THE CONFEDERATED TRIBES OF THE WARM SPRINGS RESERVATION OF OREGON

Branch of Natural Resources
P.0. Box C, Warm Springs, Oregon 97761
Phone (541) 553-2002/2003
Fax (541) 553-1994

To: The Independent Science Review Panel (ISRP) for the Northwest Power and Planning Council, Eric Loudenslager, Chair

From: Brad Houslet, Fisheries Program Manager, and
Jens Lovtang, Fisheries Management Supervisor
Confederated Tribes of Warm Springs
Branch of Natural Resources(BNR) Fisheries Department

Re: CTWSRO Response to: Follow-up Review of the Warm Springs Reservation's Fish Accord Proposal, Project, *Natural Production Monitoring and Management (*#2008-311-00) (April 26, 2011)

Once again, the Confederated Tribes of the Warm Springs Reservation of Oregon (CTWSRO) appreciates the constructive criticisms and comments on the latest draft of the Fish Accord Proposal for project 200-311-00, *Natural Production Monitoring and Management* (April 26, 2011)

The ISRP requested a response to three specific questions regarding the project as a whole, as well as further detail on five of the study objectives. The three specific questions were:

1. What management decisions will these data inform?
2. Will the data, including PIT-tag data, be sufficiently precise to adequately manage risk and provide confidence in decisions made? Evidence of data adequacy should be provided.
3. Will the GRTS-based sampling design be adequate given the physical constraints in the study area?

Each of these questions is addressed separately. Text in italics are from the ISRP document.

Question 1) What management decisions will these data inform?

This project is primarily directed at monitoring and evaluating the status and trend of wild spring Chinook and steelhead populations in reservation streams. As stated in the proposal, this information is used to help inform management decisions; however, management decisions are made elsewhere, and are the purview of the CTWSRO and co-managers. In general, management decisions informed by the project may include supplementation, harvest, and location of habitat enhancement/protection efforts. Information from this project is also needed to monitor the status of the Westside Deschutes steelhead population, which is listed as threatened under the Endangered Species Act.

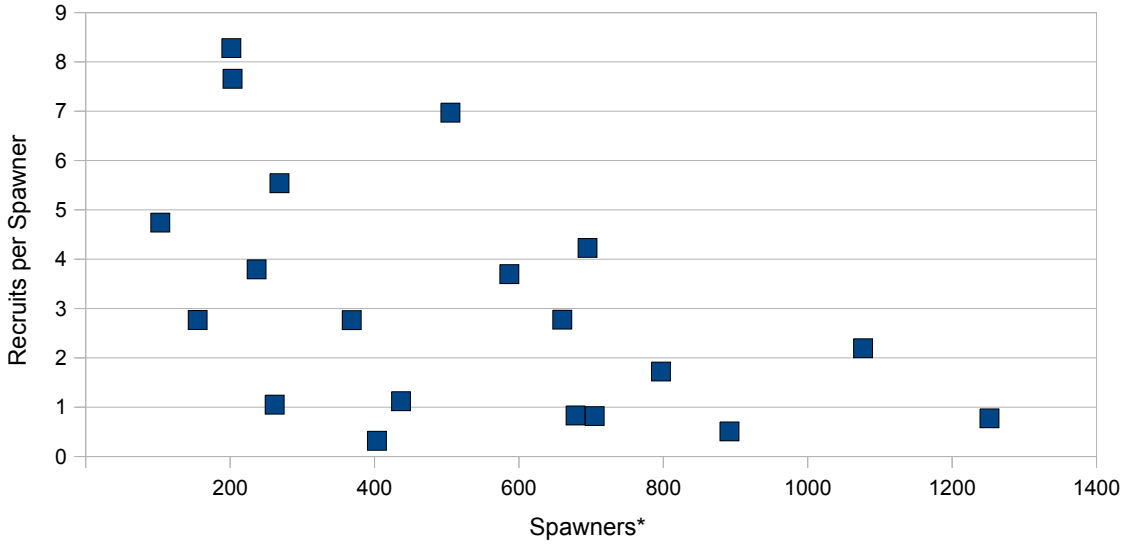
In another portion of the review, the ISRP asked, "Is this project now primarily for harvest management, decisions about allowing hatchery fish to pass above the hatchery barrier, and questions of whether to supplement naturally spawning fish in the tributaries with hatchery-produced juveniles?" As stated above, the information collected as part of this project will inform these types of management actions. Harvest management of spring Chinook and steelhead are among the primary management activities engaged in by the CTWSRO. Among the goals of the CTWSRO BNR- Fisheries Department is to, "Provide naturally sustaining and harvestable levels of wild spring Chinook and steelhead." Included within this goal is the responsibility to limit harvest when necessary.

Spring Chinook salmon harvest limits and seasons are primarily driven by the predicted number of wild salmon returning to the Deschutes River. This prediction provides the base for both sport (ODFW) and tribal (CTWSRO) harvest management of both hatchery-origin and wild fish. The primary models we use for prediction of run sizes are based upon run reconstructions from the previous year, which are partially based on information collected as part of this project.

The CTWSRO Fisheries Department will use the status and trend data collected in this project to increase our ability to make informed decisions about harvest management of wild Chinook salmon and steelhead in the Deschutes River. Although the CTWSRO has been collecting data for several decades, it has only been the past few years that there has been a concerted effort to compile those data and determine their utility for management decisions. We have determined that many of the data collection protocols were lacking, and during the development of the narrative for this project were able to develop protocols aimed at improving data collection and analysis moving into the future.

Information collected as part of this project will also be useful to the new Coordinated Assessments effort (data sharing) being implemented for projects within the Council's Fish and Wildlife Program. This effort is beginning by facilitating the sharing of abundance and productivity data for anadromous salmonids. For example, data from brood years 1986-2007 indicate a density dependent relationship between the number of spawners (adjusted for pre spawning mortality) and the number of adult recruits returning to the Warm Spring River (Figure 1), with a diminishing number of recruits as the number of spawners increases. These data further increase our ability to determine the effective capacity of the Warm Springs River Basin, and will allow us to manage harvest with more confidence.

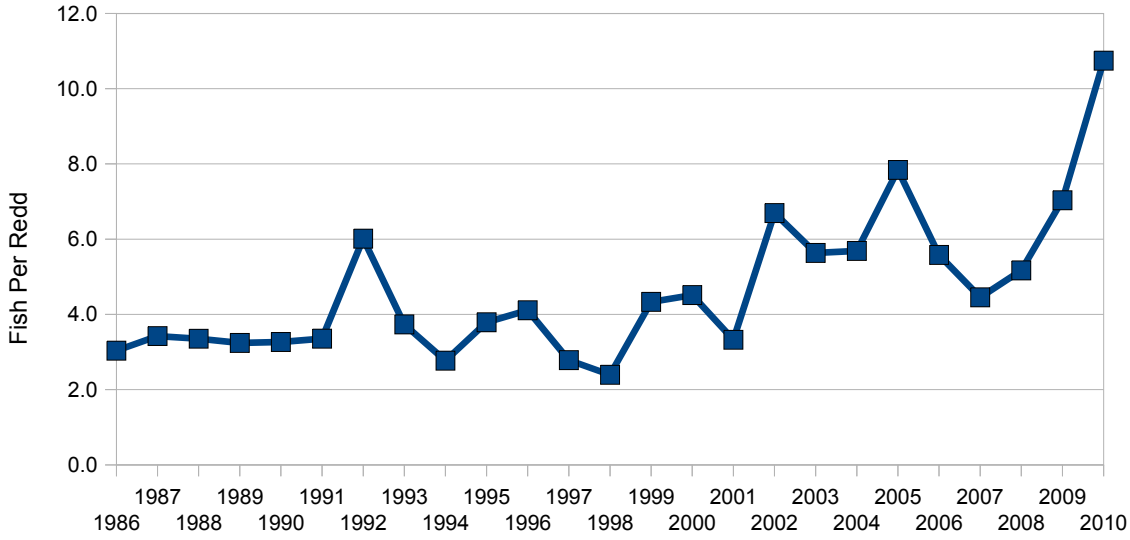
Figure 1. Wild spring Chinook salmon adult recruits per spawner in the Warm Springs River, brood years 1986-2007.



* The adjusted number of spawners was calculated by assuming 1 female per redd and that the runs consisted of 60% females (male-female proportions based on WSNFH data).

Chinook redd data also informs management decisions in the Warm Springs River Basin. Fish per redd ratios averaged 3.6 between 1986 and 2002, but have increased to an average of 6.2 between 2003 and 2010, with an all time high of 10.3 in 2010 (Figure 2). This recent increase can be attributed to one of two things: either the fish are experiencing a high level of pre-spawning mortality and are not spawning, or the distribution of redds has changed and our redd surveys are inadequate to capture all the redds. It should be noted that the index reaches surveys have been similar in all years of the survey.

Figure 2. Adult Spring Chinook salmon per redd ratios in the Warm Springs River Basin, 1986 2010.



A potential source of pre-spawning mortality may be handling protocols at the WSNFH. Currently, if testing of the volitional passage system indicates that more than 10% of the fish passing through the system are of hatchery origin, all fish will be handled and sorted by hand, which, combined with other factors such as high temperatures, may place too much stress on the wild fish. The CTWSRO is currently in negotiations with the USFW regarding the 5-year operational plan at the hatchery, and the potential causes of pre - spawning mortalities and potential solutions to those causes will be discussed.

If the issue is that our redd surveys are inadequate to observe all redds, we intend to address this question by implementing the proposed rotating panel design for non-index reaches, in which we plan to survey 20% of the non-index reach habitat annually each year for five years. We also proposed to include two carcass surveys in the Warm Springs canyon during the summer holding months.

Question 2: Will the data, including PIT-tag data, be sufficiently precise to adequately manage risk and provide confidence in decisions made? Evidence of data adequacy should be provided.

The CTWSRO feels that, although the number of fish to be tagged may be relatively small, the information gathered will be useful for investigating the life history and movements of Chinook salmon and steelhead. The CTWSRO's proposed PIT tagging program is similar in terms of the numbers of wild fish tagged to several other projects (e.g. ODFW's east side Deschutes Steelhead Hatchery Stray Study Project [BPA # 2007-299-00] and John Day River Salmonid Monitoring Project [BPA # 1998-016-00], and Yakama Nation's Klickitat River Salmonid M&E Program [BPA # 1995-063-35]). The USFWS PIT tags approximately 15,000 of their smolt production at the WSNFH each year, which represents approximately 2% of the target production goal of 750,000 smolts.

Based upon our population estimates (and confidence intervals), we will be tagging a known proportion of the total outmigration annually, which will allow us to make inferences to the total population. For example, for brood year 2007, we estimated a total of 16,408 (+/- 6,553) spring Chinook smolt outmigrants in the Warm Springs River. We captured 430 of those fish. If we had tagged all of them, we would have tagged between 2.1% and 4.0% of the total population. In the same brood year in Shitike Creek, we estimated a total of 492 (+/- 141) spring Chinook smolt outmigrants. We captured 114 of those fish. If we tagged all of them, we would have tagged between 18.0% and 32.7% of the total population. With the advent of operating the traps 7 days per weeks and making attempts to increase the efficiency of the Warm Springs trap, we expect the percentage of the total run available for tagging to increase.

Also, as stated in the proposal, we will also be providing an additional 1,000 – 4,000 PIT tagged fish annually that will be added to the Comparative Survival Study (BPA #1994-033-00) and is responding to RPA #s 50, 52, 66, and 67, all of which call for an increase in the number of PIT tagged wild salmonids.

Question 3: Will the GRTS-based sampling design be adequate given the physical constraints in the study area?

Surveys of rearing juvenile fish in the summer (either via snorkeling or other methods) have varied in terms of effort and direction over the years on the Warm Springs Reservation. This is due primarily to high turnover of biologists, and the fact that procedures and protocols were created internally without many attempts to use standardized methodologies or to even continue the protocols established by predecessors. The latest protocol has been used since 2006. We decided to attempt a GRTS – based sampling design based upon examples from other projects (e.g. John Day River Salmonid Monitoring Project [BPA # 1998-016-00]). We feel this sampling design can help us select a statistically valid and spatially balanced number of sites to sample, and can establish a protocol that can be implemented into the future.

Although portions of the Warm Spring River canyon are difficult to access, it can and will be done. We will combine summer snorkeling surveys with the carcass surveys conducted in July or August (proposal, page 33), and will be able to access the sites selected for sampling by the GRTS – based sampling design.

We will also investigate alternative methods of sampling fish populations in the lower river downstream of the WSNFH, which is non-wadeable and difficult to sample accurately via snorkeling.

Specific Responses for Individual Objectives:

Juvenile Outmigration Monitoring

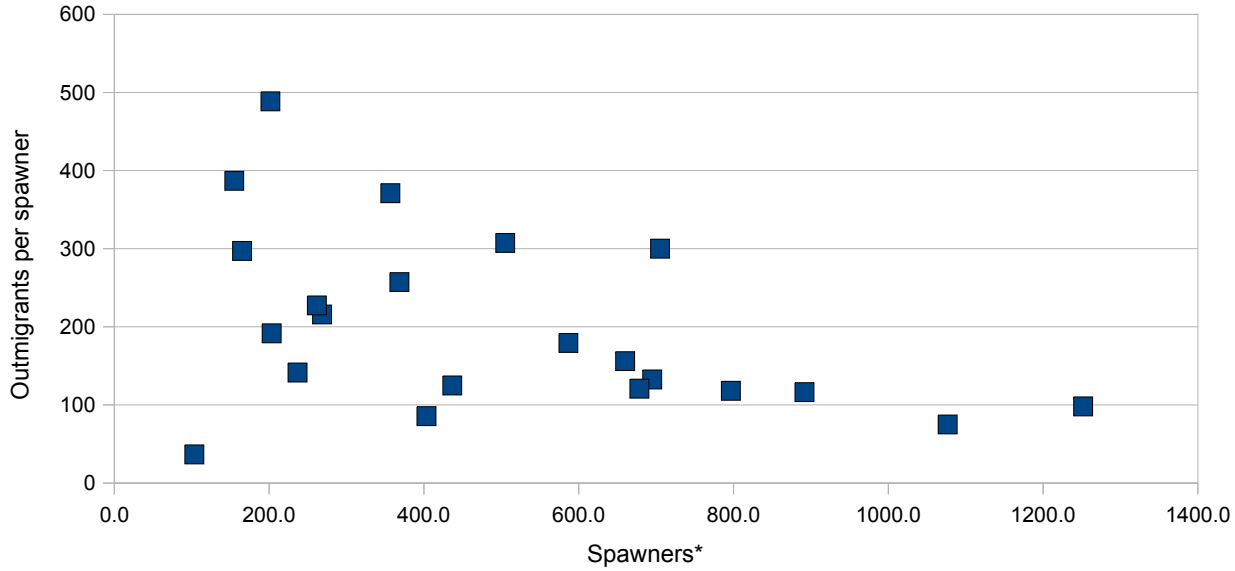
Juvenile outmigration monitoring is utilized as a method of tracking the status of each brood year and the trends of brood years over time. As is typical with any salmonid population, there is annual variation in the numbers, but recent outmigration levels are no cause for alarm. However, if the number of outmigrants drops significantly (e.g. in Shitike Creek in the late 1990's) the CTWSRO will discuss management options to address problems (e.g. the Shitike Creek adult Chinook outplanting program, implemented from 2000-2007). There are no “hard” numbers that trigger specific management actions, rather, the BNR-Fisheries Department provides data and recommendations to the CTWSRO Tribal Council and Fish and Wildlife Committee for discussion about potential actions.

Juvenile outmigration estimates from the past decades have been imprecise, although they have improved in recent years. In the narrative for this project, we propose improving methodologies (e.g. running traps 7 days per week, implementing standardized analysis protocols) which will further improve the precision of annual estimates and in turn improve their utility in terms of predicting adult returns based upon SARs.

In the Warm Springs River Basin, there is evidence of a significant density-dependent relationship between the number of spawners and juvenile outmigrants (Figure 3). Although the correlation is relatively low, there is further indication that the carrying capacity of the Warm Springs River may be somewhere around 1,300 spawners. Although this analysis is preliminary,

it gives us further confidence in the ability to manage harvest of wild fish and potentially allow tribal members to harvest wild fish .

Figure 3. Wild spring Chinook salmon outmigrants per spawner in the Warm Springs River basin, brood years 1986-2007.



* The adjusted number of spawners was calculated by assuming 1 female per redd and that the runs consisted of 60% females (male-female proportions based on WSNFH data).

Through the workshops developed by the Coordinated Assessments project, we have been learning more about the importance of these kinds of indicators as management tools. These indicators (other than SARs) were not a focus of monitoring efforts at the CTWSRO prior to the development of this proposal, and cannot be calculated for Shitike Creek due to limitations in past data collection efforts. These indicators (along with SAR and natural spawning abundance) will be key deliverables for BPA Accord projects starting in 2012. Furthermore, even though the data are preliminary at this point in time, the initial analysis for both recruits per spawner (Figure 1) and outmigrants per spawner (Figure 3) are consistent in their implications, indicating an effective capacity of the Warm Springs River system at somewhere around 1,300 - 1,400 spawners. We understand and concur that that focusing our efforts towards these indicators is important in moving forward with this project, and these indicators will play a role in future management decisions.

Snorkel Surveys

Is the GRTS-based sampling grid adequate for this situation? Because the streams in question pass through inaccessible canyons, implementing a spatially balanced sampling program will be challenging. The project description refers to "oversampling" to circumvent this problem – and this is a good idea – but what assumptions will be made about fish densities in those reaches where sampling is impractical? Will methods proposed for electrofishing minimize sublethal effects on juvenile salmon and non-target species? Another question pertains to the ability to calibrate snorkel counts in larger channels where multiple-pass electrofishing is impossible. The

ISRP suggests that the project proponents continue to explore ways of verifying and validating field methods to achieve accuracy and precision targets.

This issues was also addressed above in the response to question 3. Although accessing the Warm Springs River canyon is difficult, it can and will be done. We will combine fish sampling efforts with carcass surveys in July or August, and will be able to access the sites identified for sampling. The oversampling of sites will be used if it is determined if a site is unsuitable or too dangerous for sampling.

In the lower Warm Springs River, which is non-wadeable and unsuitable for sampling via snorkeling, we will investigate alternative methods of sampling non-wadeable streams (e.g. EPAs IMAP protocol) for collection of fish population data. We will also continue to explore methods of validating survey data to achieve targets of accuracy and precision. Our staff is trained and experienced in the use of a backpack electrofishers. We will follow established protocols for sampling of juvenile salmonids via electrofishing.

Spawning / Redd Surveys

Difficult topography and access to the river requires the proponents to use index reaches. Additional information on how representative the available data are in index reaches should be provided. Differences in observer efficiency when wading in tributaries compared to using a kayak in the lower Warms Springs River could be problematic.

Spawning index reaches were identified over 25 years ago, and were selected because they provide the best combination of accessibility and suitable spawning habitat. The non-index reaches, which have been surveyed periodically in the past, were rejected as index reaches either because the access was too difficult or dangerous, or because the habitat was not suitable for spawning. Just as there are pool tail-out habitat suitable for spawning at the bottom of the Warm Springs River Canyon, there are also non-index reaches in Beaver Creek that are easily accessible but do not have adequate spawning substrate.

We use kayaks to survey some reaches because the reach distances (up to 8 km) and the size of the stream make wading difficult. To investigate the efficiencies of surveying between methods, we will implement a study in 2011 in which we compare surveying via kayak and wading in the same reach on the Warm Springs River.

One team of two will wade a reach of the Warm Springs River, counting redds and logging the information on a GPS unit, but not flag the redds. The kayak team of two will follow on the next day, repeating the count of redds but also flagging them. A correction factor will be added to the kayak-surveyed reaches if the number of redds observed is larger via wading than it is via kayaking. If the number of redds observed via kayaking is the same or larger than that observed via wading, no correction factor will be applied.

The potential issue of bias in computing pre-spawn mortality was not well addressed. The proponent's claim that the Chinook will not spawn downstream of the WSNFH should be supported by evidence from the Warm Springs or other rivers.

The number of spawners was adjusted for pre-spawning mortality for Figures 1 and 3. Although the CTWSRO has evaluated fish per redd ratios as an index of pre-spawning mortality in the past, we had not attempted to apply corrections for pre-spawning mortality before the development of this proposal. We will continue to investigate the causes of pre-spawning mortality, and will make efforts to refine our methods of adjusting for it.

Between the years 1986 - 2005, an average of 7 spring Chinook salmon redds (2.4% of the total number) were observed downstream of the WSNFH. However, no Chinook salmon redds or carcasses have been observed downstream of the WSNFH in the last five years (Table 1). The reason for this is unknown. The CTWSRO will continue to survey the reach downstream of the WSNFH annually.

Table 1. Chinook Salmon redds in the Warm Springs River Basin.

Year	Total CHS Redds in WSR Basin	CHS Redds downstream of WSNFH	Percentage of Redds Downstream of WSNFH.
1986	428	11	2.6%
1987	484	6	1.2%
1988	401	5	1.2%
1989	415	8	1.9%
1990	547	12	2.2%
1991	246	4	1.6%
1992	163	2	1.2%
1993	147	5	3.4%
1994	166	9	5.4%
1995	65	3	4.6%
1996	323	20	6.2%
1997	362	10	2.8%
1998	124	2	1.6%
1999	126	5	4.0%
2000	658	12	1.8%
2001	752	4	0.5%
2002	225	4	1.8%
2003	264	2	0.8%
2004	428	6	1.4%
2005	96	1	1.0%
2006	214	0	0.0%
2007	99	0	0.0%
2008	107	0	0.0%
2009	87	0	0.0%
2010	140	0	0.0%
Average	283	7 (1986 – 2005)	2.4% (1986 - 2005)