Interior Columbia Technical Recovery Team meeting #17, June 3rd - 5th, 2003
Kahneeta, Warm Springs Reservation, OR

Members present: Carmichael, Cooney, Hassemer, Howell, Johnson, McClure, McCullough, Petrosky, Schaller, Spruell
Non-members present: Carson, Holzer, Piasecke

I. Viability

A) Setting Interim Goals and Carrying Capacity

Tom reviewed selected populations using a modified QAR approach: First the average population size was estimated to avoid deleterious mutation effects. Then the basin carrying capacity was estimated using the "effective basin size" calculation from Chapman & Chandler 2001. Productivity must be such as to recover from low or moderate abundance.

Possible adjustments to refine this "first cut" method:

1) The Chapman & Chandler method estimates carrying capacity using 1960's conditions, this can be adjusted to suit. Two runs could be done, one with current conditions and another with historical conditions

2) Number of suitable stream miles, or stream area, could be used to estimate capacity, instead of watershed area, to more accurately reflect varying basin characteristics. The upper limits of suitability could be defined by a gradient threshold.

3) Although there is general agreement on using the "broken stick" function to describe abundance over time, an alternative function could also be run for comparison.

4) Can the end result for some basins (expressed as number of spawners) be double checked with an alternative method, such as actual observations?

5) Some adjustments should be made for the quality of the habitat, not only quantity. Possible variables to use are Vegetation, Conductivity, Elevation, Geology, Gradient, and Landscape change.

6) Chapman & Chandler use a water temperature criterion to limit their basin area at the lower end. Can we find / create a map of their assumed basins to overlay on our defined population maps for comparison? Are other criteria possibly more appropriate?

B) Demographic Viability vs. Historical Abundance

Discussion: If a population meets the viable criteria set, including the spatial structure and diversity portions, but exists at a significantly lower level than documented historic conditions, is it still considered viable?
Consensus: Yes, the TRT must hold to the criteria it sets.

General issue for viability analyses: Several parameters strongly affect the results of extinction risk analyses, and the PCC target-setting exercise.

1) Quasi-extinction threshold (other TRTs used values of 50 fish (or close to 50 fish).

2) Variance of the distribution sampled to construct the model

3) Acceptable probability, and time frame for extinction. (guidance from region and VSP document is 5% in 100 years)

5) Under what conditions is the recovery level set?

6) At what level does the recovery begin? 1960's? Pristine?

7) Over what time period will recovery occur?

C) Smolt to Adult Return (SAR)

Charlie and Howard presented a method for setting SAR targets, using Snake River Spring Summer aggregates migrating from / to Lower Granite Dam as an example. This method could be used in other basins that have SAR estimates:

1) Yakima – Lindsay/Knox reports
2) Upper Columbia
3) Warm Springs
4) John Day

D) Spatial Structure

The main importance of spatial structure as a criterion is to prevent catastrophic events from destroying entire populations and to maintain opportunities for diversity. Populations could be divided into four categories according to their structure:

A single reach with continuous spawning
A single reach with breaks in spawning
Branching reaches with continuous spawning
Branching reaches with breaks in spawning

As a starting point, reaches with a break in spawning of 3 kilometers or more will be defined as discontinuous. The temporal structure of spawning reaches will be covered under the diversity criteria, with such possible exceptions as situations where a stretch of summer run spawners connects two otherwise separate spring spawning reaches.

Assuming equal numbers of fish in each situation, the four categories of spatial structure were ranked as follows:

Spatial Structure	Connectivity*		Opportunities for Diversity**	Risk Aversion
	within pops.	among pops.#		
Linear Discontinuous	Low	Variable, depending on: 1) Separating distance 2) Relative abundance 3) Location along migration route	Low	Low
Linear Continuous	High		Very Low	Very Low
Branched Discontinuous	Very Low		High	Medium
Branched Continuous	Medium		Medium	High

*In genetic terms: Maximizing heterozygosity

**In genetic terms: Maximizing F_{ST}

Note that this issue is a factor to be considered at the ESU level for spatial structure, rather than at the population level.

The spatial structure of populations changes over time, which also changes the level of risk over time.

- Is a current, reduced spatial structure for a particular population due to a loss of habitat or lack of productivity from other factor(s)?
- Might some populations have opportunities for changes in spatial structure which differ from the current, realized structure?

- Changes in spatial structure can be effected by a change in local habitat, or a change in abundance.

E) ESU Viability

Two possible routes exist for scaling up from population-level viability:

1) Each population either meets or does not meet the viability criteria set. A certain proportion of the populations must be deemed viable for the ESU to reach viability
2) Each population is scored on its degree of viability, and the average of these scores must exceed some threshold for the ESU to reach viability.

F) Genetic Legacy Populations

Members discussed the draft appendix of hatchery releases by population, with the purpose of potentially flagging "genetic legacy" populations. What is the effect of hatchery introgression on potential genetic legacy populations?

Populations could be categorized using the following criteria:

1) Consistent genetic uniqueness
2) Potential hatchery influence
    - Stock origin
    - Duration of program
    - Number of releases
    - Number of strays (measured or inferred)

Viability Tasks:

1) "Local Expert" members will describe current and historic spatial structure for the populations within their area, using the "chart with extensive "comment column" format. This will include the suspected reasons for any major changes in structure over time, and potential opportunities for structure other than what exists today. Members will also explore the feasibility of creating population maps with histograms which show the relative number of spawners in each major reach or branch. Deadline: June 20th.
2) All members will review the Viable Salmonid Populations (VSP) sections on spatial structure and diversity and Willamette / Lower Columbia TRT Viability Draft documents for discussion at the next meeting.
3) Write up this meeting's viability discussion for inclusion in the draft.
4) Assemble the information listed under "genetic legacy populations" above for each population.
5) Develop viability criteria at the next meeting.

II. Monitoring and Evaluation

NOAA Fisheries and the action agencies are requesting TRT comments on their updated monitoring and evaluation plan for the Columbia Basin. The plan will be released in two weeks and will be distributed to all members. Chris Jordan (NWFSC) will attend the next meeting to receive comments.

III. Population Identification

1) A population identification "rollout" workshop will be scheduled for July 17 in Lewiston. Michelle will assemble a draft for review at the next meeting in preparation for the event.
2) Stray rate appendix

Members reviewed the draft appendix on dispersal curve analyses, and had the following comments: (Additional comments due to Jessica by the end of next week)

- Add a discussion about the results' consistency with other populations
- More discussion is needed about the pros and cons of the various methods used, and the 10 – 30 kilometer result.
- Add the numbers of fish and time frame used in the analysis to the methods section.

3) Spawning distribution

Members discussed the draft section on calculating the lower extent of spawning for each population. 4) Okanogan Steelhead

Should this area be listed as extirpated, independent but greatly reduced, or lumped with the Methow (its closest neighbor independent population)? Tom and Dave to research for the next meeting.

IV. Extirpated Populations

1) Sockeye:

The document will include a brief discussion about Payette, Wallowa, and Warm lakes as possible extirpated populations or ESUs. The document will not discuss extirpated populations outside the Snake River basin (such as Cle Elum or Palmer lakes) because only Snake River Sockeye have been listed under the ESA.

2) In General:

Should areas that contained extirpated fish from listed ESUs simply be shown on a map, or should they be divided up into historic populations using a "cookie cutter" method?

Consensus: These areas will not be divided up into possible populations; however lines around major drainages should be shown on the map for the larger areas (such as above Hell's Canyon dam). A more in depth look at these areas is more appropriate during the ESU viability exercise.

Damon will circulate his summary table of extirpated populations with related information for member review.

V. Future Meetings

1) Case Study conference call, Friday, June 13th, 8 am

2) Next meeting: Missoula, MT. Start time will be 1:30 pm, June 30th.