

## October IC-TRT meeting

Oct 5-6, 2004

IDFG Nature Center

Boise, Idaho

TRT attendees: R. Carmichael, T. Cooney, F. Mutter, P. Hassemer, D. McCullough, C. Petrosky, H. Schaller, M. McClure, P. Howell

Other attendees: C. Baldwin, C. Andonaegui, D. Holzer, M. Morita, E. Seminet

### Tuesday, October 5th:

#### I. Updates

- A. BiOp Remand passed out for review
  - 1. Intrinsic potential analysis write-up included
  - 2. Life cycle modeling work (R. Zabel)
- B. RSRP meeting is scheduled for Nov 30-Dec 2 in Santa Cruz.
  - 1. Two major topics of discussion
    - a. Viability at the population and/or ESU level
    - b. *O. mykiss* -- resident and anadromous listing criteria
  - 2. The agenda and list of speakers has not been set yet so please let us know of any issues/ speakers that you would like included.
- C. BPA contract- thank you for responding, Michelle and Tom will be working on the new contract and sub-contracts.

#### II. Old and New Diversity Metric discussion

- A. Stream Width and Elevation
  - 1. Old one gave just the ranges -- didn't capture the distribution
  - 2. New one cuts off the upper and lower 5 percentiles because 90% of spawning occurs in a fairly narrow band. (~12 are widely spread out)
- B. Stream Order
  - 1. Old one didn't identify branching vs. linear
  - 2. New one; use Shreve\* stream order instead of Strahler\*\* stream order
    - \*SHREVE - Headwater arcs are assigned an order of 1. When two or more arcs converge, then the arc downstream of the confluence is assigned an order equal to the sum of the orders of the upstream arcs.
    - \*\*STRAHLER - Headwater arcs are assigned an order or 1. When two or more arcs of the same order converge, then the arc downstream of the confluence is assigned an order one greater than that of the upstream arcs.
- C. Ecoregions -- should they be included at all?
  - 1. Currently represented as a distribution showing the proportion of spawning in each ecoregion.
- D. Hydrograph
  - 1. Progress so far
    - a. Michelle has been consulting with Tim Beechey about the data we would like- it would take 9 months to get the analysis done.
    - b. GIS analysis to determine which pixels have snow in April.
    - c. Water gauge data: principle components and cluster analysis

- i. took data for monthly means from gauges within our populations
        - ii. results are not conclusive
      - 2. Input from the TRT group
        - a. Water management is not being considered
          - i. flow is heavily influenced by current land use
          - ii. irrigation begins in April-- affects flow
        - b. Spring-fed issue: any way to figure out which are spring fed?
        - c. Go with precipitation and elevation analysis
          - i. use precipitation by month + snow pack + elevation
          - ii. come up with an elevational cut-off
- E. Valley Habitat Index within populations (no downstream rearing info)
  - 1. Progress so far
    - a. standardized populations by maximum and ranked orders
      - i. ranked high- Wenatchee, Methow, SF, little Salmon
      - ii. ranked low- Entiat, Asotin
  - 2. Input from TRT group
    - a. Need to make sure that continuous and discrete variables are getting equal weights
- III. Two “Big Issues” Discussion
  - A. Diversity Issue -- How do we use the diversity metric at a “between population level”?
    - 1. Diversity at an MPG vs. population level
      - a. Two goals
        - i. Identify diversity
        - ii. Identify populations essential to diversity
      - b. MPG level diversity
        - i. Don’t just add populations up
        - ii. Generate all diversity factors for the entire MPG
        - iii. Compare MPG scores to population scores
      - c. Diversity vs. covering the whole range of diversity
        - i. need to consider actual (unscaled) values not relative comparisons
        - ii. require that MPGs contain diversity equivalent to intrinsic historic diversity
      - d. We want two things
        - i. Diverse populations
        - ii. Whole range of diversity covered within an MPG
  - B. Spawning/Rearing Issue -- How should we include downstream rearing areas (if at all) ?
    - 1. Justification for diversity
      - a. does adding rearing habitat change diversity values?
      - b. reasonable to say that spawning area is sufficient measure?
    - 2. Robust way to deal with rearing areas
      - a. Lower limit of rearing
      - b. Ephemeral streams

- c. Generate diversity rankings with and without spawning filter to see if rankings change?
- 3. Does the driver for potential diversity lie within populations because they all potentially have access to intrinsically good habitat downstream??
- 4. Plan of attack for diversity
  - a. Look at what can be measured
  - b. Look to see if it would make a difference
  - c. Acknowledge that there are some populations (GRLOO) that are depicted as riskier if juvenile potential diversity is not looked at but in more complex populations the diversity is well represented.

#### IV. Patches and Branches (see T. Cooney handout from 9/24/04)

##### A. Introduced new term -- MSA: major spawning aggregation

- 1. From the top down- continuous branches/reaches with sufficient amount of habitat to support 500 or more spawners. Breaks are determined by a stream junction or a > 5km gap.
- 2. Continuous spawning around the confluence: there was some discussion about whether there should still be a break at a confluence if the spawning is continuous.
- 3. Suggested having two different metrics- one for catastrophe risk, one for genetic diversity. Or doing the analysis with just the confluences and then with just the breaks to see the differences.
- 4. This problem was deemed to be like a “non-deterministic polynomial” (travelling salesman) and decided to leave it to the workshop group to work it out.

#### V. Size and Complexity Categories: (see T. Cooney handout from 10/4/05)

##### A. Introduced 4 size and complexity categories:

- 1. “A” -- small-intermed drainage, linear structure or 1-2 branches
- 2. “B” -- small-large with 3 or more MSA’s
- 3. “C” -- intermed-large mainstem spawning with multiple branches
- 4. “D” -- Small-Large core spawning drainage + dispersed mainstem tribs

##### B. It was suggested that we Entiat, Asotin, and Lookingglass into their own category because they are so small ( $A_1$ ).

### **Wednesday Oct 6th:**

#### VI. Workshop (each group has an electronic worksheet that they filled out)

- A. What conditions in terms of S.S. and diversity are needed for the different categories to be at various (super low, low, moderate, high) levels of risk?
  - 1. Sources, Patches, and Branches -- Paul, Charlie, Casey, Carmen
  - 2. Habitat Natural Processes -- Michelle, Pete, Dale, Phil
  - 3. Geneflow, Phenotypic and Genotypic variation -- Fred, Rich, Tom

#### VII. Workshop results

##### A. Sources, Patches, and Branches

- 1. Group decided that they wanted to devise a slightly different technique for dealing with branches and MSAs (also prefer major spawning

AREAS) that would give credit for fish even when there were less than 500.

- a. Need to identify 'hot spots' of spawning where there is a capacity for > 500 spawners. Group will be working with Damon to create a 'sliding window' that captures a moving spatial average using the intrinsic potential analysis.
2. Argued for not splitting it into two metrics (catastrophe & genetic diversity) because it is difficult to assign "good" and "bad" values in terms of genetic diversity since maximizing geneflow and maximizing diversity require opposite conditions. High vs. low risk depends on what the historic conditions looked like.
3. Group needs to work on how the peripherals are aligned and the gaps and discontinuities. Try out new analysis on the Lochsa steelhead and the Wenatchee chinook.

#### B. Habitat Natural Processes

1. Group needs to figure out:
  - a. Habitat limiting factors
  - b. Where lines are for low, mod, and high risk
  - c. What the relative risks are

#### C. Geneflow, Phenotypic and Genotypic variation

1. Group covered the following issues
  - a. Hatchery strays
  - b. Introgression
  - c. Change in gaps and range
  - d. Hatcher spawners local brood
  - e. Phenotype characteristics
  - f. Major life history patterns

2. It was suggested that they cover observed genetic variation as well.

#### VIII. Goals for the next month:

- A. October 18th -- Each group will submit a rough draft write up to the TRT
- B. October 27th -- Suggestions revised
- C. November 3rd -- Have an updated draft for the Portland TRT meeting.