Connectivity Action Team Summary

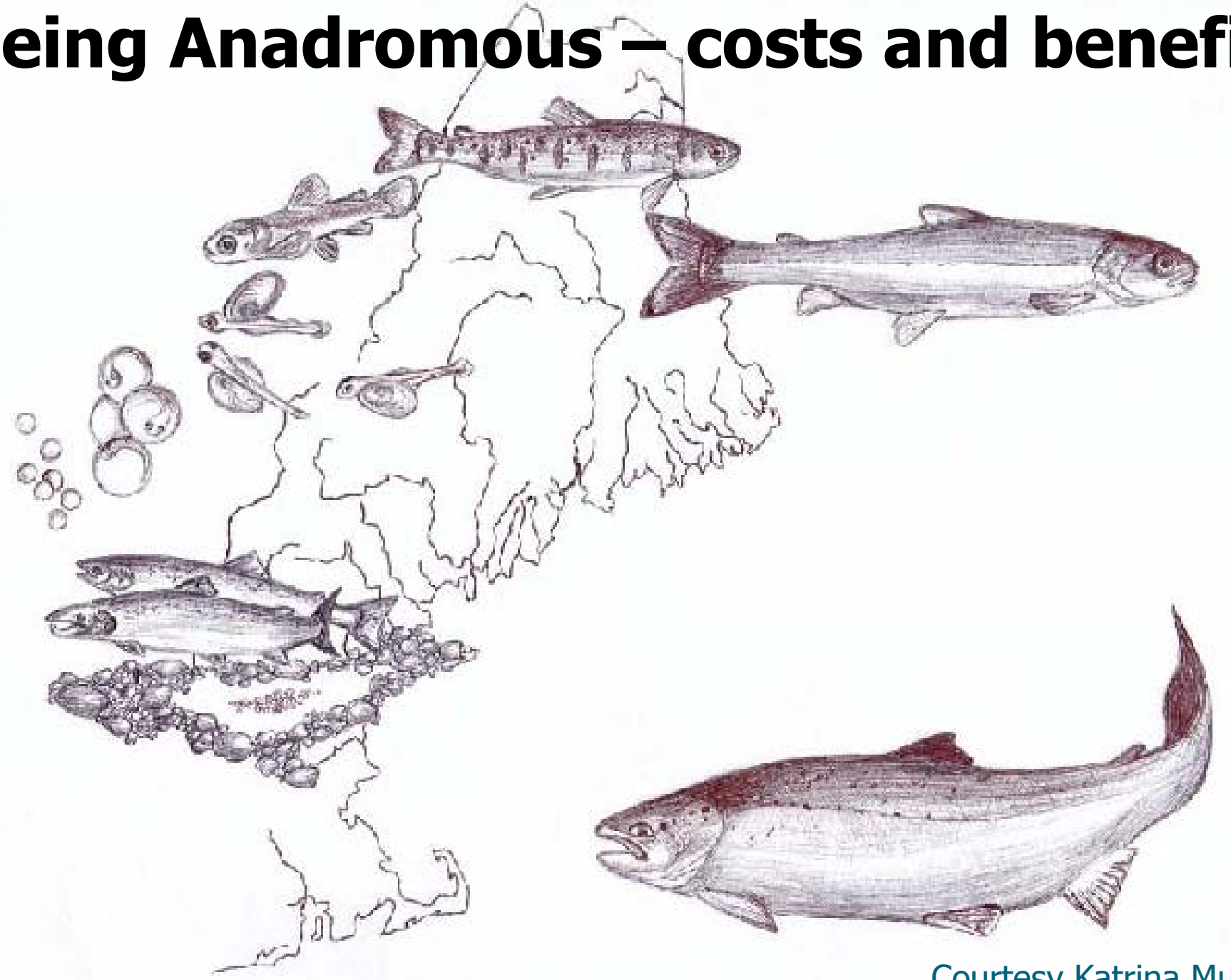
Gulf of Maine Atlantic Salmon Recovery Framework Public Meeting
August 19, 2010

Current Team Members:
Richard Dill, MDMR
Jed Wright, USFWS
Dan Kircheis, NMFS
Rory Saunders, NMFS

Outline

- Context
  - Scale of the problem
  - Habitat quantity and quality at the DPS scale
- Connectivity Strategy
  - Metrics
- Actions selected in Portfolio 7
  - Prioritization
  - Restoration project implementation
  - Mainstem dams
  - Assessment
- Portfolio 7 vs status quo

Being Anadromous – costs and benefits



Courtesy Katrina Mueller

Being Anadromous – costs and benefits

Benefits:

- Sub-adults in the marine environment – very high growth potential in the ocean
- Juveniles in freshwater – low predation risk compared to the marine environment
- Marine growth helps anadromous fish "swamp" would be competitors and predators

Cost:

- Vulnerable to high mortality in the marine environment

Extensive migrations are necessary to strike the balance (growth potential vs predation risk)

Migrations are risky, and man-made barriers alter the cost/benefit ratio

In freshwater ATS need:

- Habitat for spawning
- Habitat for feeding and growth
- Large quantities of habitat to produce large numbers of smolts to withstand high mortality rates in the marine environment
- Access to wide variety of habitat types to overcome variability in local conditions
  - Climate, competition, catastrophic events

Eggs

- Clean, permeable, cobble/gravel substrate with well oxygenated water for proper embryo development

Courtesy of Project SHARE

Fry and Parr

- Cool waters with variable habitat types that provides for feeding, growth and shelter
  - Selection of habitats depends on where fish can optimize growth and minimize predation risk
    - small 1st order streams
    - major 3rd and 4th order rivers
    - beavers bogs, lakes and ponds
    - Use and selection of habitat types can vary seasonally and/or annually
    - Anadromous fish need options – one size does not fit all

Courtesy of Project SHARE

Smolts

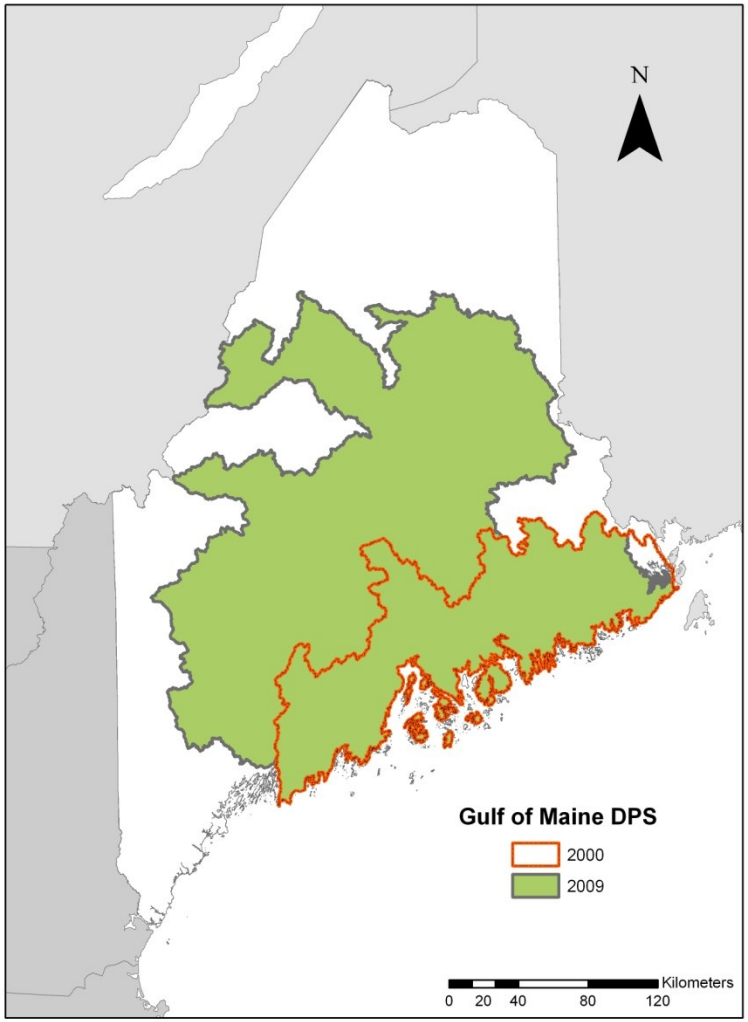
- Require open migratory corridors that allow timely access to the marine environment

Adults

- Migration corridors that allow for timely migrations back to quality spawning and rearing habitats

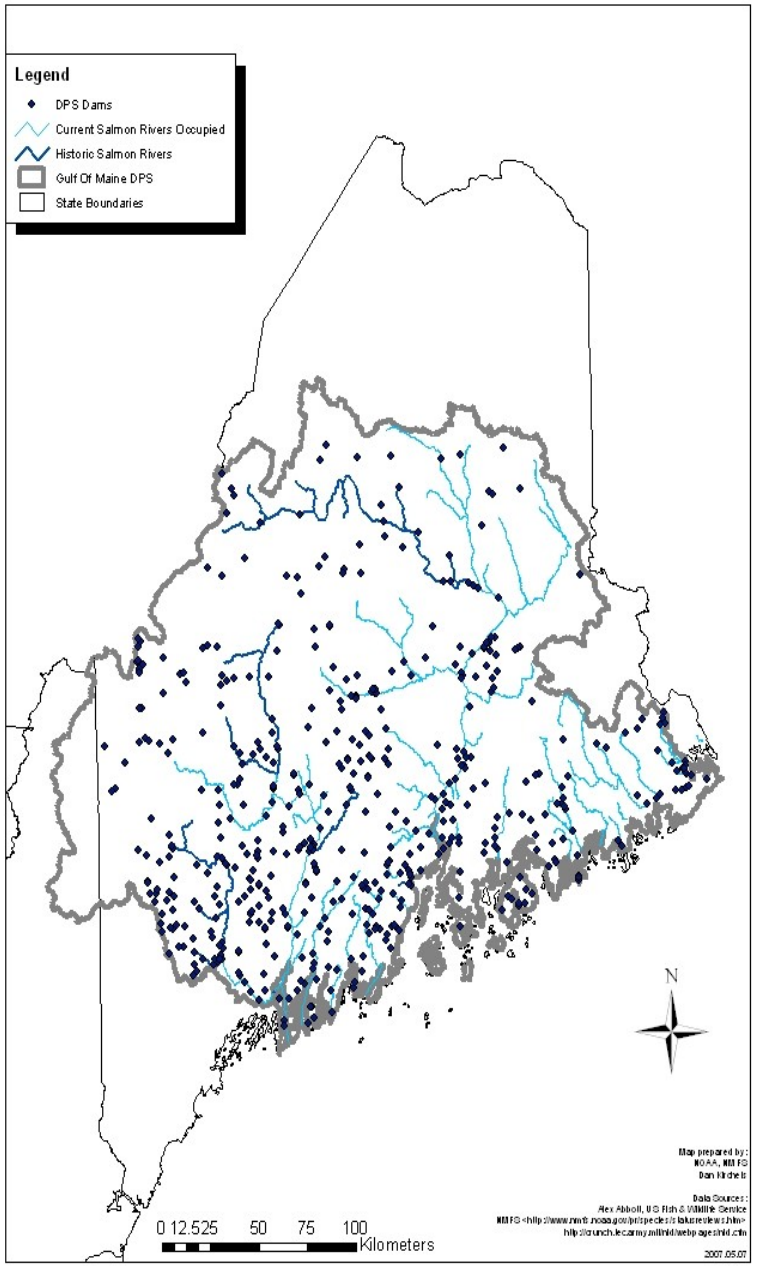
Context – Scale of the Problem

- Dams
  - 782 dams in Maine
  - **467** dams in the Gulf of Maine DPS
- Road crossings (1000s)
- Man-made barriers are a landscape-scale issue



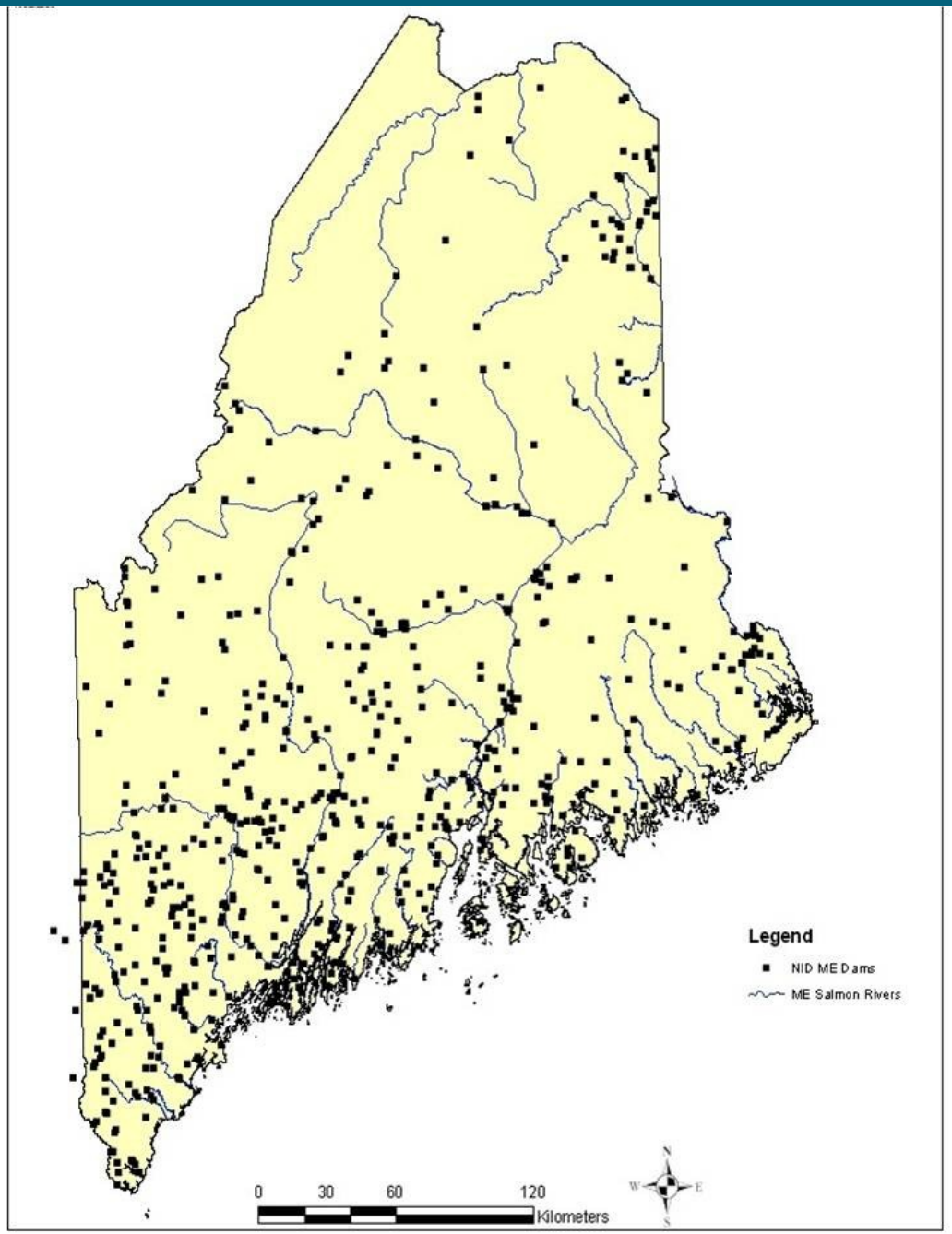
Dams

- Data gaps
  - Total # of barriers
  - Passage efficiency
    - For salmon
    - For other species
  - Effects of barriers on productivity



Dams

- Data gaps
  - Total # of barriers
  - Passage efficiency
    - For salmon
    - For other species
  - Effects of barriers on productivity



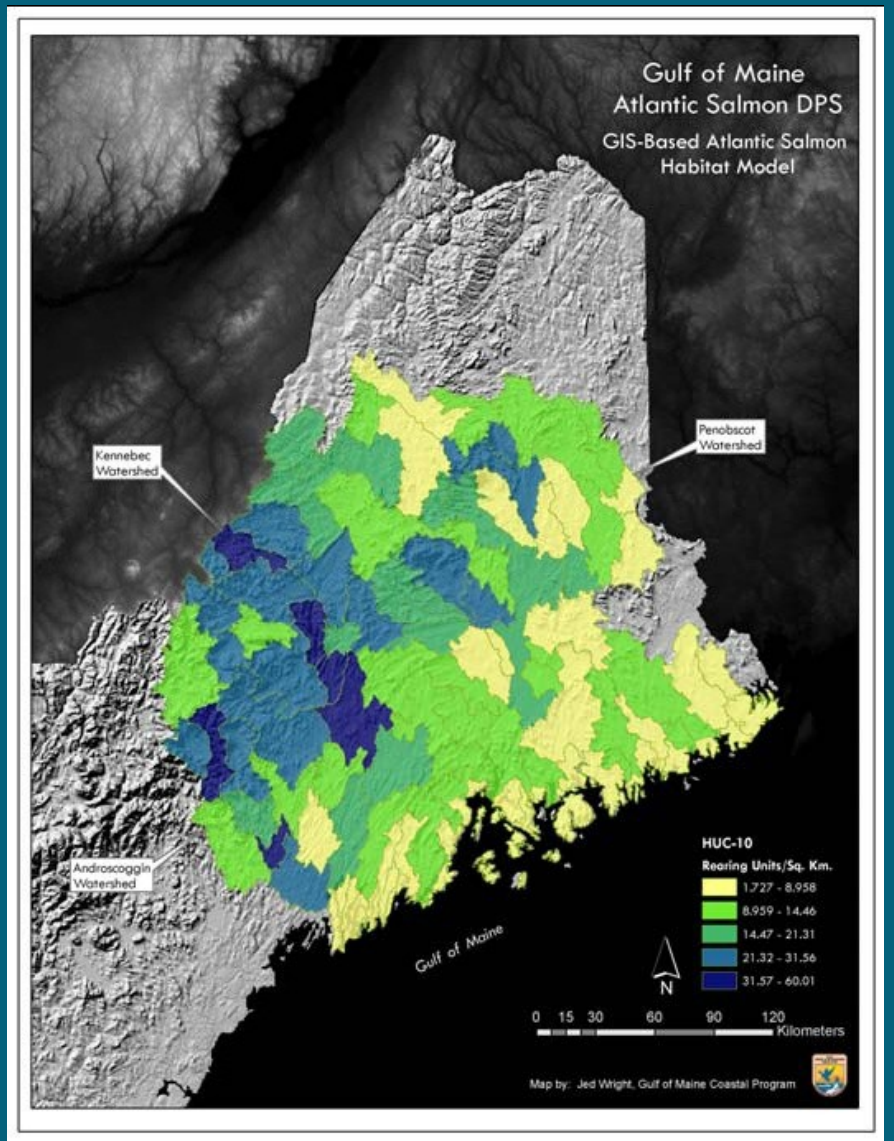
Road Crossings

- Data gaps
  - Total # of barriers
  - Passage efficiency
    - For salmon
    - For other species
  - Effects of barriers on productivity

Habitat Quantity and "Quality" at the DPS scale

Quantity

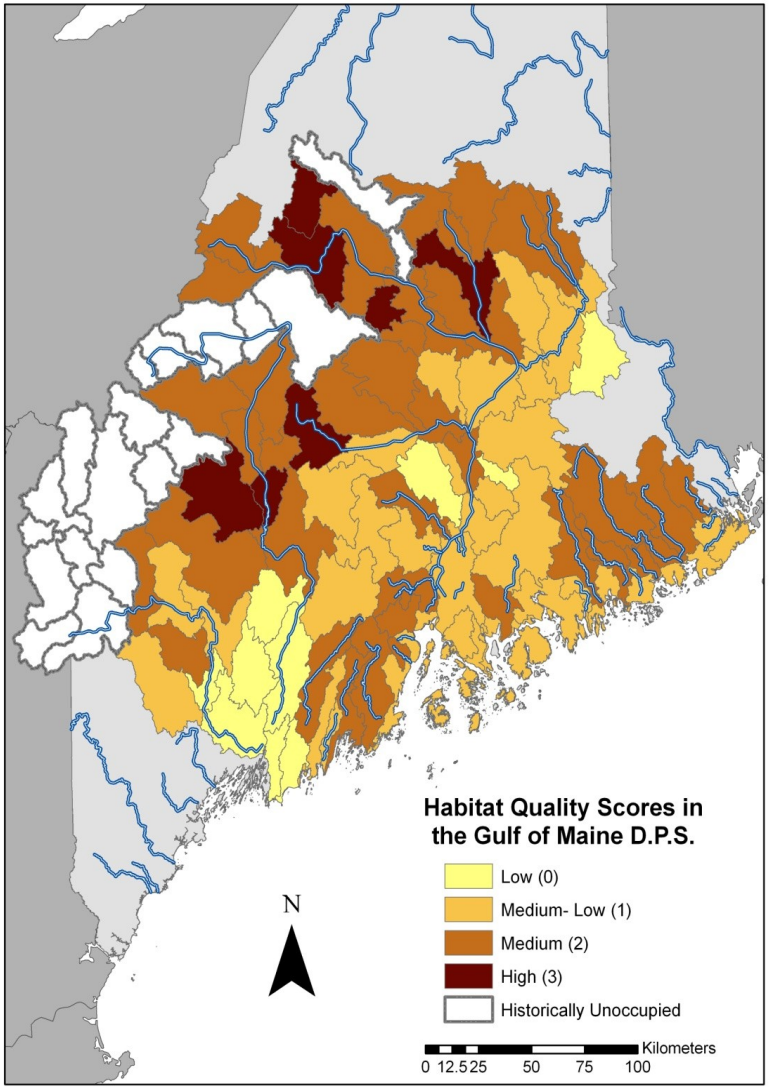
- Habitat Model
- Wright et al. 2008



Not all habitat units are created equal

Habitat "Quality"

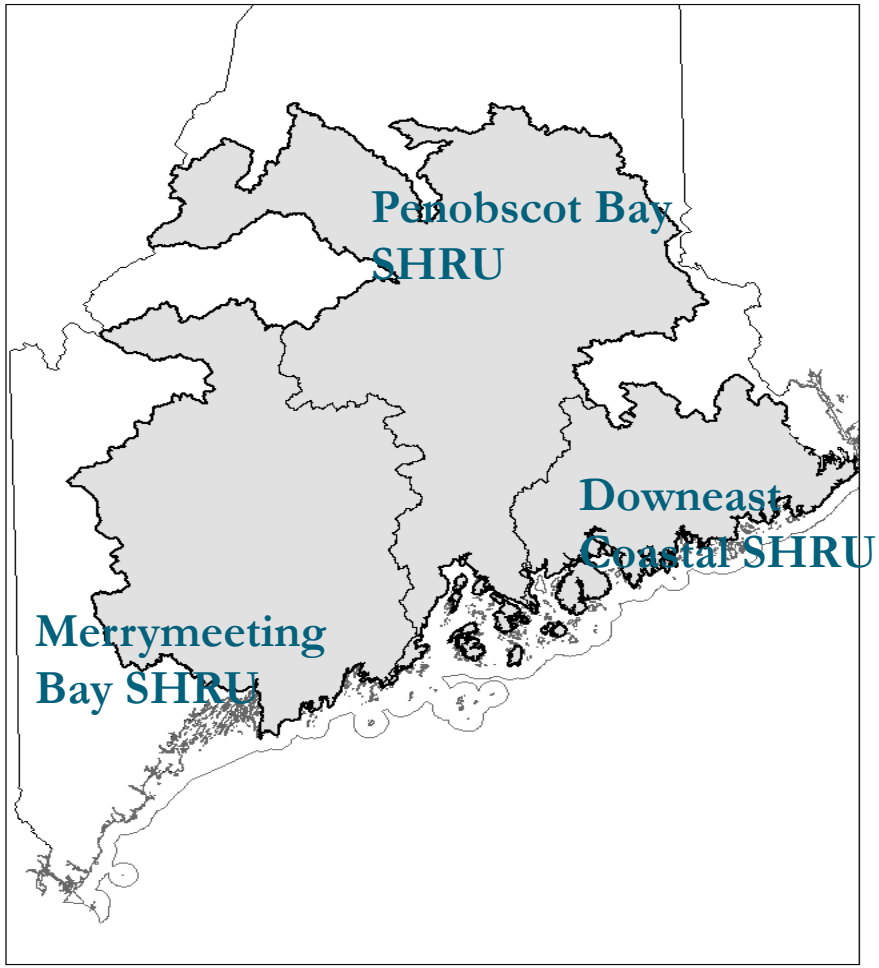
- Biological Valuation
- NMFS 2008
  - Temperature
  - Biological communities
  - Water Quality
  - Substrate and cover



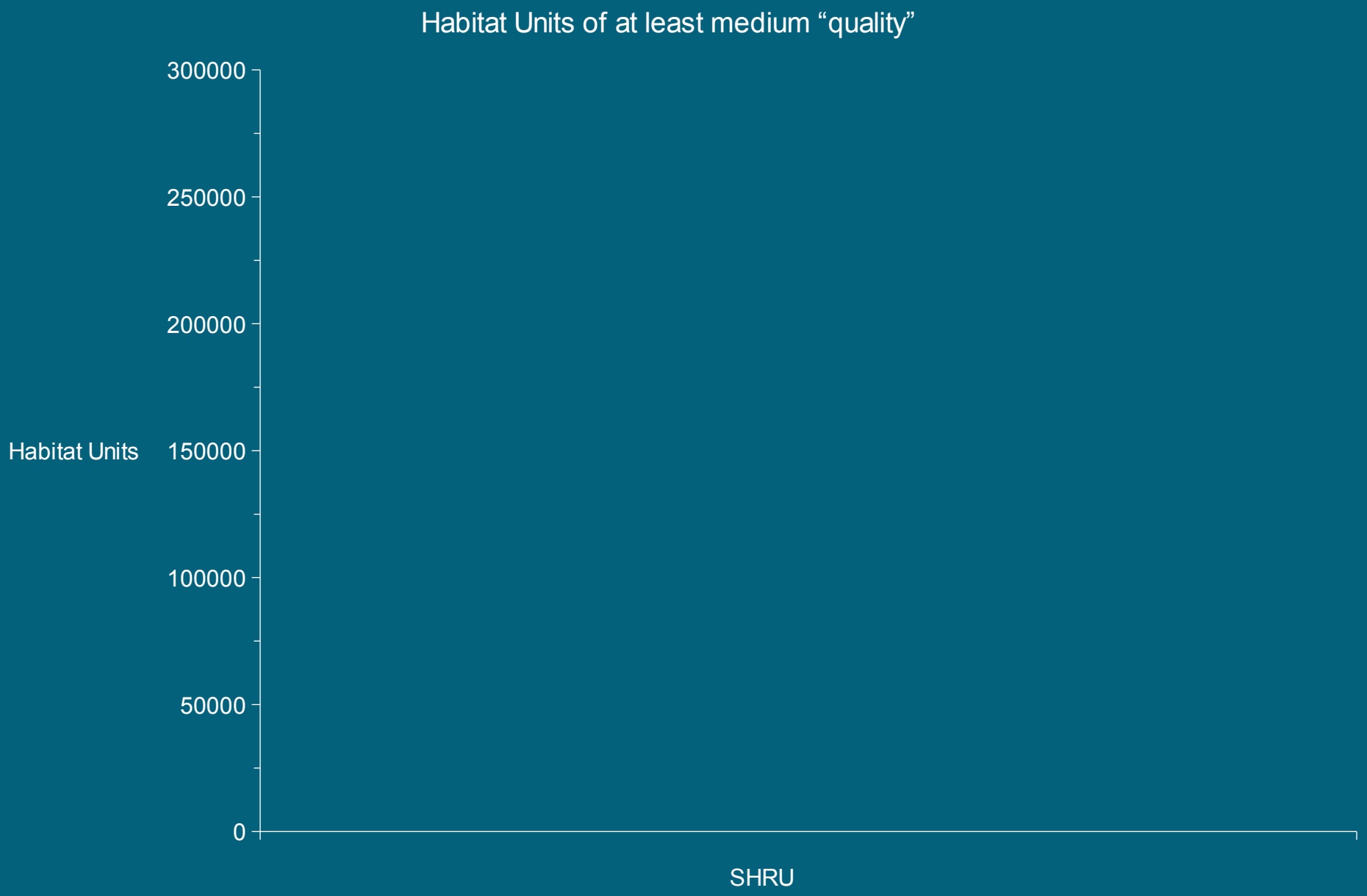
How much is enough?

Interim Recovery Criteria

- ≈ 2,000 adult returns per SHRU
- 30,000 habitat units per SHRU of at least medium "quality"



How much do we have?



Strategy: "Enhanced connectivity between the ocean and freshwater habitats important for salmon recovery"

Metrics:

- Number of **accessible** habitat units with a **habitat quality score of 2 or 3** in Merrymeeting Bay SHRU;

Click to edit Master subtitle style

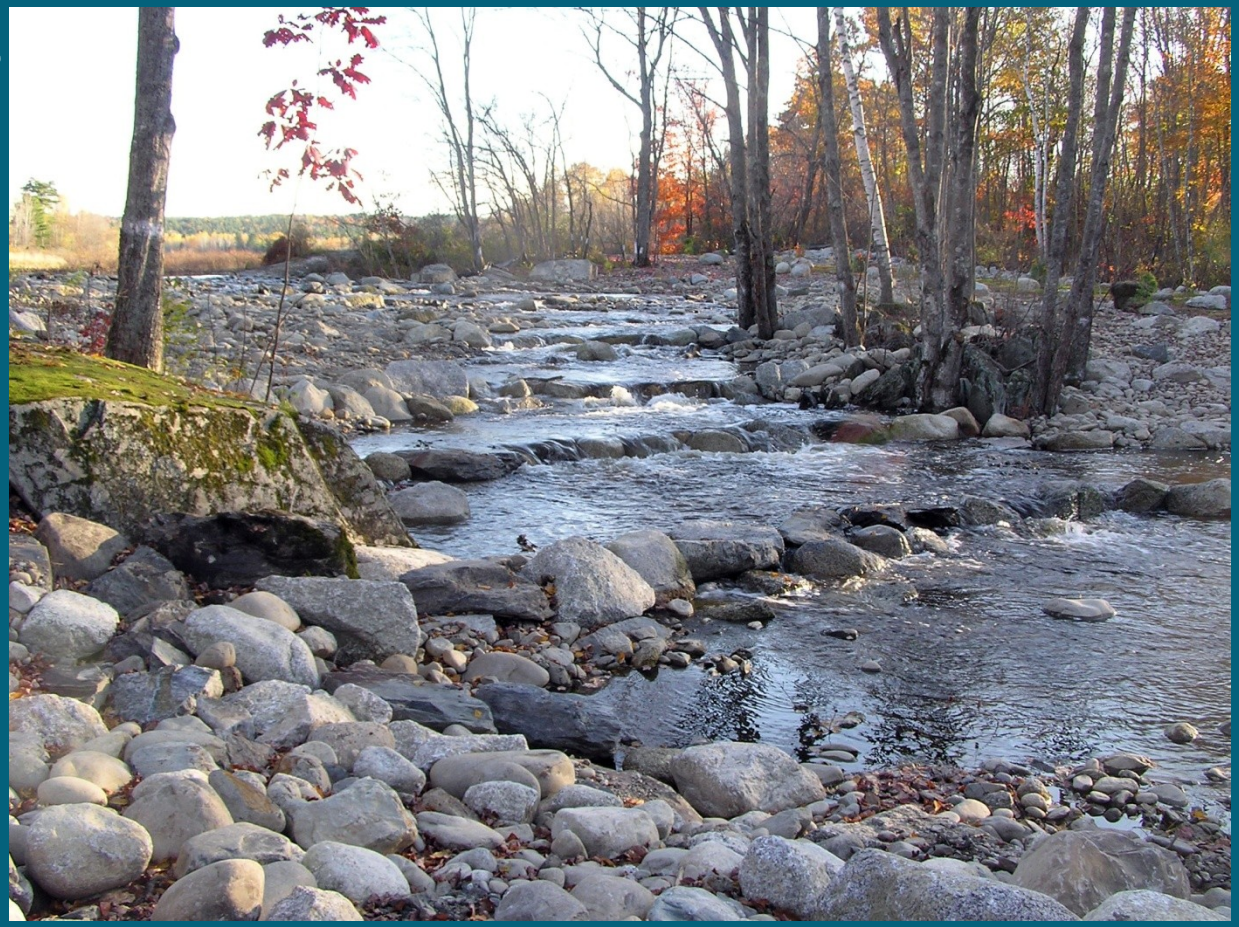
- Number of **accessible** habitat units with a **habitat quality score of 2 or 3** in Penobscot Bay SHRU;

- Number of **accessible** habitat units with a **habitat quality score of 2 or 3** in Downeast SHRU

Actions selected in Portfolio 7

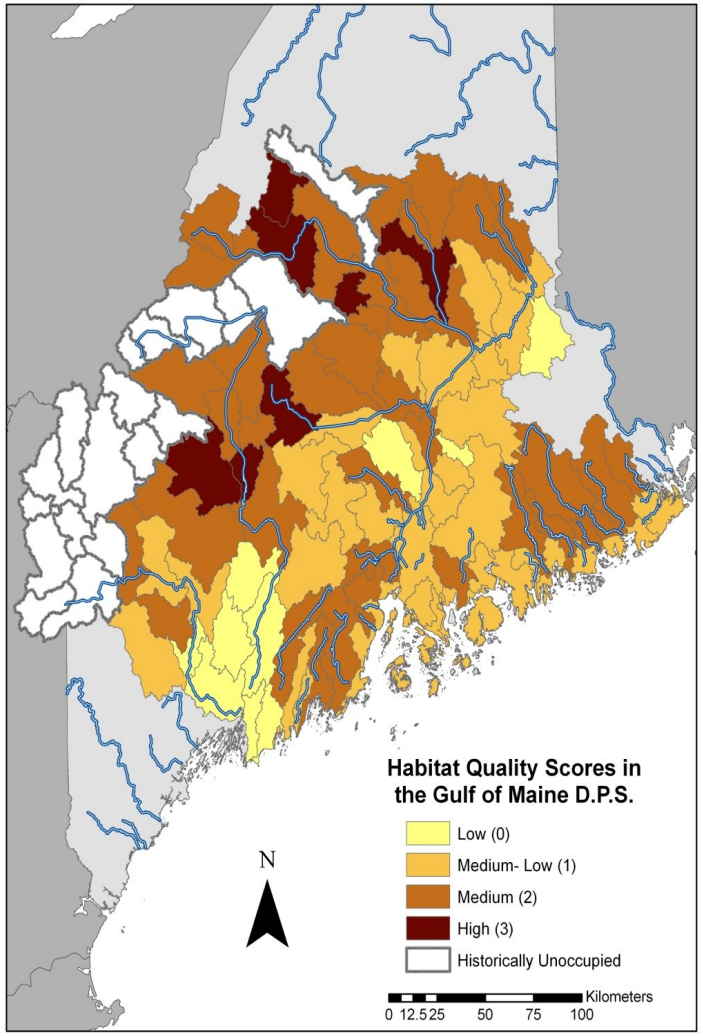
- Prioritization
- Restoration project implementation
- Mainstem dams
- Assessment

- Portfolio 7 vs status quo



Prioritization – a strategic approach to restoring conn

- Perform fish passage barrier assessments throughout the GOM DPS
- Develop prioritization model to identify highest priority fish passage barriers for remediation
- Write prioritization guidelines to identify highest priority fish passage barriers for remediation



Restoration Project Implementation

- Staff time for planning, permitting, and implementation oversight
- Funding for feasibility and engineering

Courtesy of Project SHARE

Assessment

- Rigorously monitor selected "model" restoration sites in accordance with the GOM Council BRM guide (Collins et al. 2007)
  - Monumented cross sectional surveys
  - Water quality
  - Sediment size distribution
  - Photo stations
  - **Fish community structure**
- Enumeration of salmon habitat made available as a result of restoration activities

Mainstem Dams

- Develop fish passage efficiency targets that do not "jeopardize the continued existence" of the GOM DPS

- Implement fish passage efficiency targets that do not "jeopardize the continued existence" of the GOM DPS through section 7 and/or section 10

Status Quo vs Portfolio 7

- Status Quo
  - Largely opportunistic
  - <10% of salmon resources
  - Little targeted assessment
  - Insufficient funds available to support significant amounts of on the ground restoration
- Portfolio 7
  - Strategic when possible
  - 13% of salmon resources
  - Focus on assessment and ecological connections
  - Insufficient funds available to support significant amounts of


Before


After