

RIVERS MANAGEMENT ADVISORY COMMITTEE

Meeting Minutes

June 19, 2007

Boscawen Town Hall

9:30 am – 12:30 pm

Members Present

Ken Kimball, Chair
Michele L. Tremblay, Vice Chair
Jennifer Czysz
William Heinz
Deborah Hinman
John Magee
Ted Sutton

Representing

Recreational Interests
Conservation Interests
NH Office of Energy and Planning
Granite State Hydropower
NH Assn. Conservation Commissions
Fish & Game Department
Municipal Government

Term

Dec. 28, 2008 V
Dec. 28, 2008 V
Indefinite NV
Jan. 5, 2009 V
Oct. 12, 2007 V
Indefinite NV
Nov. 16, 2008 V

Members Absent

Alan Bartlett
Bob Beaurivage
Johanna Lyons
Gail McWilliam Jellie
Walter Morse
Allan Palmer
Wesley Stinson

Agricultural Community
Public Water Suppliers
Dept. Resources & Economic Development
NH Department of Agriculture
NH Fish & Game Commission
Business and Industry Association
Historical & Archaeological Interests

Mar. 22, 2009 V
Sept. 28, 2007 V
Indefinite NV
Indefinite NV
Sept. 28, 2009 V
Sept. 28, 2007 V
June 15, 2007 V

DES Staff Present

Steve Couture
Laura Weit
Dave Neil
Carolyn Guerdet

NHDES Rivers Coordinator
NHDES Lakes and Rivers Asst. Planner
NHDES Biomonitoring Program
NHDES Administrative Assistant

Others Present

Kevin Nyhan

Department of Transportation

Guests

Josh Cline

NH Rivers Council

The Meeting Was Called to Order

Michele L. Tremblay, Vice Chair, welcomed everyone to the Boscawen Town Hall and called the meeting to order at 9:50 AM.

The agenda was adjusted to accommodate the lack of quorum. It was decided to have Dave Neils give his presentation as the first order of business.

III. Cold Water Fish Indicator and Index of Biological Integrity – Dave Neils, NHDES

A copy of the presentation is attached.

Michele asked that all the links to the reports be collected and emailed to the RMAC.

A pilot volunteer biomonitoring project was developed for the Cocheco River in 2005. It will be expanded to five different groups in 2006/2007.

Note: Ken Kimball arrived during this presentation. From this point forward the RMAC had a quorum and Ken presided over the meeting.

I. Introductions/Minutes/Committee Business

1) April 17, 2007 Meeting Minutes

- *Michele L. Tremblay made a motion to accept the April 17, 2007 meeting minutes as presented, second by Ted Sutton. The vote was unanimous.*

2) RMAC Membership Status –

Anne Krantz has been nominated by the NH Historical Society and is waiting to be confirmed.

3) Correspondence

A letter from Collis Adams with DES was noted.

V. Surplus Land Reviews (SLR) – Disposition of state-owned properties

1) DOT sale of Railroad property to the City of Rochester

Laura Weit explained that the City of Rochester would like to purchase approximately 14.21 acres of surplus land to build a bike path. The NH Fish & Game Department suggested a sufficient buffer be kept to ensure there is a wildlife corridor for the Blanding's turtle.

- **Motion was made by Ted Sutton to approve disposal with the following conditions. 1) A riparian buffer must be retained in consultation with the NH Fish & Game Department for the Blanding's turtle. 2) The Cultural Resource Agency must review the construction of the trail to assess historical/archaeological sensitivity within the project area prior to the start of work. Language must be placed in the deed that states this condition. Second by Bill Heinz. Vote was unanimous.**

2) CORD SLR 07-006: Northfield

Prior to receiving approval, the Merrimack Valley Railroad has constructed on state property a side track to store private cabooses and railroad cars on state-owned land without prior permission or approval. The track is located within the DOT ROW on top of an old railroad bed, but no maps exist of the original track layout. The Committee discussed the proposal at length, in particular the refurbishment of old railroad cars and cabooses. The request is for a one year lease.

- **Motion was made by Ted Sutton to approve the disposal with the following conditions. 1) The lease will be used for the sole purpose of storing railroad passenger cars and cabooses. The lease will expire in one (1) year. 2) A penalty will be assessed, based on a consultation with NHDOT, due to the benefit derived from the public trust prior to approval. Second by Debby Hinman. Vote was unanimous.**

Jen Cysz noted that the Long Range Capital Planning & Utilization Committee (Long Range) is paying particular attention to proposals that have altered state-owned land without prior approval. It was also mentioned that Long Range is reviewing proposals in a timely manner. Jen encouraged members to attend upcoming Long Range meetings to express their concerns. It was suggested that Long Range be copied on all future correspondence of the RMAC relative to the disposal of state-owned land.

- **Michele L. Tremblay made a motion to send copies of all correspondence to the Long Range Capital Planning & Utilization Committee regarding the disposal of state-owned land. This new procedure will commence today with the review of the first disposal. Second by Debby Hinman. Vote was unanimous.**

4) Update on CORD SLR 07-001: Windham

Long Range has reviewed and approved this with no conditions. It was assured that there was no salt and sand storage on that site.

3) CORD SLR 07-007: Lebanon

Mr. Laware has requested to purchase 16,500 sq. ft. of land underneath his home, driveway and yard to make a longstanding lease permanent.

- **Ted Sutton made a motion to approve the disposal as submitted. Second by Bill Heinz. Vote was unanimous.**

II. Legislation/Rulemaking/Other

1) Legislation – Steve Couture, NHDES

a) Brief Update on all pertinent legislation

During the 2007 legislative session, RMAC members spent a significant amount of time reviewing letters of testimony and appearing in person at legislative hearings. The RMAC submitted 29 letters of testimony and six oral testimonies.

The following are a direct result of these efforts.

HB 1) State Budget - \$27,000 was returned to the RMPP budget.

HB 25) Stream Gages - \$120,000 was added to the budget for new stream gages.

HB 61) Ammonoosuc Designation – has been signed by the Governor. Ken suggested that something be done next year to celebrate the 20th anniversary of the RMPP.

HB 71) Landfill Bill – RMAC requested that the landfill operation in Rochester be exempted.

HB 319) NRCS Watershed protection program – RMAC did not support the original version of this bill, so it was amended to grant an expedited permit with a local review process.

HB 321) ITL in the House.

HB 383) RMAC submitted written comments to change the stream order methodology to include intermittent streams. This brings in an additional 1100 miles of streams. UNH will develop a list that uses the new methodology and provide it to DES. All designated rivers, regardless of stream order, are now protected under the CSPA.

HB 722) Addition of two new representatives to the RMAC – DOT and LAC.

HB 812) Five year extension of grandfathered sites for sludge/septage land application.

HB 648) Establishment of a Flood Study Commission with a representative from the RMAC.

HB 710) Establishment of a Surplus Land Review Commission with a representative from the RMAC.

The only bill signed to date is the designation of the Ammonoosuc River. All others are waiting for the Governor's signature.

The Committee discussed follow up needed for approved legislation as well as the best way to proceed with legislation in the future.

Representatives are needed for two legislative committees.

b) HB 710, selection of RMAC member to serve on the Surplus Land Review Commission

This is a two year commitment. It was decided to ask Allan Palmer, if he is unwilling it will be discussed at the next meeting.

c) HB 648, selection of RMAC member to serve on the Commission to Develop a Comprehensive Flood Management Plan

Michelle expressed her concern that it would be difficult for a state agency person to represent the opinions of all of the RMAC members, since they are representing the interests of their commissioner or director. She felt strongly that a non-agency person represent the RMAC on these legislative committees.

John Magee volunteered to serve. Fish & Game does not have representation on this commission. Ken noted that many of the RMAC members are already driving long distances and spending considerable time to attend the RMAC meetings. Steve thought it would be advantageous to use John's expertise on this commission, especially since there is no direct conflict with his agency. John feels he could represent the RMAC, while remaining objective. He also offered to prepare a white paper on riparian buffers to resolve any concerns of him representing the RMAC.

Debby commented that many on the Committee are strongly aligned with another group and that the scientific background that John would bring would be extremely helpful.

Ken agreed with Michele philosophically, but from a practical standpoint the RMAC needs to draw from both its voting and non-voting members. All of the voting members are volunteering their time and many are driving long distances to be available and productive at the meetings. We can discuss the RMAC's position prior to the first Commission meeting and John can always clarify that he is representing the RMAC.

Ted noted that if we are going to continue to ask for legislation to create these committees the work load must be shared among RMAC members and wise judgment is needed. As these committees progress, the individuals representing the RMAC should provide the Committee with updates and solicit the opinion of the Committee. The RMAC should clarify their opinion via vote.

Michele stated that with the Right-to-Know law all discussions need to take place at a properly noticed public meeting. Michele also mentioned that the RMAC representative should base all decisions on RSA 483, is this good for RSA 483, is it bad for RSA 483, does it conflict with it, does it support it? She feels this puts John in a precarious situation and asks a lot of somebody working for an agency. Steve noted that he will probably be sitting on this committee and will be focusing on RSA 483. Debby said John probably carries RSA 483 in his head since he volunteers on a LAC and works with numerous river groups across the state.

- **Ted Sutton made a motion that John Magee be appointed to this committee. Second by Debby Hinman. Vote was in favor with one nay.**

- **Michele L. Tremblay made a motion that Allan Palmer be appointed to the Surplus Land Review Commission. Second by Debby Hinman. Vote was unanimous.**

Michele noted that if Allan declines to represent the RMAC, there must be another vote. Jennifer mentioned that the RMAC can always change its appointee. A letter to the Chair stating the new designee is all that is required. Ken expects that each representative will develop an outline of the RMAC's position of the issue and bring it to the RMAC for their review and approval. The representative would then adhere to the majority opinion of the RMAC, rather than their own individual opinion.

Committee recessed for lunch at 12:20 and resumed at 12:30.

d) HB 722, RMAC guidance to DES on development of criteria and selection process of LAC member to the RMAC

Steve asked the Committee what type of criteria should be used to select a Local Advisory Committee member to serve on the RMAC. Steve noted that the DES Commissioner will forward three nominees to the Governor. One will be chosen for the appointment. It was decided that since the RMAC has not been involved with the selection of any other members, this should continue to be done independently.

e) HB 812, proposed amendments to septage and sludge sites along designated rivers

No action needed.

f) Testimony Discussion

Ken wanted to move this discussion to the next meeting as it doesn't have a lot of bearing right now. Michele said it was all still fresh in the committees' minds from coming off of a very busy legislative season. The RMAC was not only reactive, but pro-active by drafting legislation and finding sponsors to support new legislation.

Debby asked for clarification on the issues. Michele asked for this to be put on the agenda, since as Vice-Chair, she signed a lot of the letters of testimony and attended a lot of the hearings - it begs the question from Senate and House committees as to why the Vice-Chair's signature is on this and why is the Vice-Chair the one coming to the table? Michele is concerned that since testimony is coming from the Vice-Chair, rather than the Chair it may not come across as strong as it should.

Ken disagreed and stated the Vice-Chair's responsibility is to assume the Chair's responsibilities if the Chair is unavailable.

Michele felt the Vice-Chair doesn't always get a lot of prep time when having to testify or Chair a meeting or run a hearing. More lead time is needed so she is better prepared to represent the RMAC, it has been challenging. She has been the one camping down at the LOB. Ted expressed his appreciation for this.

Ken said this is the part of verbal testimony that is always going to be challenging. The RMAC engaged in a way this year, we have not engaged before. If the expectation is for the Chair to be the person doing the testimony, Ken is happy with that, but he cannot make that kind of commitment. If people think that is the right way to go, he is willing to step down so a new Chair can be selected.

Ted doesn't feel it makes any difference if the Chair, Vice-Chair or any one of the RMAC members provides testimony. Ken said the problem with verbal testimony is that the RMAC is almost all volunteers and with the way the legislative calendar works, hearings can be scheduled with as little as 24-hours notice. If your organization has you working on other projects with rigid deadlines or you have other commitments you cannot adjust your schedule to accommodate the legislative calendar on short notice.

Debby noted that if someone is being unduly burdened because of their proximity to Concord then it is a difficult situation to be in.

The committee was unaware of how much Michele had been called upon to do. Ken noted that the Committee agreed as a group to be this involved with legislation. Steve is doing his job in trying to get the Chair and Vice-Chair to show up to testify. Allan Palmer, Debby, and Bob have all testified or made communications on behalf of the RMAC. It is a question as to whether we want to continue to be involved to this extent. This amount of effort could be very difficult to sustain.

Ted asked how volunteers were chosen to testify at the hearings. He wasn't aware that Michele had put so much time and energy into defending our position on these issues. It should have been spread around more.

Steve said it went from the Chair to the Vice-Chair.

Ted suggested divvying up the responsibilities more so not all of the testifying fell on Michele.

Steve said any bill that directly affects RSA 483 should have a face and it should be consistent for that bill. From there, the RMAC has to decide how much they want to commit to a particular bill. It is important that someone is identified at the beginning of the process and they are responsible for shepherding that bill, with staff assistance. The relationships and consistency are going to be important as the bill works its way through the process. A lot was learned during this legislative season, the timing was right to over-commit.

Michele feels we should be pushing through bills that make sense in accordance with RSA 483, not just reacting to bills. She thinks this would have been a more productive discussion if Steve, Ken and Michele had a conference call and worked out the details beforehand as she requested.

Ken disagrees; he feels this is a committee decision.

Debby said consistency of a name and face for certain bills should be a RMAC policy.

Ted stated he doesn't see any possible way to expect one individual to go to all of the hearings, especially if we continue to be pro-active.

Michele noted that she came close to going to every one this year. It wasn't clear if she was just filling in for Ken or if she was expected to stick with particular bills. It was confusing for her.

Jen suggested that we think about legislation in a pro-active way for next year. What would be the most appropriate and best strategy for the RMAC? It is a lot for any one

person to take on. She suggested that after the committee approves the letter, the Chair's electronic signature be inserted, so all letters have the Chair's signature. She then referred to Steve's proposal, that when a bill is introduced that it get assigned to an individual committee member based on availability and interest.

➤ **Ted made the above proposal as a motion. Died for lack of a Second.**

Legislation will be on the next agenda as we have a legislative subcommittee consisting of Michele, Ted, and Allan Palmer to consider some RSA 483 concepts for next year.

Michele liked the simplicity of the proposal but pointed out that it's not likely to work. Somebody signs on and they said "I'm in charge of Senate Bill 5" and they may or not be available when needed. For example, if something comes up while that person is on vacation or is unreachable and we're depending on them, we don't know that they didn't do it. Then no one has the opportunity to step forward to make sure it is taken care of and it drops or dies or somehow suffers for lack of attention.

Ted asked that this discussion be included in the minutes.

Ken asked to continue this discussion. There is a challenge here, there is no perfect solution. No matter what solution we come up with we will always have the what-ifs, because of the way this Committee is designed and the challenge of the task in front of us. Let's make sure this is on the agenda for the next meeting to find a resolution.

Debby wanted to add that the RMAC extends its tremendous appreciation to Michele, Steve and Laura for the work that was done this year for a very successful legislative season.

IV. Sustainability Initiative

To be moved to next meeting.

I. Other Business/Action Item Reviews

The draft version of the letterhead was distributed. Send any comments to Steve or Laura.

- **Michele L. Tremblay moved to approve the draft of the new letterhead with names and represented interests listed along with the RMAC logo, not the DES logo. Second by Bill Heinz. Vote was unanimous.**

VII. Next Meeting Date(s)/Adjourn:

Next meeting date: –

Tuesday, September 25th, at 9:30 AM.

Action Items –

- 1) Send an email to the RMAC that includes all of the links to the reports that Dave Neils mentioned in his presentation.
- 2) Post approved April 17th meeting minutes to the RMAC website.
- 3) Send a letter to DOT for the conditional approval of the proposed SLR in Rochester.
- 4) Send a letter to CORD for the conditional approval of SLR 07-006: Town of Northfield.
- 5) CC Long Range on all future SLR correspondence the RMAC has with CORD.
- 6) Send a letter to CORD for the approval as submitted of SLR 07-007: City of Lebanon.

7) Hold Legislative Subcommittee meeting on refinements to RSA 483 prior to the September 25th meeting.

- **Motion to adjourn by Debby Hinman, second by Ted Sutton. Vote was unanimous.**

Meeting adjourned at 12:52 pm.



Defining Biomonitoring and its Utility

As it Relates to Aquatic Systems

Biomonitoring is the science of inferring the ecological condition of an area by examining the organisms that live there.

- Community Studies
- Toxicology

Common Ecological Characters That Indicate Community Condition

- 1) Feeding Strategy
- 2) Habitat use
- 3) Tolerance to Pollution
- 4) Taxonomic Diversity
- 5) Percent Composition

Biological vs. Chemical Assessments

Biological	Chemical
<p>Pros: Directly measures impacts to biota Incorporates cumulative impacts of multiple stressors Takes into consideration temporal impacts</p> <p>Cons: Reduced ability to detect immediate impacts Unable to confirm impact source</p>	<p>Pros: High sensitivity Measures specific parameters Can detect immediate impact</p> <p>Cons: Cannot determine long-term impacts Cumulative impacts of multiple stressors missed Only useful if impact occurs at time of sampling</p>

Impetus for National Biological Monitoring Efforts

- Documentation of species distributions for purposes of tracking "status"
Extent of Imperilment: ~20% freshwater fish, 48% freshwater mussels, 33% crayfish, 20% mayflies and stoneflies (Wilcove and Master 2005)
- Clean Water Act – "restore and maintain the chemical, physical, and **biological integrity** of the Nation's waters" [section 101(a)]
Established legal framework for establishing water quality standards and assessing nations waters, recognized "ecological" benefits independent from "economic" benefits



NHDES Biomonitoring Program

- Established in mid-90s
- Supported by EPA PPA funds
- Focus since inception has been on wadeable streams
- Target assemblages are fish and macroinvertebrates
- Utilize data to develop biologically-based water quality criteria and complete assessments of Aquatic Life Use
- Over 300 unique monitoring stations have been established across NH
- Several special projects:
 - Malformed frog survey
 - New England Wadeable Streams Study
 - National Wadeable Stream Assessment
 - Targeted Surveys for regulatory purposes

Biocriteria Concept

- Numeric or narrative expressions that relate the expected "natural" structure and function of a community OR a means of communicating the level of biological integrity displayed
- Based on a select set of "reference" conditions deemed to be representative of the natural habitat
- Incorporates 1 to many measures of community "health", but commonly expressed as single number or category for ease of communication
- Analogous to water quality criteria (i.e. pH must be \geq 6.5)
- Established through the collection of data from several locations within each "natural habitat" – A.K.A Biosurveys

NH DES Statutory Authority for Establishing Biocriteria

Administrative Rule Env Ws -1700 – Surface Water Quality Regulations

Env-Ws 1703.19 *Biological and Aquatic Community Integrity.*

(a) *The surface waters shall support and maintain a balanced, integrated, and adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of similar natural habitats of a region.*

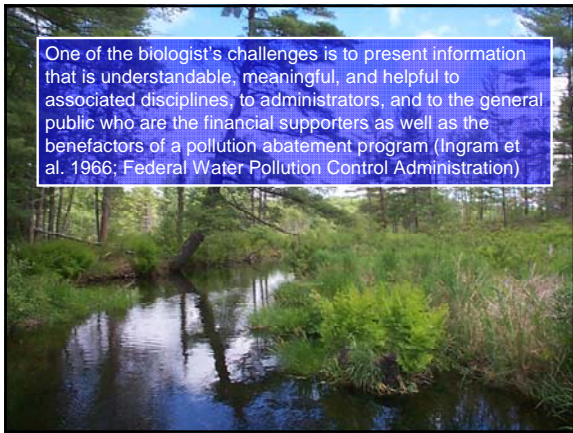
Must Establish Baseline for Natural Habitats

(b) *Differences from naturally occurring conditions shall be limited to non-detrimental differences in community structure and function.*

Must Determine When Detrimental Difference Has Occurred

NOTE: These are "Narrative" criteria; NOT a "Numeric" interpreter

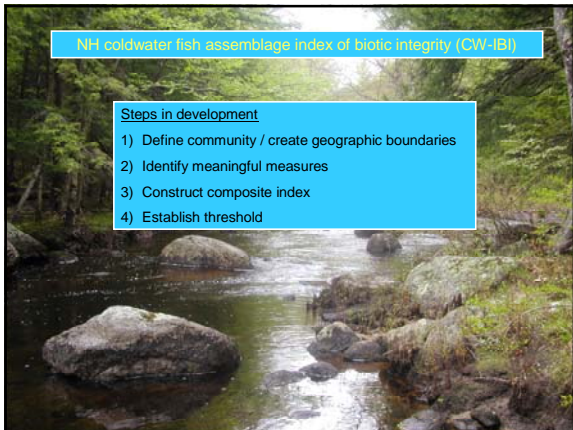
One of the biologist's challenges is to present information that is understandable, meaningful, and helpful to associated disciplines, to administrators, and to the general public who are the financial supporters as well as the benefactors of a pollution abatement program (Ingram et al. 1966; Federal Water Pollution Control Administration)

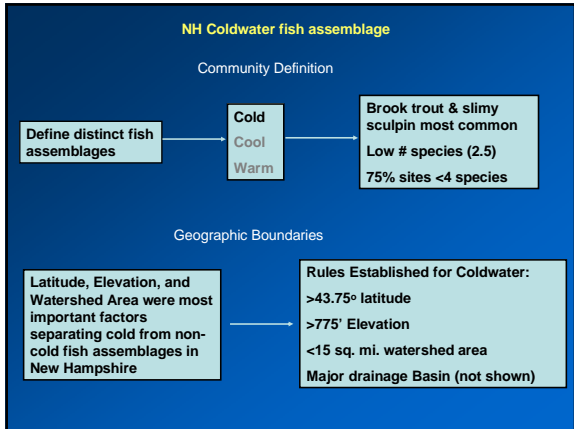


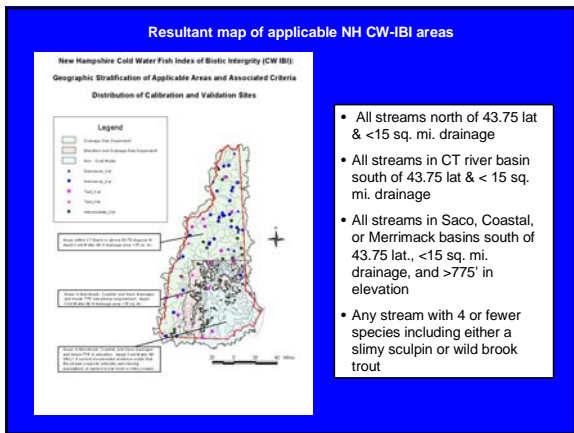
NH coldwater fish assemblage index of biotic integrity (CW-IBI)

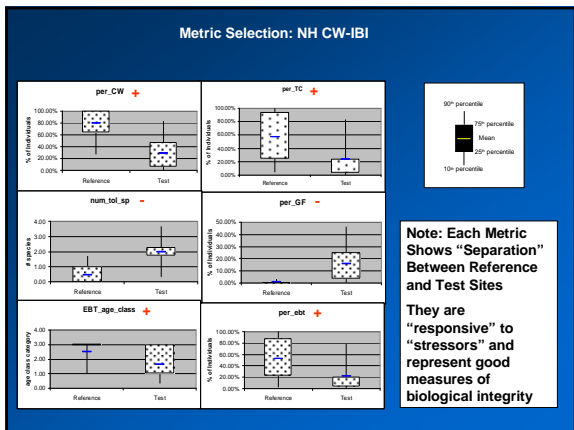
Steps in development

- 1) Define community / create geographic boundaries
- 2) Identify meaningful measures
- 3) Construct composite index
- 4) Establish threshold





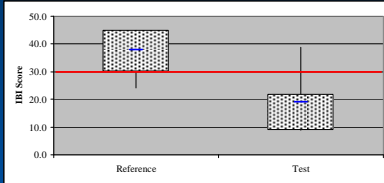




Constructing the Index & Establishing a Threshold

- Metrics combined into single index
- Each metric given score (1.5, 4.5, 7.5)
- Metric scores added together for final index score (9-45)

NH Cold Water Fish Biotic Index [9(bad) – 45(excellent)]



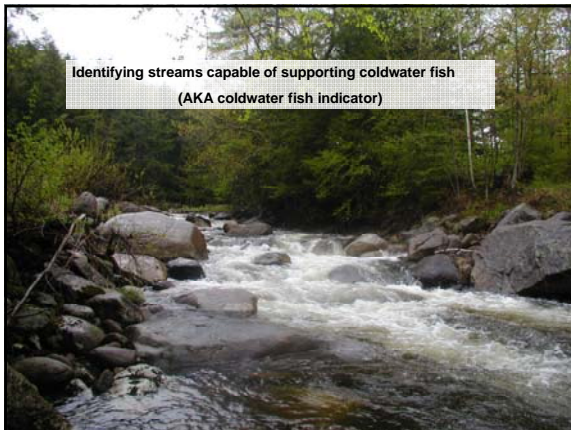
Threshold set at 30
= 25th score of all
reference sites

≥30 = Full support
<30 = Non-support

NH CW-IBI Summary

- Applies to small, coldwater streams, with limited species diversity
- Will be used to assess applicable waterbodies for ALU
- Index will be used to make impairment decisions in 2008 305(b)/303(d) water quality report to EPA
- In process of completing data exchange with VT DEC to compare CW-IBI results
- 1 of 3 indices to be developed in order to assess fish communities in NH wadeable streams (cool and warm upcoming)

Identifying streams capable of supporting coldwater fish
(AKA coldwater fish indicator)



Purpose

- DES Administrative Rules (Env Ws-1703.07) require the application of stricter dissolved oxygen criteria where coldwater fish spawning areas can be identified

Waterbody Type	Criteria
Class A	75% saturation – daily average; 6 mg/L minimum
Class B	75% saturation – daily average; 5 mg/L minimum
Coldwater fish spawning areas	Oct. 1 – May 14 7-day mean of 9.5mg/L; 8 mg/L minimum

- 3,189 unique stream segments; only 24 (<1%) assessed using coldwater fish spawning area DO criteria.

Approach

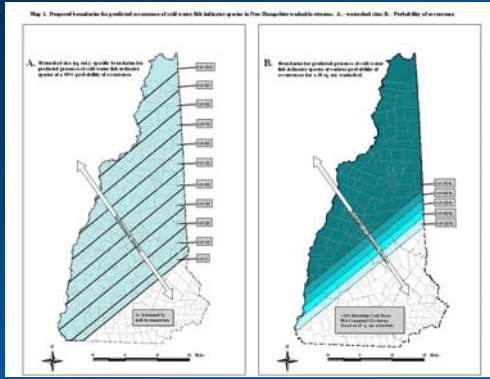
- Develop a predictive model that accurately estimates where coldwater fish species should occur
- Utilize NH DES biomonitoring fish data from 1997-2006
- Identify coldwater "indicator species" that are distributed statewide
- "Assume" that species presence is indication of successful reproduction and that where reproduction has occurred the coldwater fish spawning DO criteria is applicable
- Utilize modeling results to produce a statewide map indicating where coldwater fish indicator species are expected to occur.

Results of Modeling

- Utilized technique known as "logistic regression"
- Slimy sculpin and brook trout were the only species that served as suitable "indicator species"
- Model identified latitude, longitude, and watershed area as the best predictors of indicator species presence or absence
- Model produces a probability of occurrence (0-1) of indicator species at each site (<.5 = absent; ≥.5 = present)

Dataset	% Correct predictions
Calibration	89.9
Validation	83.3
Overall	86.6

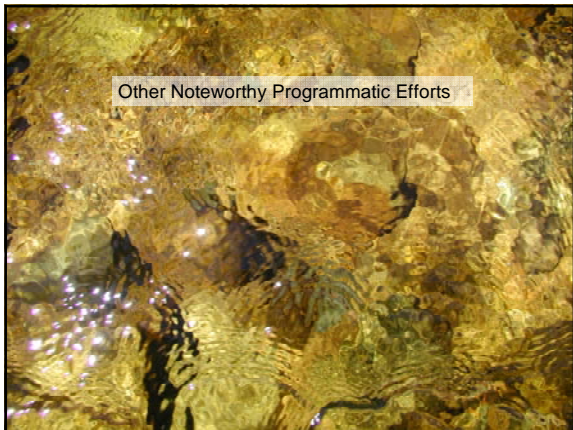
Statewide map of coldwater fish occurrence



Summary coldwater fish indicator model

- Model using longitude, latitude, and watershed size was ~85% accurate at predicting the presence/absence of indicator species
- Statewide map covers ~80% of NH land area
- Opportunity for more comprehensive application of coldwater DO criterion
- Model predictions also serving as basis for initial water temperature data collection efforts
- Model will be used to separate "cool" and "warm" water sites
- Results (environmental indicators / maps) differ from CW-IBI; CW-IBI restricted to "strict" coldwater fish assemblages (reduced species diversity)
- F&G ultimately responsible for designating coldwater fish spawning areas for purposes of DO criterion implementation

Other Noteworthy Programmatic Efforts



New England Wadeable Stream survey (NEWS) 2002-03

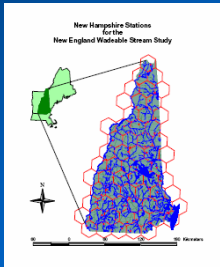
**The New England Wadeable Stream Survey (NEWS):
Development of Common Assessments in the
Framework of the Biological Condition Gradient**

Prepared for:
USDA Office of Water and Technology
Washington, DC
Frank Vitale/WRM Manager
USDA Office of Watersheds
Orono and Farmville
Washington, DC
Scott Robinson/WRM
New England National Water Pollution Control Commission
Lynch, NH
Beth C. and
Project Manager

Prepared by:
William Steuk
USDA's New England Regional
Office
Canaan, NH
Nancy P. Steuk
New England Office of Water
Quality
North Ferris, VT
New England Regional
Office
400 Birch Street, Suite 200
Orange, NH 03477
Richard A. Steuk
27 Lake St, Suite 100
Manchester, VT 05440

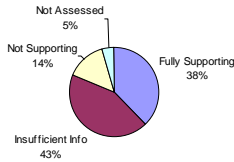
February 19, 2007

**A probability-based assessment of
wadeable stream condition**



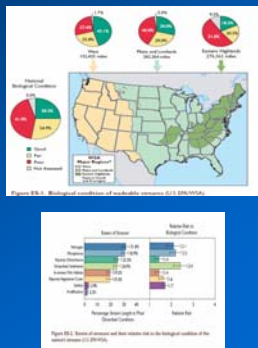
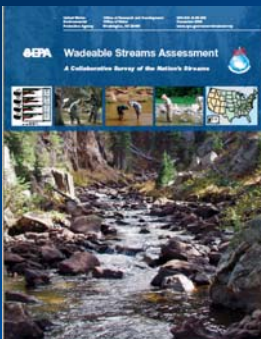
NEWS results

Aquatic Life Use Support in Wadeable Streams at All Sites



- Assessments possible for >50% of stream miles
- Low gradient streams placed in insufficient info category

**EPA National Wadeable Streams Assessment
<http://www.epa.gov/owow/streamsurvey/>**



Volunteer-Based Biological Monitoring (VBAP)



- Initiated in 2005 with Cocheco River
- 4 groups participated in 2006
- 5 groups expected in 2007
- Strong support from Coastal Program
- Sampling is focused on macroinvertebrates
- Identification is streamside to Order-level
- Volunteers collect and identify samples
- DES analyzes and prepares final reports

Long-term plan to refine index and use as screening method for DES and volunteers to increase number of sites sampled

Public Interest Biological Monitoring

- Offered beginning in 2006 to LACs and VRAP groups
- Includes full biological survey at up to 5 locations as suggested by volunteer organizations
- NH DES does all field work and analyzes data
- Provides valuable information where most interest lies

2006 Sites:

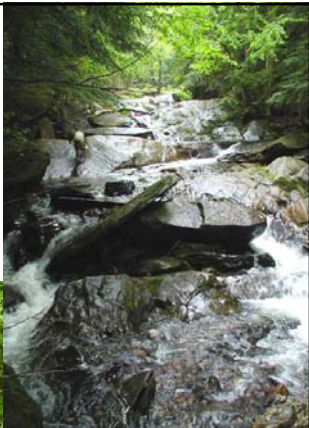
S. Br. Piscataquog River, Israel River, Isinglass River, Cold River, Warren Brook, Ashuelot River

2007 Sites:

Collins Brook (Piscataquog trib), Hayward Bk (Merrimack trib), Punch Brook (Merrimack trib), Oyster River

[08/09 EPA flowing waters study](#)

- Probability-based design
- Similar to WSA
- Will include wadeable & non-wadeable streams
- States will receive grant funds if they decide to participate
- DES will participate and hopes to follow-up with full state-wide probability-based assessment



Summary and Future

- Currently have 2 indices available for determining condition of wadeable streams (CW-IBI & macroinvertebrate index)
- Anticipate 2 additional draft fish indices to be developed during winter 2008
- Coldwater predictive model is accurate and a useful tool for identifying streams where coldwater fish species should be present; several applications possible
- Volunteer-based sampling underway but protocol requires additional refinement and testing
- Program progress is limited by lack of staff support
- Sampling in wadeable streams is limited to probability-based assessment projects, index development needs, and public interest targeted sites
- Biological monitoring and assessment MUST expand to other waterbody types (lakes, large rivers, wetlands)

David Neils
Biomonitoring Program
Coordinator
NHDES
6 Hazen Dr.
Concord, NH 03302-0095
(603) 271-8865
dneils@des.state.nh.us

