



Aquatic and Riparian Effectiveness Monitoring Program



Interagency Monitoring Program – Northwest Forest Plan Area



2015 Annual Report

**Stephanie Miller, Heidi Andersen, Peter Eldred, Ron Beloin,
Mark Raggon, Sean Gordon, Steve Wilcox**

February 2016

Introduction



Tony Lowndes

The Aquatic and Riparian Effectiveness Monitoring Program (AREMP) is a "Service First" program consisting of USDA Forest Service (FS) and USDI Bureau of Land Management (BLM) employees working together to evaluate if the Northwest Forest Plan's (NWFP) Aquatic Conservation Strategy is maintaining and restoring watershed condition within the NWFP area. The NWFP provides management direction for 24 million acres of federal lands in western Washington and Oregon, and northern California (fig. 1). The purpose of this report is to highlight AREMP's monitoring efforts and support to local units in fiscal year 2015.

During 2015, AREMP staff worked towards and accomplished several key objectives. A complete discussion of each of these accomplishments is provided in subsequent sections. The overall objectives of AREMP include:

- Collect data for assessing the condition of aquatic, riparian, and upslope ecosystems;
- Developing multi-criteria models to refine indicator interpretation;
- Providing information for adaptive management by analyzing trends in watershed condition and identifying elements that result in poor watershed condition; and
- Providing a framework for adaptive monitoring at the regional scale (Reeves et al. 2004).

Monitoring is conducted at the subwatershed scale (US Geologic Survey 6th-field hydrologic unit code [HUC]). These subwatersheds (hereafter referred to as "watersheds") are approximately 10,000 to 40,000 acres in size.

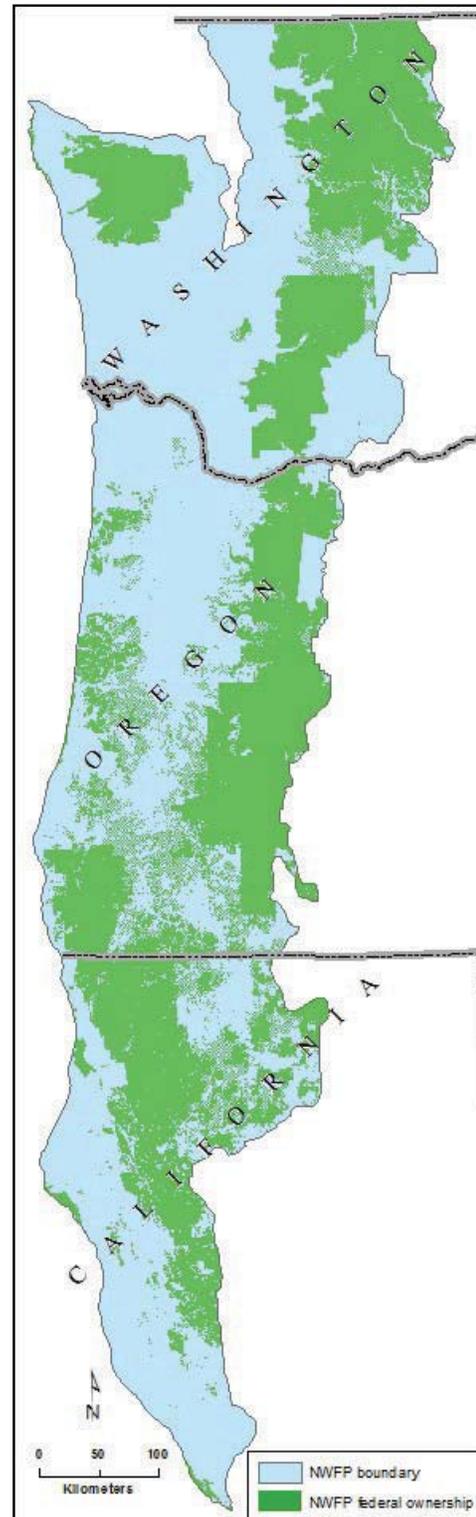


Figure 1. Northwest Forest Plan (NWFP) area and federal lands being evaluated for watershed condition.

Accomplishments

Johanna Ruff



20-Year Evaluation of Watershed Condition

AREMP staff completed a 20-year assessment of watershed condition status and trend to evaluate whether the Aquatic Conservation Strategy (ACS) of the NWFP is achieving the goal of maintaining and restoring the condition of watersheds.

AREMP determines the status and trend of stream, and upslope/riparian watershed condition for sixth-field watersheds within the NWFP area. Upslope and riparian condition was based on mapped data (e.g. road density, vegetation) representing the years 1993 and 2012 for all watersheds with $\geq 5\%$ federal ownership. Stream condition uses yearly physical stream data (e.g. substrate, wood, pools, temperature, and macroinvertebrates) collected under a sampling program that visits watersheds with 25% or more federal ownership in repeating eight year rotations. The first rotation (2002-2009) is complete and we are currently more than halfway through the second rotation (2010-2017). Watersheds were scored from 0 to 100 for stream condition and upslope/riparian condition, separately. Scores closer to zero signify a watershed has adversely deviated from expectation; 100 denotes above expectation. Models for upslope/riparian and stream condition, were standardized across aquatic provinces for more consistent and comparable assessment.

A more empirical approach was used for evaluation based on the distribution of values found in minimally disturbed sites for each vegetation zone and physical stream habitat metrics. Environmental variability was directly incorporated into the models by including information such as geology, landforms, and precipitation.

Upslope and riparian scores reflect negative impacts of roads to sediment delivery into streams and fish passage. As such, decommissioning roads improved model scores but other fish passage improvement work is not tracked well by agencies at the regional level. Forest growth led to broad-scale moderate increases in scores, particularly on matrix land. These are realized through cumulative small increases in vegetation growth across the landscape. Vegetation scores in reserves declined slightly owing to wildfires. Effects of wildfire on aquatic systems can be positive and negative. Improvements in macroinvertebrates and water temperature stream condition may suggest increased growth of riparian vegetation has positively affected streams. Declining pool tail fine scores may indicate a negative effect of roads, fire, or even climate change. However, increasing overall substrate scores offset this decline. We will continue to work towards understanding the causal relationships between upslope management actions and stream response at varying spatial scales. We are also further working toward better understanding and evaluation of the multiple effects of wildfires.

The report will be published as a Forest Service general technical report and available here:

<http://www.reo.gov/monitoring/reports/watershed-reports-publications.shtml>.

Status and Trend Sampling

One hundred fifty one stream sites within 24 watersheds spread throughout the NWFP area were sampled during 2015 (fig. 2). These watersheds were sequentially sampled from the subset of the 250 watersheds originally selected for monitoring the NWFP. The 250 watersheds were selected at random using a generalized random tessellation sampling design, which guarantees a spatially balanced sample (Reeves et. al. 2004, Stevens and Olsen 2003, 2004).



Figure 2. Map of the watersheds surveyed during the 2015 field season

Seventeen sites were resurveyed as part of our quality control program. To keep our sampling protocols consistent with the BLM Western Rivers and Stream Assessment (WRSA) and PACFISH/INFISH Biological Opinion (PIBO) monitoring programs, we made several changes to our protocols:

- Collecting water chemistry parameters including pH, specific conductance, temperature, total nitrogen and phosphorus.
- Recording whether wood is found in a pool, riffle, or outside of the active channel.

Data Management

Our database manager created new quality assurance tools to analyze data immediately upon the crews' return and facilitate timely corrections. By creating re-usable code modules, this effort is contributing to the final quality assurance/quality control and summarization of field data. A better understanding of the sources and magnitudes of measurement errors was achieved through data analysis, especially comparative analysis of site quality control return visits, which will help us to streamline and improve training, survey protocols, and results.

Invasive Surveys

Aquatic and riparian invasive species continue to be a threat to our Pacific Northwest Ecosystems. In 2015, the Pacific Northwest Research Station analyzed AREMP data and ascertained that given our sampling design we can comprehensively provide a statistically valid invasive detections across the NWFP area at minimal cost to the region. With support from the Forest Service Region 6 Natural Resources, AREMP continues to perform invasive searches, reports detections, and can also provide probabilistic estimates of invasive trends. In 2015 AREMP surveyed 177 sites in 34 watersheds throughout the 2015 field season (including status/trend and overlap study sites). Crews detected Himalayan[Armenian] blackberry (*Rubus armeniacus*) in 17 sites and Parrot feather watermilfoil (*Myriophyllum aquaticum*) in one site.

Pacific Northwest (Wade-able) Stream Reference Network

We coordinated a multi-agency project to create a consistently defined reference network across the NWFP area. Participating agencies can use data collected within this network to inform stream condition benchmarks. Evaluation tools developed by AREMP, and other participating agencies that use similarly defined collection protocols, can be used to assess condition across the NWFP area. AREMP, in partnership with the BLM National Aquatic Monitoring Center, developed both an observed to expected and a multi-metric index to assess macroin-

vertebrate condition using this reference network as a framework. Given that each agency collected macroinvertebrate data using the same protocol, we now have the ability to use the same model for assessment. This is one product from the reference network and several other products are currently in development.

Multi-Agency Field Protocol Overlap Study

A consistently defined reference network is now a common thread among several programs that monitor aquatic systems within the Northwest Forest Plan Area. This network is used to define our expectations for stream attributes and to assess condition. All programs involved in this study “overlap” in the areas that we sample. If our protocols for measurements are comparable, or if the higher level assessment of condition provide similar assessments, we could combine and share data for a more comprehensive assessment. Further, we may ascertain condition across broader geographic areas. The overlap study had several objectives:

- Given a common reference network, do the evaluation tools developed by each agency provide comparable results?
- Are the results more variable in degraded systems than semi-degraded or reference areas?
- Are certain protocols “closer” in how individual attributes are measured where they can be assimilated immediately or with slight adjustment?

AREMP coordinated logistics and data collection. Each agency used their own protocols and added a few necessary attributes to their collections such that any integrated evaluations could be performed. Some additional attributes collected for this study included: number of boulders, pool tail fines, and stream shade. AREMP crews completed surveys in 19 streams with additional surveyors from the BLM Western Rivers and Streams Assessment, Oregon Department of Fish and Wildlife, and the Oregon Department of Environmental Quality. Each organization is currently quality checking and summarizing their data and will provide a copy of these results in early 2016.

WRSA and AREMP are partnering to analyze the data, and depending on results, plan to publish the results of

the study in a peer-reviewed journal. These data will be used to compare stream survey protocols and better understand our ability to share data across agencies. Data will be shared and analyzed over the winter.

Assisting Local Units



Alanna Wong

AREMP has made several program adjustments in response to needs presented by the region and the local units. We continue to explore ways to better integrate regional scale monitoring with management unit planning and national landscape level initiatives. AREMP has substantial baseline data, and the tools necessary to assess change for evolving management across the landscape.

Multiple Scale and Customized Local-Unit Assessment

The current empirical approach used by AREMP is more consistent with regional and national programs in both the Forest Service and BLM allowing us to add data to larger scale assessments. Assessments of watershed condition at the scale of the NWFP are required to assess whether we are maintaining and improving aquatic processes through time. This regional assessment gives a broad-scale assessment of condition based on cumulative management effects throughout the NWFP area. These data provide a context for understanding condition

across geopolitical boundaries and provides a baseline from which we can determine changes over time. While useful in the broader context, smaller scale assessments can be more useful for local units use, particularly when compared to a broader assessment. To assist BLM Districts and FS Forests we are able to provide scaled down customized watershed condition reports. Reports have been customized for use as baseline in Biological Assessments and Opinions, Environmental Impact Statements, and can be used in NEPA. AREMP data are also approved by the Forest Service for inclusion in Watershed Condition Framework assessment updates. AREMP is currently preparing the reporting templates and would encourage field staff to inquire about how reports could be customized for individual needs. We continue to work with the regional office to inform and provide direction to the region how AREMP can be integrated into the new planning rules for broad-scale monitoring.

Watershed Scale Restoration Monitoring

We assisted the Roseburg BLM District Fisheries and Hydrology staff with effectiveness monitoring following a 2009 aquatic enhancement project:

- Mapped in-stream channel configuration in four sites on the Wolf Creek watershed (tributary to the Umpqua River) so that geomorphic change could be assessed through time in four sites previously sampled in 2009 and 2012 (fig. 3).
- Mapped habitat features included different types of substrate bar classifications (distinguished from unsorted bedload material), wood (both natural and placed), boulder weir structures, exposed bedrock sheets, and information about the existing pools.
- We used our existing field protocols to resurvey 20 sites in the Wolf Creek watershed that were previously surveyed in 2007 and 2011.

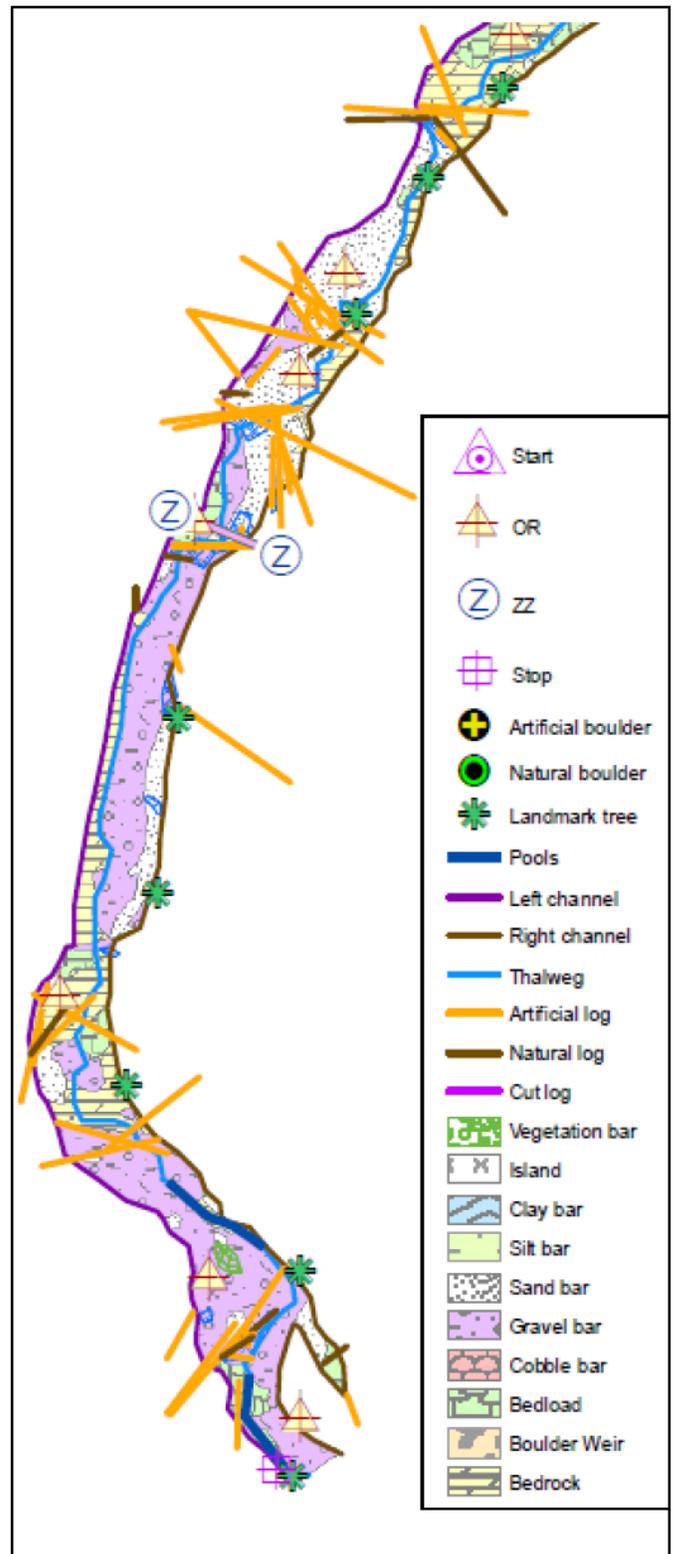


Figure 3. Example of a stream map depicting substrate types created from data collected by AREMP field crews in Wolf Creek, OR on Roseburg District BLM lands. This map was made by AREMP Cartographer Steve Wilcox.

Climate Change Vulnerability Monitoring

AREMP continued our partnership with USFS Pacific Northwest Regional Office, BLM Oregon State Office, and US Geologic Survey (USGS) Forest Rangeland and Ecosystem Science Center to monitor year-round in-stream and air temperatures in watersheds throughout the Northwest Forest Plan Area in Oregon and Washington (fig. 3). The purpose of this ongoing partnership is to provide baseline year round air and stream temperature data to climate scientists, aquatic ecologists, fish biologists and hydrologists to help determine the sensitivity of stream temperature to climate change. Temperature data is shared with the USFS Rocky Mountain Research Station as part of the NorWeST regional stream temperature project which develops spatially explicit stream network models for climate change scenarios. Outputs from these models are available on the NorWeST website for use by biologists, hydrologists, and researchers to better understand thermal impacts on aquatic species and to help prioritize conservation efforts. Many watersheds were visited and several improvements were made for this effort:

- Modified our procedures to use a resource grade GPS unit for better location accuracy.
- Created a Forest Service SharePoint database for deployment activities, providing a stable, secure, cloud-based multi-user solution that also synchronizes with MS Access for reporting and analysis.
- Continued to work with local Forest Service and BLM personnel for assistance with downloading thermographs.
- Monitored stream temperature in 92 watersheds throughout the Northwest Forest Plan Area in northern California, Oregon and Washington.
- Monitored stream side air temperature thermographs in 68 watersheds and upslope air temperature thermographs in 42 watersheds in Oregon and Washington. Upslope thermographs are located 300 to 700 ft. (91 to 214 m) in elevation above the stream side thermograph.

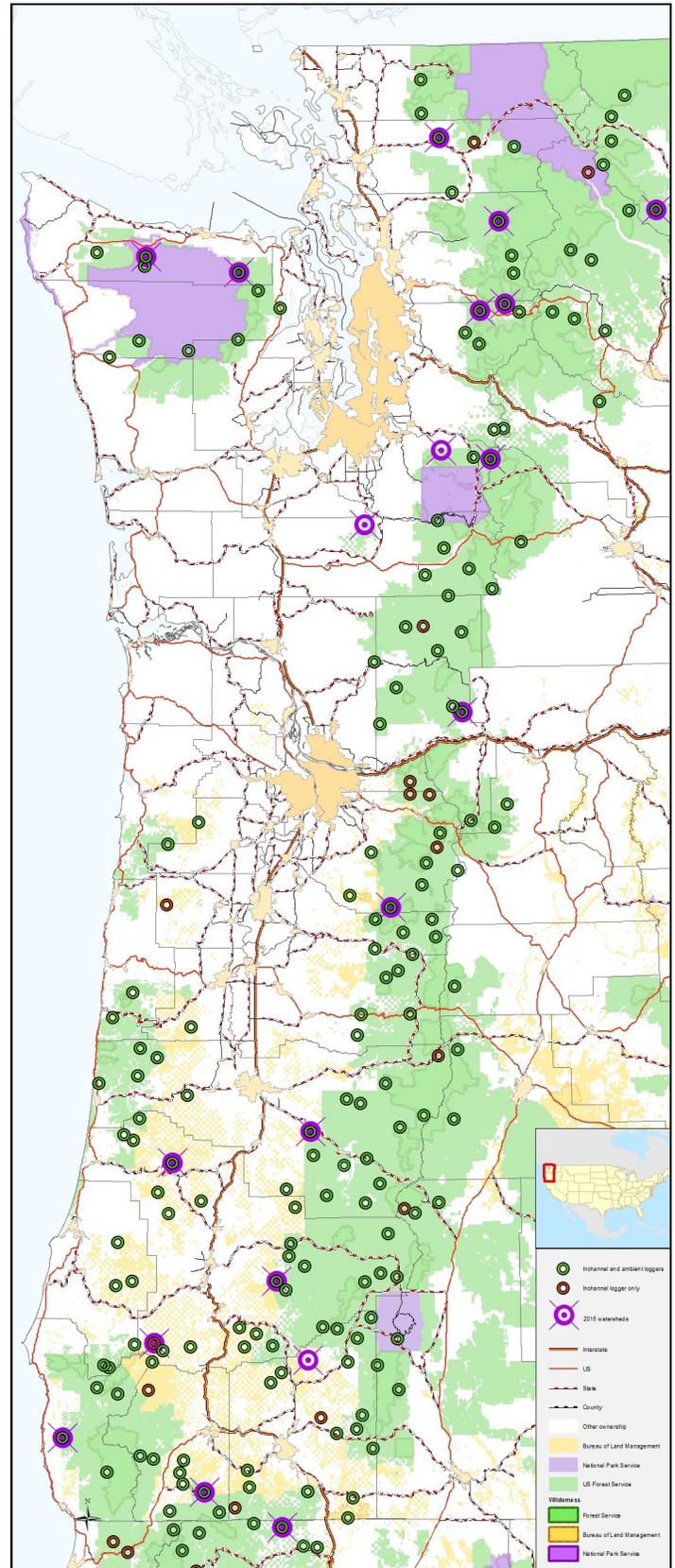


Figure 4. Location of instream and air temperature sensors placed by AREMP in the Northwest Forest Plan area of Oregon and Washington. The purple bull's eye represents watersheds surveyed for stream condition by AREMP in 2015. The green circle designates AREMP watersheds with a stream-side and upslope air sensor. The red circle depicts AREMP watersheds with an instream sensor.

Surface Water Diversion

Surveys

Over 65000 surface water diversions are thought to be on Forest Service lands; however the spatial data regarding withdrawal locations and status are often inaccurate or missing. Given the danger of these structures to entraining fish and blocking migration, the USFS Pacific Northwest Regional Office (RO) and AREMP began a partnership in 2014 to collaborate with National Forests in Region 6 to inventory and collect data on stream diversion structures. The RO and AREMP provided a protocol for Forest Interdisciplinary teams to identify and prioritize diversions to be surveyed as well as a protocol to inventory diversions in the field. In 2015 AREMP:

- Improved the instructions and forms based on user feedback;
- Continued to accept survey data and organize photographs, forms and other notes; and
- AREMP field crews surveyed 20 diversions to assist the Olympic National Forest.

Program updates



OR/WA State Director, Jerome Perez and Associate State Director Theresa Hanley present the BLM OR/WA State Director's Unit Safety and Health Award to the AREMP team (Ronald Beloin, Jason Brown, Mark Raggon, Stephanie Miller, Peter Eldred, Steve Wilcox and Tracy Pennell; not pictured Heidi Andersen).

Employment

We employed seven year-round employees who were a combination of permanent and year-round "term" employees. Twenty one crew members were employed between May - October; they were a combination of seasonal employees and American Conservation Experience interns (ACE). AREMP Summer employment information is posted at:

<http://www.reo.gov/monitoring/watershed-overview.shtml>

Youth Hires

In 2015 AREMP hired 21 youth employees (under age 35) to assist with field sampling. Youth hires included nine seasonal BLM employees and 11 interns. Interns were hired in cooperation with the American Conservation Experience (ACE) program. Those interns age 25 or younger at the time of hiring were eligible to receive a direct hiring authority via the Public Land Corps Act (PLCA) after successfully completing at least 640 hours of service. This hiring authority conveys the ability to apply to government only ("merit") position vacancies with all federal government agencies for 120 days after internship completion. Interns are also eligible for AmeriCorps Education awards up to \$1500 which can be used to pay education costs at qualified institutions of higher education, for educational training, or to repay qualified student loans.

Safety Award

AREMP employees were honored to receive the 2014 BLM Oregon and Washington State Office State Director's Unit Safety and Health Award. The award was given for consistent dedication to the safety program through a commitment to extensive safety training, risk assessments, and safe project planning. Safety is a top priority for AREMP. During the 2015 field season we added DeLorme InReach two-way satellite transponders so that field crews and supervisors can communicate in locations without cell phone or USFS radio coverage. Additionally crews can call for emergency response at the touch of a button and in most cases have two-way communications via text message with first responders.

AREMP Projects Coming in 2016



GRAIPE-lite

Partnering with Charlie Luce from the Rocky Mountain Research Station to use GRAIPE-lite, a GIS based tool used to predict the relative intensity of road sediment impacts on streams across USFS Region 6 lands and BLM Western Oregon Resource Management Plan area.

Landslide risk assessment

Creating an assessment tool with Karen Bennett (USFS Regional Soil Scientist) and Carrie Gordon (Forest Geologist—Ochoco National Forest) using terrain, geology and weather to model landslide risk across USFS Region 6 lands.

NWFP science synthesis database

Compiling a literature summary to add to the USFS Science Synthesis website to inform plan revisions within the NWFP Area.

Metadata and documentation

Updating metadata/documentation for the Watershed Condition Framework Components.

Published reference network paper

Journal article submitted for peer review describing the multi-agency project to create a consistently defined

reference network across the NWFP Area.

Pilot testing of integrated assessments of condition based on overlap study

Working with BLM Western Rivers and Streams Assessment, to analyze watershed condition based on data collected during the 2015 field season.

New application for data collection

Re-designing our field data collection workflow, from the hardware used in the field, to the quality control steps, and final compilation. The new system will use modern tablet computers, more accurate Geographic Positioning System technology, and a cloud-based collection database for data uploading. The new system provides for a much lighter load for the crews, better quality control of data entry, the flexibility to work with different protocols, and is significantly less expensive than the equipment it is replacing.

Individual reports on watershed condition

Providing individual watershed condition reports to local USFS and BLM units as requested.

Environmental (eDNA) Sampling

eDNA is a surveillance tool used to detect genetic material in aquatic ecosystems and determine species presence. We are working with Dr.(s) Brooke Penaluna and Richard Cronn from the USFS Pacific Northwest Research Station this winter on sample design and field collection protocols to collect samples during the 2016 field season across the NWFP area.



Acknowledgements



The Aquatic and Riparian Effectiveness Monitoring Program is an interagency effort funded by FS, BLM, National Oceanic and Atmospheric Administration National Marine Fisheries Service, and the US Environmental Protection Agency.

Teresa Kubo (EPA) and Kim Kratz (NOAA) for continued AREMP funding.

Brian Staab (FS R6) and Louisa Evers (BLM OSO) helped procure funding for deploying thermographs.

The BLM Oregon/Washington State Office Budget and Finance, Human Resources and Mobile GIS Specialists for support and guidance.

Oregon State University Oregon Sea Grant Extension and Portland State University provided training, support and guidance in the implementation of the invasive species monitoring protocol.

Summer field staff for assessing stream condition included: Wes A. Burton, Allison Del Gizzi, Michael Oldham, Seth Webster and Alanna Wong, Desiree Andersen, Katie Birch, Alyssa Bucci, Leah Diggins, Steven Hagerty, Patrick Haluska, Joseph Krenzelok, Olivia McGrath, Jesse R. Miller, Jon Ofiara, Morganne Price and Ben Schmidt.

We thank the following people for helping to retrieve thermographs in California: Jon Grunbaum– Klamath

National Forest; Eric Wiseman and Steve Bachman– Shasta Trinity National Forest; and Gary Diridoni and Corey Bower – Redding Bureau of Land Management.

Hydrologists and Fish Biologist from local FS, BLM and NPS units assisted with downloading thermographs throughout the NWFP area.

Several organizations and people were a part of the protocol overlap study, without which the study would not have been possible.

Scott Miller, Jennifer Courtwright, Nicole Cappucio, and Robin Jones from the National Aquatic Monitoring Center; Shannon Hubler and Lesley Merrick (ODEQ); and Kara Anlauf-Dunn (ODFW).

Grant Brink, Erik Johnson, Noah Schottenstein completed surveys under the Western River and Stream Assessment program using the BLM Assessment Inventory and Monitoring Lotic protocol for the overlap study.

Contact Information

Stephanie Miller—Program Lead

(541) 750-7017 stephaniemiller@fs.fed.us

Sean Gordon—Research Associate

(503) 808-2698 seangordon@fs.fed.us

Peter Eldred—GIS Analyst

(541) 750-7078 peldred@fs.fed.us

Ronald Beloin—Data Manager

(541) 750-7270 ronaldmbeloin@fs.fed.us

Heidi Andersen—Field Coordinator

(541) 750-7067 heidivandersen@fs.fed.us

Mark Raggon—Field Coordinator

(541) 750-7021 mraggon@fs.fed.us

Please visit our website for more information:

<http://www.reo.gov/monitoring/watershed-overview.shtml>

Appendix A—Watersheds Surveyed in 2014 and 2015

Watersheds surveyed in 2014 and 2015 with the number of sites surveyed in each watershed. Sites where quality assessment/quality control (QA/QC) were also conducted are denoted by (# sites). QA/QC sites are where a second independent crew returned to sample the same reach to determine variability in our measurements.

Watersheds surveyed in 2014

State	Province	Local Unit	6th Field HUC	6th Field HUC Name	Creek Code	County	Number of Sites
CA	KLAMATH/SISKIYOU	KLAMATH NF	180102080101	UPPER EAST FORK SCOTT RIVER	CAEFS	SISKIYOU	9 (2)
CA	KLAMATH/SISKIYOU	KLAMATH NF	180102090302	UPPER ELK CREEK	CAELK	SISKIYOU	8 (2)
CA	KLAMATH/SISKIYOU	KLAMATH NF	180102090501	OAK FLAT CREEK	CAOAK	SISKIYOU	7 (2)
OR	HIGH CASCADES	MT. HOOD NF	170703060901	UPPER BADGER CREEK	ORBAD	HOOD RIVER/WASCO	5
OR	HIGH CASCADES	ROGUE RIVER-SISKIYOU NF	171003070203	UPPER MIDDLE FORK ROGUE RIVER	ORBES	KLAMATH/JACKSON	6
OR	WESTERN CASCADES	WILLAMETTE NF	170900050107	BOULDER CREEK/MARYS CREEK	ORBLD	LINN/MARION	6
OR	WESTERN CASCADES	UMPQUA NF	171003020403	DREW CREEK	ORDRE	DOUGLAS	7
OR	WESTERN CASCADES	WILLAMETTE NF	170900060604	TROUT CREEK	ORFLS	LINN/MARION	8 (2)
OR	WESTERN CASCADES	MT. HOOD NF	170900110304	HIGH ROCK CREEK	ORHRK	CLACKAMAS/MARION	7
OR	WESTERN CASCADES	WILLAMETTE NF	170900050203	HUMBUG CREEK	ORHUM	MARION	4
OR	KLAMATH/SISKIYOU	MEDFORD BLM	171003100405	KELSEY CREEK	ORKSY	JOSEPHINE/DOUGLAS	6
OR	WA/OR COAST RANGE	SIUSLAW NF	171002060602	LOWER INDIAN CREEK	ORLIN	LAND	8 (2)
OR	KLAMATH/SISKIYOU	MEDFORD BLM	171003070802	LOWER NORTH FORK LITTLE BUTTE CREEK	ORNBT	JACKSON	4
OR	WESTERN CASCADES	WILLAMETTE NF	170900050202	NORTH FORK BREITENBUSH RIVER	ORNFB	MARION/CLACKAMAS	7
OR	WESTERN CASCADES	UMPQUA NF	171003020203	SQUAW CREEK	ORSQW	DOUGLAS	6
OR	KLAMATH/SISKIYOU	MEDFORD BLM	171003110304	LOWER SUCKER CREEK	ORSUC	JOSEPHINE	6
OR	WA/OR COAST RANGE	SIUSLAW NF	171002060501	UPPER DEADWOOD CREEK	ORUDC	LANE	8 (2)
OR	WESTERN CASCADES	EUGENE BLM	170900020304	COTTAGE GROVE RESERVOIR	ORUMC	LANE	6
OR	WESTERN CASCADES	WILLAMETTE NF	170900040107	WHITE BRANCH	ORUWB	LANE/LINN	5
OR	HIGH CASCADES	ROGUE RIVER-SISKIYOU NF	171003070403	WILLOW CREEK	ORWLW	JACKSON	6
WA	WESTERN CASCADES	GIFFORD PINCHOT NF	170800020503	COPPER CREEK	WACOP	SKAMANIA	6
WA	WESTERN CASCADES	MT. BAKER SNOQUALMIE NF	171100130101	GREEN RIVER HEADWATERS	WAGRN	KING/SNOHOMISH	6
WA	WESTERN CASCADES	GIFFORD PINCHOT NF	170800040205	JOHNSON CREEK	WAJHN	LEWIS	6
WA	NORTH CASCADES	MT. BAKER SNOQUALMIE NF	171100040301	UPPER SOUTH FORK NOOKSACK RIVER	WANOO	WHATCOM/SKAGIT	7
WA	WESTERN CASCADES	MT. RANIER NP	171100150101	NISQUALLY HEADWATERS	WANSQ	PIERCE/LEWIS	4
WA	NORTH CASCADES	MT. BAKER SNOQUALMIE NF	171100060101	SLOAN CREEK	WASLN	SNOHOMISH	5
WA	WESTERN CASCADES	GIFFORD PINCHOT NF	170800020401	UPPER SIOUXON CREEK	WASXO	SKAMANIA	6

Watersheds surveyed in 2015

State	Province	Local Unit	6th Field HUC	6th Field HUC Name	Creek Code	County	Number of Sites
CA	KLAMATH/SISKIYOU	SHASTA-TRINITY NF	180102120406	GRASSY FLAT CREEK	CAGRS	TRINITY	8 (2)
CA	KLAMATH/SISKIYOU	REDDING BLM	180102110603	GRASS VALLEY CREEK	CAGRV	TRINITY	6
CA	KLAMATH/SISKIYOU	KLAMATH NF	180102090303	LOWER ELK CREEK	CALEK	SISKIYOU	8 (2)
CA	KLAMATH/SISKIYOU	SHASTA-TRINITY NF	180102120402	PHILPOT CREEK	CAPHL	TRINITY	5
CA	HIGH CASCADES	SHASTA-TRINITY NF	180200040303	PANTHER CREEK	CAPTH	SISKIYOU	6
CA,OR	KLAMATH/SISKIYOU	KLAMATH NF	180102060903	BEAR CREEK	CABER	SISKIYOU	7 (1)
OR	WA/OR COAST RANGE	COOS BAY BLM	171003030503	UPPER CAMP CREEK	ORCMP	DOUGLAS	2
OR	WESTERN CASCADES	UMPQUA NF	171003011106	UPPER CAVITT CREEK	ORCVT	DOUGLAS	7
OR	WA/OR COAST RANGE	MEDFORD BLM	171003020803	WEST FORK COW CREEK/ELK VALLEY CREEK	OREKV	DOUGLAS	5
OR	KLAMATH/SISKIYOU	ROGUE RIVER-SISKIYOU NF	171003110801	FLORENCE CREEK	ORFLO	JOSEPHINE	2
OR	KLAMATH/SISKIYOU	ROGUE RIVER-SISKIYOU NF	171003110303	GRAYBACK CREEK	ORGRY	JOSEPHINE	7
OR	WESTERN CASCADES	MT. HOOD NF	170900110101	UPPER HOT SPRINGS FORK COLLAWASH	ORHOT	CLACKAMAS/MARION	6
OR	FRANCISCAN	ROGUE RIVER-SISKIYOU NF	171003120501	UPPER HUNTER CREEK	ORHRH	CURRY	9 (2)
OR	WESTERN CASCADES	MEDFORD BLM	171003070504	ELK CREEK/FLAT CREEK	ORHWK	JACKSON	4
OR	WESTERN CASCADES	WILLAMETTE NF	170900010702	LOOKOUT POINT RESERVOIR	ORLOK	LANE	8
OR	WA/OR COAST RANGE	SIUSLAW NF	171002050704	MERCER LAKE	ORMER	LANE	4
OR	WA/OR COAST RANGE	COOS BAY BLM	171003030401	PARADISE CREEK	ORPDS	DOUGLAS	8 (2)
OR	WA/OR COAST RANGE	SALEM BLM	171002050101	UPPER SOUTH FORK OF ALSEA RIVER	ORSFA	BENTON	2
OR	WA/OR COAST RANGE	EUGENE BLM	171002060301	UPPER WILDCAT CREEK	ORWLD	LANE	2
WA	NORTH CASCADES	MT. BAKER SNOQUALMIE NF	171100090107	LOWER BECKLER RIVER	WABEC	KING/SNOHOMISH	5
WA	OLYMPIC PENNINSULA	OLYMPIC NF	171100200304	LOWER GRAY WOLF RIVER	WAGWR	CLALLUM	6
WA	NORTH CASCADES	MT. BAKER SNOQUALMIE NF	171100050806	LOWER BAKER RIVER/LAKE SHANNON	WALBK	SKAGIT/WHATCOM	9 (2)
WA	NORTH CASCADES	MT. BAKER SNOQUALMIE NF	171100090206	LOWER SOUTH FORK SKYKOMISH RIVER	WALSS	SNOHOMISH/KING	6 (1)
WA	NORTH CASCADES	MT. BAKER SNOQUALMIE NF	171100060106	LOWER WHITE CHUCK RIVER	WALWC	SNOHOMISH	6
WA	HIGH CASCADES	GIFFORD PINCHOT NF	170701051004	MIDDLE LITTLE WHITE SALMON RIVER	WALWS	SKAMANIA	10 (3)
WA	OLYMPIC PENNINSULA	OLYMPIC NF	171100180701	SPENCER/MARPLE CREEK	WAMAR	JEFFERSON	6 (2)
WA	OLYMPIC PENNINSULA	OLYMPIC NF	171001010401	NORTH FORK SOL DUC RIVER	WASOL	CLALLUM	6
WA	HIGH CASCADES	MT. BAKER SNOQUALMIE NF	171100140105	UPPER GREENWATER RIVER	WAUGR	PIERCE	8