

Lower Klamath Sub-Basin Coordination & Planning - FYs 2012-2013

Annual Progress Report: 10/01/12 – 9/30/13



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F12AP00477 – FY 12 (Yurok Project 5104)
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Project Accomplishments

This progress report documents watershed assessment, planning, coordination, and restoration efforts conducted by the Yurok Tribal Fisheries Program (YTFP) and the Yurok Tribe Watershed Restoration Department (YTWRD) in the Lower Klamath River Sub-basin from October 1, 2012 through September 30, 2013 (Agreements F12AP00477 & F13AP00720).

- **Restoration Planning & Assessments**

During the project period, YTFP continued conducting geomorphic assessments and monitoring salmonid populations throughout the Lower Klamath River Sub-Basin. YTFP and our restoration specialist Rocco Fiori (Fiori GeoSciences - FGS) have been using these studies and results from the Klamath River Coho Salmon Ecology Study, led by YTFP and the Karuk Tribe, to plan, prioritize, implement, and assess restoration in the sub-basin. During this period, YTFP and FGS focused on several high priority Lower Klamath tributaries: Hunter Creek, Hoppaw Creek, Terwer Creek, McGarvey Creek, Blue Creek, and Tectah Creek.

YTFP and FGS continued updating the Lower Klamath River Sub-basin Restoration Plan (Gale and Randolph 2000) and the Lower Klamath River Habitat Restoration Planning Database. The database includes descriptions of restoration techniques and a set of prioritized Lower Klamath restoration projects (ongoing and future). Restoration priorities and techniques were based on current fisheries research conducted by YTFP and other basin partners (e.g. Karuk Tribe & Mid-Klamath Watershed Council) and more up to date physical habitat data. YTFP continues to update the database to help plan and track fisheries restoration in the Lower Klamath River.

YTFP and FGS continued developing wetland, stream, and floodplain enhancement strategies in the Waukell Creek watershed, a priority off-estuary tributary. Fisheries research conducted in off-estuary watersheds over the last several years have revealed significant use of these tributaries by both natal and non-natal juvenile coho salmon (Soto et al. 2008; Hillemeier et al. 2009; Hiner 2009; Silloway 2010; Silloway and Beesley 2011). Restoration objectives include improving hydrologic, geomorphic, and riparian function to increase juvenile salmonid rearing capacity and productivity. YTFP and FGS continued working with Aldaron Laird (Environmental Planner), multiple landowners, and resource agencies to develop and permit restoration designs for two proposed reaches in Waukell Creek (Upper and Lower) (Figure 1).

YTFP crews continued conducting topographic surveys of fluvial habitats within the Lower Klamath Sub-basin to document baseline conditions and to assess habitat changes associated with implementation of instream enhancement efforts. Topographic monitoring data allows us to quantitatively assess channel changes and project effectiveness, and to guide future restoration.

During this annual reporting period, YTFP survey crews completed the following topographic surveys: 1) post-project survey of the 2008 wood loading reach in Tectah Creek; 2) post-project surveys of the 2011-2012 wood loading reach in East Fork Hunter Creek (Figure 2); 3) post-project surveys of the 2012 project reaches in Hunter Creek: CDFW wood loading, USFWS wood loading, and USFWS Off-channel reach (Figure 2); 4) post-project survey of the 2012 restoration reach in McGarvey Creek; 5) baseline survey of the 2013 restoration reach in McGarvey Creek; and 6) post-project survey of the 2012 restoration reach in lower Terwer Creek



Figure 1. Map depicting restoration reaches in Waukell Creek, Lower Klamath River.

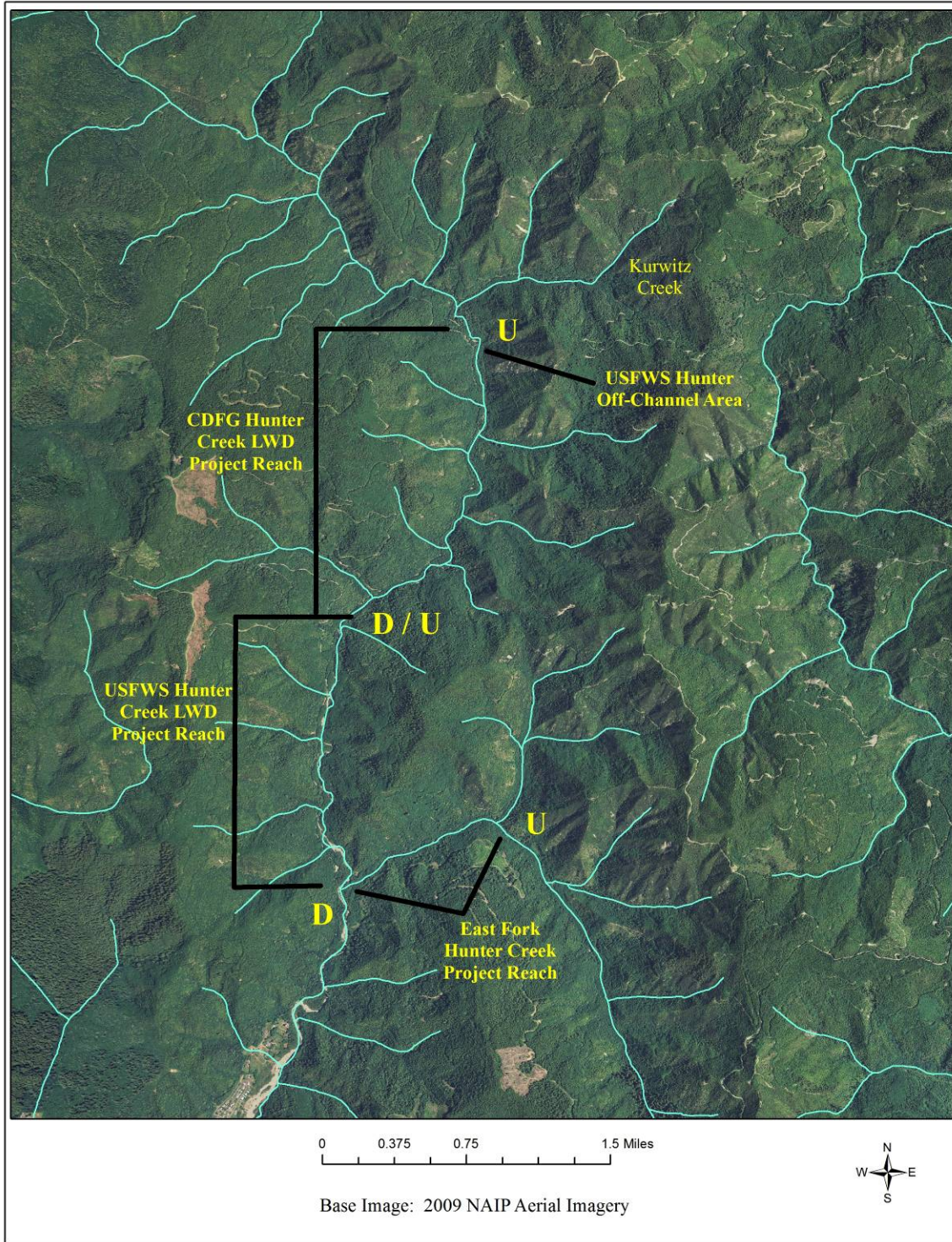


Figure 2. Map depicting several restoration reaches in Hunter Creek, Lower Klamath River.

YTFP and FGS continued conducting the Terwer Creek Off-channel Habitat Restoration Feasibility Study with funding from the California Department of Fish and Wildlife's (CDFW) Fisheries Restoration Grant Program (FRGP). Project goals are to explore the feasibility of increasing off-channel rearing habitat in lower Terwer Creek and using collected information to develop potential restoration alternatives for lower Arrow Mills Creek (Terwer Creek tributary). YTFP and FGS installed five ground water wells and two stream gages in lower Terwer Creek in fall 2012 and began monitoring ground and surface water levels in the project area. Other project related tasks conducted during the report period were sub-surface investigations; ground and surface water quality monitoring; and characterization of land use history, habitat changes, landsliding and sedimentation mechanisms, and potential fisheries restoration constraints. YTFP and FGS produced several project report chapters for the Technical Advisory Committee (TAC) to review as well as met several times with the TAC to discuss project findings.

YTFP worked with the Yurok Tribe Environmental Program, and the Yurok Tribe GIS Department to hire an experienced consulting firm to provide hands-on bathymetric survey training to Yurok staff while performing a survey of the Klamath River Estuary. Project goals included increasing Tribal capacity, testing Tribal survey equipment, establishing bathymetric survey protocols for the estuary, documenting current bathymetric conditions and analyzing past data sets to assess habitat changes over time (e.g. estuary scour and fill). A successful bathymetric survey of the estuary was conducted in late summer 2013. Currently, Yurok GIS staff is working with the consultant to complete the digital elevation model (DEM) for the project. The DEM created for the estuary will be an invaluable resource planning tool.

YTFP survey crews continued assessing water quality parameters in newly constructed off-channel habitats in Hunter Creek, McGarvey Creek, and Terwer Creek to document post-restoration conditions. YTFP also continued conducting salmonid population assessments in these and other Lower Klamath off-channel habitats to characterize use by native salmonids (Silloway 2010; Silloway and Beesley 2011; Hiner et al. 2011; YTFP 2012 & 2013). Coordinating physical habitat, water quality, and fisheries investigations greatly increase our understanding of habitat and fish response to restoration efforts and is invaluable for planning, implementing, and adapting fisheries restoration in the Lower Klamath River Sub-basin.

- **Fisheries Restoration Field Tours & Presentations**

In October 2012, YTFP led staff from CDFW and AmeriCorps Watershed Stewards members on a tour of the 2012 restoration work in Hunter Creek. The tour served as a post-project review for CDFW and as a learning opportunity for AmeriCorps members interested in salmonid recovery.

In October 2012, Rocco Fiori (FGS) gave a formal presentation and led a field tour at the Salmon Restoration Federation's Off-Channel Habitat Symposium <http://www.calsalmon.org/>. The presentation focused on the innovative approaches that FGS and YTFP are applying to restoration of off-channel habitats in the Lower Klamath. Mr. Fiori took over 20 participants to recently constructed off-channel habitats in Hunter Creek, Terwer Creek, and McGarvey Creek.

In March 2013, YTFP staff and Rocco Fiori (FGS) gave formal presentations and led a field tour at the Salmon Restoration Federation's Annual Conference <http://www.calsalmon.org/>. The

presentations and field tour focused on the innovative restoration approaches that FGS and YTFP are applying in priority Lower Klamath River tributaries.

In April 2013, YTFP staff gave a formal presentation summarizing restoration and effectiveness monitoring activities in lower McGarvey Creek. The meeting was put on by the National Fish and Wildlife Foundation (NFWF) and PacifiCorp (owner/operator of the Klamath River hydroelectric dams). YTFP received funding to conduct coho habitat restoration in McGarvey Creek from PacifiCorp's Coho Habitat Enhancement Program (NFWF administers the funding). The intent of the meeting was to allow basin participants to present project results/lessons learned and to prepare applicants for the next cycle of PacifiCorp funding.

In April 2013, Rocco Fiori (FGS) led two classes from Humboldt State University on field tours of our restoration project sites. Both classes are comprised of students who are focused on watershed management and habitat restoration. YTFP and FGS are dedicated to providing these types of learning opportunities and stimulating interest in natural resources and restoration.

In July 2013, YTFP staff gave a presentation describing the Lower Klamath Fisheries Division's restoration and monitoring programs to staff from the U.S. Fish and Wildlife Service (USFWS), U.S. Bureau of Reclamation (BOR), and from several California Indian Tribes. YTFP staff and Rocco Fiori (FGS) also led the group on a field tour of restoration sites within Hunter Creek and Terwer Creek. The objective of the meeting and field tour was to share our expertise regarding constructed wood jam (CWJ) design/installation and other innovative restoration approaches.

In July 2013, YTFP staff and Rocco Fiori (FGS) led staff from CDFW on a field tour of restoration sites within Hunter Creek. The objectives of the meeting were to share our expertise CWJ design/installation, review 2012 CWJ sites, and to discuss the next wood loading phases with CDFW permitting staff. GDRC staff also attended the meeting because they have agreed to provide some regulatory compliance assistance for YTFP restoration projects occurring on their property. This permitting assistance is extremely helpful and serves as an excellent example of why partnerships and coordination are so critically important for fisheries recovery in the basin.

In September 2013, YTFP staff and Rocco Fiori (FGS) led staff from the National Oceanic and Atmospheric Administration (NOAA) on a field tour of restoration sites within lower McGarvey Creek. The tour focused on CWJ and off-channel habitat design and installation as well as the corresponding fisheries and restoration effectiveness monitoring occurring in the watershed.

- **Fisheries Restoration Implementation**

Stream and Floodplain Enhancement

During this period, YTFP and FGS conducted the following restoration activities: 1) installed two additional CWJs and enhanced an existing CWJ in lower Terwer Creek (Beesley and Fiori 2013); 2) installed 14 CWJs in the mainstem Hunter Creek project reaches (Figure 2); 3) installed 11 CWJs in lower McGarvey Creek and constructed McGarvey Alcove III; and 4) maintained exclusion fences in Terwer Creek to protect our restoration areas from feral cattle.

Riparian Forest Restoration

YTFP continued operation of the Yurok Tribal Native Plant Nursery (YTNPN) at the Yurok Fisheries office in Klamath. The nursery and greenhouse provides quality employment opportunities with staff receiving training in native seed collection, germination and propagation, and other related nursery skills (e.g. installing water lines and operating greenhouse systems, maintaining stock, conducting inventories). The YTNPN currently provides hundreds of native conifer and deciduous saplings and shrubs each year for Lower Klamath watershed restoration projects. During this reporting period, crews maintained the nursery stock, transplanted seedlings into larger containers, collected and planted seeds, and conducted stock inventories.

In winter 2012-2013, YTFP planted 101 native trees and 497 native willow cuttings in Hunter Creek, 1,075 native trees and several hundred native willow cuttings and sedges in lower Terwer Creek, and 334 native trees in lower McGarvey Creek. All of the trees planted were provided by the YTNPN and the willow cuttings and sedges were collected from the various project sites.

- **Proposals Submitted**

YTFP Lower Klamath Division (LKD) submitted the following proposals:

California Department of Fish and Game (Fisheries Restoration Grant Program - FRGP):

Submitted in spring 2013

- Adult Coho Redd Surveys and Abundance Estimates in the Lower Klamath - \$343,706
- McGarvey Creek Coho Salmon Life Cycle Monitoring Station - \$236,075

U.S. Bureau of Reclamation Native American Affairs Funding (KBRA) (**Secured Spring 2013**):

- Stream and Floodplain Enhancement of Hunter Creek - \$200,000
- Klamath River Estuary Bathymetric Survey (YTEP, YTFP, YT GIS) - \$95,192

U.S. Bureau of Reclamation Native American Affairs Funding (NAAP):

- Water Quality Restoration and Planning for the Lower Klamath River Sub-basin - \$85,000 (**Secured Spring 2013**) & \$80,000 (**Secured Fall 2013**)

National Fish and Wildlife Foundation Funding (Bring Back the Natives & PacifiCorp Funds):

- Restoring Off_Estuary Habitat in Hoppaw Creek: Phase I - \$201,367 (**Secured Fall 2013**)

U.S. Fish and Wildlife Partners for Fish and Wildlife Program (**Secured Spring 2013**):

- Restoration of Stream and Floodplain Habitats of Hunter Creek: Phase III - \$74,956
- Restoration of Stream and Floodplain Habitats of Terwer Creek: Gage Reach - \$76,785

National Oceanic and Atmospheric Administration Coastal Habitat Restoration Fund:

- Restoration of Lower Klamath River Fisheries and Riparian Habitats - \$512,125 (**Partial Year 1 Funding Secured \$128,000 – Summer 2013**)

Department of Water Resources CA Proposition 84 Fund:

- Restoration of Lower Klamath River Fisheries and Riparian Habitats - \$420,128

Pacific Coastal Salmon Recovery Fund FY 2012 (**Secured Spring 2013**):

- Klamath River Estuary Juvenile Salmonid Sampling - \$30,000
- Lower Klamath Tributary Outmigrant Trapping - \$75,000

- **Meetings Attended**

YTFP and YTWRD held regular meetings throughout the project period to coordinate ongoing and future sub-basin assessment, monitoring, and restoration activities.

YTFP and YTWRD held regular meetings with GDRC to discuss ongoing and future watershed assessment, monitoring, and restoration activities within the Lower Klamath River Sub-basin.

YTFP and YTWRD met on a regular basis with the Yurok Tribe Council to discuss and seek approval for proposed watershed restoration, assessment, and monitoring projects.

YTFP and YTWRD worked regularly with Rocco Fiori (FGS) to plan ongoing and future restoration, assessment, and monitoring projects in the Lower Klamath River Sub-basin.

YTFP and YTWRD met regularly with CDFW, U.S. Bureau of Reclamation (BOR), NOAA, U.S. Environmental Protection Agency (EPA), and USFWS to discuss ongoing and future restoration projects/proposals, and to conduct pre- and post-project field reviews.

YTFP met with the Resighini Rancheria Tribal Council and their Environmental Program Director to try to coordinate road improvement and restoration efforts in Waukell Creek.

YTFP worked closely with staff from the BOR, Karuk Tribe, and Larry Lestelle to plan and implement the Klamath River Coho Salmon Ecology Study.

YTFP restoration staff continued participating in professional committees such as the Peer Review Committee for CDFW's FRGP, the California Coho Salmon Recovery Team, the Pacific Marine and Estuary Fish Habitat Partnership, and the North Coast Resource Partnership.

- **YTFP Lower Klamath Division Project Reports Completed**

Beesley, S. and R.A. Fiori. 2013. Stream and Floodplain Enhancement of East Fork Hunter Creek, Lower Klamath River: Phase I. Yurok Tribal Fisheries Program, Klamath, California.

Beesley, S. and R.A. Fiori. 2013. Stream and Floodplain Enhancement of Hunter Creek, Lower Klamath River. Yurok Tribal Fisheries Program, Klamath, California.

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Yurok Tribal Fisheries Program. 2013. Juvenile Coho Salmon Use of Constructed Off-channel Habitats in Two Lower Klamath River Tributaries: McGarvey Creek & Terwer Creek - 2013. Yurok Tribal Fisheries Program, Klamath, California.

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Hillemeier, D., T. Soto, S. Silloway, A. Corum, M. Kleeman, and L. Lestelle. 2009. The Role of the Klamath River Mainstem Corridor in the Life History and Performance of Juvenile Coho Salmon (*Oncorhynchus kisutch*). Phase II Report Submitted to the U.S. Bureau of Reclamation, Klamath Area Office, Klamath Falls, Oregon.

Hiner, M. 2009. Installation of Stream-Width PIT tag Interrogation Systems to Track Habitat Use and Non-Natal Rearing Patterns of Juvenile Coho in Tributaries to the Lower Klamath River. Yurok Tribal Fisheries Program, Klamath, California.

Hiner, M., S. Silloway, A. Antonetti, and S. Beesley. 2011. Lower Klamath Tributaries Riparian Restoration Projects and Yurok Tribal Native Plant Nursery. Yurok Tribal Fisheries Program, Klamath, California.

Silloway, S. 2010. Fish Surveys Related to the Proposed Del Norte Highway 101 Klamath Grade Raise Project. Yurok Tribal Fisheries Program, Klamath, California.

Silloway, S. and S. Beesley. 2011. Fish Surveys Related to the Proposed Del Norte Highway 101 Klamath Grade Raise Project: Addendum Report 2010-2011. Yurok Tribal Fisheries Program, Klamath, California.

Soto, T., A. Corum, H. Voight, D. Hillemeier, and L. Lestelle. 2008. The Role of the Klamath River Mainstem Corridor in the Life History and Performance of Juvenile Coho Salmon (*Oncorhynchus kisutch*). Phase I Report Submitted to the U.S. Bureau of Reclamation, Klamath Area Office, Klamath Falls, Oregon.

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