

Program goal and fundamental objectives review



Seth Naman, NOAA
TMC meeting
September 11-12, 2019
Weitchpec

Trinity River Restoration Program:

Integrated Assessment Plan

Version 1.0 – September 22, 2009

Prepared by staff, partners and interested parties of

Trinity River Restoration Program

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and

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- Approximately 60 “level 3 objectives”
- Redundancy
- Objectives lacked targets
- No testable hypotheses

Level 1 Objectives	Level 2 Objectives	Level 3 Objectives	Priority of Objectives (L,M,H)
	2.3 Enhance or maintain food availability for fry and juvenile salmonids	2.3.1 Increase and maintain macroinvertebrate populations (<i>achieve Fish Production objective 3.1.1</i>)	M
3. Restore and maintain natural production of anadromous fish populations	3.1 Increase spawning, incubation and emergence success of anadromous spawners	3.1.1 Optimize adult utilization of suitable spawning habitat areas in the mainstem within 3-4 brood cycles following rehabilitation of fluvial river processes	M
		3.1.2 Optimize adult utilization of suitable spawning habitat areas in tributaries within 3-4 brood cycles following rehabilitation of fluvial river processes	M
		3.1.3 Reduce temperature related pre-spawning mortality and protect in-vivo egg viability of anadromous spawners in the mainstem Trinity River	L (dependent on importance of fine sediments)
	3.2 Increase freshwater production of anadromous fish	3.2.1 Increase fry abundance, growth, physical condition, and health from baseline conditions in the mainstem Trinity River within 3-4 brood cycles following rehabilitation of fluvial river processes	H
		3.2.2 Increase outmigrant juvenile life stage abundance, growth, physical condition and health from baseline conditions in the mainstem Trinity River within 3-4 brood cycles following rehabilitation of fluvial river processes	H
		3.2.3 Improve juvenile fish production as a function of water temperature and habitat flow relationships from baseline conditions in the mainstem Trinity River within 3-4 brood cycles following rehabilitation of fluvial river processes	H
		3.2.4 Reduce clinical disease incidence in Trinity River origin outmigrants in the Klamath River to less than 20% within 5 years	M / H
		3.2.5. Reduce fry stranding in the upper 40 miles of the mainstem Trinity River by 50% following rehabilitation of fluvial river processes	L
		3.2.6 Reduce non-native fish predation on naturally produced fish by 50% in the mainstem Trinity River within 3-4 brood cycles following rehabilitation of fluvial river processes (<i>linkage to Wildlife objective 6.3</i>)	L
	3.3 Minimize impacts of predation, competition, and genetic interactions between and among hatchery and natural anadromous fish	3.3.1 Limit impacts of hatchery fish predation on naturally produced juvenile salmonids to less than 20% over the 40 miles	M
		3.3.2 Increase proportion of Natural Influence (pNI) to 0.7 or greater	H
4. Restore and sustain natural production of anadromous fish populations downstream of Lewiston Dam to pre-dam levels, to facilitate dependent tribal, commercial, and sport	4.1 Increase naturally produced fall-run Chinook salmon adult production to the extent necessary to meet or exceed escapement objectives and facilitate expanded harvest opportunity	4.1.1 Increase escapement of naturally produced fall-run Chinook salmon to 62,000 adults	H
		4.1.2 Increase harvest of naturally produced fall-run Chinook salmon adults	H
	4.2 Increase naturally produced spring-run Chinook salmon adult production to the extent necessary to meet or exceed escapement objectives and facilitate expanded harvest opportunity	4.2.1 Increase escapement of naturally produced spring-run Chinook salmon to 6,000 adults	H
		4.2.2 Increase harvest of naturally produced spring-run Chinook salmon adults	M / H
	4.3 Increase naturally produced coho salmon adult	4.3.1 Increase escapement of naturally produced coho salmon to 1,400 adults	H



Science Advisory Board (SAB) Phase 1 Report

Review of the Trinity River Restoration Program's Channel Rehabilitation Strategy, Phase 1

Prepared for Trinity River Restoration Program

November 2013

SAB Phase 1 Report

4 RECOMMENDATIONS

4.1 Primary Recommendation

To address the above issues, our primary recommendation is that the Program develop a Decisions Support System (DSS). A DSS is a series of linked physical and biological models that will allow the Program to (1) predict site and system response to alternative management actions in relation to ROD and stakeholder objectives; (2) make such predictions in a timely fashion (ahead of monitoring results); (3) focus and refine monitoring efforts; and (4) provide a necessary tool for adaptive management. Additionally, it will help to better structure and integrate Program activities and increase the defensibility of management actions. In many ways, the DSS expands upon efforts started by the Program in defining Conceptual Models and Hypotheses (TRRP and ESSA 2009a).

SAB Phase 1 Report

- “Adaptive management is a guiding principle of the Program and a stated objective of the Program stakeholders. Implementing the Program in an adaptive management framework requires a DSS; ***therefore developing a DSS, and incorporating a fish production model, should be the highest priority for the Program in the upcoming year.***”



SAB Phase 1 Report

- “Adopt rigorous hypothesis testing for Program activities and scientific investigations, which is critical for improving the effectiveness of such actions. Treat rehabilitation projects as opportunities to formally test the hypotheses and goals articulated by the ROD and IAP. The current management actions address, but frequently do not test, the stated hypotheses and objectives. ***In this regard, we recommend refinement of IAP objectives to make them testable hypotheses.***”



Final Minutes
TRINITY MANAGEMENT COUNCIL
County Library, Weaverville, CA
Wednesday, April 3, 2013

Wednesday, April 3, 2013; 9:30 AM

Attending Members

Member	Representative Seat
Brian Person	Bureau of Reclamation
Joe Polos	Fish and Wildlife Service, Vice-Chair
Dave Hillemeier	Yurok Tribe
Mike Orcutt	Hoopa Valley Tribe
Ann Garrett	National Oceanic and Atmospheric Administration, Fisheries
Bill Brock ¹	Forest Service
Curtis Milliron	California Natural Resources Agency
Judy Pflueger	Trinity County
Elizabeth Hadley ²	Trinity Adaptive Management Work Group
Robin Schrock ²	Trinity River Restoration Program, Executive Director

1) Alternate for Sharon Heywood; 2) non-voting members.

Others that attended: D.J. Bandrowski, Andreas Krause, Ernie Clarke, Rod Wittler and Eric Peterson (Trinity River Restoration Program); George Kautsky and Robert Franklin, (Hoopa Valley Tribe); Teresa Connor (California Department of Water Resources); Tim Hayden (Yurok Tribe); Don Reck (Bureau of Reclamation). Sam Chilcote, Andy Collins, Penelope Del Bene (Forest Service), Alex Cousins (Trinity County Resource Conservation District), Seth Naman, Wes Smith (National Oceanic and Atmospheric Administration, Fisheries); Don Reck (Bureau of Reclamation); Rebecca Carr (Bureau of Land Management via

- Motion from the April 3, 2013 TMC meeting prior to the May 22, Objectives Workshop held at the Weaverville Pubic Library:

Ann Garrett made a motion to continue with developing a DSS, in accordance with the path forward presented by Ernie Clarke's Powerpoint presentation on DSS (Workshop to link objectives with management actions; Assign DSS Roles and Responsibilities; select models to include in initial DSS; and plan for long-term implementation). The first step being to hold a workshop to link objectives with management actions.

Judy Pflueger seconded.

The motion passed with 7 “Ayes” and 1 “Nay”

Hoopa Valley Tribe opposed the motion.

TRRP Objectives Workshop

Meeting Summary
Trinity River Restoration Program (TRRP) Objectives Workshop
Trinity County Library, Weaverville, CA
May 22, 2013

Participants

U.S. Bureau of Reclamation (USBR): Robin Schrock (TRRP Executive Director), DJ Bandrowski (TRRP Implementation Branch Chief), Andreas Krause (TRRP), Rod Wittler (via teleconference)

U.S. Fish and Wildlife Service (FWS): Ernie Clarke (TRRP Science Coordinator), Joe Polos, Nicole Athearn, Charles Chamberlain

Hoopa Valley Tribe (HVT): George Kautsky, Robert Franklin, James Lee

Trinity County: Judy Pflueger

Yurok Tribe: Tim Hayden, Aaron Martin

California Department of Fish and Wildlife (CDFW): Andrew Jensen, Wade Sinnen, Steve Cannata (via teleconference)

California Department of Water Resources (DWR): Scott Kennedy

U.S. Forest Service: Bill Brock

National Oceanic and Atmospheric Administration (NOAA) – National Marine Fisheries Service (NMFS): Seth Naman, Ann Garrett, Wes Smith

Atkins: Tom St Clair (facilitator), Rebecca Burns (note taker)

TRRP Objectives Workshop

Goals:

Goals of May 22 Workshop

- **Primary Goals of Workshop**
 - Review the three levels of objectives listed in Table 2.1 of the IAP
 - Minimize redundancy and the potential total number of objectives
 - Separate fundamental and means objectives
- **Secondary Goals (to be accomplished following workshop)**
 - Identify linkages between objectives and management actions to support development of the TRRP DSS
 - Develop quantitative metrics for each objective

TRRP Objectives Workshop

Outcome: Common language

Goal > Fundamental Objectives > Means Objectives > Target



TRRP Objectives Workshop

Outcome: Goal and Objectives

- **Overarching Goal:** Restore and sustain natural production of adult anadromous fish populations downstream of Lewiston Dam to pre-dam levels, to facilitate dependent tribal, commercial and sport fisheries full participation in the benefits of restoration via enhanced harvest opportunities. The TRRP strategy for accomplishing this goal restores and perpetually maintains fish and wildlife resources (including T&E species) by restoring the processes that produce a healthy alluvial river system.
- **Fundamental Objectives:**
 - Restore and sustain natural production of anadromous fish populations downstream of Lewiston dam to pre-dam levels.
 - Restore the processes and attributes of a healthy alluvial river system.

Means Objectives Refinement

- Work groups then began refining objectives
- Differing levels of effort among work groups
- Most efforts not finalized

20140717_Fish related means objective and management action linkages-1 - Excel

	A	B	C	D	E	F	G	H	I	J	K	L	M
1		Num	Objectives		Management action/comments		life stage	joe's notes 1					
2		A12	Improve thermal regimes for outmigrant salmonid growth and survival (dependent on water year)		flow, reservoir	Redundant with A34, A28	juvenile	combined both of these to a juv temp objective				1.0	
3		A34	Improve thermal regimes for rearing growth and survival of juvenile steelhead, coho salmon and		flow, reservoir	redundant with A28	juvenile					1.0	
4		A28	Improve juvenile fish production as a function of water temperature and habitat flow relationships from baseline conditions in the mainstem Trinity River within 3-4 brood cycles following		flow, reservoir	delete	Juvenile					1.0	
5		A35	Provide optimal temperatures to minimize pre-spawning mortality, protect in-vivo egg viability, and improve spawning success of spring and fall-		flow, reservoir	Redundant with B26, not redundant with X2	adult	adult criteria objective				1.0	
6		B26	Improve riverine thermal conditions for growth and survival of natural anadromous salmonids		flow, reservoir	redundant with A28, A34, A35	all	overall temperature objective				1.0	
7		X2	Minimize thermal barriers to adult migration		flow, reservoir	Replaces A2	adult	shouldn't replace A2 because A2 is the adult temp				1.0	
8		A2	Reduce temperature related pre-spawning mortality and protect in-vivo egg viability of anadromous spawners in the mainstem Trinity		flow, reservoir	delete						1.0	
9		A6	Minimize temperature impacts to other native fish		flow, reservoir	delete						1.0	
10													
11		A16	Increase and maintain macroinvertebrate		flow, riparian, gravel	Redundant with X1, B22	Fry, juvenile, smolt					1.0	
12		B22	Enhance or maintain food availability for fry and juvenile salmonids		flow	redundant with A16, X1	fry and juvenile					1.0	
			Promote sufficient salmonid forage base					used this wording					

Notes | Fish Objectives | fund obj&metric | Sorted fundamental objectives | Fish Mean obj 1-sept | Fish Mean obj 2 sept | fish mean obj 3 sept | Fish ...

Average: 1 Count: 7 Min: 1 Max: 1 Sum: 1 85%

DSS Workshop



Trinity River Restoration Program **Decision Support System Workshop** Agenda

When: March 29, 30 and 31, 2016

Where: Trinity Alps Performing Arts Center, Weaverville, CA

Desired Outcomes:

The goal of the Trinity River Basin Decision Support System Workshop is to advance the development and use of a decision support system for the Trinity River Restoration Program (TRRP). The workshop will consist of oral presentations and panel discussions related to four key elements: 1) providing background on DSS and example applications, 2) communicating the status of DSS development for the TRRP and how it can be used in the near term to support decision making, 3) identifying and initiating an approach to resolve key organization and administrative challenges to DSS development and 4) initiating next steps recommended by the Science Advisory Board for implementation of a DSS such as a work plan, schedule, and identifying task leaders.

Example from Spring 2016 DSS Workgroup

	Historic	Natural	ROD
Fish Production			
Total Fish Abundance (millions)	5.0	5.0	5.0
Fry Abundance(millions)	4.2	3.8	4.2
Parr Abundance (millions)	0.8	1.2	0.8
Total Fish Biomass (metric ton)	5.5	7.4	5.5
Healthy River			
Bar Area Mobilized (%)	48.5	60.2	48.5
Bar Area with Shallow Scour (%)	17.4	27.2	17.4
Bar Area with Deeper Scour (%)	9.8	16.8	9.8
Cottonwood Potential Initiation Sites (#)	23	9	10
Frog Potential Reproduction Success (days)	22	6	22

Several Models Are Ready to Feed DSS:

Objective	Metric(s) to be evaluated	Model or data
Fish production	Chinook salmon smolt quantity, smolt size, or biomass	Stream salmonid simulator
Fish habitat	Capacity	SRH-2D
Water temperatures	Temperature at Douglas City and NF Trinity River	RBM 10
Sediment transport	Bedload transport > 5/16 in and < 5/16 in.	Sediment transport rating curves
Sediment scour/fill	Pool depth/feature depth	Scour/fill data, LIDAR
Riparian recruitment	Cottonwood germination and establishment	TARGETS
Wildlife	Foothill Yellow Legged Frog and Western Pond Turtle population trends	FYFAM
Annual flow volume/water year type	Acre-feet/year, water year classification	Calculated from model output results
Invertebrate production/drift	Species diversity, quantity of invertebrates (g/ml)	Results of 2018 invertebrate study

Current Status and Recommendations

Current Status

- A DSS was utilized for flow decisions in recent years
- Implementation of DSS stalled approximately 2 years ago
- DSS not utilized in recent years for flow and other decisions
- Personnel changes hampered progress
- Focus on perfection of developing targets at work group level hampered progress

Recommendations

- Current efforts to finalize targets should continue
- TRRP should re-adopt and utilize DSSs (Flow, Rehab, Watershed)
- DSSs would aid in implementing a rigorous adaptive management program