

Tribal Science Priorities and Success Stories

NATIONAL FORUM ON TRIBAL ENVIRONMENTAL SCIENCE

September 24-29, 2006

Quinault Beach Resort and Casino
78 State Route 115
Ocean Shores, WA 98569



Reception and Poster Session

6:00 p.m. – 8:00 p.m.



Sponsored by the National EPA-Tribal Science Council (TSC) and hosted by the Quinault Indian Nation (QIN)



Environmental Contaminants

chemistry ♦ transport ♦ modeling ♦ methods development
transformation ♦ monitoring ♦ toxicology ♦ assessment



Hoh River Knotweed Control Project: Challenges to Riverine Habitats Posed by an Aggressive Invader

Jill Silver, Watershed Program Manager
10,000 Years Institute and Hoh Indian Tribe

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360.385.0715
www.10000yearsinstitute.org



Abstract

Distribution of invasive knotweed plant sites in the Hoh River corridor has been significantly influenced by control measures that rely on carefully targeted herbicide application.

One plant, eroded and fragmented by flood flows in 1999, developed into 731 clumps (9,622 canes) in 2002, 1,244 clumps (18,585 canes) in 2003, 1,464 (8,463 canes) in 2004, 418 (2,911 canes) in 2005, and 688 (3,004 stems) in 2006. Plant size has been reduced from a predominance of large clumps with multiple canes (25-100) and an average height of 6-10 feet to scattered single stemmed plants 1-3 feet in height.

Introduction

In the Pacific Northwest, replacement of native vegetation by the aggressive non-native invader *Polygonum cuspidatum* poses a significant threat to river function and fish and wildlife habitat by impeding the development and growth of native riparian forests, recruitment of in-stream woody debris, nutrient cycling, and food production. In many rivers in western Washington State, dense thickets of knotweed completely cover acres of riparian zones, making control impossible without decades of costly and potentially toxic measures.

The Hoh River, on the west coast of the Olympic Peninsula in Washington State, is one of only a few relatively healthy wild salmon-bearing rivers in the lower 48 states, having a wide and active floodplain that easily moves invasive plants to new locations.

Objectives

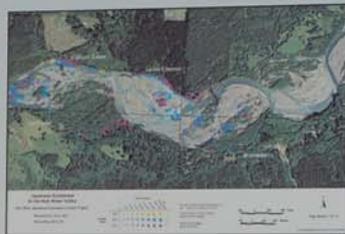
The primary objective of this project is the complete eradication of knotweed species from the Hoh River corridor in order to protect riparian and aquatic habitats and associated species, including Pacific salmon, steelhead trout, and bull trout.

Additional objectives are to provide data on this species' ecology and behavior in Pacific Northwest riverine ecosystems. This study represents a unique opportunity to document the initiation of a knotweed infestation in a large river system.



Discussion

In 1998, a single clump of knotweed was observed at a homestead on the upland edge of the river's channel migration zone (CMZ) at river mile (RM) 29.5. In 1999, this clump was eroded into the river and transported downstream during a winter storm event, giving rise to a population of knotweed that became widely distributed within the Hoh River CMZ to the river's mouth within three years.



Methods

Since 2002, annual inventories have been implemented in the river corridor extending 30 miles in length and one mile in width. Surveys occur in an upstream to downstream gradient, following riverine deposition patterns, in a grid covering bare gravel and cobble bars, vegetated islands, and forested terraces. *Trimble Pro XR* GPS units installed with a data dictionary are used to gather data on erosion hazard, plant size, rooting substrate, and to map plant sites and document control methods. Control methods in 2004 - 2006 consisted of injection using the *JK Injection Tool*® and 3-5 cc *Aquamaster*® per cane for large plants, and targeted spray of *Aquamaster*® (5-7% concentration) and the adjuvant *Agridex*® for small plants. Effectiveness monitoring follows each control season.



Results and Conclusion

Plant biomass and distribution has been reduced from many large multi-stemmed plants located in highly erodible hazard zones to small single stemmed plants growing slowly in completely shaded low erosion zones on forested terraces. The overall number of plant canes per river mile has decreased in treated areas by over 90% since 2004. Despite effective control, knotweed continues to be widely distributed in the river corridor. Viable rhizomes buried in gravel deposits are uncovered in continuous flood events. This project will require a number of years of entire river corridor surveys to ensure that all plant source material has been eradicated.

Year	Total Plant Groups	Total Number Canes	Area Surveyed (River Miles)
1998	1	50	—
1999-2000	High Flow Event		
2001	Scattered	15	—
2002	731	9,622	15
2003	1,247	18,585	15
2004	1,464	8,463	30
2005	418	2,911	30+

Figure 1. Knotweed Spread in the Hoh River Corridor (from Lauren Urgenson, University of Washington, College of Forest Resources)

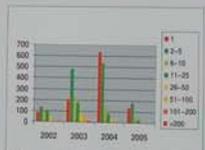


Figure 2. Change in clump size/cane count over time.

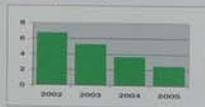


Figure 3. Change in average plant height (biomass) over time.

No Smoking in the House!

Make Your House Airtight, and Ventilate Right

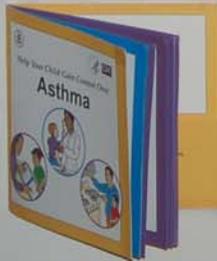
SEPA
ASTHMA HOME ENVIRONMENT CHECKLIST

SEPA
ASTHMA HOME ENVIRONMENT CHECKLIST

WHAT CAN TRIGGER AN ASTHMA ATTACK MAY SURPRISE YOU



ATTACK ASTHMA. ACT NOW.
1-866-NO-ATTACKS
WWW.NOATTACKS.ORG
DON'T LET YOUR CHILD FEEL LIKE A FISH WITHOUT WATER.



GETTING TO KNOW YOUR HEAT EXCHANGE VENTILATION SYSTEM

The Facts

LIFE BREATH



"I FEEL LIKE A FISH WITH NO WATER."

-JACOB, AGE 5

Change HVAC Filters Regularly

Keep Pets Out of Rooms

Use Allergies Checklist

Use a HEPA Filter

Use Your Allergies Checklist

Check for Mold in Your Home

Use Your Allergies Checklist



Environmental Services

Provides inspection services and technical support to Bois Forte Housing and homeowners. Indoor Air Quality home inspections include searches for mold, moisture and construction issues, asthma triggers, HVAC, ventilation and other issues.



Emergency Management at the U.S. Environmental Protection Agency



Emergency Management Activities

Our emergency management activities help to prevent, prepare for, and respond to health and environmental emergencies:

- Promote the ability of states, tribes, and local entities to lead preparedness activities
- Develop and maintain a regulatory structure that promotes prevention
- Understand the causes of accidental releases and develop state-of-the-art prevention technologies
- Form and support partnerships and work with our stakeholders



Ther-Dermant, Jacksonville, FL

Oil Pollution Prevention requires regulations that promote the prevention of discharges.

- The Spill Prevention, Control, and Countermeasure (SPCC) rule helps specific facilities that store or handle oil to prevent discharges to U.S. waters.
- Owners/operators prepare and implement plans that detail the facility's spill prevention and control measures.

Local Government Reimbursement Program provides federal funds to local governments for costs of temporary emergency restoration activities in response to releases of hazardous substances.

How Can Tribes Participate?

Regional Response Teams and **Local Emergency Planning Committees** provide a forum for emergency management agencies, responders, industry and the public to work together to understand oil and chemical hazards in the community and to develop plans in case of an accidental release.

Exercises are used by emergency responders to test existing plans and procedures and to validate communications equipment and protocol.

Response to Hurricanes Katrina and Rita



Post-Katrina Response through Collections



Post-Rita Response, Louisiana



Assessment of Flooded Storage Tank



Facilities with Facility Response Plans in the Path of Hurricanes Katrina and Rita

Facility Response Plans are required for facilities that store large quantities of oil.

- Prepare and submit plan for a worst-case discharge
- Establish emergency response resources, conduct a hazard evaluation, and determine the discharge scenarios for small, medium, and worst-case discharges

EPA Office of Emergency Management

Our mission is...

...to ensure that this nation is better prepared for environmental emergencies. OEM is working with other EPA partners, federal agencies, state and local agencies, tribes and industry to prevent accidents, as well as to maintain superior response capabilities.

...to provide national leadership to prevent, prepare for, and respond to, health and environmental emergencies. This is facilitated through partnerships, joint strategy development, and technology development.

Regulation and Policy Development Division is our policy and technical arm.

- Develops policy, regulations, and technical approaches for environmental, safety, and accident statutes
- Emergency Planning and Community Right-to-Know Act
- Regulates the prevention of oil spills through Spill Prevention, Control, and Countermeasure rule

National Planning and Preparedness Division ensures response readiness.

- Ensures that EPA is ready to respond to oil, chemical, biological and radiological contamination accidents
- Works closely with EPA's Office of Homeland Security

Program Operations and Coordination Division provides support for all of the office's operational programs.

- Provides programmatic expertise, policy information, and general support to the EPA regional offices
- Provides watch officer service 24 hours a day
- Advocates for regional needs

For more information contact William "Nick" Nichols, U.S. EPA Office of Emergency Management, 202-564-1970 or www.epa.gov/oem

To report an oil spill, call 1-800-424-8802



Oil Pollution Prevention, Preparedness, and Response in Indian Country

National Contingency Plan - 40 CFR part 300

The tribal chairman (or heads of the governing bodies) of Indian tribes, shall act on behalf of the Indian tribes as trustees for the natural resources, including their supporting ecosystems:

- Belonging to, managed by, controlled by, or appertaining to such Indian tribe, or
- Held in trust for the benefit of such Indian tribe, or
- Belonging to a member of such Indian tribe, if such resources are subject to a trust restriction on alienation.

Officials may act when there is injury to, destruction of, loss of, or threat to natural resources, including their supporting ecosystem as a result of a release of a hazardous substance.

Oil Storage Facilities in Indian Country

- Working with EPA regions, tribes, and our American Indian Office to map facilities
- Identify aboveground oil storage tanks and facilities on or near reservations, allotments, and other tribal lands



Oil Facilities (OIFs) near Tribal Lands in Oklahoma and Texas



Oil Spill Response Trailer
NEAH BAY (June 8, 2005) - Oil spill response capability in Neah Bay just got better thanks to the Makah Tribe's acquisition of a first-of-its-kind cleanup and containment equipment trailer and the training that goes with it.

EPA Region 10 Community Response Plan Pilot Project

- EPA provided funding to develop a Model Community Response Plan manual and template for tribal entities
- The template may be used as a boiler-plate for the development of community-specific response plans
- Developed with Alaska Native villages, American Indian communities, or other tribal entities
- For more information a copy of the CD, visit <http://hukaresearch.com/CRP>



Marbled Murrelet Habitat Protected, August 2006
The *Tenryo Maru* oil spill (1991) that affected Washington's outer coast and tribal land resulted in 200 years of protection for 900 acres of critical bird nesting areas.
A \$5.2 million habitat restoration plan was completed to offset the damages due to the spill.

Taos Pueblo Radon Program

Evelyn Martinez, Radon Project Coordinator

Robert Gomez, Environmental Director



Taos Pueblo Day School Community Outreach



Taos Pueblo



Radio Interview with Community Elder for NPR, KUHM, and National Native News.



Taos Pueblo

Goals:

- Educate and inform
- Test 100 homes and offices
- Monitoring and mitigation
- Build out radon

Taos Pueblo Radon Program

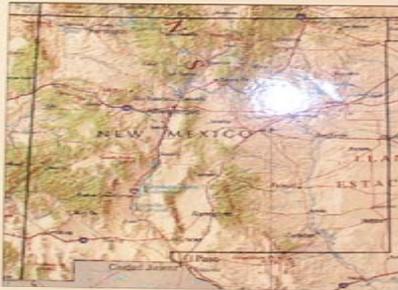
Evelyn Martinez,
Radon Project Coordinator

Robert Gomez,
Environmental Director

P.O. Box 1846 Taos, NM 87571 (505)751-4601



Taos Pueblo Day School Community Outreach



State of New Mexico



Taos Pueblo Home Owners Meeting



Radio Interview with Community Elder for NPR, KUNM, and National Native News.



Taos Pueblo Moccasin Wire Interview on KTAO

Goals:



This map shows the layout of the Sicangu Mni Wicroni (Rosebud) Rural Water System in the Primary Service Area. The Sicangu Mni Wicroni also provides services to tribal members in Tripp, Gregory and Lyman Counties Secondary Service Area.

For Additional Information Contact Rosebud State Title Office of Water Resources 1.888.742.2939

Mni Wicroni Completed Projects



Pipe Price Comparison



Mni Wicroni Completed Projects



Water Flow Changes



- Mni Wicroni generated over 250 construction and 125 operation and maintenance related jobs.
- Mni Wicroni: Reconciliation at its best between Indians and non Indians.

Mni Wicroni Project Costs



- Mni Wicroni: Expected to be extended through 2012 at a total cost of over 500 million dollars.
- Any Questions, please shoot.
- Thank you.

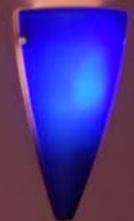
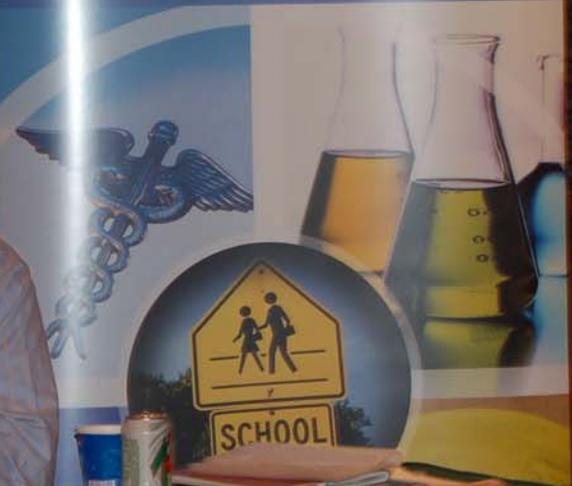




www.epa.gov/SC3

Schools Chemical Cleanout Campaign (SC3)

Mismanaged chemicals expose students and staff to unnecessary dangers.
Learn more. Visit www.epa.gov/SC3.





Seed collection also involves processing. Here, students use various pieces of equipment to process, clean and weigh seed.



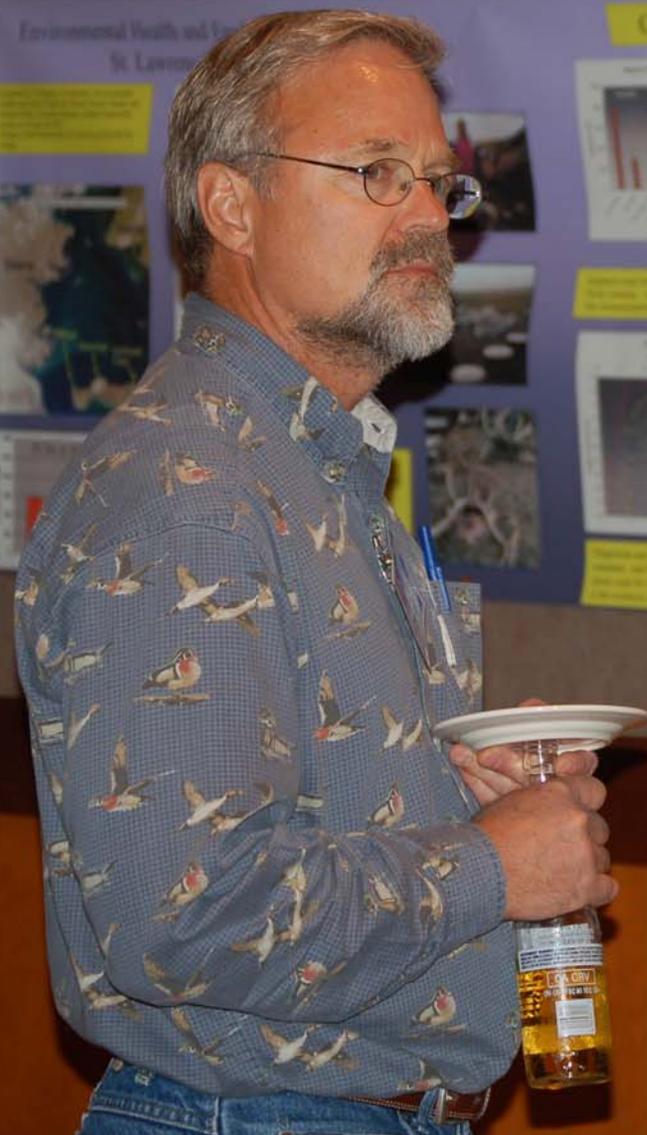
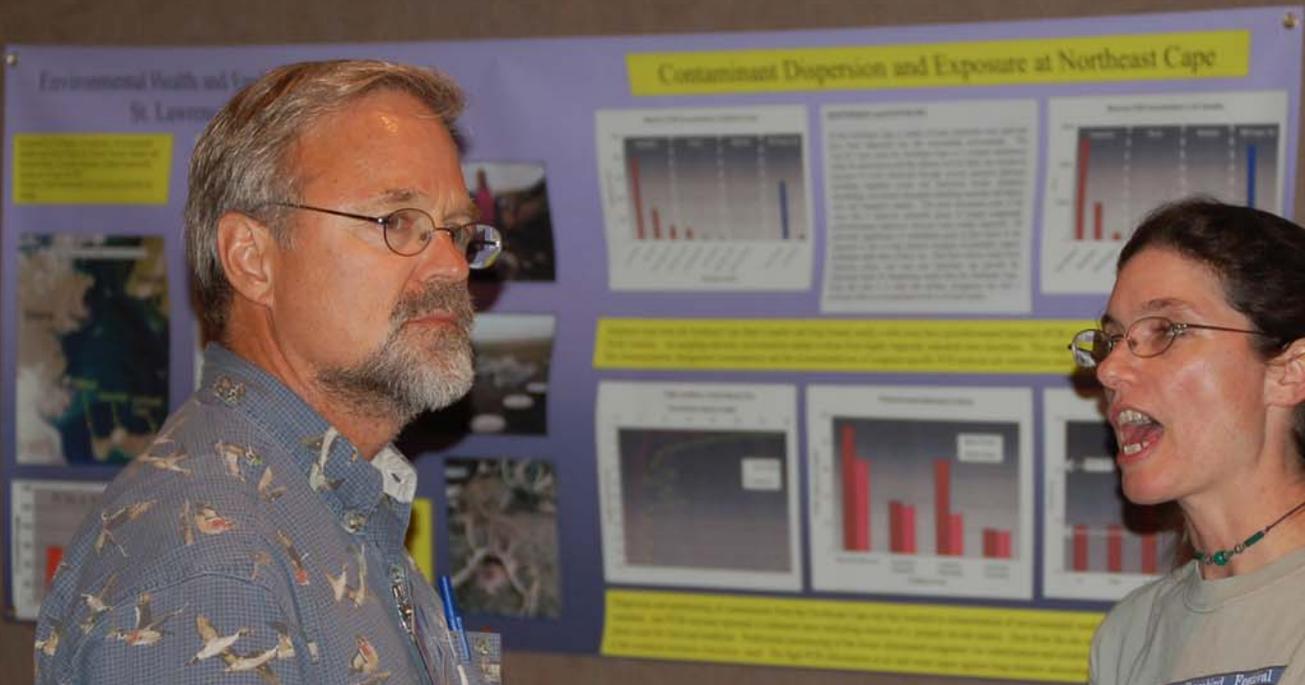
currently occurring on the Flathead Indian Reservation. In attempts to make the highway more wildlife friendly, numerous crossings were constructed. These photos show a rechanneled stream crossing, a newly engineered channel, and revegetation and bank stabilization efforts using native plants.



These posters are examples of the efforts by SKC in the plants, protection of and collaboration with colleges.





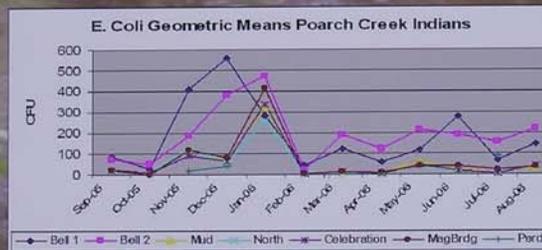
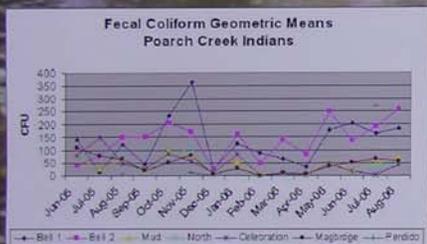


Tracking Changes in Surface Water Quality



Impacted by Open Dumping

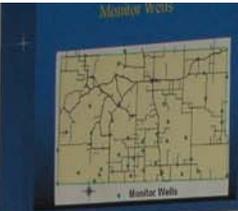
by Troy Pierce, Laura Cook, John English and Lena White
Poarch Band of Creek Indians, Environmental Department



The Poarch Band of Creek Indians has been actively acquiring land as part of reclaiming portions of the original Creek Nation homeland. Land surrounding Bell Creek and Big Escambia Creek located in southern Alabama has been purchased by the Tribe in the last few years in hopes of returning these lands into more sustainable practices after many years of monoculture forestry and gravel mining. Big Escambia Creek is a very pristine creek in that very little pollution and/or human impacts affect the portion of the creek that runs through tribal lands. Bell Creek, on the other hand, is being affected by illegal dumping at a bridge site along the creek. One year of data has been collected on a three times a month schedule on both of these creeks. Both creeks have good forest riparian zones, though Bell Creek consistently shows lower levels of DO and higher levels of fecal coliform as well as E. coli. Remediation and site exclusion is being conducted to eliminate illegal dumping at Bell Creek and public outreach will continue into FY 2007. This first year of monitoring data helps show the impact of an illegal dump site on stream health as compared to a stream with minimal pollutant impacts.

This work has been funded by a grant from U.S. EPA

Background photo of Bell Creek at testing location downstream of bridge dumping



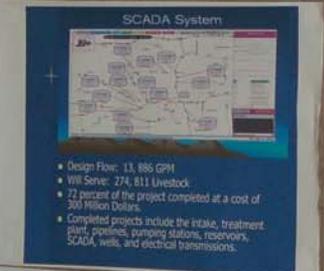
The Mni Wiconi Rural Water System Supplies Water to One-Sixth of South Dakota including three Indian Reservations.
By: Syed Huq, Director
Mni Wiconi-Rosebud Rural Water System

- Purpose: To Provide Adequate Water to meet the economic, environmental, municipal and public health needs.
- Existing water source is highly mineralized and of poor quality.
- Higher numbers of water borne diseases in the design areas.
- In some communities water had to be hauled from distant places.



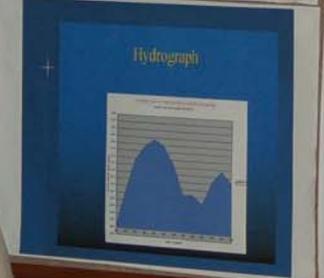
Indian Reservations of South Dakota

- Mni Wiconi was authorized by congress in 1988.
- Designated Population: 51, 635
- Area comprises 12 counties, 1/6 of South Dakota, over 12,500 square miles including Rosebud, Ogjala and Lower Brule Sioux Reservations.



Ogallala Aquifer

- Largest Rural water project in the country.
- Water Source: Missouri River and Ogallala Aquifer.
- Authorized Funding: 440 Million Dollars
- Authorized date of completion: 2008



Public Law 100-516-Oct. 24, 1988

The Mni Wiconi Rural Water Supply
Project Construction
Authorization



RELATIONSHIP BETWEEN BODY SIZE, LIPID CONTENT AND CONTAMINANT CONCENTRATION IN WHITE STURGEON



Dr. Christopher W. Thompson, Valerie A. Lee and Parker P. Witman
 Environment International Ltd, Seattle, WA.

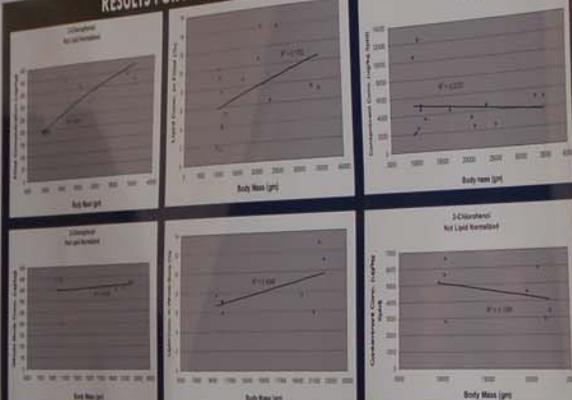
INTRODUCTION

White sturgeon, *Acipenser transmontanus*, population has declined considerably throughout much of their range in the Pacific Northwest, due to a host of factors including dam construction, habitat loss, and overfishing. This species is anadromous and spends the most time in rivers. This species and other large fish species are important to many communities and are a significant part of the Pacific Northwest's culture. This species is also a highly valued food source. This species is also a highly valued food source. This species is also a highly valued food source.

METHODS AND RESULTS

The Washington State Department of Ecology (DOE) and the U.S. Environmental Protection Agency collected whole-body and fillet tissue samples from white sturgeon in the Columbia River Basin in 1998 through 2008. We conducted new analyses of these data which indicate the relationship of body size to e.g., chemical, nutrient and organic contaminants (e.g., DDTs, PCBs, phenols, chlordanes, etc.) in white sturgeon. We found that contaminant concentrations in fillet samples, but not whole body samples, increase with increasing body size.

RESULTS FOR A REPRESENTATIVE CONTAMINANT



CORRELATIONS

Contaminant	Body Size (g)	Body Mass (kg)	Body Length (cm)
2-Chlorophenol (Nit Lipid Normalized)	$R^2 = 0.88$	$R^2 = 0.88$	$R^2 = 0.88$
2-Chlorophenol (Lipid Normalized)	$R^2 = 0.23$	$R^2 = 0.23$	$R^2 = 0.23$

CONCLUSIONS AND IMPLICATIONS

Contaminant concentrations in white sturgeon fillet samples are significantly higher than in whole-body samples. This indicates that contaminants are more concentrated in the fillet tissue. This is likely due to the fact that fillet tissue is more metabolically active and therefore accumulates more contaminants. This finding has important implications for the management of white sturgeon populations. It suggests that monitoring contaminant levels in fillet tissue, rather than whole-body samples, would be a more effective way to assess the health of white sturgeon populations. This is particularly important for the management of white sturgeon populations in the Pacific Northwest, where the species is still recovering from historical overfishing and habitat loss.



Abstract

Distribution of invasive knotweed plant sites in the Hoh River corridor has been significantly influenced by control measures that rely on carefully targeted herbicide application.

One plant, eroded and fragmented by flood flows in 1999, developed into 731 clumps (9,622 canes) in 2002, 1,244 clumps (18,585 canes) in 2003, 1,464 (8,463 canes) in 2004, 418 (2,911 canes) in 2005, and 688 (3,004 stems) in 2006. Plant size has been reduced from a predominance of large clumps with multiple canes (25-100) and an average height of 6-10 feet to scattered single stemmed plants 1-3 feet in height.

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The Hoh River, on the west coast of the Olympic Peninsula in Washington State, is one of only a few relatively healthy wild salmon-bearing rivers in the lower 48 states, having a wide and active floodplain that easily moves invasive plants to new locations.





YOUR SOURCE FOR TRIBAL POLLUTION PREVENTION INFORMATION

www.tribalp2.org



Resources and solutions for protecting Mother Earth for future generations

Find Tribal Pollution Prevention Information at: www.tribalp2.org

The web site shows how P2 can solve tribal waste problems by offering:

- ▼ A showcase of successful tribal P2 programs
- ▼ A forum to discuss tribal issues
- ▼ Sources of technical assistance across the U. S.
- ▼ Tribal P2 funding opportunities
- ▼ Project resources designed by tribes

Share your resources, news and events with others. Just use our short on-line input form.





EXIT

National EPA-Tribe



Dave Nielsen, Tribal TSC Co-
Roland Hemmelt, Agency TS

Protecting Human Health and the Environment on Sioux Tribal Lands:

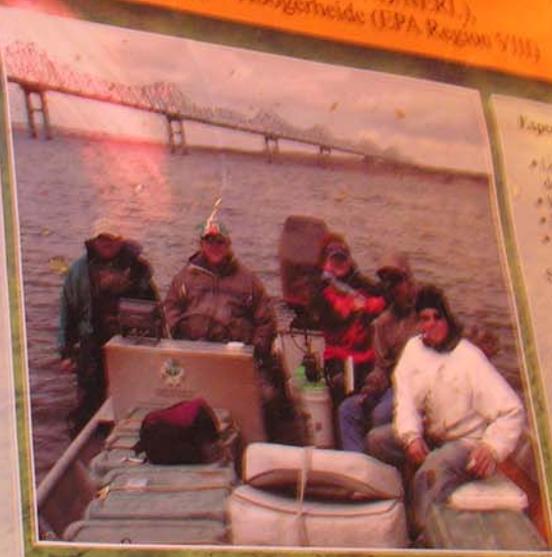
A Partnership of EPA and Tribal EPD

John Johnston (ORD/NERL), Dale Hoff (EPA Region VIII), Chris Knightes (ORD/NERL),
Robert Ambrose (ORD/NERL), Carlyle Ducheneaux (CRST) and Roger Hoogerheide (EPA Region VIII)

EPA Science Focus

Abstract

Through environmental sampling performed by EPA and Cheyenne River Sioux Tribe Environmental Protection Division personnel, mercury contamination in managed pond systems in South Dakota was characterized and risk reduction recommendations were made to protect subsistence fisherman and their families. However, scientific uncertainty remains with regard to the mechanisms of methylation and demethylation within the pond systems, as well as the means of mitigating the biomagnification occurring in aquatic food webs across the region. In a previous model evaluation of the Regional Mercury Cycling Model (R-MCM), it was discovered that models based on the current science underpredict both total mercury concentrations as well as the percent of total mercury present as methylmercury. This suggests that current models are not adequately capturing the processes governing the total loading of mercury to the system or the transformation processes governing methylmercury production. Continued monitoring of managed farm ponds is focused on reducing temporal and spatial uncertainty in model predictions, as well as uncertainty associated with model parameters such as mercury loading (atmospheric and watershed-based) and transformation. To address these key areas of scientific uncertainty, a model comparison is also underway, involving a new Excel spreadsheet-based application based on the science in the Mercury Report to Congress and expanded to include the current state-of-science.



Experiences in the Field Year

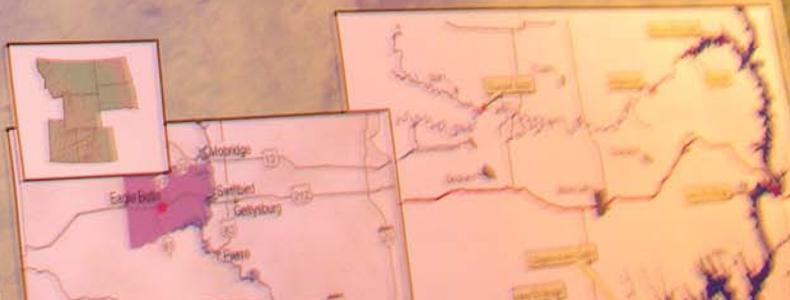
- Low fish catch due to low water levels
- Water levels
- Lack of groundwater parameters and data
- Trade-offs between sampling and safety

Second Year's Lessons

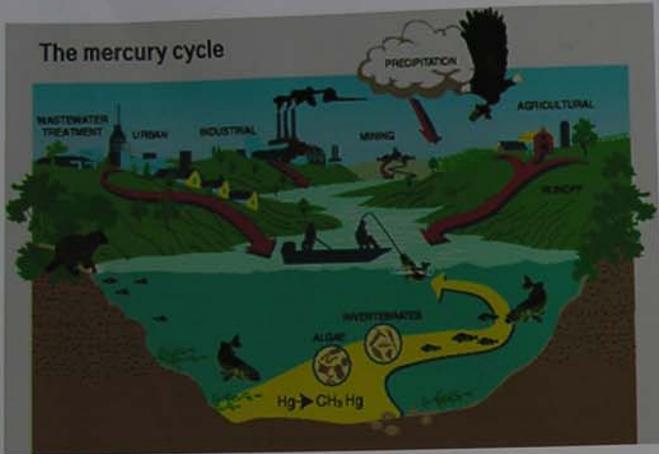
- More ponds covered for more accurate sampling
- Special sampling of mercury in sediment
- More frequent temporal sampling of ponds to capture variability
- Site preparation and maintenance, sampling methods and timing
- More sample storage of sediments and water for later analysis
- Improved design for groundwater sensors
- Additional data collected to improve model input data
- Tribal Authority to open, allocate and manage



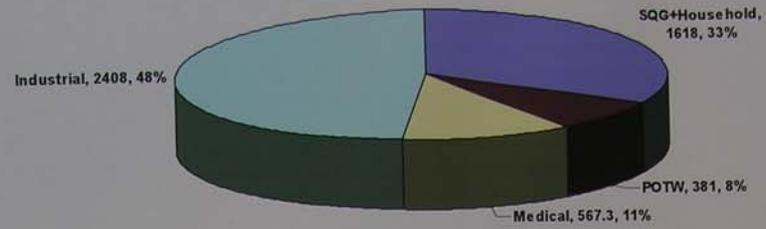
Cheyenne River Basin Sample Stations



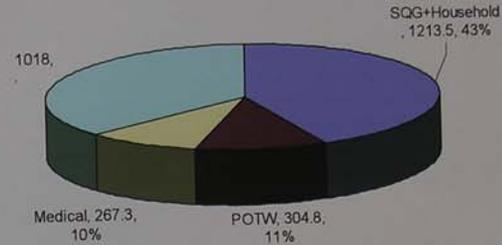
Mercury Reduction Analysis 2001-2004



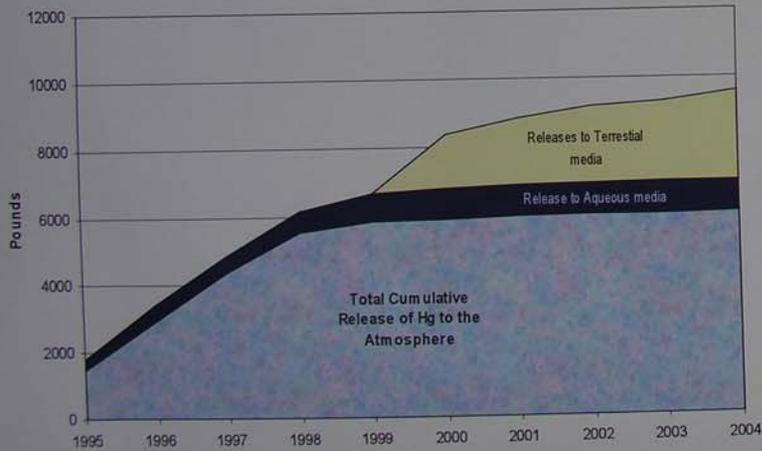
Mercury Releases 2001 (4,900 lbs)



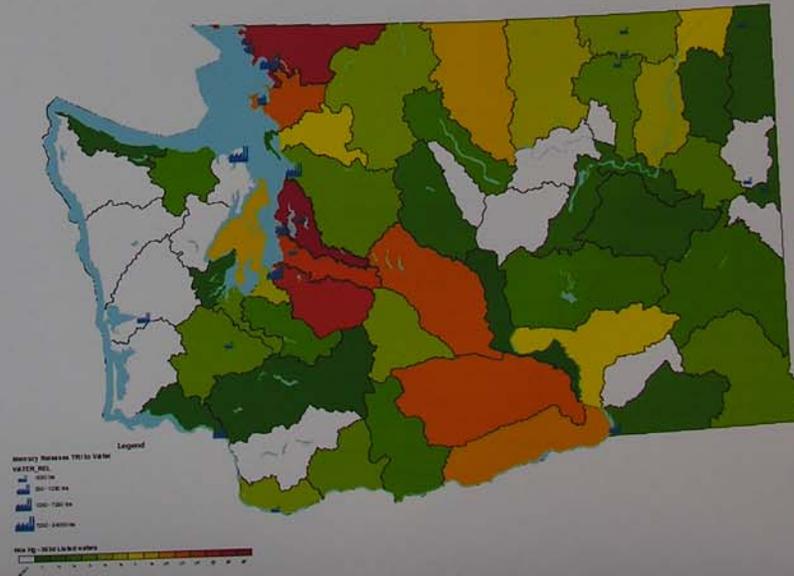
Mercury Releases 2004 (2,800 lbs)



Cumulative Total Releases of Mercury (Hg) by Media. Source: TRI



VA State Watersheds: Number of streams listed on the 303d list for Mercury



Keep our environment safe

ies on
bath

...and again dried. The cakes were wrapped in leaves or bark. Then stored away and eaten through out the year.

SALMON BERRIES (kwala')

Salmon berries usually eaten fresh, served with oil of the sockeye salmon. the new shoots of the plant (djanats), which come up each spring, were gathered and often eaten raw, they were usually cooked in a pit then same as the camas but not as long. The sprouts were served with fish oil.

ELDERBERRIES (silo'm)

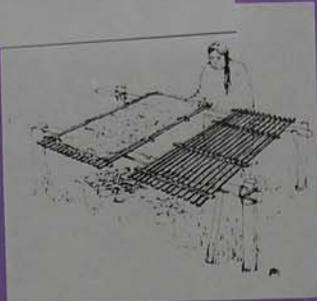
Elderberries were gathered in July. Placed between large slabs of alder or hemlock bark and baked in a fire pit. When cooked they were stored in containers of alder or hemlock bark which were lined with leaves. Stored under water in a cold spring.

SALAL BERRIES (skwasa'utcan)

Salal berries were prepared for winter use by smoke drying. Cedar was split into thin, narrow strips and woven into an open checker weave, and this frame placed on a drying rack about four feet above the fire. The frame was covered with fern leaves and the berries spread on top. Three or four baskets were placed on top, the drying was kept up for three days. Then the berries were mashed, molded into round cakes 6" in diameter and again dried. Stored in a alder dish large enough to hold five cakes was made and the half-dried berries were place din this and mashed with a stone pestle. The fruit was now dried still more and stored away. When used slices were cut from the cake, mixed with water and eaten with oil.

CRABAPPLE (kwi'tsanitl)

Crabapple was place din a pit also and covered with leaves and baked til done.



Digging stick, used to dig bulbs & roots

Fruit is healthy for you.

APPLES (pu'tum)
Apples were eaten fresh.



CRANBERRIES (asu'umish)

Cranberries of both the bush and swamp varieties were treated in the same manner.

STRAWBERRIES (xai'ax'imnitl)

Strawberries were eaten fresh. Because crops were small.

GOOSEBERRIES (le'imk's)

Gooseberries were baked and dried and made into cakes like other berries.

Seahawks

CAMAS (mola'kels)

Camas was the most important root used. The lillie like bulb was found in the prairies, during the month of June. Roots were washed in open baskets. A pit was dug in the sand, fire built on top, partially filled w/rocks. When rocks hot, fire removed and fern leaves placed over rocks. On top was placed the camas. A thick layer of fern leaves was placed on top and covered with 3" of sand. Roots cooked all night. Fire was kept burning on top. In morning the roots were removed, washed and mashed into cakes about twice the size of bread loafs. These cakes were buried in the reheated pit between layers of fern leaves and baked for a day. They were thoroughly cooked and kept through the

ARROWHEAD, WAPATO

This plant is found commonly in shallow fresh marshes and occurs in deep marshes. It readily grows in soft, mucky substrate in quiet water. The tuber is a favorite food of ducks and was commonly harvested by Native Americans

THIS IS MY LAND

This poem, "THIS IS MY LAND", best summarizes what it is to be a member of the Quinault Indian Nation. The poem is written by Clarence 'Teach' Pickernell. The poet was a member of the Quinault Tribe, an a teacher at the Taholah Grade School. He organized a dance troop taught the youngsters to dance, sing, chant and drum authentic Indian dances. He also (to a great extent) supported this young dance group out of his own pocket. He died in 1970; but left us a symbol of our own unique INDIANNESS.

THIS IS MY LAND

**This is my land from the time of the first moon, till the time of the last sun.
It was given to my people.
Wha-neh Wha-neh, the great giver of life made me out of the earth of this land.
He said, "You are the land, and the land is you.
I take good care of this land, for I am part of it.
I take good care of the animals, for they are my brothers and sisters.
Take care of the streams and rivers, for they clean my land.
I honor Ocean as my father, for he gives me food and a means of travel.
Ocean knows everything, for he is everywhere.
Ocean is wise, for he is old.
Listen to Ocean, for he speaks wisdom.
He sees much, and knows more.
He says, "Take care of my sister earth, she is young and has little wisdom, but
much kindness. When she smiles, it is springtime. Scar not her beauty, for she is
beautiful beyond all things."
Her face looks eternally upward to the beauty of sky and stars, where once she
lived with her father, Sky."
I am forever grateful for this beautiful and bountiful earth, God gave it to me.
This is my land.**

Clarence Pickernell, Quinault

