The Diadromous Species Restoration Research Network Science Meeting 2009

Restoration of Diadromous Fishes and Their Ecosystems: Confluence of Science and Restoration

22 – 24 July 2009 at the
University of Maine, Orono, Maine

Restorations as Experiments Breakout Session Notes

Noah Snyder, lead moderator

Submitted Key Questions (not ranked)

Linking results of restoration experiments to the big (metapopulation) picture
-How can we use restoration experiments to shape future restoration efforts/best contribute to recovery of species
-How can restoration as experiments guide/inform/adapt prioritrization schemes that are already in place/being developed
-How can NGOs help agencies answer some of the bigger population scale questions
-Physical restoration and watershed planning (The chicken AND the egg?)
-Society in restoration and restoration planning
-Science and management collaborative successes and lessons learned (building the bridge and connecting the rivers)
-Picking our battles (Multidisciplinary demonstration projects that assist cumulative knowledge)
-Restoration technique catalogue (What works where and new techniques coming online)
-How to set scientifically-based goals (species specific) and how to define interim milestones of success. E.g. goal for shad – 100,000 (how do we arrive at this number?) success – is 25,000 shad after 25 years success or failure?
-Evolutionary Restoration Ecology (issues including – generic variation, founder effects, local adaptation, regional population genetic structure, selection of fishways, etc)
-Fish Passage and Population Restoration (evaluations, structures, population estimation)
-Predicting future population size following restoration: 2 dimensional approach (surface area and depth)
-Predicting biological and community responses to habitat restoration
    What fish species recolonize a stream?
    What are the community benefits (value) of returning fish (alewife, salmon, etc)?
    What are the ecosystem benefits?
-Population/Habitat/Modeling (numbers and genetics) to build a priori hypotheses and direct adaptive management in DF restoration

-Strategies for cross-organizational (including intrastate agency) communication and planning for DF restoration projects
-Strategies for effective public communication/outreach to achieve support for habitat connectivity projects
-Accumulate database of common genetic marks in native populations that may colonize newly opened habitat (Base on DNA barcoding)

-Using predictive models to develop restoration hypotheses
-Incorporating science into watershed restoration
-Making adaptive management a reality
-Multidisciplinary science, restoration, and management

-Importance of Estuaries to DF restoration
-Building a scientific framework for diadromous fish restoration
-Taking an ecosystem approach to restoring DF
Using science for improving fish passage restoration planning and design
-Accounting for time-scale in science based restoration
-Defining values from diadromous fishery resources
-DF restoration and transdisciplinary sciences: Money in the Bank

-How to infuse multidisciplinary questions (e.g. ecological, management, social, etc) into study design
-Themes for auto-repair or fish restoration!
    Did it work?
    Why not?
    How do we fix it?
    How do we (cheaply and effectively) measure response of (multiple fish) populations to improved/restored fish passage

-Science informing the public to the process and progress of restoration
-Public perceptions: A stumbling block (The view of the public may hurt restoration efforts. Howland dam removal is an example where the public was against dam removal so alternatives were needed
-Adaptive management – science and restoration guiding one another
-A priori predictions for DF species restoration
-What do we really predict and why do we predict it?
-A workshop in symposium format but based upon proposal presentations
    Framework: A conference style workshop in which scientists are invited to present powerpoint style descriptions of key restoration science questions and approaches to address them in DF
    Provides level of detail needed for managers and scientists to integrate and co-plan
    Improve opportunities for interdisciplinary projects
    Gain momentum for cross-cutting ideas and adaptive management
-Limited Resources and limited time – restoration opportunities (Scientific prioritization of restoration and connecting information with needs

-Selling restoration
    How do we make the economic case for restoration (disturbing the status quo)
    Education, generating awareness of the need for restoration
    Generate pride in reclaiming history: fisheries, access, community
-Achieving transdisciplinary science
-Determining/establishing thresholds of success
-Coupled ecological-social systems

-[Developing] Public/Funder/Legislature support for DF restoration
-[Developing] Criteria for DF restoration Success
-[Modeling] Thresholds to DF restoration and resilience – hydrology, landscaping, habitat, genes
-Restoring the Role of DF in supporting watershed, estuaries and marine food webs
-Ecological value and/versus economic value:
    Toward a better understanding of DF population
    Making the case for restoration
-Human dimensions of watershed restoration (examples from the field on how local involvement can be a vital and effective part of restoration)
-One size doesn't fit all: best practices in research-based restoration
-Restoration/Research
    Time scales limitations and solutions
    Positive attitude – efforts to progress restoration success
    Coordinating (networking) research with ongoing efforts and data
        Integration into design/permitting phases
        Coordination with ongoing resource management and data collection
-Biological planning for restoration prioritization
-Overcoming culture clash: helping restoration researchers and practitions communicate
-Population goals and what it will take to get there
-Study and sample design workshop how much and where?
-Heritage of the discipline from 1130 AD to present, river keepers and fish wardens then and now have we carried the water and maintained the successes learned from past mistakes
-Planning scientific opportunities in DF restoration
-Funding projects to integrate science and DF restoration
-Early and often pre-project planning an defining goals and objectives (What to accomplish in early project phase)

Ranked Key Questions

(20) Determining thresholds/triggers for success
(16) Measuring fish population response to restoration
(14) Using predictive models to develop restoration hypothesis
(14) Defining economic/social values of DF restoration
(13) Scientific prioritization of restoration opportunities
(13) Balancing manipulated and natural restoration
(12) Communicating scientific findings to the public
(12) Where are we with restoration planning linked to watershed management planning?

(11) To what extent is habitat a limiting factor
(11) Importance of estuaries of diadromous species restoration
(10) Developing well posed hypotheses early in restoration planning
(9) How do we do truly multidisciplinary science/restoration/management at restorations?
(6) Importance of founder populations
(4) Conflict of management timescale and scientific timescale
(3) Restorations need more information on population and genetics
(2) Accounting for time scale in science based DF restoration
(2) Identifying suitable reference states for monitoring parameters

(1) Working out mechanisms for truly adaptive management

POTENTIAL WORKSHOP TITLES

(13) Integrating science and management to improve diadromous fish restoration success
(0) Scientific Diadromous Fish Restoration
(1) Restoring Diadromous Fish: How do we get there?
(3) Integrating Science and Diadromous Fish restoration: proposing solutions