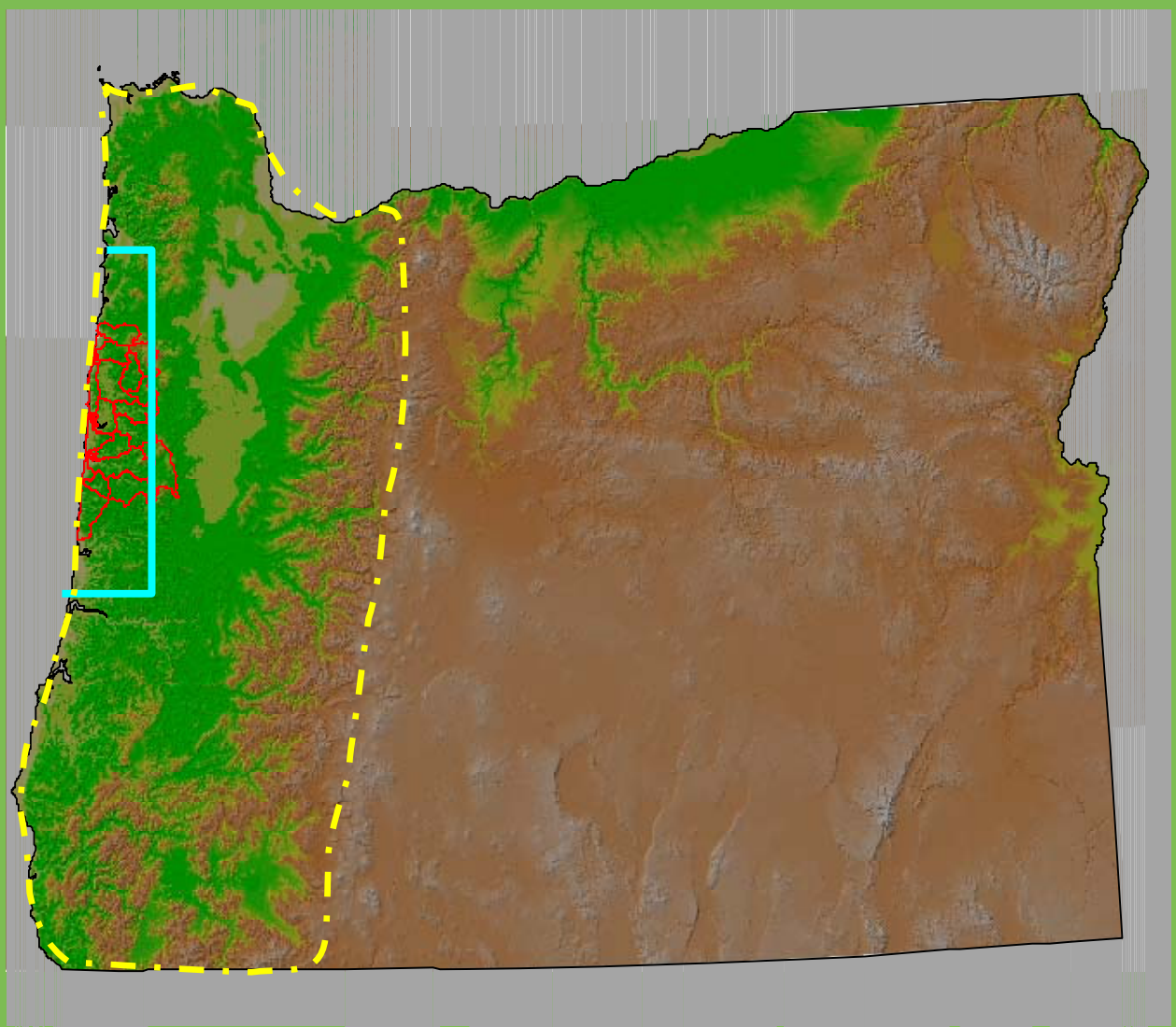
Confederated Tribes of the Siletz Indians and Coastal Coho

Siletz Tribes and Coastal Coho

- Folks that landed at the Siletz Reservation were associated with aboriginal lands that covered the Mt Hood area to Medford to Smith River to Astoria.
- The original reservation ran from south of Tillamook down to the Tenmile lakes area with an eastern boundary of the coast range ridge top.



Brief History

- During the mid 1800s seven treaties were signed by various tribes but not ratified by Congress.
- By the 1930s nearly all Siletz Indian land, regardless of its form, had been eliminated.
- The Siletz were officially terminated in the early 1950s.
- The Tribe was restored in the early 1980s.
- During restoration there were key players opposing restoration who were successful at forcing the Tribe to sign a consent decree which said the Tribe agreed to eliminate the question of unique hunting and fishing rights in the coast range.

Brief History

- During the majority of the years the State has managed fishery resources, the Tribe and the State have had a less than pleasant relationship.
- This has led to a legacy that tribal and some State staff are working hard to change.
- Because the Consent Decree does not allow the State to recognize the Tribe as a full co-manager, the Tribe has had to look at fisheries management input opportunities in more creative ways.

Brief History

- The Tribe has three traditional fishing sites all of which are located on tributary systems in the Siletz Basin.
- The sites allow for a total of two hundred adult salmon taken per year - with dip net, gaff, or spear.
- The vast majority of fish found at these sites are too old and too dark to be of use.
- Hence traditional salmon fishing is less than a top priority for active tribal fisher folks.
- The vast majority of fish taken by tribal members come from sport fishing efforts in the rivers, bays and ocean.

So what have we been up to?

- Lack of co-management status has allowed us to avoid having to follow many of the more common agency response efforts regarding endangered species and prioritization of species of importance.
- Lack of co-management has allowed us to stand back and pause and think about what tribal members really need, for the long haul, as a community, regarding natural resources such as water and fish.
- Our approach to date has been to
  - look at what agency objectives have been and see where we agree or disagree
  - determine what gaps or opportunities are available to address our perceived needs
  - look for money to complete the work related to the objectives and or gaps we have identified

So what have we been up to?

- We have not been involved in assessing coho populations or limiting factors specific to coho.
- We have made an active decision to not be heavily involved in targeted coho habitat restoration.
- We have not prioritized coho in any way shape or form.

- We do believe coho have been and are likely to continue to be in trouble and we do believe these issues are being addressed with some success, in some arenas.

What do the Siletz want in their future relative to coho?

- Clean water and clean air.
- Appropriate limits on all fisheries harvests so the ocean and freshwater ecosystems can function in a natural manner.
- A chance to grow families and economies while retaining tribal cultures.

CTSI

Aquatic Projects Update

2005

Stan van de Wetering

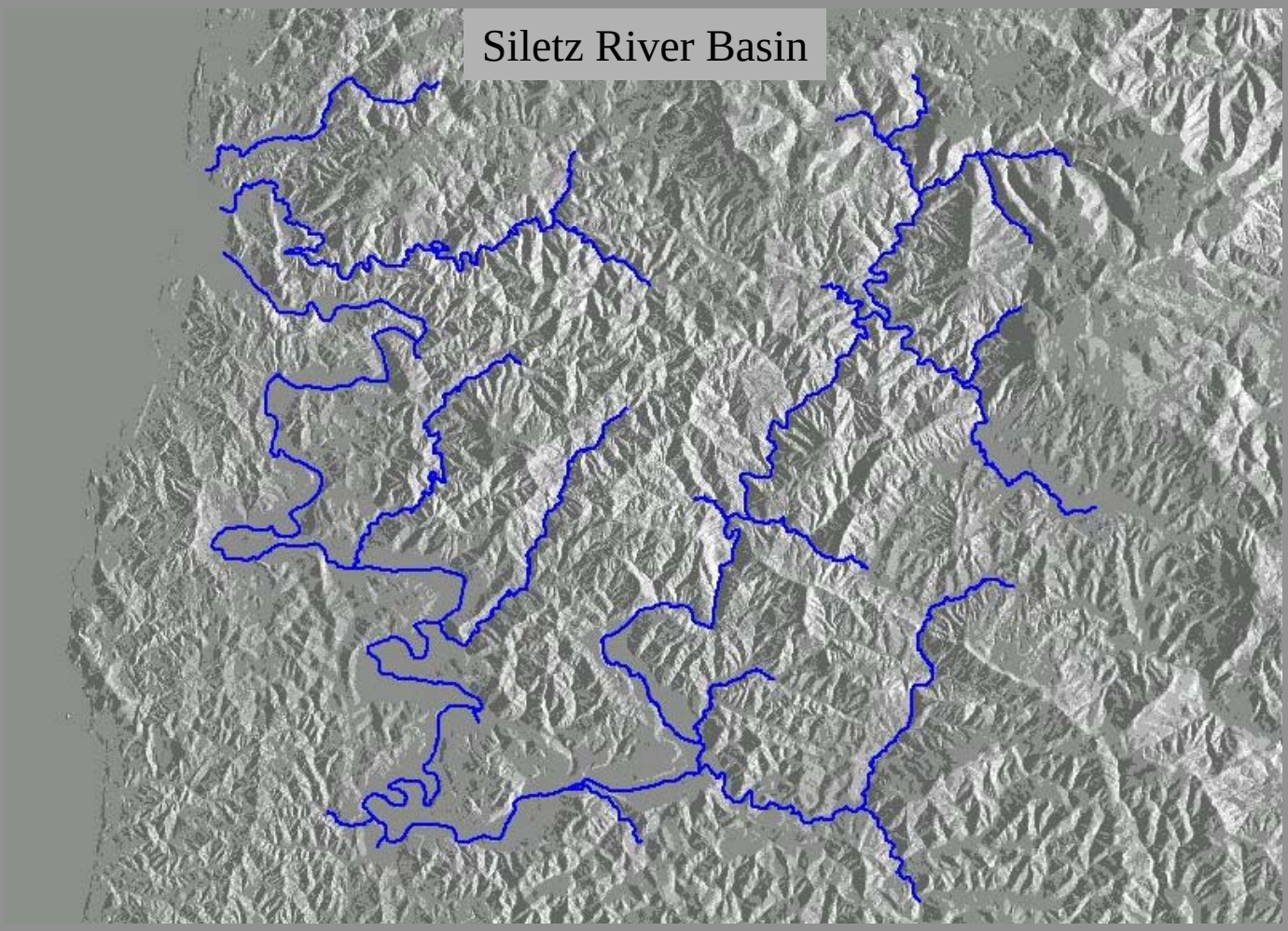
Dave Rollins

Ryan French

Tom Downey

Frank Simmons

Tribal Research and Monitoring



Tribal projects involve estuaries, fresh water streams, air, land cover, geology, sediment, aquatic organisms and how weather and human activities influence these tribal resources.

Field data are collected during seasons that prove critical to the resource of interest. For instance stream temperatures in our region are thought to adversely affect fish during the summer and fall seasons. Data are collected during the period when stream flows drop and air temperatures increase.

Suspended stream sediments are collected during the high water months – fall, winter and early spring.

Aquatic organisms like lamprey (eels) and salmon are collected when the life stage of interest is available – fall for salmon and spring and summer for adult eels.

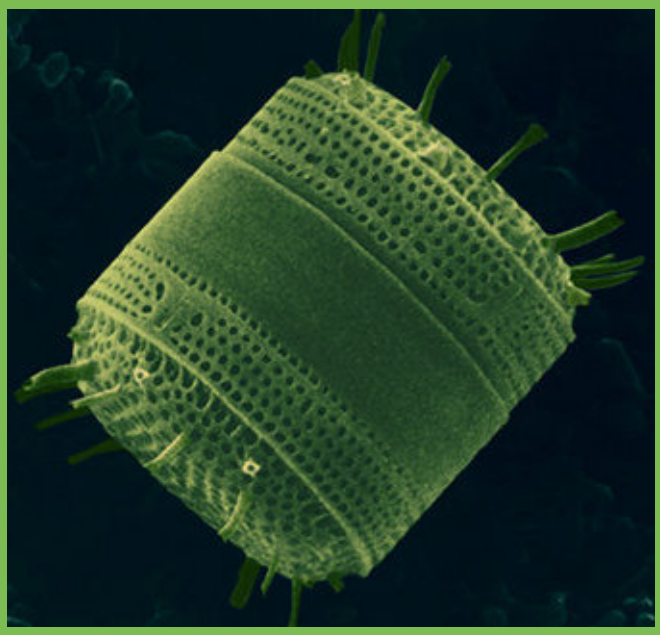
Tribal herbicide spraying and monitoring occurs during spring and fall. Estuarine research and monitoring occurs in the spring, summer and fall during which time juvenile salmonids utilize our Oregon bays.

Hatchery activities tend to occur during the fall spawning season and the spring smolt migration period.

Projects such as mapping geologies or land cover usually depend on outside data acquisition and can thus be completed during all seasons.

Nutrient Cycling, Algal Communities and the Food Chain

Salmon and eel success depends in part on food availability. During 2005 the Tribe began looking at the bottom portion of the food chain in our coastal streams. Using EPA funding, tribal staff have begun describing what types of algae grow across the various types of habitat in our small streams, larger rivers, and our estuaries.



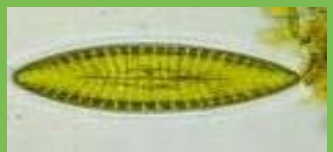
Tribal staff place growth substrate (clean floor tiles) in stream bottoms during the spring and fall seasons. Staff remove the tiles after 30 days and scrub the algae off the tiles and into a bottle. Samples are then sent off to a laboratory where a scientist determines how many algal cells, also known as diatoms, grew on each tile. What types of diatoms are present is also determined.

Diatoms are microscopic single celled alga. Multicellular plants are also counted but rarely show up in our samples. Diatoms come in all shapes and sizes. They are typically symmetrical in shape and have incredible design patterns.

Algae growing in streams is equivalent to grass growing in a pasture. Depending on the climate various grasses may be more or less productive. Management of a pasture usually includes fertilization. Streams are normally fertilized by the seasonal cycling of natural nutrients. Too much un-natural fertilization in a stream can be harmful. In our area common potential human caused nutrient additions include treated sewage, single house septic systems and agricultural and forest fertilizer runoff.

Using contract scientists the Tribe is examining how areas with and without human influence compare in algae type and amount. An additional tool we are using involves performing chemical tests which can determine if the nutrients (nitrogen) currently used by the algae in the stream came from human or “natural” sources.

These data will provide us with an understanding of how much of an effect we are already having on the cycle of nutrients and in turn the food chain and fisheries production at this present time. This work will also help us understand future shifts in the river’s food chain as the human population up and down the river basin grows.



Herbicide Research and Monitoring on CTSI Lands

Young industrial timber plantations require intensive care or management during the first several years of growth. This is mainly due to competition by native (such as alder & maple) and exotic plants. These competitors are commonly controlled using chemicals. In the past few years the Tribe has begun to look at the affects of spray methods, weather, soils, and land cover on the presence and quantity of chemicals in our streams (runoff). These data will assist the Tribe and others in our community to better understand the side-effects of chemical application across our landscape.

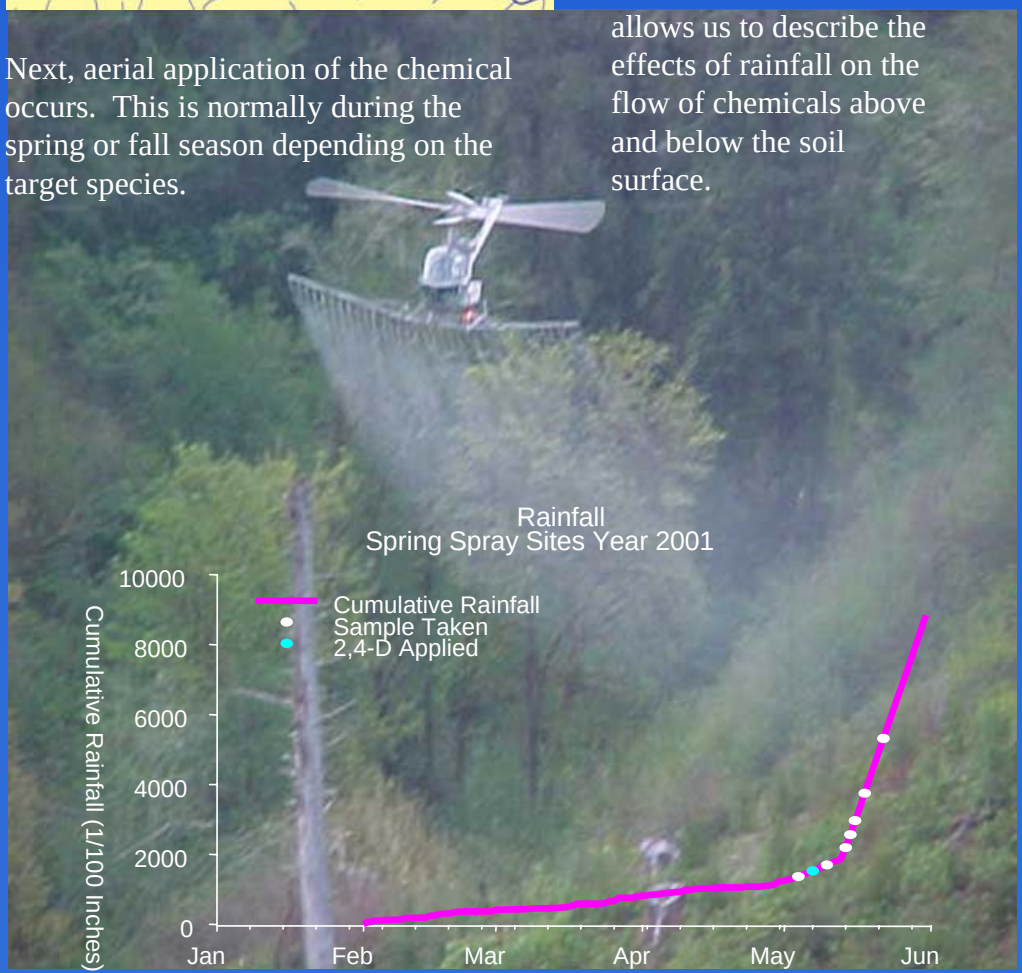
The process begins with timber personnel using ground surveys and aerial photography to assign spray sites and associated chemicals to various tribal plantations.

Borders are assigned to target spray areas with a goal of staying out of stream water as well as targeting unwanted plants or tree species. Aquatics personnel take the aerial photographs with the hand drawn borders and convert those to “polygons” within a computer map. The computer map then allows us to lay those polygons across elevation, soil, geology, plant and stream line data.

Next, aerial application of the chemical occurs. This is normally during the spring or fall season depending on the target species.

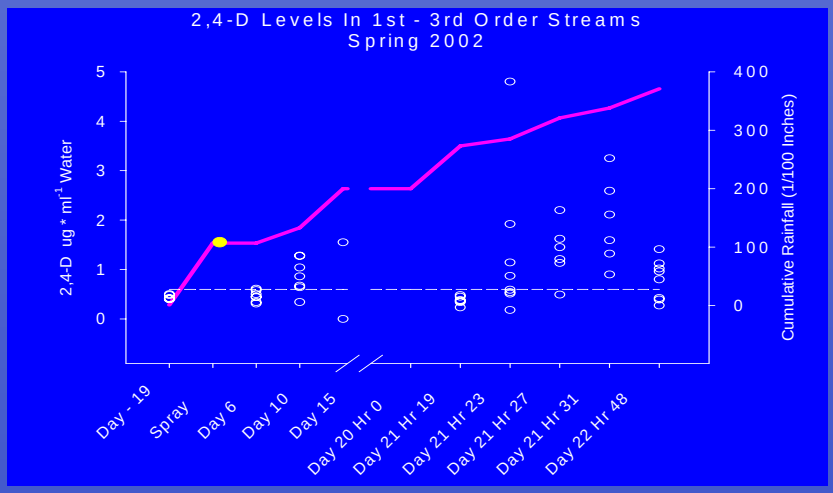
Aquatics personnel complete field activities in the spray unit before and after spraying occurs. Using GIS mapping software we can determine where the lowest point in the landscape occurs relative to the polygon where the chemicals are applied. This allows us to collect water downstream of tribal chemical runoff from tribal lands but upstream of other runoff from other landowners that may bias our results.

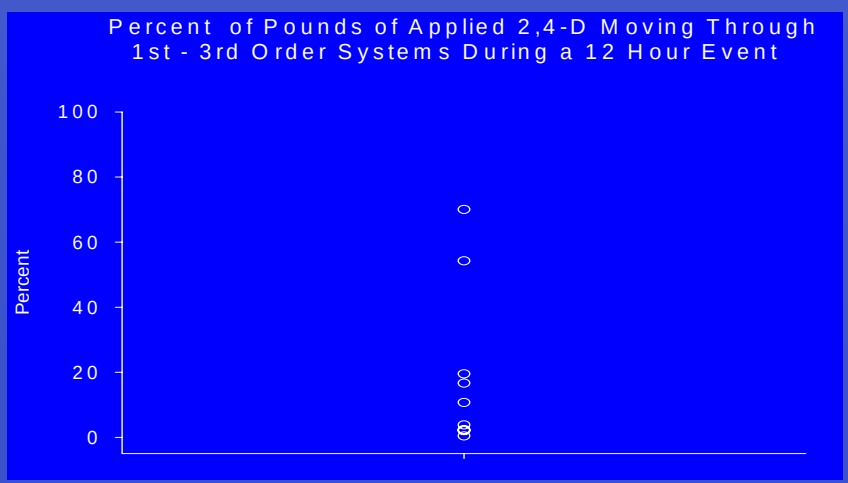
A rain gage is set up on the hillside so we can collect minute by minute rainfall records. This allows us to describe the effects of rainfall on the flow of chemicals above and below the soil surface.



Herbicide Research and Monitoring on CTSI Lands

Once a significant rainfall event (>1/2 inch) begins, water samples are collected and stream flow volumes are measured at regular intervals of four hours. The samples are put on ice and sent to a local laboratory. The laboratory determines the level of chemical in the water sample using monoclonal antibodies. Different antibodies are designed to bind to different spray chemicals. If an antibody comes in contact with a target chemical within a water sample it binds and a dye is produced. More dye means more chemical is present. Concentrations are then compared to rainfall and stream flow values.





Satellite images of the Siletz watershed are then analyzed for plantation age. Mapping software is used to correlate color patterns in the photo with known plantation ages. This produces a new map showing the age of known and unknown plantations across the complete watershed.

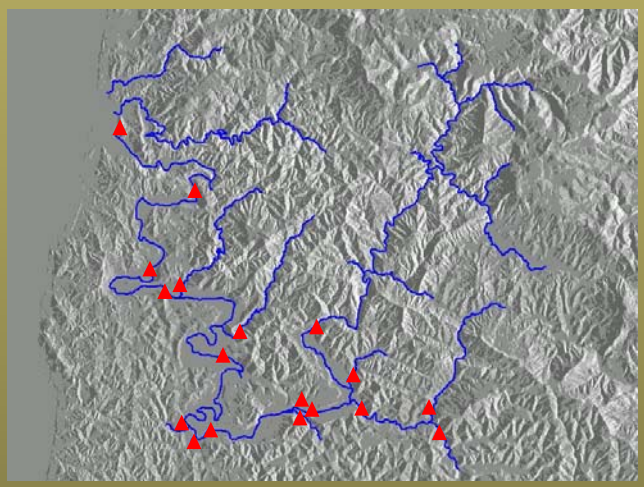
Satellite Image

Plantation Age Map

Our streams and elevation data are laid over the plantation data. We can then begin to model the potential acres that are sprayed each year with various chemicals and the potential effects of those chemicals on natural resources (drinking water, fish, algae…) of interest.

Suspended Sediment Research and Monitoring

For a few decades now there has been a controversy over the affects of land management activities and water quality in our coastal region. The discussion has focused on timber and agricultural land management (skid roads, road building methods, road failures, slope failures and agriculture riparian grazing). Many forms of regulation have occurred and in many cases sediment loads appear to have decreased. However much controversy remains over the potential deleterious effects of sediment in our coastal rivers. During winter 2000 the Tribe began collecting suspended sediment samples at several sites across the Siletz basin to begin to develop a better understanding of fine sediment transport.



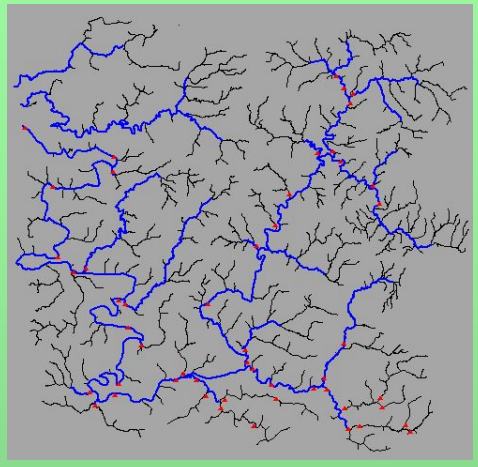
Collecting surface grab samples for monitoring

The Tribe's first goal is to examine fine sediments on a spatial scale using GIS data sets. We are in the process of comparing landscape parameters such as number of miles of roads, acres of clear cuts, steepness of the land, basin geology, and rainfall levels to measured river sediment levels. The second goal is to examine the effects of fine sediments on local stocks of salmon and lamprey. In 2004 the Tribe will begin looking at how survival of salmon eggs buried in stream gravels is affected by varying levels of fine sediment being transported in the water column. Five different reaches of stream will be selected for varying levels of sediment loading during typical winter high water periods. Spawning salmon nests will be counted over time, hour by hour sediment, rainfall and stream flow levels will be measured with automated meters These data will be compared to salmon egg survival during the winter period.

Future projects examining the effects of fine sediment transport on lamprey (eels) and their food chain will likely begin in two to three years.

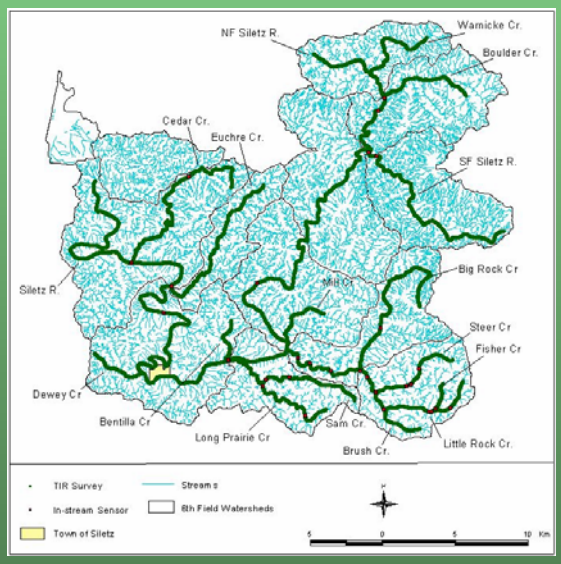
Stream Temperature Research and Monitoring

Monitoring Sites



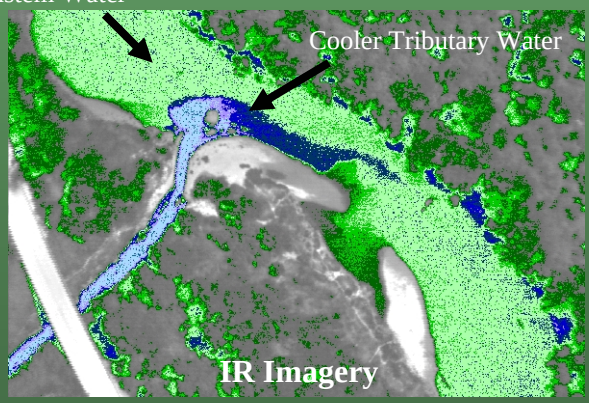
During the past five years the Tribe has gone from monitoring 15 stream and air temperature sites to more than 150 sites across the Siletz Basin.

In 2000 the Tribe used Forward Looking Infra Red (FLIR) photography to map 144 miles of continuous stream temperatures.



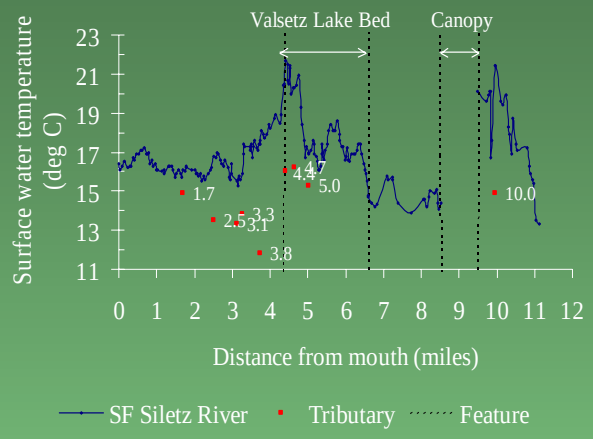
FLIR Imagery

Warmer Mainstem Water



Stream Temperature Research and Monitoring

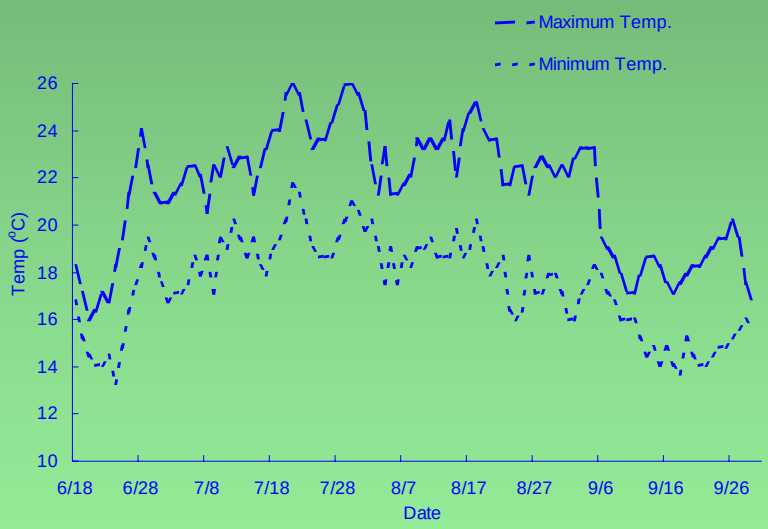
The FLIR data provided a series of stream and reach profiles from which to focus site specific temperature research and monitoring work. These were areas of distinct increases or decreases in the temperature profile.



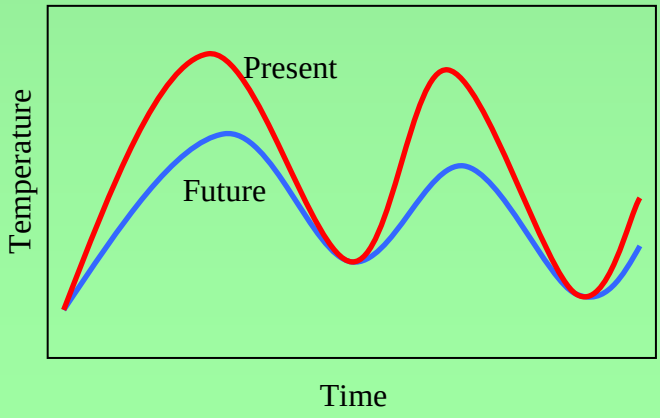
Riparian canopy, aspect, hill shade, gradient, substrate and other variables will be used with a DEQ model to describe potential shifts in riparian composition and the resultant shifts in stream temperatures.

Using aerial photography and field validations the Tribe will classify more than 150 miles of riparian canopy across the Siletz Basin this year.

Stream Temperature Data



DEQ's Heat Source Model

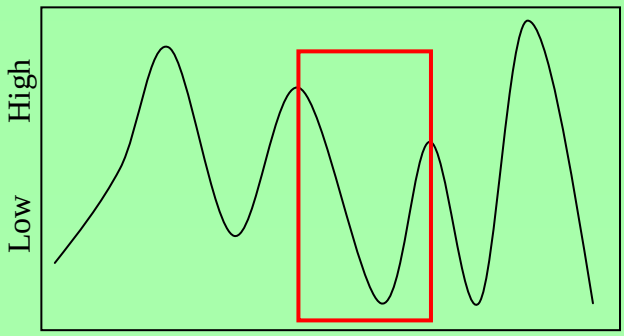


Stream Temperature and Stress in Fish

Elevated stream temperatures have been a focus of water quality regulators for several years now. The U.S. EPA and the State's DEQ have focused much of their water quality efforts toward better understanding how to regulate potential increases in stream temperatures as well as how to deal with historical shifts in stream temperatures.

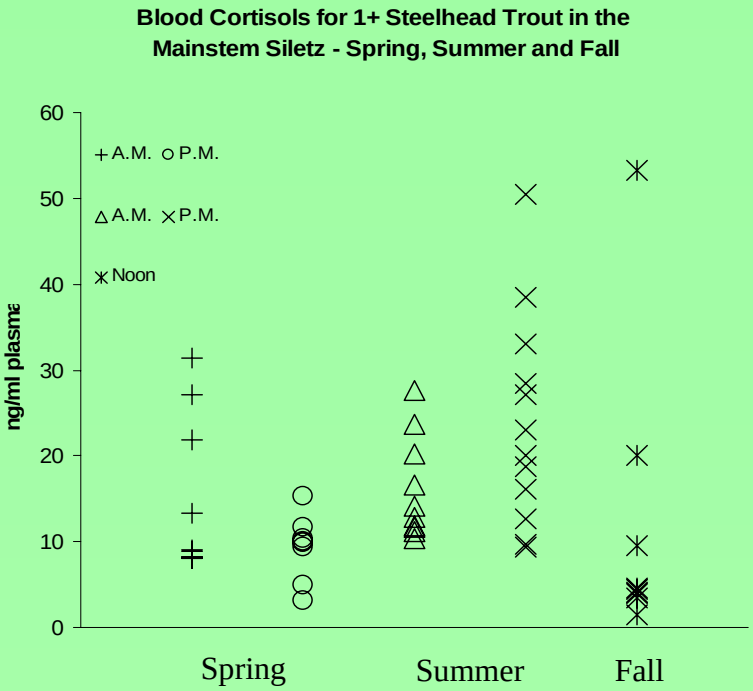
In an effort to better understand how local fish populations deal with shifts in stream temperatures the Tribe began research examining stress levels in fish during the cooler and warmer seasons of the year. Most PNW coastal streams have cyclic temperature patterns where highs are related to daytime sun exposure levels and lows are related to evening air cooling and circulation patterns.

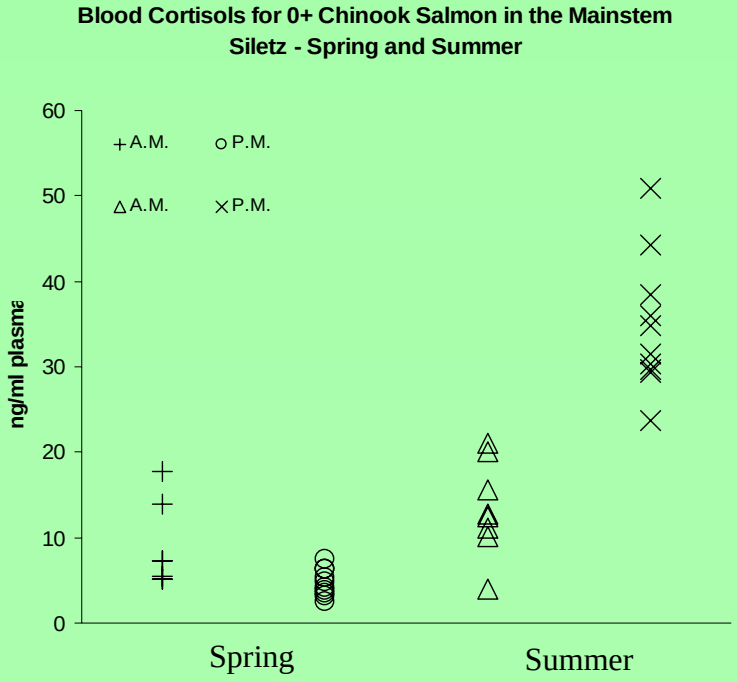
Summer Stream Water Temperature Patterns



In 2004 we began to look at the physiological effects, on juvenile fish, from increasing and decreasing stream temperatures using the stress hormone cortisol. As stress increases in an animal, blood cortisol levels increase. As stress is reduced, cortisol levels drop. We sampled various species of fish during different seasons, flows, and temperatures.

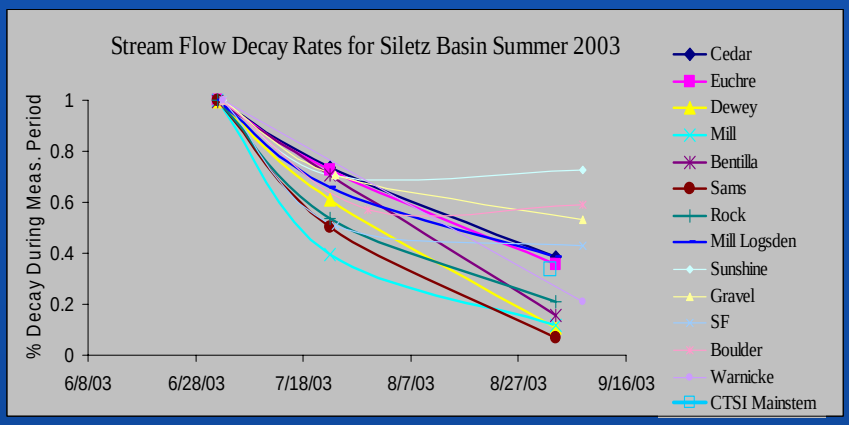
Although we have not completed our research initial results from the first two years have been interesting. These include differences between species and between seasons.



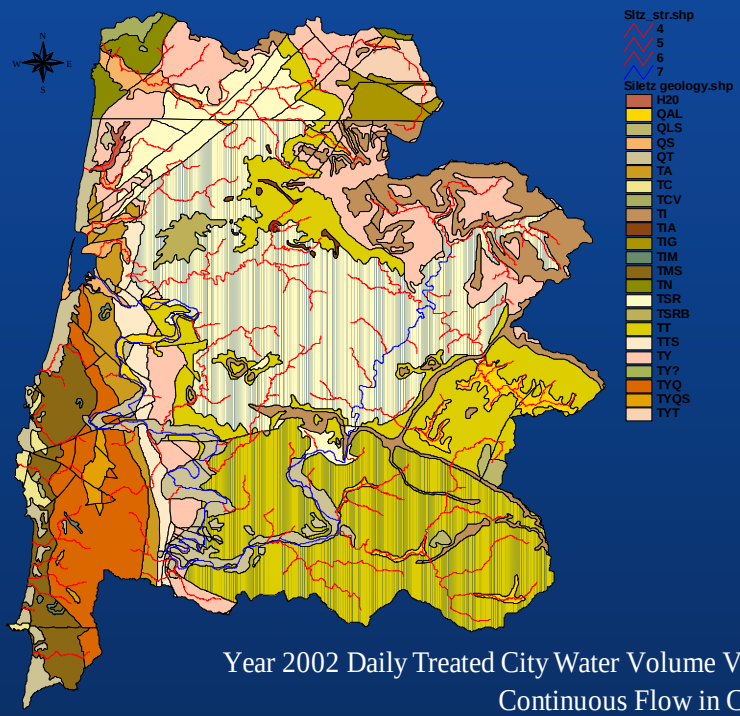


Stream Flow Research and Monitoring

During the past three years the Tribe has increased its efforts to examine the natural patterns of stream flow in several Siletz River sub-basins. We are examining the effect of rainfall patterns, geology, soils, landcover (trees), slope steepness and various management methods on the volume of freshwater in our streams. More than fourteen tributary systems and seven mainstem sites are monitored across the spring and summer months.

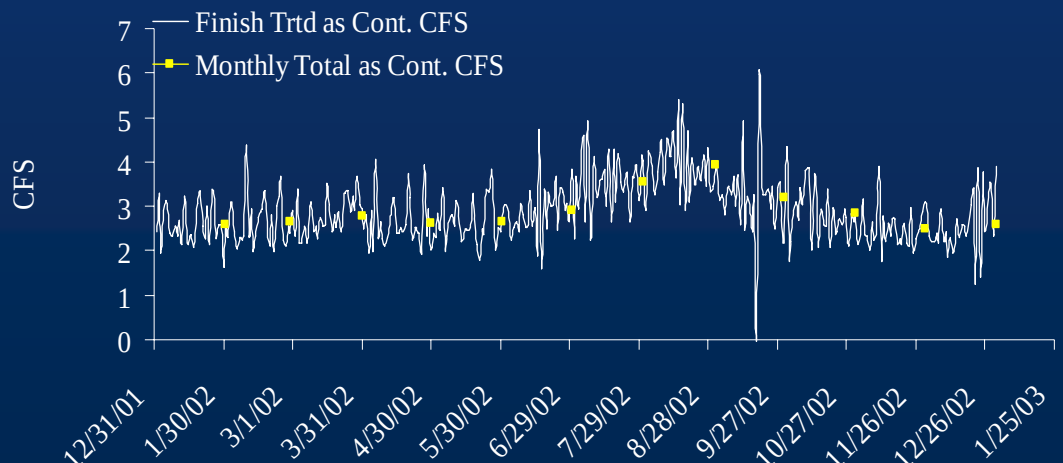


Siletz Basin Lithologies



The Tribe is examining how current municipal water demands, as well as projected demands of coastal municipalities might conflict with the sustainability of other natural resources of interest. We are looking at the effects of reduced stream flows on stream temperatures and available habitat. We are examining whether reduced stream flows affect estuarine salt water mixing patterns – habitat distribution in our bays. In general our approach is to examine how resources of interest respond to reduced stream flows and how we might better plan growth in our county to insure sustainability of those same resources.

Year 2002 Daily Treated City Water Volume Values and Monthly Means as Continuous Flow in CFS

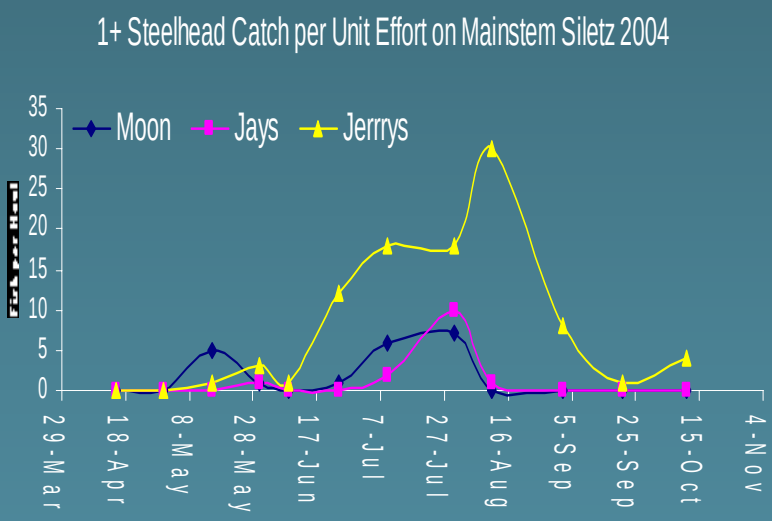


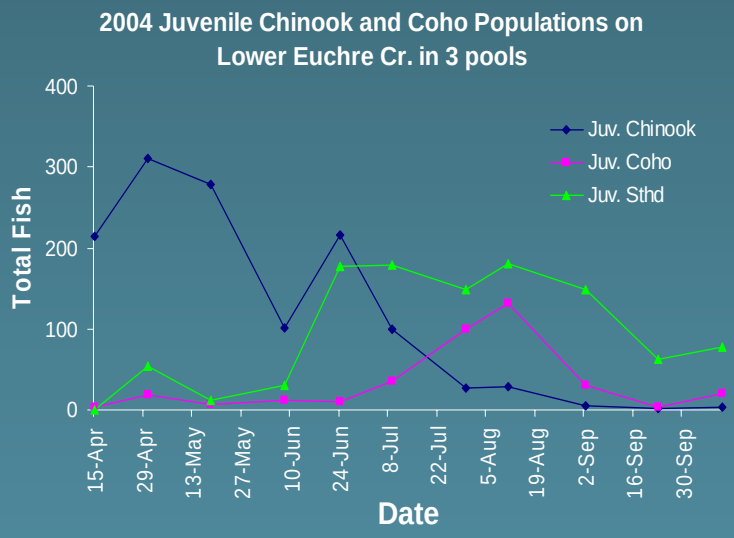
Patterns of Juvenile Salmonid Use In the Mainstem Siletz River and Its Tributaries

For the past three years the Tribe has been tracking seasonal use of mainstem and tributary habitats. This work has been focused on describing how various species segregate habitats and how water quantity and quality play a role in habitat use patterns and possibly population success.

Beginning in April and running through October, the Tribe completes biweekly sampling at several sites across the lower 70 miles of river. Fish are sampled with a seine net, counted, measured and examined for parasites.

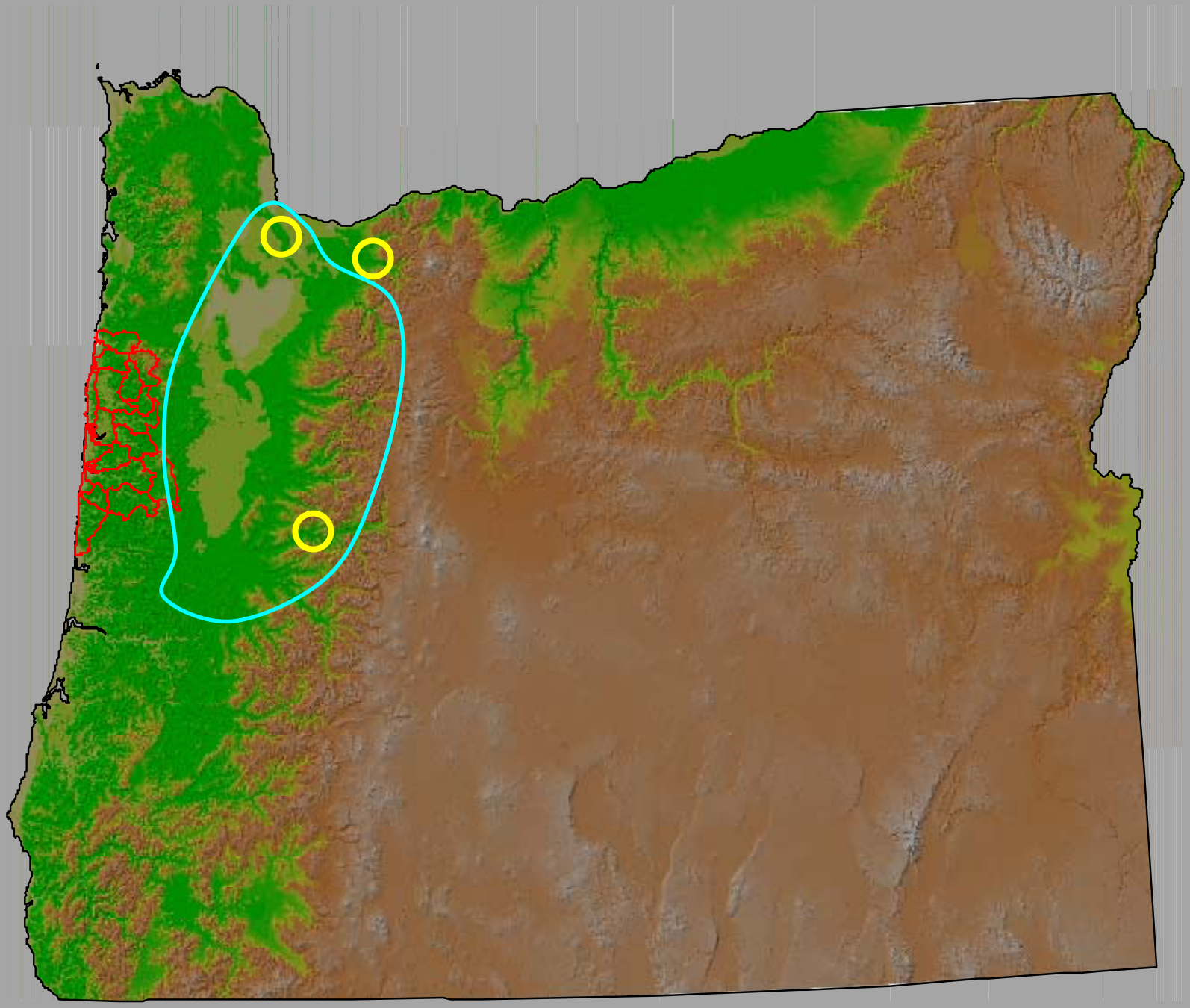
At the same time a set of sites located in tributary systems are sampled using snorkeling methods. Pools are monitored for species composition and fish density every two weeks from late winter through fall. The combination of tributary and mainstem data has allowed the Tribe to begin describing how various species move through different habitats and how environmental shifts such as stream flows, stream temperatures and habitat availability affects fish distribution.



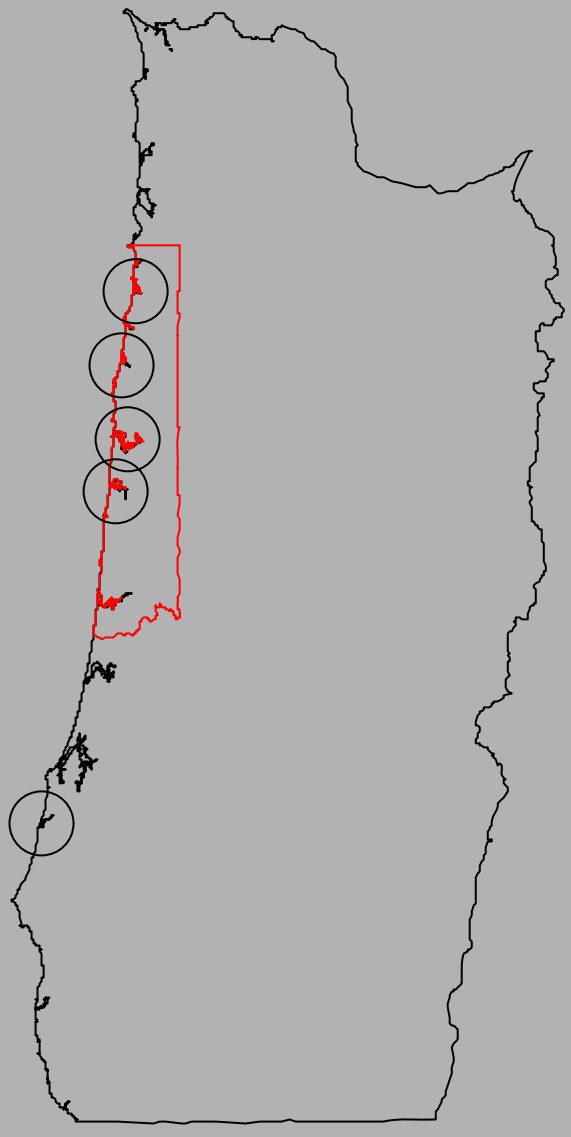


These data along with the results from several years of stream flow and stream temperature monitoring will be used to model seasonal shifts in species use patterns. These results will also be used to examine how management and restoration activities can be used to improve species success.

Projects Within the Willamette Basin



Oregon Estuarine Research and Monitoring



Estuarine Research and Monitoring

During the late 1990s tribal personnel became acquainted with the Refuges division of the U.S. Fish and Wildlife Service (USFWS). The USFWS had been acquiring degraded farm lands within Oregon estuaries. It was apparent from the start that the Tribe and the USFWS had several goals in common. We as citizens of Oregon coastal communities have seen, in most instances, a loss of more than 70 percent of our tidal wetlands during the past century. These tidal areas have always played a significant role in the health and preservation of tribal natural resources such as salmon and shellfish.

A third party, the U.S. Forest Service (USFS), was also interested in estuarine health. The Tribe, USFWS and USFS formed a cooperative agreement which in part has allowed the Tribe to become more involved in the restoration process of federal lands across the coastline.

Aquatics personnel have been working with the USFWS and the USFS to examine fish use of various habitats across estuaries. In particular we have focused on restoration of salt marshes and large wood across tidally influenced habitats.

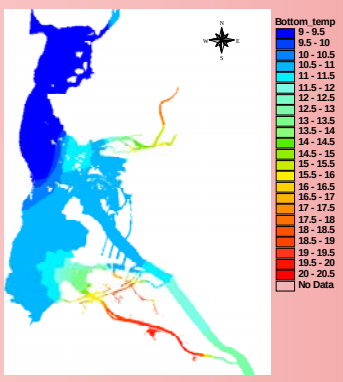
Our partnership has allowed us to more efficiently utilize restoration funding. Under the present partnership the USFWS performs the restoration planning and on the ground activities. This is a large effort that takes many years due to the complicated world of property acquisitions. Tribal personnel perform pre-restoration assessments of marsh elevations, plant communities, channel morphologies, water temperatures, salinities, use by various aquatic species and historical land use patterns (aerial photo reconstructions). The Tribe also completes post-restoration effectiveness monitoring. The National Oceanic and Atmospheric Administration (NOAA) and the USFS have provided tribal funding. Land purchasing and restoration funds are appropriated through congress for the USFWS budget.

Estuarine Research and Monitoring

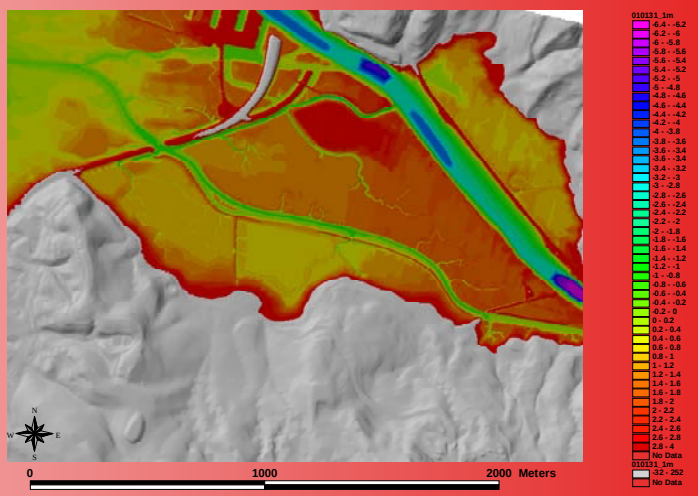
Over the past three years the Tribe has monitored several salt marsh channel systems in the Millport area just North of Salishan Resort. These data will prove valuable to a host of restoration and management agencies currently involved in salt marsh restoration. It is very uncommon for restoration funding agencies to provide dollars for monitoring those sites that have been restored. This makes it difficult for practitioners to know the "real" responses to their restoration efforts.

In the case of the Millport marsh, we expect to have statistically sound numbers comparing the response of aquatic organisms, plant communities, soil elevations, water temperatures, salinities and tidal cycles after restoration in comparison to pre-restoration. This will help practitioners better understand how effective we were in meeting our goals as well as how to best utilize future restoration dollars.

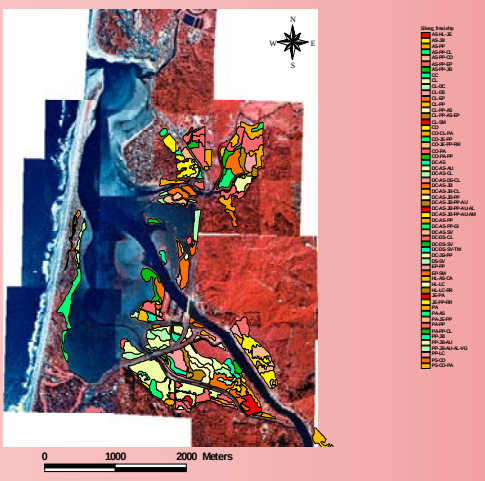
Mapping Temperatures



Mapping Soil Elevations



Mapping Plant Communities

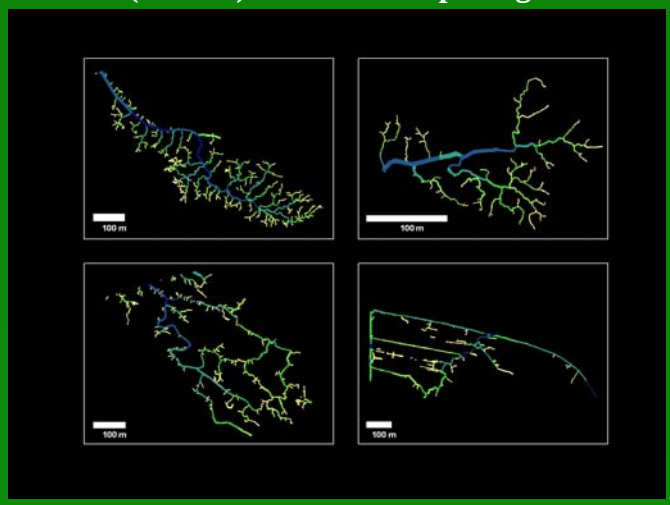


Estuarine Research and Monitoring

Marsh fish use patterns are determined using under- water videography. Cameras are mounted on poles to form a “fence” across the mouth of the study channel. As the tide floods and ebbs within the marsh fish movement is recorded. Tapes are analyzed in the lab to calculate the number of fish using the marsh.

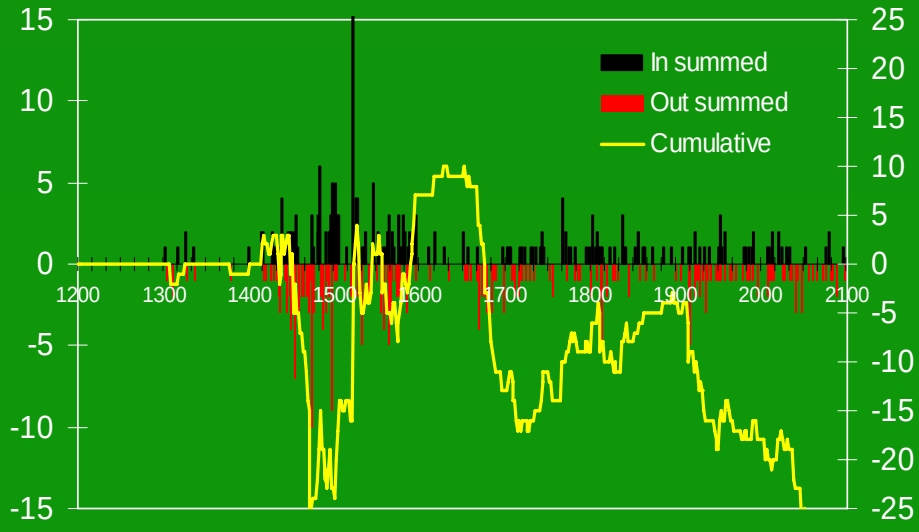
Species numbers are associated with GIS channel morphology data to allow for fish per volume unit estimates (densities). Before and after restoration densities can then be compared for shifts in response levels.

GIS Based Natural (top) and Restoration (bottom) Channel Morphologies



Data are examined for species based behavioral use patterns (migration into or out of a channel) relative to the tidal cycle and available habitats.

GIS Based Species Densities



Estuarine Research and Monitoring

Large conifers grow along stream banks and hill slopes throughout our coastal river basins. Various natural events place some of these trees in our rivers. A portion of these large trees move down to the associated estuaries or near shore areas during large storm events.

Spruce on Bulls Bag Stream Bank

Aquatics personnel have been examining fish use patterns around large complex wood habitats in the Siletz Bay.

Nets and underwater videography are the methods of choice. Nets are used to seine fish at a series of bank locations to provide distribution data across 17 miles of tidewater. Cameras are then used to count fish swimming into or out of wood complexes. Video is recorded during a twelve hour flood and ebb tidal cycle.


Seining

Spruce that fell in Siletz River and became a snag in the Siletz Estuary during a 1999 Storm.


Camera Poles

The Tribe has shown young salmon use large wood complexes at densities 100 times greater than other tidal habitats.

Native Oyster Restoration

In the summer of 2005 the Tribe began a native oyster restoration project with NOAA as a funding partner. The initial project is small and will run two years.

The goal of the Tribe is to use existing populations of native oysters, such as those in Netarts Bay, to provide brood stock to get the Yaquina project started. In 2005 the Tribe contracted with Whiskey Creek Hatchery to take brood stock from Netarts, spawn them and produce babies growing on old oyster shell.

The company Oregon Oyster allowed the Tribe to hang those babies (on old shell) off their docks downriver of Toledo. The babies were allowed to grow during the summer period. During that time tribal staff periodically examined the hanging bags for surviving babies.

Survivors were then transferred to ropes to allow for fewer oysters in a given volume of water and thus better growth. These ropes of oysters will now be placed in several sites up and down the bay and maintained for a full year.

The Tribe will repeat the spawning and hanging process again in 2006. During 2006 the babies that survive the summer period will get an additional treatment. Some of the survivors will be placed directly on the bottom at several places up and down the bay. In the future the Tribe will also be experimenting with different growing substrates such as wood, rock, cement and sand. This work, as well as our modeling of salinities, temperatures, depths, plankton levels, and substrate types should allow the Tribe to develop a list of limiting factors that will help us better understand what will be needed for restoration of native oysters in the Yaquina.

As the Tribe develops an understanding of what native oysters need to survive in the Yaquina we can begin to look and land acquisitions and habitat restoration that will allow us to have a healthy and maybe even a harvestable population of native oysters.

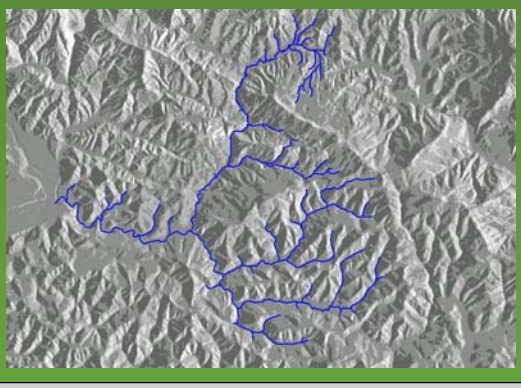
Stop?

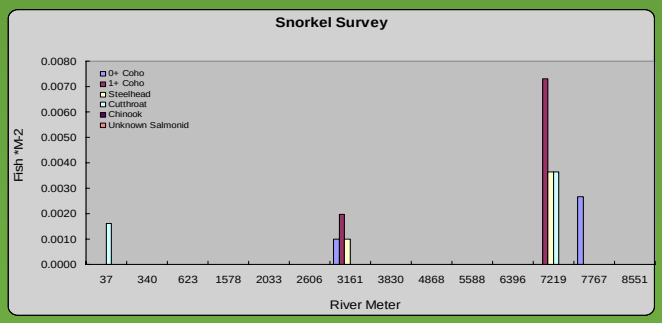
Rock Creek Watershed Project

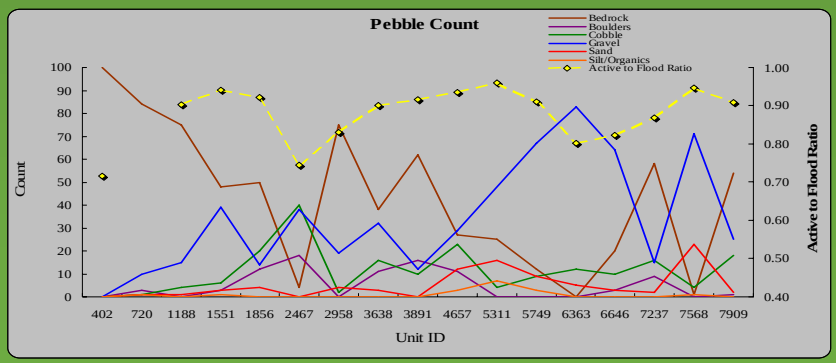
During the past two years the Tribe has completed a series of surveys allowing for an assessment of the Rock Creek Basin. The assessment has focused on habitat distribution, adult and juvenile salmon distribution, and the role the tribal hatchery plays in the ecology of Rock Creek.

Rock Creek Basin coho and chinook numbers have been on the rise the past few years. In the upcoming year we will be evaluating the effect of hatchery releases on the overall recovery strategy for the Rock Cr. Basin.

Surveys include 30 miles of summer habitat, more than 20 miles of summer snorkeling, several miles of winter snorkeling, spring and summer stream flows, and spring and summer stream temperatures.







	Number	Total Length	Average Width	Surface Area	% Surface Area	Pool/Riffle Ratio	Mean Depth	Dominant Riparian Left	Dominant Riparian Right
Pool	70	4673.01	19.10	92201.30	57.46	Number	0.89	1. 62.70% Deciduous (116 units)	1. 62.70%Deciduous (116 units)
Riffle	61	901.87	16.38	15276.97	9.52	1.15		2. 15.68% Conifer/Deciduous (29 units)	2. 18.92%Conifer/Deciduous (35 units)
Glide	42	2904.96	16.80	50985.09	31.77	Surface Area	0.64	3. 11.35% Shrub (21 units)	3. 11.35% Shrub (21 units)
Step	11	60.14	20.18	1217.03	0.76	6.04		4. 8.10% Annual Grasses (15 units)	4. 5.40%Annual Grasses (10 units)
Cascade	1	43.01	23.00	791.29	0.49			5. 1.62% No Vegetation (3 units)	5. 0.54% No Vegetation (1 unit)
Total	185	8582.98	19.09	160471.68	100.00			6. 0.54% Perennial Grasses (1 unit)	6. 0.54% Conifer (1 unit)

Rock Creek Tribal Hatchery Property

We have explored new and innovative ways of rearing young coho salmon that contribute to traditional tribal fishing harvests in Rock Creek. Many more coho salmon have been available to tribal members the past few years than during the prior decade. Our fish are surviving significantly better than traditional hatchery fish so we can do a lot more with a lot less money. We have a long way to go in providing optimal opportunities for quality fish but we are continually experimenting and learning more.

During 2003, tribal personnel began a long-term planning process involving new hatchery site facilities that will allow for more comfortable educational visits and traditional fishing outings.

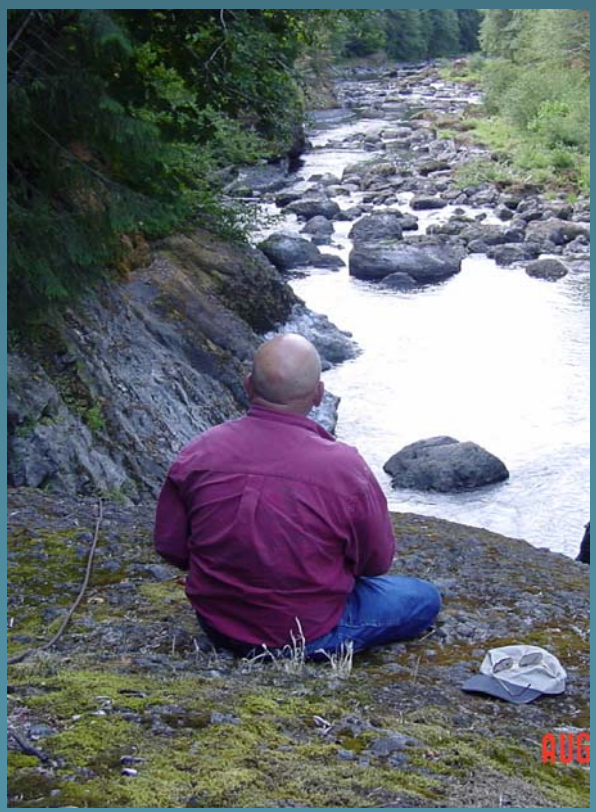
Staff are discussing park-like structures such as a pavilion, viewing decks along the creek, trails across the 200 acre property, vehicle bridges, picnic benches, landscaping and stands of traditional plants such as hazelnut and camas.

The Tribal hatchery property supports many more animals than just coho salmon – herons, king fishers, jays, owls, red tails, an occasional eagle, deer, elk, beaver, muskrat, and raccoon to name a few. The ponds also support chinook, trout, steelhead, mussels, crayfish and eels.

Eel (lamprey) Harvest, Research and Monitoring

For the past several years tribal staff and members have got together for a day of "eeling" at Willamette falls. Our catch has varied but usually runs about 200-400 eels for a three to four person group. The falls area can be dangerous under any condition so safety is always a concern. We recently acquired a larger boat which has increased our harvest abilities as well as our level of safety as we travel to the base of the falls. Tribal members clean the catch and allocate those eels to elders and other members who still enjoy the taste of eel.

During 2001, 2002 and 2003 tribal staff worked with a host of federal and state agencies as well as other tribes and non-tribal stake holders in the relicensing process for the Willamette Falls dam facilities. This long process came to a close during late 2003. As part of the agreement to allow Portland General Electric to continue using Willamette River water for power generation, eel studies will be completed at the falls site as well as across the Willamette Basin. Tribal staff will continue to be involved in setting priorities for those studies as well as future eel harvest regulations and management at the falls.



More locally we remain concerned about our eel populations. Tribal fishermen still go out a few nights a year when the eel ants (termites) start flying but catches continue to be minuscule compared to 35 years ago. During 2003 we began looking for additional funds for more eel research and monitoring work. We anticipate working with the State Fish and Wildlife monitoring eels at the Gorge Trap during 2004 and beyond. In 2004 we will be writing a Memorandum of Agreement with the U.S. Forest Service for a long-term project looking at juvenile and adult eels and habitat issues.

Eel (lamprey) Harvest, Research and Monitoring

Since 1998 we have seen what appears to be a slow increase in spawning adult eel numbers in the Siletz. The way eels are counted is relatively simple. Nests or "redds"are counted as a measure of adult numbers. A single redd is about the size of the inner portion of a small car tire rim and circular in shape. Several spawning behaviors have been observed. These include everything from large numbers of eels working cooperatively to build a few redds to a single male female pair building a single redd. Therefore it is difficult to determine how many eels are associated with a particular nest.

This is just one of the several research issues we have to work out in order to strengthen our .

understanding of long-term eel populations in the Siletz Basin

Using our 1998-2002 data describing the distribution of adult eels we developed a method to sample a subset of the available mainstem spawning habitats. This sub-sample method has allowed us to estimate the total spawning eel population across the lower 55 miles of river - and we can do it with less effort and money and more confidence.

Siletz River Eel Spawning Habitats