habitat by improving access through dam removal and fish passage



What are the goals?

- Provide unobstructed access to quality habitat for spawning and rearing of diadromous fish
- Provide streamline approach to promote regulatory efficiency
- Increase private landowner collaboration in stream restoration activities to provide long term conservation benefits to many species of diadromous and resident fish



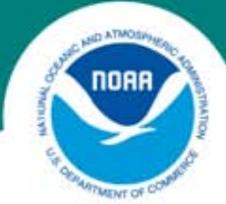
More specifically...

Improve access to 90,000 units of quality habitat for the entire GOM DPS of Atlantic salmon

- 30,000 in each SHRU
- Currently there are 8,400 units of fully accessible high quality habitat in the Penobscot SHRU

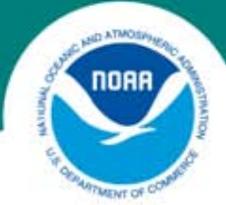
Improve or restore stream processes...

- Sediment transport
- Hydrologic regime
- Nutrient flow
- Reduce light and heat inputs



Strategies to achieve goals

- Precautionary approach
 - Focus on projects where there is some certainty that the restoration will work, and no lasting harm will likely come from it
- Longevity
 - Conduct projects that have a long shelf life and require minimal to no maintenance

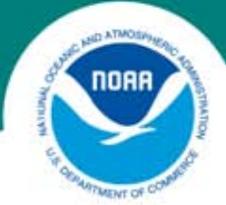


Planning for success

3 Key elements to prioritizing restoration:

- Principles of watershed processes
- Protection of existing high-quality habitats
- Current knowledge of the effectiveness of the technique

“...watershed restoration should focus on restoring natural stream processes that create and maintain habitat rather than manipulating instream habitats.” Roni et al., 2002

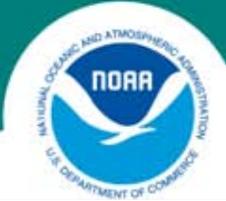


Monitoring for success

Projects are considered ecologically successful if:

- Provides for a more dynamic healthy river system
- Measurable improvements to river conditions
- Able to withstand changes to the river system
- No lasting harm is inflicted on the ecosystem
- Incorporates both pre and post assessment

Palmer et al. 2005



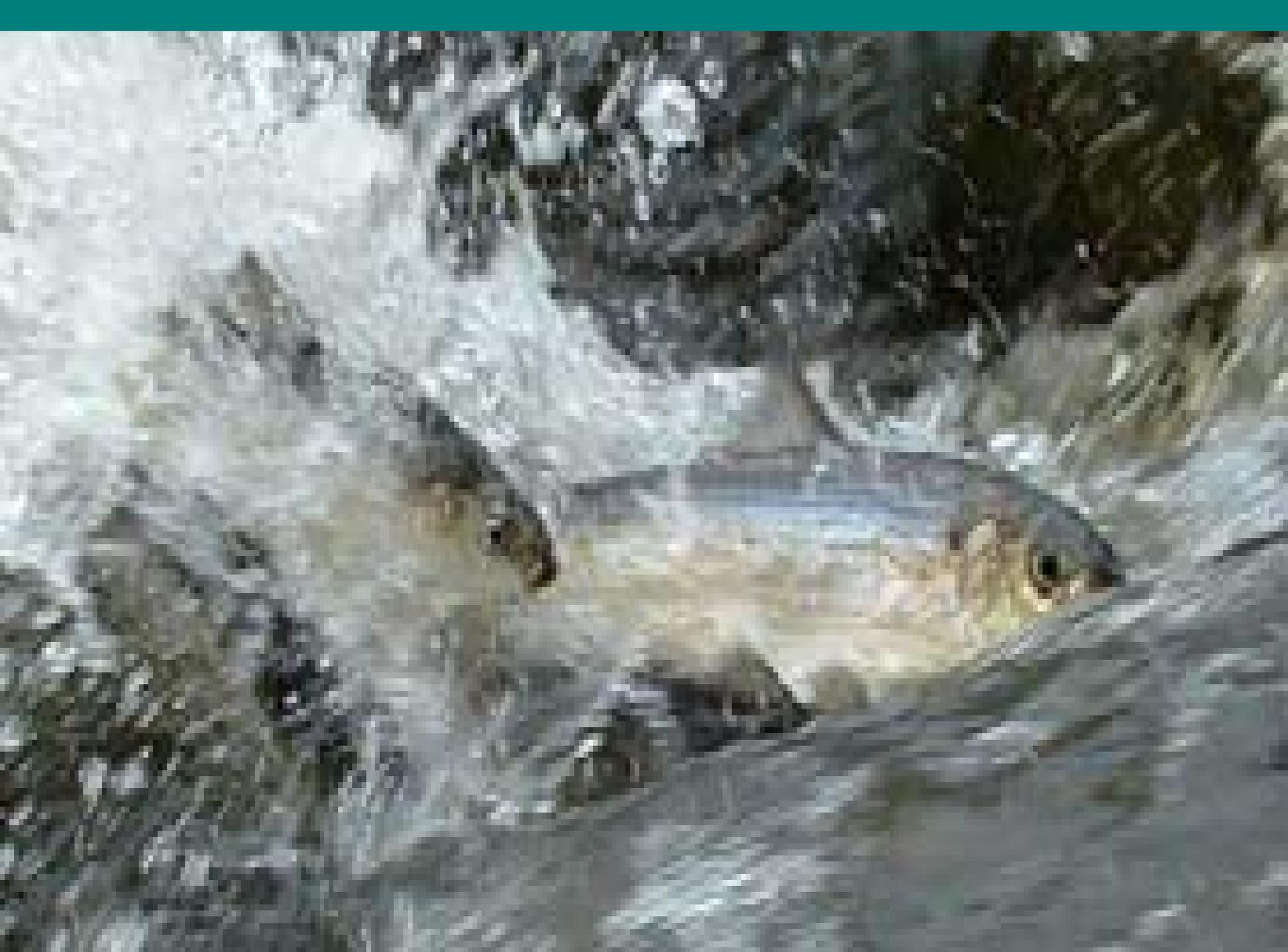
Open rivers provide opportunities for...



Fish Migrations











<http://www.fishbase.org>



Thanks for Coming

For more information, please see the Website;

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Staying Involved

- Review draft documents available on website
- Provide written comments during formal public comment period
- Participate in local community meetings during project development
- Participate in restoration projects as a volunteer