

Project Title: Utilizing Yurok Traditional Ecological Knowledge to Inform Climate Change Priorities

Project Leader/Principal Investigator:

Kathleen Sloan, Ph.D., Director, Yurok Tribe Environmental Program
PO Box 1027, Klamath, CA 95548
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Email: ksloan@yuroktribe.nsn.us

Cooperators/Partners and anticipated contributions:

Joe Hostler, Environmental Specialist, Yurok Tribe Environmental Program, PO Box 1027, Klamath, CA 95548,
Ph: 707-482-1822 ext 1010, email: jhostler@yuroktribe.nsn.us:

As Co-PI, Mr. Hostler will conduct several scoping sessions with community members through participation and presentations at Yurok Council District Meetings, Natural Resources Committee and Cultural Committee. He will also participate in the documentation of TEK information provided by tribal members through structured interviews. He will also assist with mapping and GIS components of the project.

Dave Hillemeier, Program Manager, Yurok Tribe Fisheries Program, PO Box 1027, Klamath, CA 95548,
Ph: 707-482-1350, email: dhillemeier@yuroktribe.nsn.us:

Mr. Hillemeier will assist the project through participation in meetings, discussions and identification of issues, scientific information needs, data gaps and resource management considerations for fisheries resources and impacts of Climate change. He will also identify other fisheries program staff to participate.

Robert McConnell, Tribal Heritage Preservation Officer, Yurok Tribe, PO Box 1027, Klamath, CA 95548,
Ph: 707-498-2536, email: rmccconnell@yuroktribe.nsn.us:

Mr. McConnell will participate in the community consultations, specifically Cultural Committee in identifying TEK concerns, issues, needs and elders for participation in the structured TEK interviews.

Project Summary:

The Yurok Tribe proposes to conduct a two phase study on Climate change impacts on Yurok Ancestral and Reservation Lands and resources, specific to impacts on wildlife and habitats that support culturally significant species. The first phase will be the collection and documentation of TEK through community scoping and structured interviews that will be recorded, transcribed, and entered into a GIS (mapped). The second phase will consist of analyzing the data collected in order to identify scientific information needs, data gaps and priority resources of concern specific to Climate change impacts that will be summarized in a final report to inform future funding, management and research efforts.

Project Proposal:

The Yurok Tribe and the Yurok Reservation are particularly vulnerable to the impacts of Climate change due to the location and unique ecosystem that comprise Yurok Ancestral Lands, including the Yurok Reservation. Climate change models conducted for the Pacific Northwest indicate that changes in precipitation will include changes in seasonality, intensity and duration of events (more rain, less snow) (Flint and Flint 2009). Culturally important wildlife: aquatic and anadromous species (salmon, Pacific Lamprey, sturgeon) will have to adapt (or decline) due to the changes in hydrology and temperatures, and will most certainly be impacted by higher intensity rainfall in winter months and less snowmelt for spring and summer runs. Further impacts to culturally significant plant and animal species and the unique habitat provided by the redwood coastal forests will likely result from changes in seasonal fog along the redwood coast (Dawson 1998, Johnstone and Dawson 2010). Rising sea levels will have significant impacts on coastal areas, the Klamath estuary and adjacent wetlands that are critical habitat for a number of culturally significant aquatic and terrestrial species.

The Yurok Tribe is very concerned about the potential impacts of Climate change on Yurok lands and resources, specifically to culturally significant species and the habitats and ecosystems that support them. The purpose of this Project is to assist the Tribe in collecting and documenting Yurok Traditional Ecological Knowledge (TEK) on ecosystem functions, community structure, species behavior and habitat use, and traditional Yurok management approaches that were intended to enhance the environmental conditions required for the abundance and successful survival of culturally significant resources and species. This Project will collect baseline information from tribal elders on conditions and changes in the overall environment and these specific resource communities over their lifetimes. It will also collect and document Yurok TEK on how these ecosystems should function, indicator species and environmental signals, and identify the critical components of desirable ecosystems and ecological communities and habitats to support culturally important species. Using this ethnographic information, collected and documented in a systematic way to enable content analysis, the Project Team will map, analyze and utilize this TEK as data to inform Yurok Tribe information and research needs to identify priority areas for management decisions in response to climate change.

Objectives:

This Project has 2 broad objectives. The first objective is to meet the needs of the Yurok Tribe in collecting and documenting TEK to inform tribal planning related to climate change impacts to culturally significant wildlife and habitats that support these species. This information is crucial to informing Yurok Tribe resource managers and the Yurok Council as it embarks on climate change adaptation planning. The Yurok Tribe's Environmental, Forestry, Wildlife, Fisheries and Cultural Resources Programs will all benefit from the outcomes of this project as they prepare for climate change impacts on specific resources, species, and habitats of importance to Yurok tribal subsistence and culture. The second is to assist the NPLCC in its efforts to integrate Tribal TEK into the planning, research and implementation of LCC goals by providing a model for how to collect and document TEK within a tribal community (while protecting confidentiality and intellectual property rights of the community and project participants) in a manner that results in the identification of information and needs critical to integrating tribal goals and objectives into LCC science and research on climate change impacts to wildlife to inform resource management. We believe this approach can be duplicated within other tribal communities to accomplish the same objectives.

Methods: The project consists of 2 phases: TEK Data Collection and Analysis.

Phase 1 – TEK Data Collection:

The data collection phase will consist of a series of community scoping meetings and the completion of a series of structured interviews with tribal elders. Community Scoping meetings will be conducted by the Project Team at scheduled Council District Meetings. Council District Meetings are held regularly for each of the 7 Yurok Tribal Districts and are attended by tribal membership who reside within a specific District and are led by that District Council Member. These scoping sessions will have 2 goals: outreach and education of community members on climate change science and information, Yurok Tribe efforts on climate change research and planning, and to solicit from the tribal membership priority areas of concerns and observations of change to culturally important species and habitats/ecosystems. These will also provide an opportunity for the Project Team to identify elders to participate in the structured interviews. A minimum of 1 meeting per district will be held for the Project in the Project period.

Additional scoping will be conducted for the same purposes as noted above with the Yurok Tribe Natural Resources and Cultural Committees. These committees are comprised of appointed tribal members selected by Council Members for their expertise, interest and knowledge of Yurok culture, history, and traditional resources management. These committees meet monthly and the Project Team will schedule a minimum of 2 meetings with each committee during the Project period.

Structured Interviews will be conducted by the Project Team with 10 elders selected for their knowledge in Yurok culture, history and traditional resources management. Interview questions will be developed by the Project Team and based upon priority issues identified in scoping sessions with the Natural and Resources and Cultural Committees and the Project Team’s research questions on TEK and Climate change. Interviews will be conducted formally, and will be documented through the completion of a Informed Consent Use Agreement by each participant prior to any interview. Interview participants will be compensated for their time taken to complete the interview at \$100 per participant. Interviews will be audio recorded in their entirety and transcribed fully. Interviews are anticipated to run 1-2 hours in length. These interviews will represent a documentation of TEK on resource change over time, traditional resources management and traditional knowledge of healthy ecosystem function required to sustain and support culturally significant wildlife and the habitats they rely upon for successful survival. All scoping sessions and interviews will be conducted using base maps of the study area and all mapping will be incorporated into a GIS. All interviews will be audio recorded.

Phase 2 – TEK Analysis:

All interviews will be fully transcribed, indexed and geo-referenced in a secure Geographic Information System (GIS) to enable content analysis by the Project Team. This will enable the systematic review of all ethnographic data obtained in response to specific research questions related to Climate change by the Project Team in a manner that allows for the protection of confidential and proprietary information and respects the restrictions as provided by each interview participant. Through this analysis the Project Team will identify areas of priority concern, traditional resource management needs and goals, and scientific information, data and research needed to assist the Tribe in planning for climate change impacts on culturally significant wildlife, ecosystems and habitats throughout Yurok Ancestral lands.

The Project Team will complete a final report that utilizes the TEK information collected, summarize key TEK findings specific to climate change impacts and identifies information and research needs while protecting the confidentiality of the TEK information. This final report will be submitted to the NPLCC as a final deliverable for the Project.

Geographic Extent:

The Yurok Tribe, per its tradition, history and Constitution assert stewardship responsibilities for all resources within their Ancestral Lands. Further, the Yurok Tribe has management responsibilities for all resources within their Reservation Lands. The Study Area will include the 55+ miles of the northern California Coast and inland areas within Yurok Ancestral Lands in addition to the lower 46 miles of Klamath River and the Yurok Reservation which extends 1 mile on each side of the Klamath River. Due to its location on the Lower Klamath River, the Yurok Tribe has an interest in the health of the entire Klamath River watershed. Some tribal members utilize resource areas that are considered in Aboriginal Territory (areas outside of Yurok Ancestral Territory but traditionally visited for the purpose of procuring specific resources). Included in the Study Area are coastal areas, lagoons, the Klamath River and its tributaries, numerous creeks, coastal and inland forests and prairies, and all the wildlife and ecosystems within them. The Study Area for this Project is identified on the accompanying map.



Timeline of Schedules, Products and Outcomes:

Schedule	Tasks and Products	Outcomes
Phase 1: TEK Data Collection Months 1 thru 8	Scoping: 7 Council District Meetings 2 Natural Resource Committee Meetings 2 Culture Committee Meetings Interdepartmental meetings with tribal staff 1 Council Planning Session	Increased staff, Council and community knowledge and understanding of complex and technical issues surrounding climate change research and potential impacts. Increased understanding of potential and predicted climate change impacts on Yurok Ancestral lands, wildlife and habitats. Increased capacity of tribal environmental program staff to understand and explain complex scientific information to tribal members and decision-makers Increased partnerships with outside entities engaged in climate change planning and research.
Months 4 thru 8	Interviews: Project team will design structured interview questions 10 elders will be selected for interviews and Informed Consent/Use Agreements will be completed for each participant prior to interview. Individual interviews will be conducted and recorded.	Documentation of TEK on Yurok traditional management of wildlife and habitats. Integration of TEK into Yurok Tribe discussions and planning efforts on climate change impacts to culturally significant resources. Recommendations from elders on traditional resources management for contemporary tribal program and managers.
Phase 2: TEK Data Analysis Months 9 thru 12	All scoping data and interviews will be fully transcribed, indexed, content analyzed and entered into a GIS. Project team will analyze the ethnographic and TEK information collected to identify research questions specific to climate change and NPLCC goals. Project team will prepare a final report that summarizes key findings, recommendations, data gaps and information needs specific to wildlife and habitat management for the study area and climate change.	Demonstration of a model that can be utilized to engage native communities and tribes in TEK research in a way that protects culturally sensitive information and intellectual property rights and also allows for systematic analysis of information to answer specific research questions. Assist the NPLCC in its efforts to integrate TEK into LCC research and development through the completion of a summary report that utilizes TEK in a manner that protects tribal interests and provides the LCC methodologically sound information that clearly identifies research needs and priorities for the study area. The NPLCC will receive a tangible, final report that can be shared and used to inform NPLCC research and planning efforts in addition to assisting the Yurok Tribe in its own climate change adaptation planning, research and funding efforts.

Disclaimer Regarding Data Sharing:

Traditional Ecological Knowledge (TEK) is considered proprietary information and tribal intellectual property by the Yurok Tribe. For these reasons several safeguards are built into this Project to assure that the rights of the individual participants and the Yurok Tribe are protected at all times with regards to any information collected under this grant. Interview participants will be fully informed of the purposes of the interview by the Project Team and will sign Informed Consent Use Agreements which may include specific instructions or restrictions on how the data will be used for the project or in the future. All TEK collected data is considered to be the sole property of the Yurok Tribe once it is collected and any future uses of such data will require express consent of the Yurok Tribal Council and must comply with any specific instructions in the individual Informed Consent Use Agreement signed. All recorded interviews, transcripts, maps, and GIS will be kept in a secure location within the Yurok Tribe Environmental Program Offices. The TEK data will not be provided to the NPLCC or any outside entity as grant products or deliverables. The final report prepared will be provided to the NPLCC and will be considered to be final the grant deliverable.

References Cited:

Dawson TE (1998) Fog in the California redwood forest: Ecosystem inputs and use by plants. *Oecologia* 117(4):476–485.

Flint L and Flint A (2009) Evaluating Hydrologic Changes in the Klamath Basin. Presentation prepared for the US Geological Service, Sacramento, CA.

Johnstone JA and Dawson TE (2010) Climatic Context and Ecological Impacts of Summer Fog Decline in the Coast Redwood Region. *Proceedings of the National Academy of Sciences*, Online Publication: www.pnas.org/cgi/doi/10.1073/pnas.0915062107

Resumes:

Principal Investigator/Project Manager: Kathleen Sloan

Co-Principal Investigator: Joe Hostler

Kathleen M. Sloan, Ph.D.
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(541) 251-3159
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Qualifications & Experience:

- Yurok Tribe Environmental Program Director
- Quality Assurance Officer – Environmental Program
- Principal Investigator – Environmental Research Grants
- Secretary of Interior Qualified Archeologist
- Principal Investigator – NHPA and Cultural Resources
- Environmental Regulation and Monitoring: Water Quality, Wetlands & Air Quality
- Grant Writing and Grants Management
- Technical Report Preparation and Review
- FERC – Klamath Dam Removal and Re-licensing – Yurok Tribe
- Environmental Compliance: NEPA, Federal Agency, Tribal, Permitting
- Climate Change Research and Adaptation Planning
- Agency Consultations: Federal, Tribal and State
- Community Consultation, Outreach and Environmental Education

Education:

- Ph.D. 2007 Oregon State University**
Major: Environmental Sciences
Minors: Cultural Resources Management and Native American Studies
- M.A.I.S. 2003 Oregon State University**
Major: Anthropology - Cultural Resources Management
Minors: Native American Studies and Native American Art History
- B.A. 1990 University of Notre Dame**
Major: Design and Visual Arts
Minor: Art History

Specialized Professional Trainings:

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| March 2012 | ArcGIS10 Training for Environmental Professional
Northwest Environmental Center, Olympia, WA |
| April 2011 | Tribal Traditional Cultural Properties Training
Dr. Tom King, SWCA Consultants, Arcata, CA |
| April 2010 | Places That Count: Traditional Cultural Properties Training
Dr. Tom King, SWCA Consultants, Albuquerque, NM |
| June 2009 | Arc GIS Workshop for Environmental Professionals
Northwest Environmental Training Center, Oakland, CA |
| Nov. 2007 | ARPA Investigations and Law Enforcement
Archeological Resource Investigations, Crescent City, CA. |
| April 2005 | ARPA Investigations and Archeological Damage Assessments
Archeological Resource Investigations, Bend, OR. |
| May 2004 | Non-Invasive Archeological Site Stabilization Workshop
National Park Service, Point Reyes National Seashore, CA. |

Employment History:

8/2008 - Present Yurok Tribe Environmental Program (Director/Principal Investigator)
Yurok Tribe, PO Box 1027, Klamath, CA 95548. (707) 482-1350

8/2006 - 6/2009 College of the Redwoods, Del Norte Campus, CA (Associate Faculty)
883 W Washington Blvd, Crescent City, CA 95531 (707)465-2300

6/2003 - 8/2008 Yurok Tribe, Klamath, CA (Asst. Director, Cultural Resources/Archeologist)
Yurok Tribe, PO Box 1027, Klamath, CA 95548. (707) 482-1350

7/2002 - 6/2003 National Science Foundation Fellowship (G K-12 Science Teacher)
Oregon State University, 300 Kerr Administration, Corvallis, OR 97331

5/2003 - 6/2003 Deschutes National Forest, Crescent Ranger District (Archeologist)
PO Box 208, Crescent, OR 97733. (541) 433-3200

6/2002 - 10/2002 Deschutes National Forest, Crescent Ranger District (Archeologist)

6/2001 - 10/2001 Deschutes National Forest, Crescent Ranger District (Archeologist)

6/2000 - 9/2000 Confederated Tribes of Umatilla, OR (Cultural Resources Intern)
46411 Timine Way, Pendleton, OR 97801. (541) 275-3165

9/1997 - 6/2003 Oregon State University (Graduate Teaching and Research Assistant)
Anthropology Dept, 238 Waldo Hall, OSU, Corvallis, OR 97331. (541) 737-4515

1/1996 - 1/1997 North American Mortgage Co. Lebanon, OR (Mortgage Processor)

9/1991 - 4/1993 Madison Oyster Bar. South Bend, IN. (Customer Service/Dining)

1/1991 - 8/1991 Citizen's Action Coalition. South Bend, IN.(Environmental Education)

4/1989 - 1/1991 Center Street Café. Mishawaka, IN. (Customer Service/Dining)

9/1982 - 4/1989 Standard Federal Savings Bank. South Bend, IN. (Supervisor/Banker)

Professional References:

Dave Hillemeier, Fisheries Program Manager (707) 482-1350
Yurok Tribe PO Box 1027, Klamath, CA 95548

Brad Cass, Natural Resources Director (707) 487-9255
Smith River Rancheria 140 Rowdy Creek Road, Smith River, CA 95567

Robert McConnell, Yurok THPO (707)498-2536
Yurok Tribe PO Box 1027, Klamath, CA 95548

Teara Farrow, Manager (541) 276-3629
Cultural Resources Protection Program
Confederated Tribes of the Umatilla 46411 Timine Way, Pendleton, OR 97801

Joseph Thomas Hostler
P.O. Box 1027 Klamath, CA 95548
(707) 482-1822 x 1010
jhostler@yuroktribe.nsn.us

Education

Del Norte High School, Crescent City, CA Diploma 5/1996
College of the Redwoods, Eureka, CA. A.S. Transfer Study 5/1999
Humboldt State University, Arcata, CA. B.S. Tribal Natural Resource Planning and Policy 5/2004

Work Experience

- 12/07-present Yurok Tribe Environmental Program. (YTEP) P.O. Box 1027 Klamath, CA. 95548
Environmental Protection Specialist
Write, manage, & operate, YTEP's EPA Clean Air Act Sec. 103 grant. Collect & manage field data, write required reports, and administer appropriate grant functions. Has attended numerous capacity building trainings in Air Quality, Cultural Resource Management, G.I.S. ,& Climate Change. Assisted with Cultural Resource protection monitoring for development projects within Yurok Tribal ancestral territory. Conducted extensive field work, utilizing GPS, GIS, and other survey techniques, as well as extensive outreach to the tribal membership, tribal staff and tribal leadership. Has been conducting research about Traditional Ecological Knowledge (TEK) with Tribal Elders, the Yurok Tribal Cultural Committee, and Tribal Members. Conducting extensive environmental education with numerous schools located on the Yurok Indian Reservation, teaching elementary and high school students about TEK, Climate Change, Air Quality, & traditional Native American land management. Under a small EPA Environmental Justice Grant, conducted extensive public scoping with Tribal Membership about climate change. Educated membership about expected impacts from climate change and collected tribal member comments and concerns regarding climate change. Under this EJ grant, represented YTEP at numerous multi-party Climate Change meetings nationwide. Advocated for Tribal concerns and TEK at these multi-party meetings. Attended numerous North Pacific Landscape Conservation Cooperative (NPLCC) Steering Committee meetings to advocate for Yurok Tribe Environmental Program concerns and use of TEK.
- 5/07-9/07 Karuk Tribal Natural Resource Department P.O. Box 282 Orleans, Ca. 95556
Water Quality Biologist
Collected water quality samples along the mid-Klamath River and Iron Gate and Copco Reservoirs for the Karuk Tribe's Water Quality Department. Followed strict sampling protocol to collect Nutrient grab samples, Blue-Green Algae samples, and maintenance of numerous automated water sampling SONDE's.
- 3/06-5/07 Hoopa Tribal Environmental Protection Agency. P.O. Box 1130 Hoopa, Ca. 95546.
Water Quality Technician
40 hr/week Maintained numerous Continuous Data Recording sites that collect water quality data for compliance with various Federal and Tribal environmental laws. Conducted thorough

sampling regime to ensure data quality. Wrote summary Environmental Impact report for a large landslide that is severely impacting tribal beneficial water uses. This document will be used as a basis for turbidity TMDL on this particular stream in which off-reservation activity degrades Tribal water use. Wrote and helped administer EPA grants.

Supervisor: Ken Norton Land Management/TEPA Director. (530) 625-5515.

11/04-7/05 Office of U.S. House of Representatives Member Greg Walden
1210 Longorth House Office Building, Washington DC 20515
56 hr/week Senator Mark O. Hatfield Fellow

Through a congressional fellowship sponsored by the Confederated Tribes of Grand Ronde, I acted as legislative assistant to congressman Walden and his office regarding Native American Affairs, Environmental, and Resource legislation. Helped represent the office in meetings with numerous tribes, staffed hearings, researched proposed laws, wrote memos to brief the congressman and office on Native American and environmental issues.

Supervisor: Brian MacDonald Chief of Staff (202) 226-7340

6/01-8/03 U.S. Fish and Wildlife Service, 911 NE 11th Ave. Portland. OR 97232
40hr/week Assistant Regional Native American Affairs Liaison (SCEP)
Student Career Employment Program

During summers of 2001, 2002 and 2003, I assisted the Regional Native American Affairs Liaison with policy recommendations in issues concerning the USFWS and Native American Tribes. I also assisted the Liaison with government-to-government consultations with many of the 170 Region 1 Tribes. Consulted with federal agencies, state officials, Tribes and other Federal Organizations to resolve natural resource conservation disputes. Assisted with the development and administration of the Tribal Wildlife Grant Program, Eagle Feather Distribution policy and regulation recommendations. Helped represent FWS in multi-agency meetings.

Supervisor: Scott Aiken Regional NA Affairs Liaison (503)231-6123

References

Dr. Kathleen Sloan Yurok Tribal Environmental Program (YTEP) Department Director
(707) 482-1822 ksloan@yuroktribe.nsn.us

Brian MacDonald U.S. Congressman Greg Walden Chief of Staff
(202) 225-6730 brian.macdonald@mail.house.gov

Scott Aiken U.S. Fish and Wildlife Service Regional Native American Affairs Liaison
(503) 231-6702 scottaiken@rl.fws.gov

Skills

Outspoken, articulate, strong writer, efficient presenter. Strong Native Cultural & scientific background. Comprehensive knowledge of Federal and State environmental laws. Comprehensive knowledge of Federal Indian Law, Tribal Sovereignty, Native American Culture, and Tribal governments. Able to work well with multiple parties while respecting varied outlooks and opinions. Able to work with confidential and highly sensitive work loads. Able to work well individually or with a team. Eager student of TEK, Native Science & Traditional Native American land management practices.