

Science Update

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Presentation to the TMC

June 25, 2015



Topics

- 2016 preliminary work plan
- Upcoming events
- Decision Support System
- Wildlife and Vegetation Environmental Compliance Monitoring (*presented by riparian ecologist James Lee*)
- A brief history of our “distributed” science program

2016 PRELIMINARY WORK PLAN

Work planning timeline

March 13

Work group suggestions

Mid-April

Request for investigation plans

Early June

Work plan summary for Science Advisory Board

March 19

IDT integrate suggestions across disciplines

Mid-May

Investigation plans due

Mid-June

Science Advisory Board input; Budget proposal for TMC



UPCOMING EVENTS

Sediment Management Lessons Learned Workshop

Location to be determined

Weaverville, California

Wednesday, September 16, 2015

Purpose: *This event is part of a workshop series intended to build a common understanding among Trinity River Restoration Program (TRRP) policy makers, stakeholders, and staff about (1) what has been learned during the past nearly 10 years of program implementation and (2) how that information will influence future management and restoration actions.*

Science Symposium

Location to be determined

Weaverville, California

Wednesday, March 30 – Friday, April 1, 2016

Purpose: *Update Science Advisory Board on Decision Support
System development.*



DECISION SUPPORT SYSTEM

TRRP Decision Support System

Component	Model(s)	Status
Hydrodynamics	SRH-1D	In use
	SRH-2D	In use
	HEC-RAS	In use
Riparian Dynamics	SRH-1DV	Being developed
	SRH-2DV	Being developed
Geomorphologic	SRH-1D	In use
	SRH-2D	In use
	iSurf (bed size)	In use
	SAM	In use
Temperature	RBM10	Being calibrated for use in WY16
Fish Habitat	SRH-2D or other habitat typing technique	Recommendation to be made by modelers within the month
Fish Population Dynamics	SSS	Being developed to the North Fork for use in WY16

SRH

Sedimentation and River Hydraulics

HEC-RAS

Hydrologic Engineering Centers River Analysis System

V

Vegetation

iSurf

Inverse Surface Model

SAM

Stable Channel Analytical Model

RBM

River Basin Model

WY16

Water Year 2016

SSS

Stream Salmonid Simulator

TRRP Objectives



Restore the processes & attributes of a healthy alluvial river system.

Restore & sustain natural production of anadromous fish populations to pre-dam levels

Rehabilitate & protect wildlife habitats / populations

Establish & maintain riparian vegetation

Create & maintain spatially complex channel morphology

Increase habitat for all life stages of anadromous salmonids.

Improve riverine thermal conditions.

Minimize impacts of hatchery.



Presented by James Lee, TRRP Riparian Ecologist

WILDLIFE AND VEGETATION ENVIRONMENTAL COMPLIANCE MONITORING

What and Why do we Monitor?

- Riparian Vegetation Quantity and Quality
- Riparian Bird Population Trends
- Foothill Yellow-legged Frogs and Western Pond Turtle distribution
- Largely driven by the California Environmental Quality Act- impacts to sensitive species and habitats must be quantified and mitigated
- Environmental compliance obligations are also aligned with TRRP Ecological Objectives

Riparian Vegetation



Riparian Vegetation

- California has a no net loss policy regarding wetland and riparian habitats
- Vegetation is a measure of riparian habitat quality
- Compliance goal is 1:1 replacement of selected vegetation classes within ten years of impact
- Mapping and assessments point to full compliance with State policy, although it is a close one

Wheel Gulch Summary

Revegetation Survival and Composition Information in 2013

Planted Riparian Vegetation	Survival Summary: 116 surviving pods 418 plantings survived	Pods Planted* 118 Total pods: 42 Mixed willow pods 76 Cottonwood pods	Individual Planted 708 Total plantings: 42 Arroyo willows 346 Cottonwoods 160 Shining willows 160 Red willows
Survival Information	Number of Individuals/Percent Surviving	Ave/Max Height (m)	Health/Vigor (0-5)
Arroyo Willow	7 / 17%	1.0 / 3.0	3
Cottonwood	287 / 83%	1.5 / 3.0	3
Shining Willow	78 / 48%	1.0 / 2.0	3
Red Willow	46 / 29%	1.5 / 2.5	3

Pod survival (at least one planting alive in pod)

Pod survival (at least half of plantings alive in pod)

Pod survival (all plantings alive in pod)

Planting survival

Notes:

- upland plantings are struggling
- *Some inaccuracies in pod identification were observed; inaccuracies are the same as those presented in the 2012 survey.
- Survival rate of red willows is low, being 29% survival.
- Arroyo willow survival is poor at 17% of individuals.
- The density of sweet clover which dominated the area experienced during the 2012 survey.
- Shining willow showing signs of browse, but browse was not observed.
- Strong areas of cottonwood regeneration from seed.
- Upland plantings were not assessed in 2013; a general assessment of a few individuals.
- Upland plantings appear to be struggling due to soil temperatures during the summer months. Areas of cottonwood plantings appeared to have higher number of survival.
- Clump planting appear to be surviving okay specific woody species were present in most all of the plantings.

RIPARIAN MITIGATION AND MONITORING PLAN FOR THE TRINITY RIVER RESTORATION PROGRAM

Prepared for:

THE NORTH COAST REGIONAL WATER QUALITY CONTROL BOARD
THE CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
And
THE U.S. ARMY CORPS OF ENGINEERS

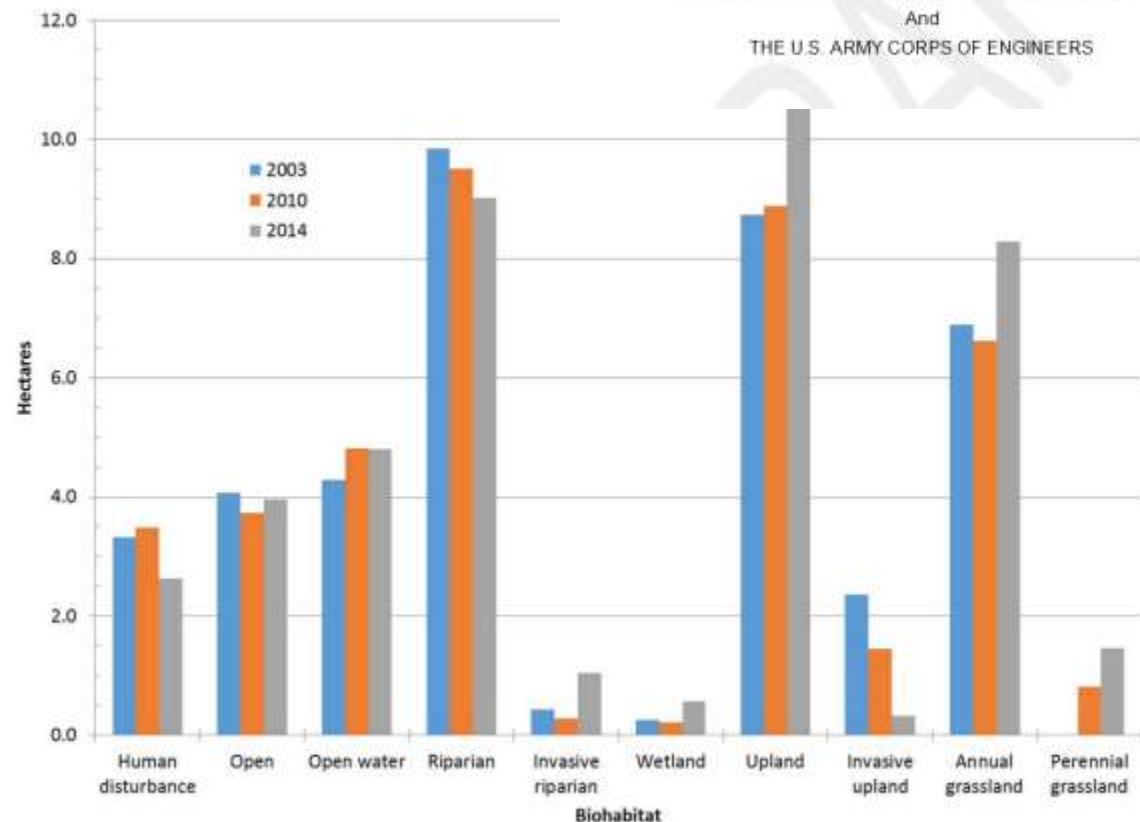


Figure 18. Biohabitats mapped in 2003, 2010, and 2014 at 18 constructed and 8 pre-construction channel rehabilitation sites.

Herpetological Monitoring



Herpetological Monitoring

- Foothill Yellow-legged Frogs and Western Pond turtles are special-status aquatic species
- Flow regulation and channel rehabilitation activities have the potential to affect these species

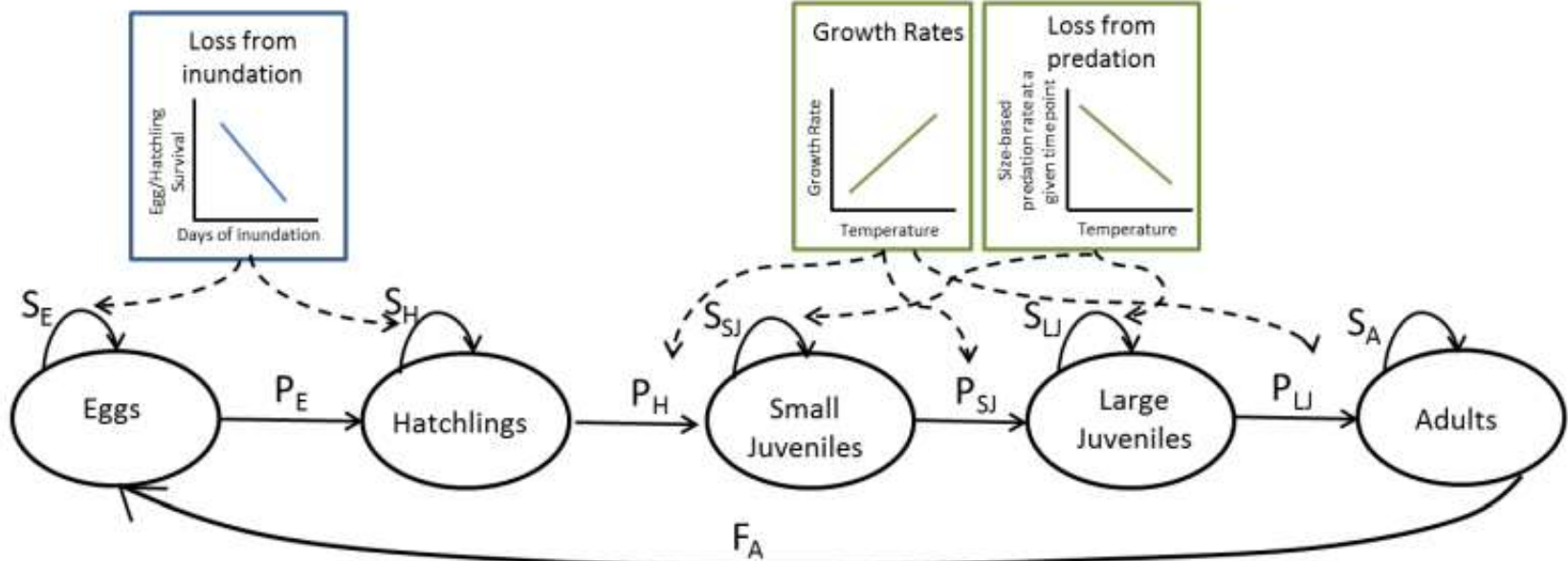
Herpetological Monitoring

- A USGS effort to model the distribution of these species in the Trinity River is underway
- FY 2015 is the final year of the 3-year occupancy modeling study
- Future monitoring will be built around this model and will also focus on evaluating the risk of scour and desiccation to FYLF egg masses

Impacts related to water management decisions

Water temperature impacts

Growth/size-based
predation on juveniles



Potential impacts from channel rehabilitation

- Improved/increased nesting habitat
- Pond structures adjacent to main channel could provide warmer water temperatures and opportunities for increased growth rates

Avian Monitoring

- The Trinity River provides unique and exceptional habitats for riparian and riverine birds
- Birds are long-term, high-level indicators of ecosystem health
- Twenty-four species are monitored, with five focal riparian species: Black-headed grosbeak, song sparrow, tree swallow, yellow-breasted chat, and yellow warbler
- Trends since 2002 indicate healthy avian populations



Trends in Riparian and Riverine Bird Populations along the Trinity River, 2002-2014

Sarah M. Rockwell and Jaime L. Stephens
Klamath Bird Observatory
Rep. No. KBO-2015-0003

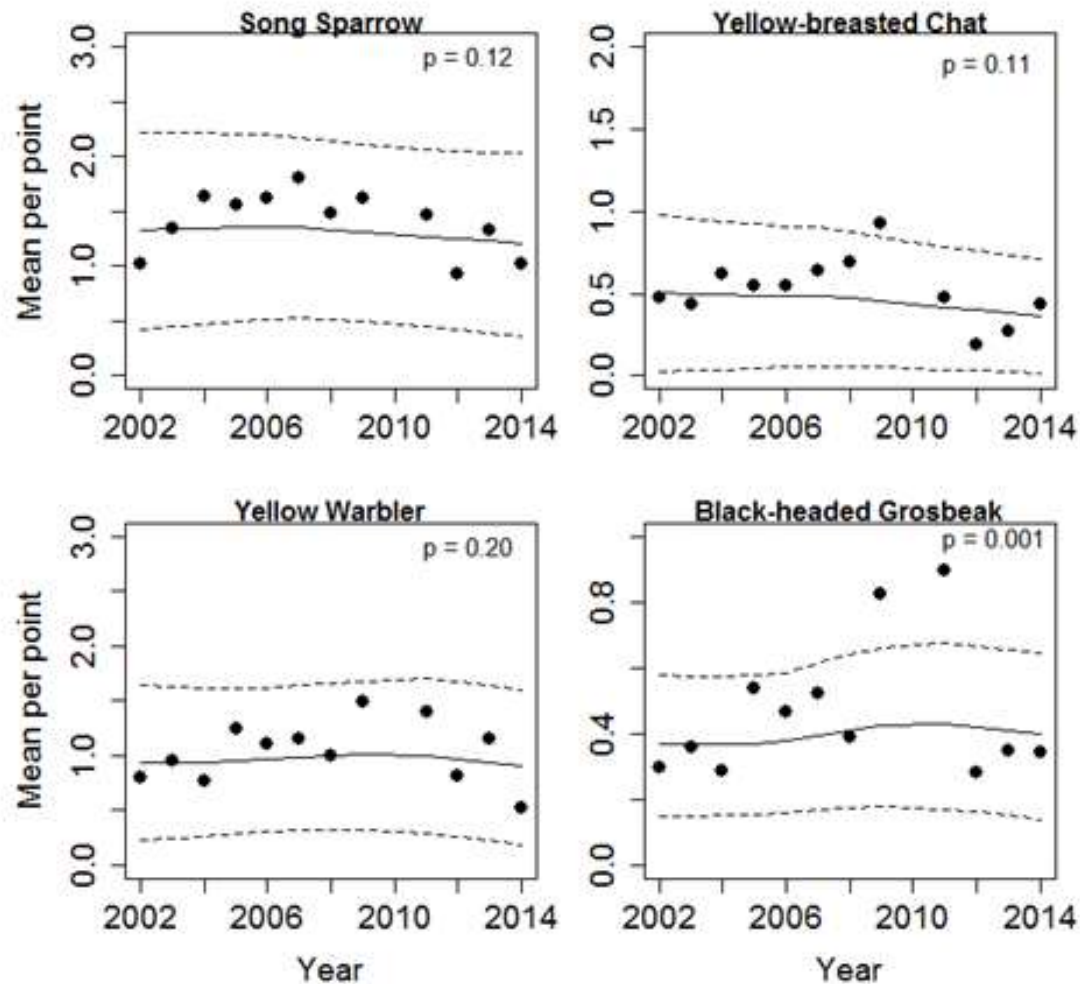


Figure 2. Breeding season abundance trends for 16 riparian bird species along the Trinity River mainstem. Data points displayed are the mean number of individuals counted per point from all survey points within a year. Fitted lines, 95% confidence intervals, and significance are from quasipoisson GLMs with Year, Julian Day, and Point ID as explanatory variables.



“DISTRIBUTED” SCIENCE PROGRAM

A brief history of the “distributed” science program

