



MAKAH TRIBE



MAKAH FISHERIES SUMMER INTERNS

2014 FINAL REPORT
(July 7th, 2014 – July 31st, 2014)

INTERNSHIP PROGRAM SUMMARY

Since 2002, Makah Fisheries Management has sponsored summer internship programs to teach Makah youth about fisheries management and environmental science. The primary goal of the internship program is to excite Makah youth about fisheries and environmental sciences so they one day pursue a college degree in a related field and return to the Reservation to be the managers and scientists of Makah Fisheries Management's future.

This year we worked with the Summer Youth Employment Program and received funding from the Olympic Coast National Marine Sanctuary to hire four interns. The four interns were Selena Akin (age 16), JaRickson Kanichy (age 17), Deon Cooke (age 15), and Collin Haupt (age 17). After reviewing their applications and conducting interviews we selected these four interns because they had potential, aptitude, and the right attitude to succeed.

We had a three-part plan for introducing the interns to Makah Fisheries Management. Our first step was to give the four interns background lectures on why fisheries management is important to the Tribe, how fisheries management works, and on general ecology. Next, the interns job shadowed and did projects with many of the divisions and programs within Fisheries Management and with outside researchers so they can understand the day-to-day job responsibilities and could learn hands on how the department works. The final part of the plan was to require the interns to present what they had learned to the community. To achieve this plan the interns wrote this Makah Fisheries Summer Interns 2014 Annual Report and presented the report orally at the Makah Senior Center on July 31, 2014.

I would like to thank all of the staff of Makah Fisheries Management and outside researchers and scientists for their contributions to this year's internship program.

- Russell Svec, Fisheries Director



INTRODUCTION

With Russell Svec, Jonathan Scordino, and Adrienne Akmajian

TREATY RIGHT AND FISHERIES MANAGEMENT

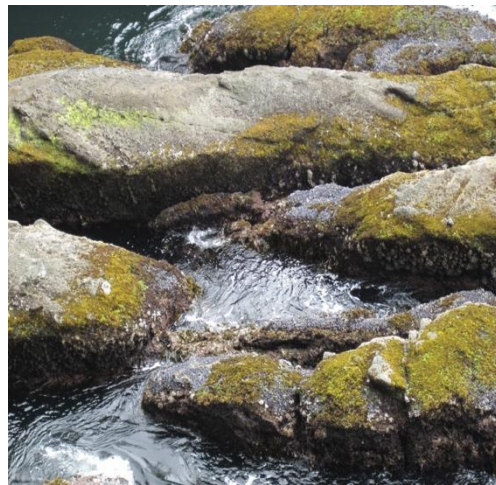
On the first day, Russell Svec gave us a brief lesson on the 1855 Treaty of Neah Bay. We currently have the largest treaty fisheries in the nation. The treaty was hard to interpret, but is a very important change of the Tribe's history. During the lesson we learned that in the negotiation between the Makah Tribe and the Federal Government that the Makah leaders were very determined to keep our fishing, whaling and sealing rights preserved. Our leaders also wanted to keep their rights to the oceans resources because the ocean was home to the Makah. The Fisheries Management Department's job is to maintain the treaty rights and view it as a privilege and a responsibility to protect these rights. The department is striving to develop an ecosystem based management approach in which all things are connected. To overcome this challenge the Makah Fisheries Management Department will need help from the community of Neah Bay.

INTRODUCTION TO ECOLOGY

On the first day, Adrienne Akmajian gave us a lesson on Ecology. We learned the definition of Ecology. Ecology means the relationship between and among living things and their environment. She drew a picture of tide zones and we had to draw pictures of animals and put where we thought they belonged. After that we went through to see if we put the animals in the right place. Then we went to Cape Flattery to look at how our drawing compared to real life.



Interns looking down at tidal zones.



A picture of a tidal zone.

LINCOLN PETERSON BEAN LAB

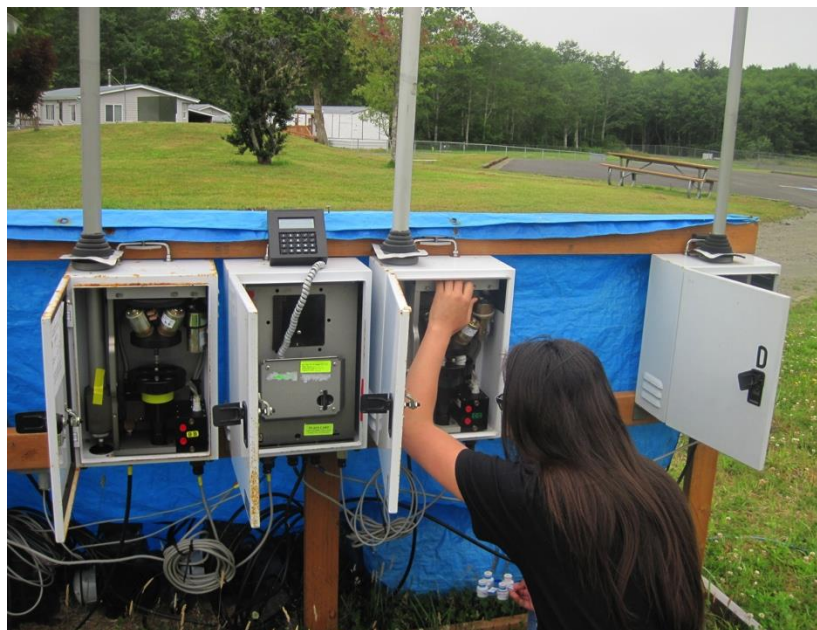
For this project, the interns worked with Jon Scordino on how to use the Lincoln Peterson method, or the mark-and-recapture method. Jon handed the interns bags full of brown beans. The goal was to get a population estimate of the beans in the bag. The first step in this procedure was to grab a handful of brown beans out of the bag and count how many brown beans we took. The next step was to replace the same amount of removed brown beans, with white beans, and put them in the bag. We would then shake the bags to mix the beans around. After this was done, we would grab a handful of mixed beans, and put them on the table. We would then count the amount of white beans and brown beans. We then used a formula to calculate estimates of the total amount of beans. We repeatedly did this procedure to get a more accurate average.

AIR QUALITY PROGRAM

With Doug Sternback

AIR QUALITY MONITORING

In this project, we looked at the pollutants found in our rain. The two pollutants we surveyed for was Mercury (Hg) and Ozone (O₃). These pollutants usually come from diesel engines, coal burning, and wood fires. After a long and picky procedure by EPA, we took the rain sample for testing at the EPA Headquarters in the State of California. We do not know the results of the water since they are still in testing. We then also took the samples of the air that were sucked in through a tube into capsules. The locations that are tested are Warnick Field, and the National Fish Hatchery in Neah Bay, WA.



Selena changing the fuel-efficient eon filtered carburetors.

WATER QUALITY PROGRAM

With Aaron Parker and Maria Roberts

WATER QUALITY, SHELLFISH MONITORING, BEACH MONITORING

First we did red tide testing with Aaron. We went to Hobuck Beach and Agency Creek to collect muscles. After that we went to a different beach to dig for 6 different types of clams. At that beach we also learned a little about how to plant geoducks. We bagged the clams and muscles we dug and sent them to a lab to be tested for red tide. Red tide is caused by a phytoplankton that has a neurotoxin that gets into the animals. Red tide is an important thing to know about because it can cause paralytic poisoning where everything in your body shuts down even your lungs and unless you get to the hospital on time you die, and red tide can also cause diarrhetic food poisoning which just gives you diarrhea for a day most people think they got a 24 hour bug but its red tide. The next week we went to various rivers with Maria and tested the quality of them by taking a vial full of the river's water putting it into a machine that would tell us how clear the water was. We also used a machine called a YSI which you throw one end in the water and the other half gives you the data from the water and it tells us the time, salinity, dissolved oxygen, pH, temperature, conductivity. Most of the rivers were clear except for one down at Ozette and one river that had a higher salinity.



Selena and Deon writing data for a water quality test.

HABITAT PROGRAM AND HATCHERY OPERATIONS

With Larry Cooke, Angela Tetnowski, Joe Hinton, Debbie Cooke, and John Ides Sr.

LAKE OZETTE AND HOKO HATCHERY

We went up to the Hoko Fish Hatchery on July 24th to learn what the hatchery staff does and how they raise salmon. They put salmon eggs into trays, and when they hatch and grow big enough, they are put into a runway that is like a large tank. They tag them and release them after that to get an indicator of the rest of the species. What they do with the chinook in the hatchery is put wire tags in them to mark that they came from the Hoko Hatchery. The tags are used to compute the impact of fishing on salmon populations in the western Strait of Juan de Fuca. If a certain area took too many chinook then fisheries managers can tell fishermen to start taking less.

After that we went with Larry Cooke to learn about the monitoring of Lake Ozette sockeye salmon. Right now they use a dam like thing called a weir. A weir is basically dam with a hole in the center of it so the fish can pass through. They have a camera in the hole too see the fish that pass through. There is flaw in that though. Because the fish can only pass through that one part, the predators wait in the hole for them to pass and eat them. That is why they want to start using a machine called the Didson. The Didson is sonar that can see the fish.

One important focus of the hatchery is raising sockeye salmon. They are focusing on that one particular fish because they are being killed by the debris from logging, otters, and lack of space to lay their eggs. The sockeye are too small to implant with tags when they are babies, so they put a special experimental material on them that when you shine a certain light on them they glow.



The interns sitting under the Ozette river bridge like trolls.

SALMON PROGRAM

With Chuck Combs, Zac Espinoza, and Andrew Long

SALMON MANAGEMENT AND CODED WIRE TAGS

Doing coded wire tags (CWT) with Zac Espinoza and Andrew Long, JaRickson and Deon had to cut the fish heads looking for tags. They used a metal detector to find the tags. The tags are very small in size and they had to be careful not to lose them. The tags diameter is .25 millimeters. For each tag Selena read the numbers that were coded on the tag using a microscope and then wrote it down on the data sheet. The way this was done was picking it up with a magnet pen and putting it in the illuminator (a device that uses light technology to help read the coded wire tags). The importance of the tags is to identify what hatchery the fish came from and stock identification for the purpose of calculating the size of fishing quotas. In other words the fish tags are used for population estimates and for negotiating fishing quotas.



Left: JaRickson and Deon are cutting heads to find the coded wire tags. Right: Selena and Andrew reading coded wire tags.

MARINE MAMMAL PROGRAM

With Jonathan Scordino and Adrianne Akmajian

MARINE MAMMAL SURVEYS AND GRAY WHALE ID

We started by practicing using the cameras so we did not accidentally drop them in the water. After that we went outside to a field and they made two of us act like whales while the others took pictures, this helped us to get better pictures of moving objects. We tried on the immersion suits, which were pretty hard to put on. We put them on to be prepared in case the boat started to sink. We went on a boat to do a marine mammal survey, which is photographing the sides of the whale to identify whales by the marks on their bodies and counting sea lions. The places we went on the boat were from Neah Bay to Sekiu, Tatoosh, Ozette and Sea Lion Rock. We identified a couple of the whales and tried to biopsy (which is taking a sample of their skin and blubber) a few who we could

not recognize. We also counted the seals and sea lions while looking for hot iron brands of numbers and letters, tags, and entanglements on them. We only found a couple sea lions with brands, on Tatoosh. We went through a couple of safety exercises before we went on the boat. We jumped on to Sea Lion Rock and photographed the sea lions up close.



JaRickson counting harbor seals.



Deon photographing whales.

SPECIAL PROJECTS

COASST DEAD SEABIRD SURVEYS

With Heidi Pedersen (OCNMS/COASST volunteer), Sally Parker (COASST volunteer), and MFM staff members Jonathan Scordino, Aaron Parker, Maria Roberts and her daughter Aunjraya, and Angela Tetnowski,

On July 10, 2014 we conducted a COASST dead bird survey with Heidi Pedersen from the Olympic Coast National Marine Sanctuary. The importance of this survey is to see how the bird died, the species and age. The birds are easy to survey because they will not fly away and with precaution the carcass can be picked up and examined in detail. When a dead bird was encountered we measured the beak, wings and the tarsus (leg measurement, which is from the ankle to the bend of the foot.) to help us identify the species of the bird. After we would measure parts of the birds we had to record data down on the survey sheets. We also tagged the birds with colored zip ties to mark that it has been surveyed.

After the dead bird survey we conducted a beach debris survey following OCNMS methods. At two locations on the beach we measured out 100 meters and in those 100 meter transects we collected debris off the beach for analysis. One bag was taken to the Sanctuary Office for analysis while the other was analyzed at Fisheries by Heidi and the interns. The interns dumped the bag from one transect on a table and sorted through and recorded data from the debris such as, type of material, color, and if it was sharp. After we recorded all the data the beach debris was thrown away.



The interns, Jonathan Scordino, Angela Tetnowski, Maria Roberts, Aaron Parker and the COASST dead bird survey superstar Aunjraya Roberts.

COASST MARINE DEBRIS SURVEY

With Hillary Burgess (COASST), Erin (COASST volunteer), and MFM staff members Jonathan Scordino, Adrienne Akmajian, and Maria Roberts

We monitored marine debris on two of the beaches in Neah Bay. The first was the Boom Beach and the second was a section of Tsoo-Yess. First we had to make an overall survey area. On Tsoo-Yess this was 170 meters between two logs and on the Boom Beach it was 87 meters between the jetty and a log. Then we would construct transects in the survey area by picking random numbers and walking that many paces. Once we walked the number of paces we would put flags down to mark the different tidal zones of the beach (Surf, wrack, high, and vegetation). To monitor small debris (less than 5cm) we would use a 50 cm square and lay it down 10 paces from the middle of each zone. To monitor medium debris we would walk 3 meters on each side of the flags in each zone and pick up any debris bigger than 5cm and less than 50cm that was in the 6m transect. To monitor large debris we would walk the entire length of the survey area looking for any trash bigger than 50cm. For large debris that we did not pick up we would mark with spray paint to see if it was there next time we did the survey. For each piece of trash we would write down its characteristics like if it were colorful, shiny, plastic, etc. We did this debris survey get a baseline number in case of a catastrophic event and to see if the procedure was effective or not.



Interns collecting data on marine debris at the Boom Beach.

COMMUNITY BEACH CLEAN-UP

Jonathan and Liliana Scordino, the interns, Rickson Kanichy, and Mac Gao did a beach clean-up on the beach south of the breakwater (Boom beach) on Saturday July 12th, 2014. There was debris spread all over shore with a large amount of variety. A lot of the debris found were objects that could have come from the marina, like plastic bags. There was also a fair amount of Styrofoam. There were also your common plastic bottles and chip bags. The most peculiar objects found were a staircase and a toy ATV. We were certain that the staircase came from a boat, but we were not quite sure where the ATV came from.

By the end of the day we were able to collect roughly 700 pounds of debris. We took the debris to the transfer station, which is where we weighed the debris. We wanted to clean the beach to make it a safer and cleaner environment. We also wanted to clean the beach so the next time we did a debris survey of that beach, we would know what debris was newly washed up.



The clean-up crew with the pile of debris collected.

OLIVE SHELL MONITORING

With Tim Wooten, Cathy Pfister, and MFM staff members Jonathan Scordino and daughter Liliana, Adrienne Akmajian, and Joe Petersen

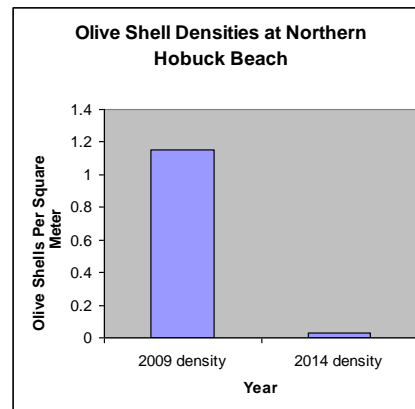
We went to Hobuck and Second Beach to monitor for Olive Shells. The objective of this was to be able to find a population and density estimate of Olive Shells of those beaches and to look at how healthy the shells were.

We surveyed for olive shells with the following procedure:

1. Roll a Hula-hoop down the beach.
2. Look to see if there are any olive shells within the Hula-hoop.
3. Use a GPS to find the location of the observing area.
4. Record the location, the amount of olive shells in the location and each olive shell's condition (healthy, minor, and severe).
 - Healthy- A shell with no scratches.
 - Minor- Faint discoloring, little scratches.
 - Severe- Completely covered in deep scratches.
5. Repeat steps 1-5 until necessary.

After this procedure was conducted, there were no olive shells that were found on the beach of Second Beach. However, we were able to find many olive shells in the tide pools, mostly being used by hermit crabs. Most of the olive shells found were either in minor or severe condition. Not many shells that were found were healthy. Many of the olives shells that were in minor condition had algae growing on them. This could mean they are older shells and that the poor condition is not only on the new shells. The group that went to survey Hobuck Beach were able to find 3 olive shells within the transects.

After all the fieldwork was done, we went back to the office to input our data into Microsoft Excel. With this we had to find the area of the Hula-hoop to be able to get a density estimate. The density of olive shells on the two beaches was very low.



Left: Deon and Cathy looking through at olive shells. Right: The density of live olive shells found on Hobuck Beach in 2009 compared to 2014.

SANDY INTERTIDAL MONITORING

With Liam Antrim (OCNMS) and Jessica Lindner (OCNMS volunteer)

For this project we worked with Liam Antrim to monitor intertidal sand critters. Intertidal monitoring was to see the abundance of sand critters at different tide heights. We took sand samples every 7.5 meters down the beach for 60 m. After collecting sand we sifted through all the sand and counted all the critters we found and had to name each one. The majority of what we found was arthropods, isopods, and blood worms. We had to take sand samples from three different transect. With our data we found that the dominant species were eohau, prlo, eumu, and excir. According to our data the population of sand critters declined since last year. We also had to profile the beach by measuring the slope of the beach with a laser to see how the shape of the beach changes.



Liam showing the interns how to identify sandy intertidal invertebrate species.

OCEAN ACIDIFICATION

With Cathy Pfister

Once again Cathy Pfister came to Neah Bay to work. She taught us why alkalinity is important to the ocean because it buffers the acidity in the water. We had to stick probes in the tide pool to measure the dissolved oxygen percent and measure the pH level. The most fascinating thing I learned is that sea plants need nitrogen to grow fast and mussels produce the amount nitrogen plants need to grow. She told us plants that do not grow near mussels grow four times slower than the plants that grow near mussels.

OZETTE HIKE AND MUSEUM TOUR

With Adrienne Akmajian, Jonathan Scordino, and Polly McCarty

We took a trip Cape Alava to learn about the history of Ozette. The group walked the 17,424 foot trail to the beach at Cape Alava. At the beach we saw the excavation site

of the Ozette dig. After the beach we went to the Makah Museum to learn about the Makah history first hand. Polly McCarty gave our tour and she went over whaling, fishing, canoe making, and gathering materials. We learned the importance of many of the artifacts found at the dig including a net that was used to prove to Judge Boldt that the Makah traditionally used nets to fish. We also learned that since the mudslide preserved everything in the village the excavators were able to find everything including plant fibers and clothing.



The interns enjoying a day on the beach at Cape Alava.