

Elwha Nearshore Update

A NEWSLETTER OF THE ELWHA NEARSHORE CONSORTIUM

October 2006

Welcome to the fall 2006 *Elwha Nearshore Update* newsletter which summarizes current activities focusing on the Elwha nearshore. It is sponsored by the Elwha nearshore workgroup, an informal consortium formed in spring 2004 and dedicated to understanding and promoting the nearshore restoration associated with the Elwha dam removals. The newsletter provides updates on various activities since the last edition (October 2005). Previous editions of the newsletter and proceedings from our spring 2004 nearshore workshop can be found on the Clallam Marine Resources Committee website, <http://www.clallammrc.org>.

The Washington Department of Fish and Wildlife provides workgroup and newsletter coordination, and partners with the Lower Elwha Klallam Tribe, Clallam Marine Resources Committee, Olympic National Park, Puget Sound Action Team, and others in promoting the work and communication of the Elwha nearshore workgroup. For information on the Clallam MRC contact Doug Morrill, committee chair, dmorril@elwha.nsn.us, and Cathy Lear, Clallam County, CLear@co.clallam.wa.us / 417. 2423. For information on the Elwha Tribe, contact Matt Beirne, 360.457.4012 x12; beirne@elwha.nsn.us. For information on Elwha nearshore workgroup, or questions or comments about the newsletter, contact Anne Shaffer, Washington Department of Fish and Wildlife at shaffjas@dfw.wa.gov / 360.457.2634. Information on the Elwha dam removals can be found at the Elwha webpage <http://www.nps.gov/olym/elwha/home.html>.

Table of Contents

Workgroup announcements	2
Additional coordination	2
Ongoing management issues.....	2
New and ongoing restoration activities by subject category	3
Physical Processes.....	3
Habitat	5
Biological Communities.....	9
Fisheries	10
Workgroup Directory.....	11
Educational entities.....	11
Additional resources	12

Workgroup announcements

WE WILL BE HOLDING A WORKSESSION FOR ACTIVE MEMBERS OF THE ELWHA NEARSHORE CONSORTIUM TO UPDATE THE GROUP ON INDIVIDUAL WORK AND FINDINGS TO DATE, PROMOTE ADDITIONAL COLLABORATION AND EFFICIENCY, AND IDENTIFY PRIORITY GAPS. WE ARE AIMING FOR THE WEEK OF 22 JANUARY 2007, DATE AND LOCATION TO BE ANNOUNCED. RSVP TO ANNE IF YOU WANT TO PARTICIPATE AND HAVE A DATE PREFERENCE .

Additional coordination

The Elwha Research Consortium (ERC). Dwight Barry, Professor, Peninsula College, is coordinating the ERC, founded in 2005 when Western Washington University's Huxley College of the Environment and its partner institution Peninsula College were awarded \$500,000 by the National Science Foundation's Research Coordination Networks grant program. This initiative establishes the Elwha Research and Education Consortium to serve a vital function to encourage and facilitate the development of more research and educational opportunities associated with the Elwha River Restoration project. **Contact:** Dwight Barry 360.417.6586/
dwightb@pcadmin.ctc.edu.

Ongoing nearshore management/restoration issues

The key elements of the nearshore restoration strategy, including historic habitat, current sediment processes, and current habitat form and function, are coming together. Our next step is to combine these elements to predict future habitat conditions and, our ultimate goal, define additional 'value added' restoration priorities in the Elwha nearshore. This modeling effort has not yet been funded. Potential partners on this work, which is a top priority, include the Corps of Engineers, Battelle, and USGS. WDFW, Clallam County, UI, and the Elwha Tribe. Recent funding proposals for this time sensitive work have not been successful. This will be a work group discussion point at our January meeting. Contact Anne Shaffer (shaffjas@dfw.wa.gov) in the meantime if you are interested in a copy of the strategy and how you can help realize this very important component of our nearshore restoration work.

The Clallam County continues to promote dialog with citizens and Place Road landowners on the west levee. With dam removal and associated changes to the river and nearshore, the levee on the west side of the river will need to be altered to provide the current level of flood protection to landowners at the north end of Place Road. In the initial stages of discussion, neighbors, agencies, and the Lower Elwha Klallam Tribe are looking at the flood protection options and how they may coincide with habitat restoration. Current contact for this dialog is Cathy Lear, Clallam County, [360.417.2361](tel:360.417.2361)/CLear@co.clallam.wa.us

The coordination between Elwha nearshore habitat management and restoration continues to need leadership. Top priority items include coordination between the city of Port Angeles (installing a new revetment along the Elwha bluffs); Nippon paper (who has a five-year maintenance program for applying additional armoring to the existing armoring along 9000 feet of shoreline along the Elwha bluffs), and CoE (that has a half dozen or so authorities for ecosystem assistance for drift cell maintenance and restoration). Current Elwha nearshore workgroup contacts for this are Matt Beirne, Elwha Tribe (457.4012 x 12/ beirne@elwha.nsn.us); Jeffree Stewart, 360.407.6521/ jste461@ECY.WA.GOV; Arnold Shouten, Surfrider Foundation arndeb@olypen.com; and John Cambalik, PSAT, 360-582-9132/fax: 360-582-9132 jcambalik@psat.wa.gov.

New and ongoing restoration activities by subject category

within Elwha nearshore, as provided by project primary investigators. For ongoing projects with no update the project title and contact information are provided (see earlier newsletters for project details).

Physical Processes

Habitat modification due to marine sediment dispersal (focusing on hyperpycnal river plumes) – an opportunity to study transport and deposition in a controlled dam-removal experiment

Funding has recently been obtained from WA Sea Grant for baseline studies and from the National Science Foundation for dam-removal studies that will investigate the dispersal of sediment in the marine environment. The dam removal provides a special opportunity to address the formation and transport mechanisms and the resulting sedimentary signatures of high-density flows coming directly from rivers (hyperpycnal plumes) or reconstituted on continental shelves (fluid muds). These processes occur infrequently under natural conditions but likely control the cross-margin transport of particulates and associated geochemical components. Alternately, fine-grained sediment can be distributed by hypopycnal (surface) plumes and release nutrients and increase regional primary productivity. We will undertake a combination of high-resolution seabed characterization, water-column profiling, time-series instrument deployment, and seabed sampling as a baseline study (prior to dam removal) and throughout the dam removal period. Rapid-response cruises during river flood events will occur in the two winters of the dam-removal period. Understanding the pathways that sediment takes on its route to burial within the seabed is key to understanding the fate of particle-reactive chemical species and will help evaluate the impact of dam removal in the marine environment. We look forward to coordinating our efforts with other projects.

Timeline: The project will be initiated in Spring 2007, and in the following year the baseline (pre-dam removal) study of water-column and seabed conditions will commence.

Contact: Andrea Ogston and Chuck Nittrouer, School of Oceanography, University of Washington, Box 357940, Seattle, WA 98195. Ph. 260-543-0768. Email: ogston@ocean.washington.edu

Beach Profile Monitoring of the Elwha River Delta Coast

Contact: Matt Beirne and Larry Ward, Lower Elwha Klallam Tribe, 51 Hatchery Road, Port Angeles, Washington. 360.457.4012 ext 12 and 17 (beirne@elwha.nsn.us; lward@elwha.nsn.us) and Jim Johannessen, Coastal Geologic Services, Inc., Email: coastalgeo@comcast.net, Phone: 360-647-1845

Landslide Hazard Zonation (LHZ) of the Lower Elwha Watershed

Contact: Dave Parks, Washington Department of Natural Resources, 311 McCarver, Port Angeles, WA 98362.: 360-4457.2570 ext. 225/fax: 360-452-4922/ dave.parks@wadnr.gov

Effects of Elwha Dam Removal on Nearshore Habitats This is a U.S. Geological Survey (USGS) research project with four primary tasks: (1) document the effects of dam removal on the nearshore sediment budget, (2) characterize the changes experienced in offshore substrate and habitats due to increased sedimentation after dam removal, (3) understand the physical processes (waves, currents and sediment transport) of the river mouth region, and (4) Develop a process-based numerical model for nearshore sediment transport of Elwha River sediment.

During winter 2005 and summer 2006 a number of field and research activities were undertaken: 1) We continued the semi-annual nearshore and beach topographic and bathymetric surveys along approximately 100 cross-shore transects during May and September 2006. In addition, a rapid response topographic response was completed (with the help of Department of Ecology) in January 2006 after a storm with large waves during a high tide flooded coastal lands. Significant erosion of the shoreline (up to tens of meters) occurred locally, gravel washed over the berm, and some dunes were destroyed. 2) In May 2005 we collected several beach grain-size transects. We are using digital camera photographic techniques to evaluate the grain-size of sediment on the Elwha beach ("Cobble Cam"). Grain-size data collected before dam removal will be compared to data collected after dam removal to identify grain-size changes along the beaches. 3) We deployed two seabed stations offshore of the river mouth that measured waves and currents from January 26 – May 2, 2006 with Acoustic Doppler Current Profilers (ADCPs). Data from this winter deployment reveal that wave heights exceeded 1.2 m five times and exceeded 1.5 m twice. Large waves entering through the Straits have a large impact on sediment transport around the Elwha delta. 4) We also initiated development of a hydrodynamic and sediment transport model for the Straits around the Elwha delta. The model is driven by tides and waves, and we will be adding the Elwha River to the model soon. Data from the ADCP deployments will be used to calibrate and verify the numerical model.

Contact: Guy Gelfenbaum, USGS, 345 Middlefield Rd., MS999, Menlo Park, CA 94025, ggelfenbaum@usgs.gov; or Jon Warrick, USGS, 400 Natural Bridges Drive, Santa Cruz, CA 95060, jwarrick@usgs.gov.

Monitoring sediment and channel topography in the lower Elwha River: Field surveys and remote sensing are used to monitor sediment grain-size characteristics and channel geometry on the lower Elwha River, in order to establish baseline data for a representative period of time before dam removal begins. We plan to survey transects in selected areas of the river repeatedly at biannual intervals to establish the range of topographic and grain-size variability caused by the seasonal hydrograph fluctuations in the dammed system, so that these can eventually be compared with changes to be evaluated at the same locations after dam removal once the system begins to respond to reservoir-sediment influx.

Three study reaches in the lower river (below Elwha Dam) were chosen as focus areas during April 2006 reconnaissance field work. The first set of high-resolution topographic surveys were

conducted in these reaches by Amy Draut, Josh Logan, and Tom Reiss (USGS, Santa Cruz, CA) in September 2006. The three reaches represent a variety of geographic conditions and locations relative to local sediment supply. A fourth section of the river upstream of both reservoirs, within Olympic National Park, is monitored as a control reach. By monitoring this control reach we will establish the magnitude of geomorphic variability in the natural, undammed, Elwha River for eventual comparison with rates of change in the post-dam-removal lower river, recognizing that the steeper gradient of the control reach compared to the lower river implies a somewhat more dynamic system above the dam sites. Within each reach, transects are spaced 5–15 m apart and span as great a cross-sectional width as access allows. Survey location control is established using a static global positioning system (GPS) network that includes three remote stations and one base station. Sediment grain size is also monitored along the surveyed transects. Documenting grain-size changes in the lower river is key to evaluating the success of dam removal in terms of the habitat quality that results. We use a combination of digital grain-size analysis for coarse sediment (images collected using our “CobbleCam” system) and traditional sediment sieving for finer sediment.

In addition to the field surveys, Josh Logan has worked closely with Randall McCoy of the Lower Elwha Klallam Tribe to quantify rates and patterns of lateral channel migration in the dammed system using historical channel boundaries interpreted and digitized from nine sets of georeferenced aerial imagery dating between 1939 and 2003. Studying channel-migration rates on the floodplain while the dams have been in place will give scientists a baseline against which to compare channel adjustments after dam removal.

Contact Amy Draut Coastal and Marine Geology Program, USGS, Pacific Science Center, 400 Natural Bridges Drive, Santa Cruz, CA 95060 USA. 831-427-4733/ adraut@usgs.gov; webpage: http://walrus.wr.usgs.gov/infobank/programs/html/staff2html/staff/Amy_Draut.html

Elwha Sediment Management and Monitoring Plan

Contact: Tim Randle, Sedimentation and River Hydraulics Group (D-8540) U.S. Bureau of Reclamation Technical Service Center P.O. Box 25007 Denver, Colorado 80225-0007; 303-445-2557/TRANDLE@do.usbr.gov.

Habitat

An Integrated Approach to Restoration of Anadromous Salmonids and Their Habitat in the Elwha River Following Dam Removal. (The LEKT-UI-CSC Project)

Contact: Chris Peery, University of Idaho Cooperative Fisheries Research Unit, Moscow, ID. 208.885.7223. cpeery@uidaho.edu

Historical Changes to Estuaries, Spits, and Associated Tidal Wetland Habitats in the Hood Canal and Strait of Juan de Fuca Regions of Washington State

This study was funded through the Bureau of Indian Affairs (in the Strait portion) and the State Salmon Recovery Funding Board (in the Hood Canal portion). We used historical sources (mainly coast survey maps, General Land Office notes/maps, and early air photos) from the 1850-1900 period, and contemporary air photos (2000-2005), to delineate both historical and current day estuarine, spit, and tidal wetland features (e.g., salt marsh, channels, lagoons) in the Strait and Hood Canal regions. The historical and contemporary habitat datasets were analyzed to give us an understanding of changes in the extent and connectivity of tidal wetland habitats, as well as insights into the causes of alterations to habitat-forming physical processes (i.e., fluvial

hydrology, sediment deposition, littoral drift processes, and tidal erosion processes) that are responsible for the habitat changes we see over time. The report includes recommendations for conservation actions and future assessments. A draft was circulated for review in June 2006, and the Final Report will be made available in October 2006. This Final Report, and GIS datasets, will be available for download from the Point No Point Treaty Council website, pnptc.org.

Timeline: The Final Report of this study will be available in October 2006.

Contact: Steve Todd, Point No Point Treaty Council, 7999 NE Salish Lane, Kingston, WA 98346, 360-297-6526, stodd@pnptc.org

Use of Estuarine and Nearshore Habitats by Anadromous Salmonids. The 2006 field season represents year two of this project investigating the use of estuarine and nearshore habitats by juvenile salmonids and their subsequent dispersal into the greater marine ecosystem. Chuck Boggs (University of Idaho) and Raymond Moses (LEKT Fisheries) continued to develop and implement appropriate hydroacoustic telemetry methodologies to track the movement of salmonids in nearshore habitats following their departure of the Elwha River.

During April through June, 87 juvenile salmon (22 Chinook, 17 coho and 48 steelhead) were captured in a rotary screw trap located in the lower 0.25 mile of the Elwha River, surgically-implanted with acoustic transmitters and released back into the river. Movements of fish were tracked using a series of remote acoustic receivers located near the mouth of the river and with boats using mobile receiver units. Additionally, the acoustic transmitters used in this study were compatible with the POST (Pacific Ocean Shelf Tracking) Project, an international collaborative research project created to monitor the movements of marine species along the west coast of North America. By utilizing the POST Projects listening lines in the Strait of Juan de Fuca and the Strait of Georgia, we will be able to make inferences as to the marine migration of Elwha River salmon stocks.

Contact: Chris Peery, University of Idaho Cooperative Fisheries Research Unit, Moscow, ID. 208.885.7223. cpeery@uidaho.edu Raymond Moses, Lower Elwha Klallam Tribe. 51 Hatchery Road, Port Angeles, WA 98363. 360.457.4012 ext. 26. rmoses@elwha.nsn.us

Juvenile Salmonids in the Strait of Juan de Fuca Staff from the Lower Elwha Klallam Tribe, Northwest Fisheries Science Center (NOAA Fisheries) and the Jamestown S'Klallam Tribe has been collaborating in investigations into the distribution and abundance of juvenile salmonids in the nearshore environment (estuarine and marine) along the Strait of Juan de Fuca.

These studies have employed sampling protocols developed for the Puget Sound region: The paired samplings of beach seines and surface trawls (towing) between Discovery Bay to the east and Crescent Bay to the west – a coastline distance of approximately 80 km.

Beach seining: Beaches were sampled using a 37m seine deployed from a small skiff and a team of 6 samplers. Each survey site received 2 replicate seine hauls adjacent to one another. Each site was located and marked with a GPS receiver and classified geomorphically. Habitat types (substrate materials and vegetation assemblages) were noted and water quality parameters (salinity, temperature and dissolved oxygen) were measured.

Surface trawls: Tow netting studies were conducted in the nearshore environment adjacent to each beach seine survey site. The tow net was deployed using the NOAA r/v *Harold W. Streeter* and the *Rhinotto*, a 5.2m aluminum skiff. Location and habitat characteristics were noted and

water quality parameters (salinity, temperature and dissolved oxygen) were measured for each tow location.

For both methods, fish in each haul were enumerated and species assemblages analyzed. Some non-salmonid species encountered in high numbers (surf smelt, shiner perch, anchovies, ling cod, sole, flounder) had their abundances estimated to facilitate rapid processing and release.

Results: There have been a total of 33 beach survey sites identified and actively sampled this season. These sites have been paired with surface trawls and encompass a wide range of geomorphic nearshore habitat types including bluff sites (high and low), barrier beaches, spits, berms, and salt marshes. Sites were located directly along the Strait, within bays, estuaries, industrially active harbors and national wildlife refuges. Sample results are currently being tabulated for analysis.

Contact: Kurt Fresh, NOAA Fisheries. Northwest Fisheries Science Center, 2725 Montlake Blvd. East, Seattle, WA 98112-2097. 206.860.6793. kurt.fresh@noaa.gov and Larry Ward, Lower Elwha Klallam Tribe, 51 Hatchery Road, Port Angeles, WA 98363. 360.457.4012 ext 17. lward@elwha.nsn.us

Nearshore Central Strait of Juan de Fuca: an ecosystem assessment of salmonid use and priority restoration actions

In this project the WDFW, Lower Elwha Klallam Tribe, NOAA and Peninsula College will define fish use within the central Strait nearshore, including: a) Species, populations, timing, and life history strategies of juvenile salmonids (including Puget Sound Chinook, Hood Canal Summer Chum, searun cutthroat, steelhead, and bull trout); b) How fish use nearshore areas. Priority habitats include lower rivers and estuaries, eelgrass and kelp beds, and sandy shorelines. Once fish use is defined we will then; c) Prioritize additional nearshore restoration projects. The project is based on the nearshore strategy developed in 2004 and 2006 fish assessment work by the Elwha Tribe and NOAA. Funding decision is anticipated January 2007.

Contact: Anne Shaffer, WDFW, 332 E. 5th Street, Port Angeles, Wa. 98362 360.457.2634/417.3302fax shaffjas@dfw.wa.gov

Eelgrass Mapping Along the Elwha Nearshore The goal of this project, funded by the Clallam County Marine Resources Committee, is to map and gather baseline data on eelgrass (*Zostera marina*) along the Elwha nearshore. We used the same underwater videographic methods used by the Washington State Department of Natural Resources (DNR) Submerged Vegetation Monitoring Project (SVMP). SVMP methods divide the shoreline into 1000 m sections (called “fringe sites”) and estimates four parameters within each site: (1) aerial extent (number of square meters of the seabed with at least some eelgrass growing on it); (2) patchiness index (number of transition changes between eelgrass presence and absence per 100 m of transect length); (3) mean minimum eelgrass depth; and (4) mean maximum eelgrass depth.

We surveyed the shoreline from the west end of Freshwater Bay to the tip of Ediz Hook (19 fringe sites) during early June and the shoreline from Morse Creek to the tip of Dungeness Spit (22 fringe sites) during mid-September. Fig. 1 shows the eelgrass bed locations between Freshwater Bay and Ediz Hook. The dominant feature of this region was macro algae (which we observed almost everywhere) and large schools of juvenile fish (mostly Pacific sand lance, *Ammodytes hexapterus*). Parameter estimates and further data analysis will be presented at a paper at the upcoming Georgia Basin Puget Sound Research conference, Spring 2007.

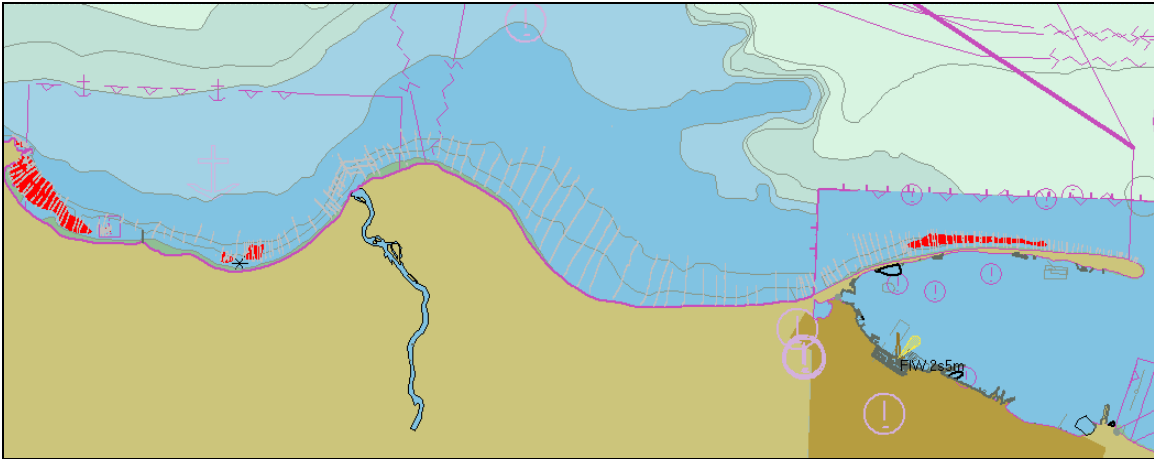


Figure 1. Location of eelgrass beds (shown in red) observed during the June 2006 underwater videographic eelgrass survey.

Contact: Jim Norris, Marine Resources Consultants, PO Box 816, Port Townsend, WA 98368; jnorris@olympus.net

Elwha Nearshore Habitat Monitoring. In **2005** the WDFW Shellfish Dive Team and the Jamestown S'Klallam Dive Team established two permanent study sites (one treatment and one control) as baseline data sets for pre and post dam removal comparisons. These two study sites focused on rocky habitat and used important shellfish species (red and green sea urchins, sea cucumbers, abalone and rock scallops) as targets for evaluating impacts of dam removal. Additional presence/absence data on other key vertebrate, invertebrate and algal species was obtained. Habitat mapping at each site was completed using diver observations and video documentation. The video data will also be used to create baseline photo mosaic images of the habitat for pre and post dam removal comparisons.

In **2006** these dive teams continued their collaboration and resurveyed the stations established in 2005. Additionally, two new permanent study sites were established. The first of these was an additional treatment site on rocky habitat using the same methodology outlined in the 2005 work. The second study site focused on mixed sediment habitat (sand, gravel, pea gravel) using horse clams and geoducks as the targets for evaluating impacts of dam removal. Presence/absence data on other key vertebrate, invertebrate and algal species was obtained. Although not completed this year, habitat mapping using diver observations and video documentation of the mixed sediment habitat will be completed prior to dam removal.

In early February of **2007** the WDFW Dive Team hopes to re-video all of the rocky habitat sites so that rock structure can be documented without the interference of annual macroalgae cover. In late summer of 2007 the team plans to resurvey all study sites. Mapping of the mixed sediment habitat will be completed. Additional mixed sediment treatment and control study sites may be added. Depending on time constraints, 1 m³ benthic samples (via venturi dredge) may be incorporated into the mixed sediment study sites to identify species diversity and relative abundance of infauna. Because of the scope and scale of this study, collaboration and support from other interested parties will be needed in order to expand this project beyond its current level.

Contact: WDFW: Don Rothaus, at 425-379-2315; Tribes: Doug Morrill, Lower Elwha Klallam Tribe, at 360-457-4012 ext. 18; or Kelly Toy, Jamestown S'Klallam Tribe, at 360-681-4641

Consequences of the Elwha River dam removal on nearshore habitats and ecosystems-USGS Coastal Habitats in Puget Sound (CHIPS) Program. In 2006, the USGS began implementing a new interdisciplinary research project in the Elwha River and nearshore. One of three projects supported under the Coastal Habitats in Puget Sound (CHIPS) initiative (<http://puget.usgs.gov>), this project integrates researchers from USGS water, biology, geography, and mapping divisions. The objectives of the project are to link studies of physical, chemical, and biological processes in the lower river, estuary, and nearshore. The investigation reflects the temporal context of the Elwha River restoration project by dividing activities into three periods-before the dams are removed, during the dam removal process, and the recovery period following dam removal. This project is linked to existing USGS work, as well as that of other entities.

The first year field research activities included: a) bathymetric and topographic surveying in the lower river; b) current profiling of the river mouth (velocity and direction) over a tidal cycle during May high flows; c) river metabolism study in June and August; d) nutrient status of the lower river and estuary, consisting of monthly nutrients samples being collected at 6 different locations; and e) collecting juvenile Chinook salmon from different habitats in the lower river/estuary for otolith analysis. These data will be used to establish baseline characterizations of habitats in the Elwha river estuary, to define how the transport of sediment and nutrients effects these habitats, and to understand how key species currently utilize these habitats.

Contact: Jeff Duda, Western Fisheries Research Center, 6505 NE 65th St., Seattle, WA, 98115. 206-526-6282 x 233, Jeff_Duda@usgs.gov.

Biological Communities

Comprehensive Assessment of the Wetland Complex at the Mouth of the Elwha River.

Contact: A two year grant from the EPA that will enable the Tribe to collect baseline data on biological, chemical, and physical conditions within the estuary. Activities completed during the March through September sampling period within the estuary complex on the east side of the river mouth included:

Fisheries

1. Beach seining in two of the estuary ponds.
2. Stomach lavage of juvenile salmonids to collect stomach contents.
3. Fyke netting between adjacent estuary ponds.

Water Quality

4. Water quality data collection using a Hydrolab Datasonde 4a for temperature, dissolved oxygen, salinity, conductivity, pH, turbidity, and depth.
5. Water samples were collected on a monthly basis by USGS for analysis of marine derived nutrients.

Macroinvertebrates

6. Insect fallout traps were deployed in the littoral, shrub, and forested zones surrounding one of the beach ponds to determine species composition of terrestrial insects.
7. Macroinvertebrates were collected in the same pond using petite Ponar sediment grabs.
8. Macroinvertebrates were also collected using a Hess sampler in an intarestuarine channel and in Bosco Creek, a tributary to the estuary.
9. Plankton samples were collected during each seining of the estuary.

Mammals

10. Small mammal trapping was conducted along two 250 meter traplines within the estuary. Each trapline included 25-paired traps that alternated in proximity to the open water from shoreline to 10 meters from shore.

Most activities will be repeated again from March through September 2007. Beach seining and water quality will continue on a monthly basis year round.

Contact: Matt Beirne, Lower Elwha Klallam Tribe, 51 Hatchery Road, Port Angeles, Washington. 360.457.4012 ext 12; beirne@elwha.nsn.us.

Fisheries

Shellfish Harvest Activities Associated with Elwha Dam Removals (ongoing management topics).

Contact: WDFW: Michael Ulrich, WDFW, at 360-902-2737; Tribes: Doug Morrill, Lower Elwha Klallam Tribe, at 360-457-4012 ext. 18; or Kelly Toy, Jamestown S'Klallam Tribe, at 360-681-4641

Workgroup Directory

Workgroup participants actively working in nearshore. *Italic* are nearshore workgroup coordinators/key contacts

Name	Affiliation	Email
<i>Anne Shaffer</i>	<i>Washington Department Fish Wildlife</i>	shaffjas@dfw.wa.gov
<i>Doug Morrill</i>	<i>Clallam Marine Resources Committee</i>	joes@armstrongmarine.com
<i>Cathy Lear</i>	<i>Clallam County</i>	Clear@co.clallam.wa.us
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Helen Berry	Washington Department Natural Resources	elen.berry@wadnr.gov
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John Warrick	USGS	jwarrick@usgs.gov
Rob Young	University North Carolina	ryoung@wcu.edu

Educational entities

A number of educational entities have received funding for Elwha proposals (not specific to nearshore). They include:

Western Carolina University, Olympic Park Institute, and Olympic National Park continue to implement the National Science Foundation funded grant entitled ‘*The Elwha Education Project (EEP): Increasing the Relevancy of the Geosciences for Native American Youth Through Participation in Environmental Restoration Projects on Tribal Lands*’ the intent of which is to develop a summer science education programs centered on the Elwha restoration and focusing on tribal kids. Contact: Rob Young, Associate Professor, Western Carolina University, Department of Geosciences, Cullowhee NC 27823, Tel: (828) 227-3822, Fax: (828) 227-7647 Tel in PA: (360) 457-0997 (ryoung@wcu.edu)

Peninsula College (PC) continues to implement the National Science Foundation's Research Experiences for Undergraduates funded program to establish an undergraduate student research program at PC, linking students with faculty and agency scientists. This grant funds PC and Western Washington University Huxley College of the Environment students to conduct research projects associated with the Elwha River Basin ecosystems before and after removal of the dams. This includes the possibilities for terrestrial, freshwater, and nearshore projects. For more information and full list of participants **Contact** Dr. Bill Eaton (PI), Peninsula College, 1502 East Lauridsen Blvd., Port Angeles, WA 98362, 360-417-6246, bille@pcadmin.ctc.edu.

Olympic Park Institute (OPI) continues to lead multi-day educational programs this summer and fall focused on the Elwha River Ecosystem and connections to the nearshore. The focus for this summer has been field testing a research and educational strategy to use with field science student groups, which includes 8-12th grade students and K-12 teachers. Two main focus areas are the ecological processes in the river and how those processes contribute to nearshore conditions. OPI is interested in strengthening our nearshore work and education, and would be interested in assisting with field work occurring between Freshwater Bay and Ediz Hook. **Contact** Darek Staab, OPI, 360-928-3720 ext. 23, dstaab@yni.org

Washington State University (WSU) Beachwatchers program is up and running in Clallam County. The first training session for citizen monitoring, which has included elements of the Elwha nearshore, will be completed in November 2005. Beachwatchers is an excellent resource for assistance in field monitoring. **Contact:** David Freed, WSU Beach Watchers, Clallam County 360-565-2619 DFreed@co.clallam.wa.us

Additional resources

Peninsula College is sponsoring a newsletter of the Elwha Research Consortium entitled 'Upstream'. The newsletter, initiated in September 2006, can be found at [http://www.pc.ctc.edu/coe/new%20pdfs/UPSTREAM1\(1\)Sept06.pdf](http://www.pc.ctc.edu/coe/new%20pdfs/UPSTREAM1(1)Sept06.pdf). **Contact:** Dwight Barry 360.417.6586/dwrightb@pcadmin.ctc.edu.