Meeting Summary

TRRP Interdisciplinary Team Meeting

March 5, 2025

Meeting Time: 11:00 (Following Limiting Factors Analysis Meeting) – 4:00
Location: Virtual
Organizer: Eric B. Peterson
Note Taker: Ty Wallin

Desired Outcomes

- Movement towards FY26 RFP.
- Consensus on Flow and Augmentation recommendations for TMC.
- Discussion on the Environmental Flow Study Plan.

Action Items

- **Follow-Up on Turtle Temperature Target**: Further detail needed on calculation methods and modeling framework for decision support.
- **Email Communication**: Todd Buxton and Smokey Pittman to reach out to work group coordinators for feedback on stream gauging review.
- **Todd Buxton to gather feedback on monitoring stations and suggestions for additions/removals.**
- **Follow-up discussions on potential collaborations regarding S3 and Inundation modeling efforts.**
- **Ensure adherence to the timeline for project proposal reviews.**
- **Eric Peterson to send out the outline for the Environmental Flow Evaluation Study Plan for further input.**
- **Eric Peterson to plan meeting in near future for Environmental Flow Evaluation Study Plan.**

Agenda Overview

Cramer Fish Sciences Limiting Factors Analysis Phase II meeting (notes provided by CFS separately)
Morning Session

- TMC Agenda Review
- Workgroup Coordinator Reports
- Review proposed Northwestern Pond Turtle Temperature Target
- Lunch Break

Afternoon Session

- FY26 Science Planning and proposal reviews.
    - Tributary Sedimentation Proposal
    - Foodscape Modeling in S3 Proposal: Focus on fish consumption and modeling.

    - Thermal Diversity for Turtles Proposal: Investigating temperature impacts on turtle habitats.
- Spring Flow Recommendations:
    - Consensus to forward Flow Workgroup recommendations to TMC.
- Augmentation Recommendations:
    - Discussed gravel and wood augmentations timeline.
- Monitoring & Modeling Review Status:
- Environmental Flow Evaluation Study Plan:
    - Outline created based on previous discussions; focus on prioritizing variables.

Adjournment

- Meeting concluded at 1545.

Participants

Peterson, Eric (TRRP-USBR) / Fausch,Kurt (SAB) / Rogers, Oliver W (TRRP-USBR) / Don Ashton (ARS-HVT) / Scott McBain (ARS-HVT) / Andrew Paul (SAB) / Buxton, Todd H (TRRP-USBR) / Wallin, Ty (USFWS) / Annie Brodsky (CFS) / Jason Hall (CFS) / Justin Alvarez (HVT) / Kiera McNeely (CFS) / Morgan, Trevor (CDWR) / Lindke, Kenneth (CDFW) / Patrick Flynn (TRRP-TC) / Joe Merz (CFS) / Kyle De Juilio (YT) / Smokey Pittman (ARS-HVT) / Knechtle, Morgan (CDFW) / John Hayes (SAB) / Seth Naman (NMFS) / Nissen, Bradley (USFWS) / McSloy, Jeanne (TRRP-USBR) / Buffington, John (SAB) / Dixon, Michael (TRRP-USBR) / Laskodi, Christopher (TRRP-YT) / Dodrill, Michael (USGS) / Perry, Russell (USGS) / Lee, James (TRRP-USBR)

TMC Agenda Review

- TMC Agenda available here: TMC Agenda
- **TMC Meeting Format**:
    - Shifted to a fully virtual meeting on March 19th due to federal travel restrictions.
    - Condensed to a single day
    - Contract for note taking services was canceled, and to utilize the transcription program, we are asking everyone to join individually.
    - In the case of a lapse of funding how will flow recommendations be made?
        - TRRP Staff reassured the group contingency plan is in place that would apply the Flow WG recommendation.
    - Workgroup coordinators will be asked to provide their updates at the end of this section of the agenda
        - Condensed agenda may mean there is not time for coordinators to present

Updates from Work Groups

- **Physical Work Group**:
    - Meetings held on December 11 and February 25.
    - Focus on 2025 gravel augmentations and core monitoring reviews.
    - Two core monitoring reviews completed; two more in draft form.

    - Annual work plan includes completing remaining core monitoring reviews and reviewing fine sediment augmentation recommendations.
- **Design Team**:
    - Annual work plan in progress; conceptual designs for Evans Bar project discussed.
    - Construction updates on Upper Corner Creek.
- **Watershed Group**:
    - No recent meetings due to budget constraints; reevaluation expected in June for FY26.
- **Fish Work Group**:
    - Focus on core monitoring; plans for next meeting on May 20.
- **Flow Work Group**:
    - Spring hydrograph developed through a series of meetings; ongoing monitoring and modeling activities discussed.
- **Riparian Aquatic Ecology**:
    - Finalized memo for turtle temperature target; discussions on wood management plan and potential field trips.
- **Interdisciplinary Team:**
    - Meeting with Flow WG in February about evaluation of Environment (Winter) Flows as an Adaptive Management action (correction afterward: meeting was January 29)
    - Status of FY26 Science Planning that we will be discussing today
    - SAB visit to the basin this summer or early fall with a focus on monitoring projects, restoration sites, and spawning activity

Review proposed Northwestern Pond Turtle Temperature Target

- Memo from RAE Workgroup distributed to the IDT on 2/28/2025 (Appendix A)
- RAE WG incorporated input from IDT to make the language for the new target more specific including the temperature metric and timing of temperature
- Proposed new target: *"Increase thermal diversity to provide warmer waters, specifically areas with mean daily maximum temperatures at least 4 ºC above thalweg mean daily maximum temperatures during June and July, through enhancement of aquatic habitats and structural features used by various age classes of northwestern pond turtles."*
- Discussion on the specifics of measuring mean daily maximum temperatures for turtle habitats. What is Mean Daily Maximum Temperature, recommendation to define the metric being used and the geographic extent of the target.
- Clarification needed on the geographic scope and target calculation and use in decision support.

Lunch Break: 12:00 PM - 1:00 PM

FY26 Science Planning and proposal reviews.

Emphasis on adhering to the timeline for project proposals and reviews.
Proposal presentations scheduled for today, with reviews due by April 4th.

- **Tributary Sedimentation Proposal**

    - No proposal was received; Todd Buxton will discuss stream gauge monitoring instead**.**
- **Stream Gauge Monitoring Review (Todd Buxton)**
    - Overview of existing gauges on the main stem funded by federal entities.
    - Suggested additions:
        - Temperature monitoring above Coffee Creek.
        - Turbidity monitoring at Lime Kiln, Junction City, and above North Fork Trinity River.
    - Justification for turbidity monitoring includes assessing winter flow impacts, sediment impacts on spawning, and monitoring wildfire effects.
    - Suggested removal of the Burt Ranch gauging station due to lack of usage.
    - Discussion on the importance of gauging stations and their data utility.
    - **Discussion:**
        - Kenneth Lindke expressed concerns about the effectiveness of turbidity monitoring for localized tributary inputs (as opposed to grab samples for sediment concentration).
        - Suggestions to clarify expectations regarding what turbidity monitoring can achieve.
        - Don Ashton suggested adding temperature monitoring at Junction City.
        - Other suggestions made by individuals:
            - Temperature for South Fork?
            - More gages in South Fork watershed?
            - Watershed level turbidity monitoring (Hoopa?) rather than third in upper river?
- **USGS Presentation on Stream Monitoring Simulator (Michael Dodrill)**
    - Presentation focused on enhancing the S3 model for growth, movement, and survival simulations.
    - Tasks outlined:
        - Add flexibility to the S3 model.
        - Translate macro invertebrate drift into consumption metrics.
        - Evaluate output under different scenarios.
        - Reporting and documentation of findings.
    - Discussion
        - Computational requirements and potential overlaps with ongoing inundation modeling efforts.
- **Thermal Diversity in Relation to Turtles Presentation (Don Ashton)**
    - Focused on whether rehabilitation site design can provide adequate thermal diversity for northwestern pond turtle growth.
    - Historical data comparison between the main stem Trinity River and the South Fork Trinity River showed faster growth rates in the South Fork.
    - Emphasized the impact of damming on thermal regimes and turtle growth.
    - Proposed to measure thermal diversity at selected rehabilitation sites and assess turtle growth rates.

    - Discussion on the challenges of measuring growth and the importance of temperature in turtle development.
    - **Discussion:**
        - Todd Buxton suggested expanding the study to include flow effects on turtle health and growth.
        - Kyle De Juilio discussed the potential for modeling to assess future design impacts on thermal diversity.
        - A point was made that turtles provide an in-situ measure of biological response to thermal heterogeneity
- **Review by Workgroups**
    - Assignment of proposals to work groups for reviews. Concern that there might not be enough workgroup members not involved to complete a review; coordinators assured that would not be an issue
    - Fish Workgroup will review Qs on Foodscape Modeling in S3 Proposal
    - Riparian and Aquatic Ecology Workgroup will review Qs on thermal diversity for turtles Proposal
    - Previously there was guidance not to consider budget in reviews, but given the funding environment, if reviewers see areas for efficiency in the proposals, please include that in the review.

Spring Flow Recommendations (Patrick Flynn)

- Presentation on spring flow recommendations for Water Year 2025.
- TMC motion in 9/2024 included implementation of winter flow as well as to implement spring flows after April 15
- Recap of recent events related to flows and the flow planning process.
- Discussion on elevated base flows
- Two hydrographs were submitted; geomorphic and riparian priorities
    - DSS Model outputs of greatest significance during discussion: output of smolts, output for juvenile production, and output for riparian model
    - FYFAM Model was the only model that shows riparian focused hydrograph with more benefit; small change made to geomorphic hydrograph to increase benefit for FYF
- Recommendations for three geomorphic hydrographs based on potential water year scenarios.
- Consensus reached to forward the recommendations to TMC for consideration.

Augmentation Recommendations

- Discussion on gravel and fine sediment augmentations.
- Updates on the status of wood augmentation proposals.
- No current recommendations for IDT to review.

Monitoring and Modeling Review

- Check-in on the status of work group coordinators.
- Discussion on the need for stream gauge monitoring.
- Updates on various monitoring and modeling projects.

- Identification of unmet needs, particularly related to sediment monitoring.

Environmental Flow Evaluation Study Plan

- Discussion on the need for a solid evaluation of environmental flows.
- Outline of a preliminary plan for evaluating winter flows.
- Emphasis on developing clear, testable hypotheses before data collection begins.
- Suggestions for forming a smaller group to refine the outline and hypotheses but with recognition that most/all TMC members would like representation, group was held as the full IDT.
- Timeline discussed for finalizing hypotheses and expected outcomes.

Note: Please review and provide any additional input or corrections to these notes.

Feel free to provide any additional parts of the transcript or let me know if you need further modifications!

Appendix A

TO: ERIC PETERSON, SCIENCE COORDINATOR

FROM: BRADLEY NISSEN, RIPARIAN AND AQAUTIC ECOLOGY WORK GROUP COORDINATOR

SUBJECT: Northwestern Pond Turtle (*Actinemys marmorata*) Temperature Target Recommendations [DRAFT]

Background on the Objectives and Targets

The Trinity River Flow Evaluation (TRFE) of 1999 proposed a fishery resource restoration strategy pursuant to the Trinity River Basin Fish and Wildlife Act of 1984. The proposed restoration strategy recommended management actions that were expected to create a functioning river system that could provide and maintain the diversity and abundance of habitats necessary to restore the anadromous salmonid and other riverine dependent fish and wildlife populations of the Trinity River. In December 2000, the Secretary of the Interior signed a Record of Decision (ROD) selecting the TRFE recommendations, plus a watershed restoration component, as the Preferred Alternative for restoring the mainstem fishery resources of the Trinity River. The TRFE and ROD provide a restoration strategy, including management actions and associated targets. However, these documents do not provide detailed methods for assessing the effectiveness of the management actions in achieving Program goals or management targets.

In 2009, the Trinity River Restoration Program (TRRP) released the Integrated Assessment Plan (IAP), which was designed to help the program evaluate long-term progress towards achieving the restoration strategy provided in the TRFE. This document contained an extensive list of ecological objectives and associated assessments and was used by the Program for over a decade to guide the science program. In the years since its completion, the Program identified a need to refine, reduce, and reorganize its objectives. With guidance from the TRRP Interdisciplinary Team (IDT), four TRRP workgroups worked over the course of a few years (2018 – 2021) to summarize the IAP into a new set of Objectives and Targets. In 2023, the Trinity Management Council (2023) passed a motion approving the Science Plan, to guide the TRRP's science process, which incorporated the newly revised set of Objectives and Targets. The Science Plan describes the Objectives and Targets report as a living document, and gave the work groups the responsibility of revising or updating targets associated with the approved Objectives.

Northwestern Pond Turtle

Listing Status

The U.S. Fish and Wildlife Service (Service) was petitioned to list the western pond turtle (*Actinemys marmorata*) as threatened or endangered under the Endangered Species Act (ESA) in July 2012 by the Center for Biological Diversity. The Service published a substantial 90-day petition finding on April 10, 2015 (80 FR 19262). Since then, the western pond turtle was split into two separate species, the northwestern pond turtle (*Actinemys marmorata*) and the southwestern

pond turtle (*Actinemys pallida*). The Service published a proposed rule to list both species as threatened, with a Section 4(d) rule, on October 3, 2023 (88 FR 68370), but did not propose designation of critical habitat due to a lack of sufficient data from which to perform an analysis. The proposed rule also served as a warranted 12-month finding for the two species. Both species are considered by the Service as "proposed threatened" until publication of a final listing rule in the Federal Register.

Previous exclusion of northwestern pond turtle in TRRP Objectives and Targets

In 2018, the Riparian and Aquatic Ecology workgroup (RAEWG) started working on revising the assessments proposed by the IAP into the current Objectives and Targets report. This process was a continuation of the efforts of TRRP workgroups to complete the tasks described in the IAP and refine these objectives into a manageable set that can be monitored by the Program to measure success.

As part of the 2022 Objectives and Targets report, the RAEWG proposed four new means objectives with corresponding targets for each. Despite the IAP specifically outlining a level 2 objective (6.5) to "Increase population size, survival, distribution, and recruitment success of northwestern pond turtle," this objective (and related targets) was not specifically incorporated into the revised Objectives and Targets report of 2022, due to the turtle "being a potentially listed species."

As part of the ESA, Section 7(a)1: "All other Federal agencies shall, in consultation with and with the assistance of the Secretary, utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered species and threatened species listed pursuant to section 4 of this Act." Therefore, the Program has a legal obligation under the act to carry out their programs for the conservation of listed species, including the NWPT, and this reasoning for exclusion from the 2022 Objectives and Targets is not legally justified.

The RAEWG outlined their reasoning for the proposed Objective RAE-2: "Maintain a range of temperatures over various flow regimes needed by native species" in a 2020 memo (Appendix 6 of Objectives and Targets report) written by the RAEWG coordinator at that time (Chris Laskodi) focused on the impacts of flow releases on foothill yellow-legged frogs (*Rana boylii*). Upon further review, the RAEWG proposes that a target specifically related to northwestern pond turtle should also be incorporated as part of this Objective.

Newly Proposed Target

The RAEWG proposes to add an additional target to Objective RAE-2 that would specifically address the importance of maintaining suitable water temperatures for growth of juvenile northwestern pond turtles. The proposed target would read as follows,

"Increase thermal diversity to provide warmer waters, specifically areas with mean daily maximum temperatures at least 4 ºC above thalweg mean daily maximum temperatures during June and July, through enhancement of aquatic habitats and structural features used by various age classes of northwestern pond turtles."

This revised target is modified from the original IAP target (6.5.2) and would allow the Program to achieve this target through both habitat restoration actions such as creation of side-channels, off-channel backwaters, and the placement of large woody debris, as well as through managed flow releases.

There is strong evidence that turtles are smaller, and thus less fecund, in the perennially-cold mainstem Trinity compared to the South Fork Trinity (Ashton et al. 2015). The selection of at least a 4° C increase is based on the Ashton et al. (2015) study which found that from 2005 to 2007 the difference between July maximum water temperatures on the regulated Main Fork (avg = 17.3° C) and the unregulated South Fork (avg = 25.8° C) was an average of 8.6° C. July was the month with the greatest temperature difference between the two river forks, and in other months the temperature differences were closer to our suggested 4° C target. Thus, while turtles could certainly benefit from warmer waters far beyond what would be achievable within the mainstem Trinity river, providing water temperatures that are ≥ 4° C above thalweg temperatures for at least two months (June and July) during their primary growth period of April to August, may strike an achievable balance between benefiting turtles and maintaining cold water in the thalweg for salmonids. A significant temperature increase is likely not achievable prior to mid-May or after August because ambient air temperature and solar radiant heating are less likely to provide enough energy to the system to expect that much heating.

Furthermore, turtles of all age-classes have the benefit of basking to thermoregulate as well, so the placement of large woody debris with complex structure such as trees with intact root wads can improve turtle thermoregulation, growth, and survival by providing basking structures and protection from predators. For younger age classes specifically, smaller structures and emergent vegetation in shallower waters will provide important cover and basking opportunities, increasing opportunities for population growth beyond those conferred from warmer waters alone.

It is worth noting that one of the research questions identified by the Program for further investigation in Fiscal Year 2026 (FY26) is a better understanding of how the TRRP, and the actions and projects they carry out, can impact (and improve) water temperatures for turtles. Specifically, the TRRP will benefit from understanding if habitat restoration projects can create thermal diversity that is beneficial for northwestern pond turtle, by providing warmer spring and summer water temperatures to promote juvenile growth, and ultimately improve population persistence on the landscape. The results from an investigation into this key uncertainty could help to further refine this proposed target with more specific language. Until then, the RAEWG proposes this target to allow for the northwestern pond turtle to be considered in the management actions of the Program.

References

Ashton, D.T., Bettaso, J.B., and Welsh Jr, H.H. 2015. Changes across a decade in size, growth, and body condition of western pond turtle (*Actinemys marmorata*) populations on free-flowing and regulated forks of the Trinity River in northwest California. Copeia 103(3):621–633.

Trinity River Restoration Program (TRRP) and ESSA Technologies Ltd. 2009. Integrated Assessment Plan, Version 1.0 – September 2009. Draft report prepared for the Trinity River Restoration Program, Weaverville, CA. 285 pp.

TRRP (2022) Trinity River Restoration Program Objectives and Targets Summary. TMC Review Draft 06 June 2022. Trinity River Restoration Program, Weaverville, CA. 69 pp.

USDI (U.S. Department of Interior). 2000. Record of Decision, Trinity River Mainstem Fishery Restoration Final Environmental Impact Statement/Environmental Impact Report. Record of Decision by the U.S. Department of Interior, December 2000. http://www.trrp.net/library/document/?id=227

U.S. Fish and Wildlife Service (USFWS). 2023. Species Status Assessment Report for the Northwestern Pond Turtle (*Actinemys marmorata*) and Southwestern Pond Turtle (*Actinemys pallida*), Version 1.1, April 2023. U.S. Fish and Wildlife Service, Ventura Fish and Wildlife Office, Ventura, California. 183 p.

United States Fish and Wildlife Service (USFWS) and Hoopa Valley Tribe (HVT). 1999. Trinity River Flow Evaluation Study - Final Report. A report to the Secretary, US Department of the Interior, Washington, D.C. 513 p.