



Proposal: Notice of Funding Opportunity USFWS/NPLCC 2016

Project Title

Developing a Southeast Alaska community-based stream temperature monitoring network

Principle Investigator (PI)

Angie Flickinger, Executive Director, Southeast Alaska Watershed Coalition (SAWC), PO Box 1992, Wrangell, Alaska 99929, 907.231.1710, angie@sawcak.org. Role: **Network Coordinator** - administer grant, coordinate steering group meetings, recruit partners, communicate project.

Project Co-Investigators and Partners

Scott Harris, Science Director, SAWC. Role: **Technical Coordinator** - coordinate activities of community-level participants, coordinate working group meetings, provide technical support for community-level efforts, maintain site catalog and integrate with AKOATS, maintain SAWC's active monitoring sites.

Sue Mauger, Science Director, Cook InletKeeper. **Technical Advisor** - integrate with south-central and western Alaska stream temperature networks, advise on data collections standards, provide field training in site installation.

Michael Winfree and Eran Hood, Researchers, University of Alaska Southeast. Role - develop strategic sampling (site selection) plan, refine map and catalog of monitoring sites

Emil Tucker, Hydrologist, USFS Tongass National Forest (end-user). Role - consult on sampling design and network data goals, collect data

Deborah Hart, Coordinator, Southeast Alaska Fish Habitat Partnership. Role - coordinate cooperator and partner meetings, communicate project

Patricia Warren, Chilkat Indian Village. Role - host training, install sites and collect data

Meredith Pochardt, Chilkoot Indian Association. Role - install sites and collect data

Chris Whitehead, Sitka Tribe of Alaska. Role - install sites and collect data, recruit tribal partners

Additional partners anticipated, other local tribes or community organizations. Role - install sites and collect data

Geographic Scope of the Work

Southeast Alaska from Yakutat to southern Prince of Wales Island.

General Public Summary

This project, with funding support by the North Pacific Landscape Conservation Cooperative and partners, will address the need to better understand the impact that climate change will have on our salmon subsistence resources in southeast Alaska. Working with federal and state agencies, as well as community-based organizations and tribal governments, this project will 1) build a network that supports local organizations in their efforts to collect stream temperature data, and 2) coordinate those efforts so that the data will inform and empower management agencies, researchers, and communities to adapt to changing conditions for fish in the freshwater stages of their lifecycles.

Statement of Need or Issues to be Addressed

A coordinated stream temperature monitoring network will provide data to address the need to monitor, study, and manage the effects of climate change on aquatic subsistence resources, particularly salmonids, in southeast Alaska. Stream temperature data has been and continues to be collected in southeast Alaska, but there is no regional sampling plan, no coordination of site selection between organizations, no minimum standards, and no data storage/management between the many entities involved.

Researchers, natural resource managers, and communities in our region have all expressed growing concern about climate change and agree on the critical need for more intensive and coordinated monitoring of impacts on subsistence resources. For example, The Tongass National Forest identified increasing vulnerabilities to fish resources as a result of changing hydrologic regimes due to climate shifts (EcoAdapt 2014); community organizations and tribal governments in the region have identified climate monitoring as a high priority; and research has identified climate change as one of the “more pressing challenges to Pacific Salmon conservation and management for southeast Alaska in the 21st Century” (Shanley et al. 2014). A coordinated stream temperature monitoring network is also listed as a priority action in the Strategic Plan of the Southeast Alaska Fish Habitat Partnership (SEAKFHP 2014).

While climate prediction models are constantly improving the ability to predict changes in air temperature and precipitation at finer scales, predicting associated changes in stream temperatures are complicated by confounding climate-change-affected variables (for example, the effect of air temperature on snowpack, timing of spring thaw, and hence flow regimes) and the poor coupling of stream and air temperatures in mountain streams (Fellman et al. 2014, Luce et al. 2014).

Finally, there are existing stream temperature networks to both the north (Cook Inlet/Keener, Kodiak, Bristol Bay) and south (NORWest in the Pacific Northwest) of southeast Alaska, and there are incipient NPLCC-funded efforts in coastal British Columbia. The proposed southeast Alaska network will fill in a key geographic gap in stream temperature data collection which will aid efforts to manage for subsistence resources in the face of climate change.

The Southeast Alaska Watershed Coalition (SAWC) has maintained a stream temperature network of 10 sites for 3 years, and has played a key role in leading regional discussions of stream temperature monitoring. This role includes chairing the temperature working group of the recent Climate Adaptation Workshop in southeast Alaska in April 2016, and participating in meetings and discussions with network developers in the rest of the state.

Project Goal(s) and Objectives:

The goals and objectives of this project are to:

- 1) Establish the first coordinated stream temperature monitoring network in southeast Alaska

Objectives:

- a. Convene the working group and steering committees for bi-monthly teleconferences to inform development of the network
- b. Implement action items identified by the freshwater temperature workgroup of the Southeast Alaska Climate Adaptation Workshop in April 2016

- c. With committee input, develop a “white paper” describing the utility of stream temperature data for resource managers
 - d. Develop an Implementation Plan for the Southeast Alaska Stream Temperature Monitoring Network
- 2) Provide region-wide standard methodologies
- Objectives:*
- a. Adopt minimum stream temperature data collection standards for the region
 - b. Complete a Strategic Sampling Plan to prioritize monitoring site locations
- 3) Arrest the potential loss of historical data
- Objectives:*
- a. Establish and maintain a catalog of active monitoring sites, and integrate site data collection efforts with the Alaska Online Aquatic Temperature Site (Western Alaska LCC project)
 - b. Maintain SAWC’s ten monitoring sites, and incorporate into the regional Network
 - c. Collect and store temperature data from all sites in the network
- 4) Engage community-based tribal and non-profit organizations in climate change monitoring.
- Objectives:*
- a. Recruit community-level partners (tribes, watershed councils, non-profit organizations, municipal governments) to maintain prioritized monitoring sites
 - b. Conduct a stream temperature monitoring training (site selection, installation, maintenance, quality control, data management) for community-level partners
 - c. Provide technical assistance to community and agency partners to maintain critical long-term sites

Project Activities, Methods, and Timetable:

Establish the first coordinated stream temperature monitoring network in southeast Alaska

At the April 2016 climate workshop, SAWC identified both a working group and steering committee to inform Network development. The working group consists of individuals able to commit organizational resources (staff time) to advising and advancing Network development. Facilitated by SAWC (Angie Flickinger and Scott Harris), the working group includes members from the Tongass National Forest (Emil Tucker), University of Alaska Southeast (Eran Hood), and Cook Inletkeeper (Sue Mauger). The working group will convene monthly to advance development of the Network, and will meet with the Steering Committee bi-monthly to ensure the Network and collected data are meeting resource management objectives and data needs. The Steering Committee will provide guidance in the development and maintenance of the Network, and consists of representatives from the Alaska Dept. of Fish and Game (Jeff Nichols), Central Council of the Tlingit and Haida Indian Tribes of Alaska (Ray Paddock), U.S. Geological Survey (Ryan Toohey), U.S. Forest Service NORWest stream network (Dan Isaak), Alaska Dept. of Environmental Conservation (Brock Tabor), National Park Service (Chris Sergeant), Southeast Alaska Fish Habitat Partnership (Deborah Hart), Southeast Alaska Conservation Council (Emily Ferry).

The first activities of the working group, with steering committee input, will be the implementation of primary action items identified at the April 2016 climate workshop. As a high priority action item, the group will begin work on the development of a “white paper” that describes the management context and need for a stream temperature network, and the adoption of minimum data collection standards for the region.

Establish region-wide standard methodologies and arrest the potential loss of historical data:

SAWC will focus on leveraging the efforts of and lessons learned from other regions in order to achieve financial efficiencies, ensure data will integrate with other regions, and avoid expending unnecessary efforts “reinventing the wheel” in establishing a regional temperature monitoring network. To this end, SAWC will contract Sue Mauger of Cook Inletkeeper as a technical advisor to help establish the framework of and develop an implementation plan for the regional Network. Sue has been instrumental in the development of stream temperature networks in Cook Inlet, Kodiak Island, and Bristol Bay. To develop a strategic sampling plan for the region, SAWC will contract Michael Winfree of the University of Alaska Southeast, who developed a sampling plan to support his graduate research on the landscape influences on stream temperatures in the region.

SAWC will work with Steering Committee member Ryan Toohey of the U.S.G.S. Alaska Climate Science Center to ensure our data collection sites integrate with the Alaska Online Aquatic Temperature Site portal (AKOATS, a Western Alaska LCC project). To integrate efforts with the NORWest network and incipient data collection efforts in British Columbia, Dan Isaak from the NORWest network will also participate on the Steering Committee.

The University of Alaska Southeast has created an initial catalog of past and active stream temperature sites in southeast Alaska. SAWC will add sites to and maintain this catalog, as well as submit all site metadata to AKOATS. SAWC will maintain 10 sites and the University of Alaska Southeast or other partners will maintain an additional approximately 20 sites. Additional sites are maintained by the Tongass National Forest and other partners, and will be included in this catalog.

Engage community-based tribal and non-profit organizations in climate change monitoring:

With over a decade of experience working directly with community-based tribal governments, watershed councils, and NGOs, SAWC is ideally suited to coordinate this effort. SAWC will leverage our existing network of community-based resource management entities to recruit community-level participants in stream temperature data collection and management. SAWC will partner with the Chilkat Indian Village (CIV) to coordinate a Stream Temperature Monitoring Training for tribes and community organizations hosted by CIV in summer 2017. SAWC will participate in the Southeast Alaska Environmental Conference (hosted by the Central Council of the Tlingit and Haida Indian Tribes of Alaska) to outreach for participation in the Network and recruit tribal organizations to send representatives to the CIV training. SAWC is committed to providing long-term technical support to build capacity for tribes and organizations to collect and manage temperature data.

Manage for long-term sustainability

SAWC will adopt the lessons learned from other networks to develop the Southeast Network in a step-wise fashion that will consider the changing capacities of partners (e.g. the departure of key staff) and

inconsistent funding sources. This means that we will focus current efforts under this project to the highest priorities that were identified at the April 2016 Climate Workshop: stem the loss of data, leverage existing capacity, coordinate standard protocols, identify and fill the gaps in regional coverage, and provide standardized training to interested partners.

Timetable:

Activity	Purpose	Accomplished by
Working group and steering committee meetings	Inform network development and ensure design will ultimately meet the needs of key stakeholders	Bi-monthly throughout project
Maintain existing temperature sites	Maintain, collect, and manage data from 10 SAWC sites	August 2016 and summer 2017
Participate in southeast Alaska Environmental Conference	Recruit tribal participants and integrate efforts with Central Council of the Tlingit and Haida Indian Tribes of Alaska	September 2016
Develop White paper	Describe management context and need for the development of a stream temperature network	December 2016
Data collection standards	Adopt minimum data collection standards for the region	December 2016
Strategic sampling plan	Based on key stakeholder and steering committee input, develop a sampling plan for selecting monitoring sites	March 2017
Update site catalog	Catalog all sites in the region and submit metadata to AKOATS	May 2017
Gap analysis	Identify site location gaps	May 2017
Recruit community participants	Based on the gap analysis, identify and recruit organizations to adopt sites (priority for community and tribal organizations)	Summer 2017
Site installation training	Train community participants in site installation, data collection, and data management	Summer 2017
Site installation support	Support community participants in installing sites	Fall 2017
Site maintenance and data management support	Support site maintenance. Ensure all metadata is integrated into AKOATS	Spring and Summer 2018
Sustainability plan	With steering committee, identify and act on long-term funding opportunities	Summer 2018

Anticipated Products, Outcomes Dissemination

All products will be relevant across the entire geographic range of this project (southeast Alaska). Because we are working closely with networks to both the north and south, the impact of this project will be to fill in a critical gap in the data coverage of the western coast of North America.

Specific products include:

- Comprehensive catalog of past and active data collection sites
- Minimum of 30 sites added to and/or maintained in AKOATS

- Temperature data from a minimum of 10 SAWC sites and approximately 20 partner sites
- Five community-level partner organizations trained in site installation and standard protocols
- White Paper describing management context and need for a stream temperature network
- Strategic sampling plan for southeast Alaska
- Minimum standards for data collection and management
- Active working group and steering committee
- Framework for region-wide coordination of stream temperature monitoring

The target audience for products will be the end-users of the data collected by this network: resource managers in federal, state, and tribal governments, as well as community based organizations. Data will also be of high utility for climate change researchers to improve climate and hydrologic prediction models. An important outcome of this project will be the increased capacity of community-based practitioners to conduct climate change monitoring activities, and the increased understanding of climate-change impacts on important subsistence resources. Project results and products will be shared through a publicly accessible online database and annual report, as well as NPLCC webinar/s for which we are invited to host.

Data Management

Storing, disseminating, and conducting quality control of data are significant challenges for stream temperature networks. We plan to address these challenges as follows:

Storage

All sites for our Southeast Alaska Network will be mapped, and metadata stored, with AKOATS. This effort will include a catalog of all sites that are using the standard protocols and the person and entity responsible for each site. Because AKOATS does not yet store the actual temperature data (AKOATS only stores metadata and maps sites), the Southeast Alaska Network will collect and store the temperature data for all sites. Data will be stored on the SAWC network server, and hardcopies as CDs.

Dissemination and quality control

Public access to data is a core value of the Network. We will discuss this primary value with our tribal and community partners to ensure appropriate protections of traditional knowledge and places. Data stored with SAWC will be available upon request. Ideally, quality-assured data would be publicly available through an interactive web-based portal. However, the scope of this proposal is not sufficient to provide such a product. For this end, we will rely upon, and actively participate in, state-wide efforts to provide such a resource. The key people and entities addressing this issue at the state level are on our steering committee. We will collect and manage our data in a manner so that it can be integrated into a public access portal at a future date.

Role of Intended Users

The target audience of resource managers in federal, state, tribal, and community entities will also be involved in strategic planning and Network design. Representatives from these entities and other key partners (including representatives from other regional networks) have already been recruited to the Steering Committee. This committee will advise Network design through facilitated meetings. The target

audience and key partners will also maintain monitoring sites. Involvement of the target audience is critical to ensuring that Network design meets their needs.

Project Monitoring and Evaluation

We will measure project success by tracking the accomplishment of the specific deliverables. The Steering Committee will monitor progress toward achieving objectives and provide input and feedback on overall Network development. We will also assess project success by the number of participants and number of communities represented at the summer 2017 training workshop hosted by Chilkat Indian Village, as well as the number of tribal and community entities we can recruit to participate in the Network.

Expected Project Period

15 August 2016 through 31 July 2018.

Budget:

	Year 1	Year 2
Requested Funds:		
Salaries	\$ 10,320	\$ 6,000
Supplies		\$ 300
Equipment		\$ 2,280
Travel	\$ 1,000	\$ 8,000
Contracts	\$ 17,000	\$ 0
Overhead	\$ 2,832	\$ 1,658
Sub-total	\$ 31,152	\$ 18,238
Matching Funds:	\$ 15,450	\$ 42,950
Source 1:SAWC - confirmed: salary, existing site equipment, work station use, site maintenance logistics	\$ 10,400	\$ 5,400
Source 2: steering committee - anticipated: participation in meetings	\$ 3,750	\$ 2,750
Source 3: Chilkat Indian Village - confirmed: training workshop summer 2017, travel, contract for trainer.		\$ 21,000
Source 4: community partners - anticipated: salary to attend workshop, salary and equipment for site installation and maintenance	\$ 1,300	\$ 13,800
<i>Grand Total</i>	\$ 46,602	\$ 61,188

In-kind note: the summer 2017 training workshop is funded by a grant to the Chilkat Indian Village from the U.S.E.P.A.

Note: the following sections are not included in the 7-page limit. Descriptions of organizations, resumes of key personnel, citations, and support letters follow.



Literature Cited:

- EcoAdapt, 2014. A climate change vulnerability assessment for aquatic resources in the Tongass National Forest. Ecoadapt, Bainbridge Island, WA
- Fellman, J.B., Nagorski, S., Pyare, S., Vermilyea, A.W., Scott, D., Hood, E., 2014. Stream temperature response to variable glacier coverage in coastal watersheds of Southeast Alaska. *Hydrological Processes* 28 (4), 2062-2073. doi:10.1002/hyp.9742
- Luce, C., Staab, B., Kramer, M., Wenger, S., Isaak, D., McConnell, C., 2014. Sensitivity of summer stream temperatures to climate variability in the Pacific Northwest. *Water Resources Research* 50, 3428–3443. doi:10.1002/2013WR014329
- Mauger, S., Shaftel, R., Trammell, E.J., Geist, M., Bogan, D., 2015. Stream temperature data collection standards for Alaska: Minimum standards to generate data useful for regional-scale analyses. *Journal of Hydrology: Regional Studies* 4, 431–438. doi:10.1016/j.ejrh.2015.07.008
- Shanley, C.S., Pyare, S., Goldstein, M.I., Alaback, P.B., Albert, D.M., Beier, C.M., Brinkman, T.J., Edwards, R.T., Hood, E., MacKinnon, A., McPhee, M.V., Patterson, T.M., Suring, L.H., Tallmon, D.A., Wipfli, M.S., 2015. Climate change implications in the northern coastal temperate rainforest of North America. *Climatic Change* 130, 155–170. doi:10.1007/s10584-015-1355-9
- SEAKFHP, 2014. Strategic Action Plan 2014-2016. Southeast Alaska Fish Habitat Partnership. Available online http://www.seakfhp.org/wp-content/uploads/2013/02/SEAKFHPstrategicactionplan2014_2016_final_July-09_14.pdf



Description of Entities Undertaking the Project:

Applicant Organization:

The Southeast Alaska Watershed Coalition (SAWC) (<http://www.alaskawatershedcoalition.org/>) is a regional coordinating body for community-based watershed councils and resource management entities throughout the region. SAWC staff work with communities throughout the region to provide technical support, grant administration, capacity development, and project management for community-based groups.

Project Manager: Angie Flickinger, Executive Director (angie@sawcak.org, 907.205.4028)

Project Co-Investigator: Scott Harris, Science Director (scott@sawcak.org, 907.738.4091)

Key Project Partners:

Cook Inletkeeper is a non-profit organization based in both Homer and Anchorage, Alaska. As the Science Director, Sue Mauger (sue@inletkeeper.org, 907.399.2070) implemented their first stream temperature network in 2002, and since has played a key role in the establishment of 2 additional networks in south-central-west Alaska. Ms. Mauger will participate on the Network Steering Committee and will facilitate the development of a strategic sampling plan for the region.

The **University of Alaska Southeast** is the only university in southeast Alaska. Eran Hood (eran.hood@uas.alaska.edu, 907.796.6244) is a Professor of Environmental Science. Mr. Hood has a background in hydrology and aquatic ecology and has published peer-reviewed research on climate change implications for the region and potential alterations in flow regimes of rivers in southeast Alaska. Eran will participate in the working group and acts as an advisor to Michael Winfree.

Michael Winfree (mwinfree2@alaska.edu, 907.843.1144) is a graduate student researching landscape influences on stream temperature. For his research, he developed a 40-site sampling plan. He will refine this sampling plan to meet the needs of the proposed Southeast Alaska Stream Monitoring Network.

The US Forest Service, Tongass National Forest is the largest “landowner” in the region, managing nearly 17 million acres of lands. Nearly all of our rural communities are literally surrounded by and dependent upon the Tongass for subsistence foods, resource-based economies, and traditional way of life. Emil Tucker (etucker@fs.fed.us, 907.772.5874) will be the primary representative of the US Forest Service on both the Steering Committee and working groups. Mr. Tucker is also responsible for maintaining all of the temperature monitoring sites on the Tongass.

The **Southeast Alaska Fish Habitat Partnership (SEAKFHP)** (<http://www.seakfhp.org/>) is a collaborative working group comprised of resource managers, scientists, and professionals from agencies, tribes, and non-profit organizations throughout the region, coordinated by Deborah Hart



(coordinator@sealaskafishhabitat.org, 907.723.0258). Ms. Hart and SEAKFHP will support this project by providing conference and facilitation services, and acting as a network for broader project communication.

Chilkat Indian Village (CIV, <http://chilkatindianvillage.org/>) is the federally recognized tribe located in the village of Klukwan. Klukwan enjoys a multi-layered cultural history that is preserved through the Tlingit language, rituals, stories, oral histories, and subsistence activities practiced by the Chilkat Tlingits. The Chilkat Indian Village Council is empowered by its constitution and by-laws to "manage and control all the economic affairs and enterprises of the Village," "engage in any business that will further the economic well-being of the members of the Village," and "preserve and cultivate the arts, crafts, and culture of the Indians of this community." Jess Kayser Forster (kayserforster@gmail.com, 907.314.3257) coordinates the EPA Tribal Wetland Program Planning project for CIV. CIV will host a Stream Temperature Monitoring Training for tribal entities and community-based organizations interested in climate change monitoring of their local watershed resources.

Chilkoot Indian Association (CIA, <http://www.chilkoot-nsn.gov>) is a federally recognized tribe located in Haines, Alaska. The Chilkoot Indian Association serves its members and community in a variety of exciting ways, from housing projects to Youth services to environmental efforts and in transportation initiatives to cultural preservation activities. Meredith Pochardt (Meredith@takshanuk.org, 907.314.3280) assists the CIA with Environmental Project Coordination, and will participate in the Stream Temperature Monitoring Training, and will assist with the installation of temperature monitoring sites and data collection for CIA.

Sitka Tribe of Alaska (STA, <http://www.sitkatribes.org>) is the federally recognized government for more than 4,000 Tribal Citizens who are primarily of Tlingit, Haida, Aleut, and Tsimpsian heritage in the *Sheet'-Ká* (Sitka) area of Southeast Alaska. The protection of subsistence resources is vital to the health and well-being of tribal citizens, and the Resource Protection Department (RPD) is STA's first line of defense in the long battle to maintain our traditional resources. The RPD provides continuing advocacy for maintaining tribal citizens' rights to harvest customary & traditional foods. Chris Whitehead (chris.whitehead@sitkatribes-nsn.gov, 907.747.7395) is the Environmental Program Manager with STA, and will participate in the Stream Temperature Monitoring Training, will assist with the installation of temperature monitoring sites and data collection for STA, and will recruit tribal partners to participate in the Monitoring Network.

Resume: Scott Harris

1815 Edgecumbe Dr, Sitka AK 99835 Tel: 907.747.5790 Cel: 907.738.4091 scott@sawcak.org

EDUCATION

M.S. Natural Resources Management, University of Alaska at Fairbanks, 2004
B.S. Aerospace Engineering with Highest Honors, University of Texas, 1990

WORK EXPERIENCE

Science Director, Southeast Alaska Watershed Coalition, 2016 - present

Develop science program, manage habitat restoration projects, provide technical support to community watershed organizations. develop strategic partnerships, conduct monitoring projects, maintain stream temperature monitoring sites

Conservation Science Director, Sitka Conservation Society, 2007 - present

Develop programs and partnerships to restore fish and wildlife habitat, monitor and assess restoration actions, advocate for science-based natural resource management, and integrate grades 7-12 and university students in these programs. Created a community-based natural resource monitoring program (www.seakecology.org).

Founder and Sole-proprietor, Latitude Adventures, LLC, 2008 - 2015

Sea-kayak outfitter-guide business, environmental consulting, and instructional / guide support for outdoor-based university field courses.

Board Chairman (2010-2011) and Board Director (2007-2012), Sitka Sound Science Center

Co-found the Sitka Sound Science Center, a 501c3 non-profit corporation - dedicated to science education and research of Gulf of Alaska ecosystems. Included business oversight of the Sheldon Jackson Hatchery.

Program Director and Instructor, Sheldon Jackson College Center for Outdoor Education, 2005-2007

Developed and instructed a summer program offering credit and non-credit courses that combined the disciplines of outdoor leadership and natural history. Instructed regular semester courses in outdoor skills and leadership. Developed a risk management system and taught risk management. Managed an outdoor center.

Research Assistant, University of Alaska at Fairbanks, 2001-2004

Conducted market research in rural indigenous communities of southern Chile to assess biodiversity conservation strategies.

Senior Staff Instructor, National Outdoor Leadership School (NOLS), 1996-2005

Led and taught expedition-based courses (offering college credit) in risk management, leadership, outdoor skills, and natural history. Cumulatively led approximately 500 students over 180 weeks in the field.

Wildlife Research Technician, 1993-1998

Collected, analyzed, and reported on research projects for various federal agencies and non-profit organizations: raptor migration, avian winter ecology, coyote-wolf sympatry and ecology, tropical rainforest restoration, and shorebird/waterfowl/passerine population surveys.

Program Manager and Research Engineer, NASA Ames Research Center, 1987-1993

Designed, conducted, analyzed, and published results of aeronautical wind tunnel research projects.

GRANTS

National Forest Foundation (NFF). 2015. Advancing the Tongass Transition: forest to product. \$24,000
NFF. 2015. Tongass Young Growth Management Symposium (co-PI). \$24,000
NFF. 2014-2015. Twelvemile Creek Salmonid Smolt Monitoring Project. \$124,000
NFF. 2014. Community Engagement in Watershed Stewardship. \$27,000
Margaret A Cargill Foundation. 2014. Sustainable Southeast Partnership (co-PI). \$34,000
NFF. 2013. Citizen-based Habitat Restoration. \$28,000
NFF. 2013. Young Growth Utilization and Watershed Restoration (co-PI). \$24,000
Margaret A Cargill Foundation. 2013. People and Place Program (co-PI). \$48,000
USFS Sitka Rural Advisory Committee. 2013. Deer Habitat Restoration Monitoring. \$16,688
USFS Sitka Rural Advisory Committee. 2012. Sitka Student Watershed Monitoring. \$33,360

NFF. 2012. Community Integration in Adaptive Management. \$32,000
NFF. 2012. Restoring Watersheds and Utilizing Young Growth (co-PI). \$24,000
Alaska Sustainable Salmon Fund. 2011. Education Curriculum Development. \$78,000
NFF. 2011. Habitat Restoration and Monitoring. \$28,000
Alaska Sustainable Salmon Fund. 2010. Sitkoh River Restoration Partnership. \$149,000
NFF. 2010. Wilderness Stewardship Program. \$55,000
NFF. 2010. Capacity Assistance Program. \$7,000
NFF. 2009. Wilderness Stewardship Program (co-PI). \$30,000
Hewlett Foundation. 2009. General Program Support (co-PI). \$50,000
USDA Cooperative State Research, Education, and Extension Service. 2007. Program Support (co-PI). \$386,000

PUBLICATIONS

In prep. *Plant succession in canopy gaps in an 80-year-old young-growth forest stand*. SH Harris and JC Barnard
USFS Pacific Northwest Research Station. Research Paper.
A Market Survey of Ecotourists in the Valdivian Temperate Forest Ecoregion of Chile. Master's Thesis, University of
Alaska at Fairbanks, December 2004.
Computation of Wind-Tunnel Wall Corrections for Complex Models Using a Low-Order Panel Method, DL Ashby and
SH Harris. NASA Technical Memorandum. 1993.
Small-Scale Wind-Tunnel Investigation of an Advanced Fighter Configuration Semi-Span Wing, K.J Langan and SH
Harris. AIAA. 1993.
Maneuvering Technology for Advanced Fighter Aircraft, MG Alexander, SH Harris, and RH Byers. SAE International.
1992.

RECENT AWARDS

Most Outstanding Science Educator, Alaska Science and Engineering Fair, 2014
2013, 2012 Regional Forester's Award, Honorable Mention, Partnership, USFS Alaska Region
Bob Marshall National Wilderness Award, USFS, 2010 (group achievement award)
River Warrior Award, Resource Renewal Institute, 2010
Outstanding Researcher, Fixed-wing Aerodynamics Branch, NASA Ames Research Center

PROFESSIONAL AFFILIATIONS / APPOINTMENTS

American Fisheries Society, Alaska Chapter
The Wildlife Society, Alaska Chapter
Native Plant Society of Oregon
American Association for the Advancement of Science
Southeast Alaska Fish Habitat Partnership, Science and Data Committee
Wilderness Education Association
Citizen Science Association
Sitka Rural Advisory Committee, US Forest Service - Tongass National Forest
Tongass Collaborative Stewardship Group

ADDITIONAL QUALIFICATIONS

Computer skills- Filemaker and database management, website development and management, GIS - ArcMap,
QuickBooks, Photo-editing, desktop publishing, spreadsheets, word-processing
Spanish language fluency
Private Pilot's License - single engine land and sea, instrument rated, 400 hours
USCG 50-ton captain's license
Wilderness First Responder
Extensive wilderness outdoor experience (both professional and personal) in challenging environments,
including Alaska and Chilean Patagonia on both land and sea

SUE MAUGER
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Education

M.S. in Fisheries Science

Oregon State University
Corvallis, Oregon
October, 2000

B.S. in Zoology

Duke University
Durham, North Carolina
December, 1987

Professional Experience

Science Director, Cook Inletkeeper, Homer, Alaska; July 2000 – present

- Coordinate data collection and analysis of the Cook Inlet Stream Temperature Monitoring Network (2008-2016)
- Technical Coordinator for the Bristol Bay Temperature Network (2014-2016)
- Developed parcel-level strategies to guide land conservation and improve landscape-scale resilience for salmon on the Kenai Peninsula (2012-2015)
- Maintained Stariski Creek gauge, collecting year-round discharge data, conducting benchmark surveys (2006-2010)
- Conducted a 5-year baseline water quality assessment of lower Kenai Peninsula salmon streams (2000 – 2005)

Project Director, The Xerces Society, Portland, Oregon; January 1995 - December 1997.

- Developed a citizen-based Aquatic Invertebrate Monitoring Program for western Oregon

Project Coordinator, Earthwatch, Watertown, Massachusetts; August 1992 – Sept. 1994.

- Coordinated logistics and volunteers for international field projects

Laboratory Specialist, Virginia Institute of Marine Science, Gloucester Pt., Virginia; September 1988 – March 1991.

- Coordinated field crews and logistics; conducted juvenile blue crab recruitment studies

Teaching Experience

Adjunct Professor, *Stream Ecology*, Spring Semester, 2009
Kachemak Bay Campus, Kenai Peninsula College, University of Alaska Anchorage

Recent Presentations and Posters

Mauger, S., H. Leba, and J. Gerken. 2015. Cold water habitat use by juvenile salmon directing conservation in the Big Lake basin. Alaska Chapter of the American Fisheries Society Annual Meeting, Homer, Alaska.

Mauger, S. 2014. Cold water mapping and salmon habitat characterization guide land conservation and restoration in Cook Inlet watersheds. Alaska Chapter of the American Fisheries Society and the American Water Resources Association Annual Meeting, Juneau, Alaska.

Sue Mauger

Mauger, S., D. Rinella, R. Shaftel, and J. Leppi. 2013. Landscape controls on stream temperature and thermal sensitivity: Assessing climate change impacts in Cook Inlet salmon streams. Alaska Chapter of the American Fisheries Society Annual Meeting, Fairbanks, Alaska.

Mauger, S. 2012. Challenges and Opportunities for Landscape-scale Monitoring in Alaska. Invited presentation, Alaska Stream and Lake Temperature Monitoring Workshop. Anchorage, Alaska.

Mauger, S. 2011. Salmon Stream Temperatures: Past, Present and Future. Alaska Center for Climate Assessment and Policy's Climate webinar series, Fairbanks Alaska.

Mauger, S., M. Geist, T. Kurkowski, N. Fresco. 2010. Future Climate Conditions for the Cook Inlet Watershed. (Poster) Mat-Su Science & Conservation Symposium, Wasilla, Alaska.

Selected Publications

Mauger, S., R. Shaftel, E.J. Trammell, M. Geist, and D. Bogan. 2015. Stream temperature data collection standards for Alaska: minimum standards to generate data useful for regional-scale analyses. *Journal of Hydrology: Regional Studies* 4: 431-438.

Mauger, S. 2013. Stream Temperature Monitoring Network for Cook Inlet Salmon Streams (2008-2012): Synthesis Report. Alaska Clean Water Actions (ACWA) Grant 13-01, FY2013 Final Report. Cook Inletkeeper, Homer, AK.

Mauger, S. 2012. Stream Temperature Action Plan: Steps to protect Alaska's wild salmon habitat from the impacts of thermal change. Cook Inletkeeper, Homer, AK.

Mauger, S. 2009. Salmon in Alaska. Thoreau's Legacy: American Stories about Global Warming. Union of Concerned Scientists and Penguin Classics. New York, NY.

Mauger, S. 2008. Action Steps toward Greater Protection of Lower Kenai Peninsula's Salmon Streams. Annual Water Quality Assessment. Homer Soil and Water Conservation District and Cook Inletkeeper, Homer, AK.

Mauger, S. 2003. Effectiveness of Citizens' Environmental Monitoring Program, *Exxon Valdez* Oil Spill Restoration Project Final Report (Restoration Project 02667), Cook Inlet Keeper, Homer, AK.

Mauger, S. 2000. Invertebrate Composition and Distribution in Desert Springs of Oregon. M.S. Thesis, Oregon State University, Corvallis, OR.

Professional Societies and Affiliations

- Society of Freshwater Sciences (1996 – present)
- American Fisheries Society (2005- present)
- American Water Resources Association (2008 – present)
- Kenai Peninsula Fish Habitat Partnership Steering Committee (2009-present)
- Kenai Peninsula Wetland Working Group (2000 – present)
- Homer Demonstration Forest Steering Committee (2002 – 2012)
- City of Homer's Global Warming Task Force (2007)

Angela Flickinger

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Education

B.A. Environmental Studies, Communication Studies | Western Michigan University, 2009

Experience

Executive Director, Southeast Alaska Watershed Coalition | February 2012-present

Ensure that the Coalition has a long-term strategy which achieves its mission, and toward which it makes consistent and timely progress. Provide leadership in developing program, organizational, and financial plans with the Board of Directors and staff, and carry out plans and policies authorized by the Board. Manage Coalition staff and financial systems. Oversee Coalition program and grant management. Coordinate regional network of community, tribal, and agency partners working to advance informed watershed management in Southeast Alaska.

Crew Leader/Biological Technician, US Forest Service, Wrangell Ranger District | April 2012-October 2012

Supervised a crew of technicians at Anan Creek Wildlife Observatory on the Tongass National Forest. Trained technicians on bear ecology and behavior, data collection protocols, and area management regulations and procedures. Oversaw organization and management of collected observatory data.

Case Manager, AICS Alaska Crossings | October 2010-November 2011

Worked as a liaison between children participating in a 51-day wilderness therapy program and their parents at home. Composed, reviewed and edited clinical documentation to ensure quality standards were met for submission to medicaid. Participated in inter-agency meetings to provide information, updates and feedback on various issues, and assist in treatment planning.

Fisheries Technician, US Forest Service PIBO Effectiveness Monitoring Program | May 2009 – October 2009

Sampled streams throughout the Columbia River Basin following the PIBO-EMP stream monitoring protocol. Collected field data on various stream attributes pertaining to fish habitat including channel geometry, substrate, gradient, stream bank characteristics, water chemistry, macroinvertebrates, channel cross sections, and large woody debris. Assessed riparian habitat and stream bank conditions on the Routt National Forest in response to grazing management methods.

Michael Winfree

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EDUCATION

University of Alaska Fairbanks **September 2014 - Present**
M.S. - Interdisciplinary Studies in Hydrology

My graduate research is titled: Linking landscape characteristics and stream temperature in the coastal temperate rainforest of southeast Alaska. I am the principal investigator of a regional scale study seeking to quantify the relationship between landcover and geomorphic characteristics of watersheds and stream temperature.

Colorado State University **2003**
B.S. - Wildlife Biology

Washington State University **1997- 1999**

WORK HISTORY

Wildlife Biologist **September 2003 – January 2015**
Togiak National Wildlife Refuge
U.S. Fish and Wildlife Service

Projects as lead investigator:

- Surface water discharge monitoring on Refuge rivers. I also collaborated with the USFWS Water Resources Branch to operate and conduct discharge measurements at the Egegik River stream gaging site on the Alaska Peninsula – Becharof National Wildlife Refuge in Southwest Alaska.
- Water quality monitoring of the Salmon River. Designed a water quality monitoring program on the Salmon River and installed and maintained a continuous water quality gage.
- Marine mammal monitoring in Bristol Bay. Monitored endangered candidate species Pacific walrus, endangered Steller’s sea lions, and seal use of terrestrial haulouts in Togiak Refuge.
- Seabird productivity and population monitoring.
- Initiated and developed eelgrass monitoring program on Togiak Refuge coastlines. I inventoried eelgrass bed distribution and size to provide baseline information for the development of a long term eelgrass monitoring program.
- Furbearer abundance surveys: Conducted annual beaver food cache abundance surveys to estimate trends in beaver populations on Refuge rivers.

Wildlife Biological Technician

May– August 2003

Wildlife Disease Program

National Wildlife Research Center

- Assessed efficiency of guard dogs as deterrents for white-tailed deer in livestock pastures in Michigan endemic to bovine tuberculosis and trapped skunks for lab study assessing delivery methods of rabies vaccine.

Biological Technician

October – December 2002

Yukon Flats National Wildlife Refuge

U.S. Fish and Wildlife Service

- Mapped historical waterfowl survey sites using GIS and developed a Refuge digital library.

Biological Technician

August – September 2002

Izembek National Wildlife Refuge

U.S. Fish and Wildlife Service

- Banded and collected blood samples of Steller's eiders for testing of adenovirus prevalence; conducted radio telemetry and age ratio surveys for emperor geese and Pacific black brant.

Biological Technician

May – July 2002

University of Minnesota

- Trapped and radio collared Canada goose hens to monitor brood movement and survival of Canada geese on Cape Churchill, Manitoba.

Biological Technician

May – August 2001

Yukon Flats National Wildlife Refuge

U.S. Fish and Wildlife Service

- Captured, anesthetized, and surgically implanted radio telemetry transmitters in lesser scaup hens to monitor nesting success and brood survival.

Biological Technician

May 2000 –April 2001

Product Development Program

National Wildlife Research Center

- Determined effects of trapping and holding time on corticosterone and reproductive hormone levels in brown tree snakes and tested fertility control methods in the African house snake.



Proposal Addendum

20 June 2016

Project Title

Developing a Southeast Alaska community-based stream temperature monitoring network

Existing SAWC Stream Temperature sites

SAWC maintains a small network of 10 stream temperature monitoring sites on Baranof and Chichagof Islands in southeast Alaska. These sites were established under and data collection and management procedures follow the standards established by Sue Mauger with Cook Inletkeeper. These standards have subsequently been published as Mauger et al. (2015). Sites were installed and have been maintained by Scott Harris. Data collected are hourly, year-round stream temperatures. SAWC will continue to maintain these sites after Scott departs SAWC.

Partial data sets are currently publicly-available at:

<http://www.seakecology.org/freshwater/stream-temperatures/>. Five of the sites are within federally designated Wilderness and are maintained under a research permit with the USFS Tongass National Forest. The sites and dates of establishment are:

- Nakwasina River (July 2011)
- Black River (July 2013)
- No Name Creek (May 2014)
- Salmon Lake Creek (June 2014)
- Starrigavan Creek (July 2014)
- Goulding River (August 2014)
- Waterfall Cove Creek (August 2014)
- Leos Creek (August 2014)
- Ford Arm SE Creek (August 2014)
- Benzeman Lake outlet creek - Necker Bay (January 2015)

Scott Harris transition role

Scott Harris received a NSF fellowship and will be departing SAWC to pursue a graduate degree, starting in September 2016. SAWC has hired a replacement Science Director, Rebecca Bellemore (CV attached). Rebecca will be assuming the role of Technical Coordinator as described in the original proposal during a transition period of August to September 2016. Scott will work with Rebecca during this time, and convene the first working group and steering committee meetings. After September 2016, Scott will serve as a technical advisor to the working group through December 2016.



Project communication

The Southeast Alaska Watershed Coalition plans to communicate project progress, results, and products to our target audience and beyond via several channels of communication and through our network of natural resource management partners and collaborative efforts.

SAWC maintains a project blog on our website that is shared through our Facebook page and feeds into our quarterly newsletter. We will communicate project updates, results and products through these established channels, as well as targeted press releases to regional news outlets. We will also share project results and products through our various collaborative partnerships and networks that extend across the region and the state. SAWC sits on the Steering Committee as well as the Science and Data Committee for the Southeast Alaska Fish Habitat Partnership, and will provide that group of resource management practitioners with regular updates on the project. We will also share the project with the Tongass Collaborative Stewardship Group and the Juneau Economic Development Council's Research Cluster Group, both of which SAWC participates in. In addition, as SAWC frequently attends regional and statewide fisheries and resource management conferences, we intend to capitalize on these opportunities to share the project results and products with larger audiences.