



MAKAH TRIBE



From Left: Alex Wise, Reggie Buttram, Noah Rascon, and Zach Dulik

MAKAH FISHERIES SUMMER INTERNS

2013 FINAL REPORT
(July 8, 2013 – August 1, 2013)

INTERNSHIP PROGRAM SUMMARY

Each year Makah Fisheries Management has a summer internship program 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 to hire four interns. The four interns were Zach Dulik (age 14), Noah Rascon (age 14), Reggie Buttram (age 15), and Alex Wise (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 with many of the divisions and programs within Fisheries Management so they can understand the day to day job responsibilities and could learn hands on how the department is run. 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 2013 Annual Report and presented the report orally at the Makah Senior Center on August 1, 2013.

I would like to thank all of the staff of Makah Fisheries Management for their contributions to this year's internship program. I would like to give a special thanks to Adrienne Akmajian for coordinating this year's internship program.

- Russell Svec, Fisheries Director



INTRODUCTION

With Russell Svec, Jonathan Scordino, and Adrienne Akmajian

INTRODUCTION TO FISHERIES MANAGEMENT

On the first day of work we learned about why fishing in the Makah area is so important and that we have been fishing for thousands of years. We were told very interesting stories by Russell Svec. He told us some stories about his great, great grandpa. We were also walked around and introduced to all the people we would work with during this summer internship. We were told how the treaty of the Makah people was unique because it is the only treaty in the United States that has the right to hunt for whales, so no other treaty in the US has a treaty like ours. We were told how each job in fisheries is important. We learned about all of the different departments and what they do to help the fish spawn and live a better life so that we can harvest them when they get to there full-size. Over all it was very interesting to learn about the fisheries jobs. We also enjoyed learning more about our history and how the Fisheries department works.



From Left: Reggie Buttram, Russell Svec, Zach Dulik, Alex Wise, and Noah Rascon

INTRODUCTION TO ECOLOGY

Adrienne Akmajian gave an introduction to ecology and why it is important to Fisheries Management and how all of the programs at the Fisheries Department work together. We talked about the ecology of some of the ecosystem here in Neah Bay and learned about marine intertidal ecosystems. Then we went to Cape Flattery to observe some of the ecosystems we had been learning about.

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From LEFT: Reggie Buttram, Zach Dulik, and Noah Rascon at Cape Flattery overlook

BEAN LAB: ESTIMATING POPULATION SIZE

This project was to learn a version of estimating populations. The method we used is called the Lincoln Peterson method, or mark and recapture. We started with a bag full of brown beans to represent animals. We then subtracted a handful of brown beans from the bag. We counted the brown beans we subtracted and replaced them with white beans (which would be the marked beans). We then mixed the beans, removed a second handful, and took a count of total brown and marked beans and then replaced them. We did this step multiple times. We then used a formula to calculate how many beans were in the bag. Although we did multiple repetitions, our estimates of beans in the bag was both higher and lower than the actual number of beans in the bag. This states that although our estimation numbers of wild animals can be close they will not be exact.



PHOTO: Jon Scordino teaching Interns about population estimation with a mark and recapture technique used on sea lions

AIR QUALITY PROGRAM

With Dana Sarff, Doug Sternback, and Seraphina Peters

AIR QUALITY MONITORING AND SUSTAINABLE FISHING FLEET PROJECT

The tribe conducts this project to mainly see what chemical compounds are in the air with a focus on those that affect human health. In this job shadowing what we did was we went up 400 line with Doug Sternback. When we went up there we went inside this little air quality station and collected the data through the air testers. What the air quality tester does is it looks for many types of pollution in the air. One of the things that we looked for was carbon dioxide. One of the new programs that the Makah Fisheries Department has is the Makah Sustainable Fisheries Project. This project helps boat owners swap out engines so they can have engines that don't use as much gas and have fewer emissions.



Top LEFT: Boarding the Sunstar; Top RIGHT: Interns in the engine room of the Sunstar looking at the new diesel engine; Bottom: Interns learning different techniques for air quality monitoring

WATER QUALITY PROGRAM

With Aaron Parker and Billy Noel

WATER QUALITY AND BEACH MONITORING

The tribe conducts this project so that they can see how warm the waters are. If the water is really warm then they could predict that fishing in a few years wouldn't be that good because really warm water isn't good because the fish could die from it. The Water Quality Program uses a device called a tidbit to test the water temperature every half of an hour.

We also tested marine water quality. We tested the water at hobuck beach, tsoo yess beach, third beach, and front beach using a cylindrical container that we dipped in the water and we filled it up with water. These water samples were taken by Aaron to Port Angeles and a scientist did tests for sewer levels in the water.



PHOTOS: Interns preparing to take water quality samples at a field site

HABITAT PROGRAM

With Kim Clark, Larry Cooke, and Travis Butterfield

THE OZETTE WEIR AND DIDSON

On July 12th we went to the Ozette weir with Larry Cooke, Kimberley Clark and Travis Butterfield to learn about the weir and to move the Ozette Didson. The purpose of the weir is to funnel all the fish through a triangular shaped viewing chamber to count the fish that migrate up stream. The Didson was placed at the weir to test to see if the Didson would see all the fish that went into the viewing chamber. For the second phase of this study, we moved the Didson to operate independently of the weir and because in the

summer the river's height decreases and the Didson needs sufficient depth to operate. To move Didson, we needed aluminum piping, tripods, and steel brackets for holding the pipe to build a structure to funnel the fish in front of the Didson. To build the structure we had to get supplies and pick up tripods at the Hoko Fish Hatchery. In transporting the tripod we had a complication due to a tripod falling out of the truck. The tripod was moved off the road and moved back to the hatchery. At the river, we built the weir where the Didson would go after that we moved the Didson upstream. We tested how the Didson recorded in its new location by walking in front of the camera. We also observed some little fish swim by and seen them on the Didson so we knew that it was working. And then we left the weir to Neah Bay.



LEFT: Ozette weir and Didson; RIGHT: Interns Zack Dulik and Reggie Buttram moving the Didson upstream with Larry Cooke and Kim Clark

WATER TEMPERATURE MONITORING

The habitat department measures the temperature in the water because temperatures are important to water quality if the water is too hot the oxygen will decrease and the fish in the water will die. To measure water temperature the habitat department use tidbits. A Tidbit is a little small chip that measures the water temperature every half hour. The tidbits are deployed inside little tubes connected to a wire that is tied to a stable object. On July 18 we went with Kimberly and Travis to check the Tidbits in the Tsoo-Yess River we put the Tidbit in a special device called a shuttle that downloads the data from the Tidbit and checks to see if the Tidbit is still processing data. After that we went back to the office to check the downloaded data. Travis said they check the tidbits every 3 months.



PHOTOS: Interns working with Travis Butterfield and Kim Clark to monitor Tidbits in the Tsoo-Yess River

WA'ATCH RIVER CLEAN UP

The main reason for the net clean up was to clean the river of all the nets that were abandoned after the river fishing season. The nets needed to be taken out after the season so that the fish can come back up the river. If the nets were to be left in the river they could still catch fish causing them to die and rot inside of the net instead of going up stream and spawning.

On the 17th of July we worked with Travis Butterfield to remove nets from the Wa'atch River. We started off loading the boat on to the truck with Travis we drove the truck the Wa'atch. The low tide made it difficult to launch the boat into the mouth of the river. We found a large bundle of rope right in front of the launch. Within a few minutes we had the rope and the pipe it was connected out of the ground, into the boat, and out of the river.

Alex, Zach and Travis pulled the boat up the river because the river was too low to drive the boat. Once the boat could float, we road for about one hundreds yard without seeing any nets until we came to a stop as the boat bottomed out. We left the boat to walk to third bridge to finish our net clean up.



PHOTOS: Interns removing a large rope mass from the Wa'atch River

GROUNDFISH MANAGEMENT

With Joe Peterson and Joe Gonce

FISH IDENTIFICATION

We met with Brian Walker, who works for Washington Department of Fish and Wildlife to learn about fish identification. Brian samples ground fish that our fishermen bring in to the dock. He samples the fish and measures their length, takes out an otolith to age the fish, and checks if it is a male or female. He showed us how to identify different types of flatfish, rockfish, and salmon.



PHOTO: Brian Walker and Joe Gonce (LEFT) teaching interns how identify species of salmon, flatfish, and groundfish

PLANKTON SAMPLING

Joe Peterson brought us to collect plankton samples at the jetty and the t-doc. There we threw the plankton net into the water, and gently pulled the net through the water. Then we took the canister off the bottom of the plankton net and emptied the concentrated plankton sample into a sterile vile. We also took water depth visibility measurements using a secchi disk. When we were at the jetty we also caught a jellyfish. After we were done retrieving our samples from the t-doc, we pulled up a rope tied to the dock, and found an invasive tunicate species from Asia. Tunicates traveled here from attaching to hulls of boats from Asia, which came to the west coast. After we returned to the lab we looked at the plankton under a microscope and identified and counted the abundance of species.



PHOTO: Zach Dulik pulling up a plankton sample

FORAGE FISH EGGS WITH JOE PETERSON

The Makah Tribe conducts forage fish egg sampling because some people want to use wave energy for electricity but if there is forage fish eggs on the beach they can't so they are trying to see what beaches do not have the eggs so that they can have wave energy. We sampled sand from beaches around Neah Bay to look for tiny little forage fish eggs. We had many places where we would take the sand. The places that we sampled

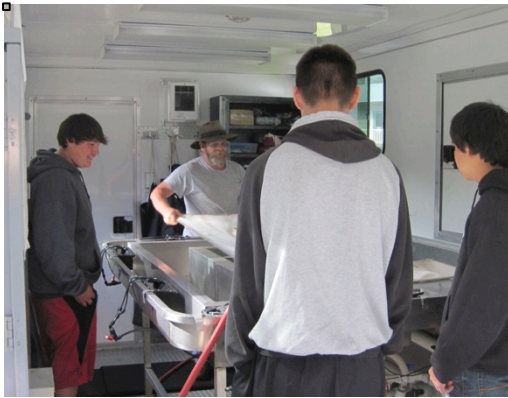
were archiwat, secret beach, Ozette. We collected nine samples at each site. We put the sand through three sieves and the last one would catch the forage fish eggs. We would take that sand and swoosh it around until all of the light sand was at the top, then we would scoop the sand with a spoon and get three spoon fulls, then we would put it in a container and last look at the sand through a microscope and try to find the forage fish eggs.

HATCHERY OPERATIONS

With Joe Hinton, Debbie Cooke, John Ides Sr., and Bill Mahone Sr.

HOKO FISH HATCHERY

In this job shadowing we learned how the Hoko Fish Hatchery works and the fish species that they raise. The type of fish they mainly raise are Coho, steelhead, Chinook and sockeye. One interesting fact we learned about the hatchery is it does not run on huge generators like the national hatchery. The hoko fish hatchery runs on natural water that comes from the mountains and they use that water to filter through the tanks. Another thing that we learned up there was how they fin clipped the salmon. Also we helped them build blockade so that the bank wouldn't collapse. We also took out some waster filter tubes for repairs.



LEFT: Interns with Joe Hinton learning about the Hoko Hatchery; RIGHT: Interns and Hatchery staff putting in bank reinforcements at Umbrella Creek

SALMON PROGRAM

With Victor Lebuis and Zach Espinoza

Salmon management and coded wire tags

We worked with Zach Espinoza and Victor Lebuis to learn about salmon management. First we went to the co-op and checked for coded wire tags within the salmon heads with metal detecting wands. Then we cut the snouts off of the fish that had coded wire tags and labeled them. Later that day, we went back to the lab and cut the snout multiple times until we could see the tag. We used fillet knives, scalpels and a metal detector to help find the coded wire tags. Then we put the tags under a microscope and looked at the number engraved on the tag. With that number we can type it into a computer and find out where the fish was from and how old it was. This transaction is important so we can find out where the fish migrate and how old the fish are when they're caught. Victor took us to the Makah National Fish Hatchery and taught us about salmon quotas and how he makes them.



Top LEFT: Victor Lebuis discussing salmon quotas and management with interns; Top RIGHT: Interns at the CO-OP wading salmon to detect coded wire tags; Bottom LEFT: Reggie Buttram and Alex Wise cutting fish snouts to remove coded wire tags; Bottom RIGHT: Zach Dulik, Noah Rascon with Zach Espinoza reading coded wire tags on the microscope

MARINE MAMMAL PROGRAM

With Jonathan Scordino and Adrienne Akmajian

MARINE MAMMAL SURVEYS

The Makah Tribe's Marine Mammal Program conducts research on marine mammals because they are important to the culture of the tribe and important to the ecosystem. Gray whale research is a primary focus because the Tribe is trying to resume its traditional whaling practices and data is needed on gray whale abundance and population structure. The Marine Mammal Program also researches the population of other marine mammal populations in the Makah usual and accustomed areas.

We participated in four marine mammal surveys. On 10, July all four interns assisted in the survey from Neah Bay to Sea Lion Rock. On 12, July, Alex assisted with a survey from Neah Bay to Sekiu. On 25, July, Reggie and Alex assisted in a survey from Neah Bay to Sand Point. On 26, July, Zach and Noah assisted in a survey from Neah Bay to Sekiu. The goals on the survey were to 1) photograph gray whales for identification, if not previously sampled the goal was to collect a biopsy sample, 2) count Steller and California sea lions to estimate population size, 3) look for branded/tagged sea lions for mark-recapture studies, and 4) document sighting locations and counts of other marine mammals.

The process for photographing whales was to first document the location, time, depth and behavior of the whale then we photographed the left and right lateral flank of the whale. The whale photographs were then compared to the markings on the whales previously biopsied whales in a photo catalogue. If whale was not in the catalogue we then biopsied the whale. To biopsy the whale we used a crossbow to shoot a bolt into the lateral flank of the whale. The bolt has a biopsy tip that cuts into the whale to collect skin and blubber. A float behind the tip prevents the bolt from penetrating the whale and causes the bolt to bounce off the whale. The bolt then floats at the surface and we collect the sample. The biopsy tip is wrapped in foil, placed in whirlpack bag, labeled, and stored in a cooler. At the lab we removed the skin and blubber from the biopsy tip and froze the sample for later analysis. During the surveys we collected two biopsy samples.

During the survey we approached sea lion haulouts to conduct counts and to look for branded and tagged sea lions. To count the Steller and California sea lions we first had to identify the species of sea lions. Steller sea lions are characterized by their blondish color, large body size, and guttural growl sound. California sea lions are generally characterized by their dark brown color, crested head, smaller body size compared to Steller sea lions, and their barking noise. We used eyes and binoculars to count the Steller and California sea lions. We photographed and documented the brand numbers of observed marked sea lions. We documented sighting locations and counts of other marine mammals during surveys. The other species of marine mammal we observed were sea otters, harbor seals, and harbor porpoise.



Top LEFT: Interns trying on immersion suits before heading out for a marine mammal survey; Top RIGHT: Zach Dulik looking for whales on the Makah Research boat; Bottom: Photograph of Steller sea lions and gray whale taken by interns during the ocean surveys

WHALE PHOTO-IDENTIFICATION LAB

Adrienne Akmajian led a lab on how to identify gray whales based on their birth markings and other markings. To do this we were given a sheet with photographs of five whales and a catalogue of known whales. We then had to identify the whales on our sheet by matching the markings of the whales on our sheet to the catalogue of whales.



PHOTO: Whale lateral flank which is used to identify individual gray whales

SEA LION SCAT LAB

Scat is sea lion feces. We did a lab consisting of pudding with fish remains. We used a sieve to separate the pudding and remains. Scientists use this information in finding out what sea lions are eating. We found eye lenses, vertebrae, and otoliths. We then used a key to identify species of fish and get an estimate on how many fish was in the stomach at that time. This information is important in finding out what the health of the animal is. There are multiple complications with this test and these are that not all the bone in the stomach of the animal comes out in one scat also bones can be damaged.



TOP: Interns emptying sea lion scat into sieves to be washed; Bottom LEFT: Interns washing “scat” through the sieve; Bottom RIGHT: Interns pick fish bones out of the sieve to identify what the sea lions were eating

IDENTIFYING GRAY WHALE CALFS LAB

The last activity we did was reading a paper by Amanda Bradford to learn how to identify gray whale calves based on barnacle shape, barnacle scarring, and pigmentation. We used her methods to try to figure out which whales seen in their first year in the Pacific Coast Feeding Group were calves and which were not. We found that 13.6% percent of newly observed whales in the PCFG were calves and 86.4% percent were not calves.

OTHER PROJECTS

With Adrienne Akmajian and Jonathan Scordino

MARINE DEBRIS SURVEY

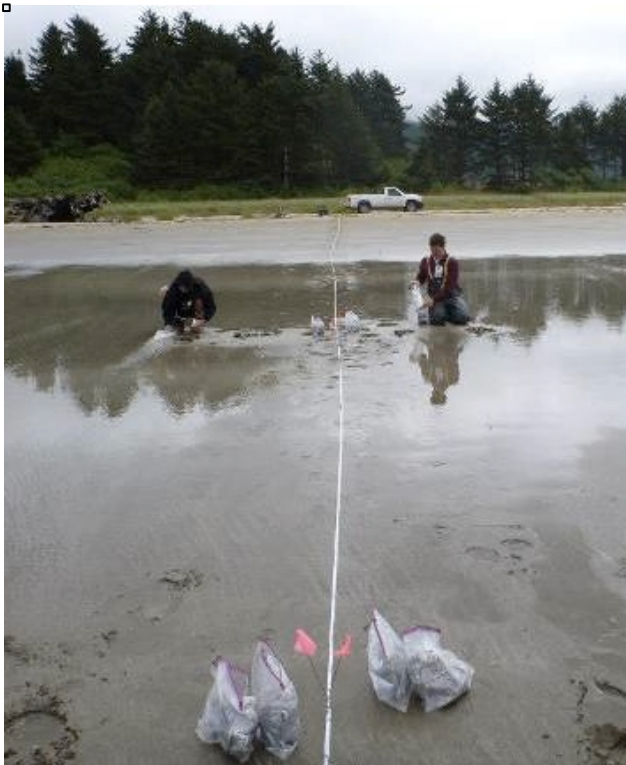
We went to archiwat and did a marine debris survey. We did this by determining a transect on the beach. We then picked random numbers for determining which section of the transect we would test. We then walked up to the top of the beach and down from the mark to the water line. While we did this we marked what we had found. This information is important because marine debris affects all animals, the small pieces of plastic fish can swallow and nets and ropes get caught around sea lions.



LEFT: Interns setting up a transect line across the beach; RIGHT: Example of an entangled sea lion photographed during a marine mammal survey

SAND SAMPLING

During this project we went to Tsoo-Yess beach and worked with Liam Antrim of the Olympic Coast National Marine Sanctuary to collect sand samples to look at the abundance and species of invertebrates at different tide heights. We did three transects that were perpendicular on the beach. Each transect had 20 samples each. Four of the samples from each transect went to a lab in Port Angeles to determine grain size of the sand. The rest of the samples we processed on the beach by sieving through the sand and counting the invertebrates we found. This information is important to get a base line of amount of animals on the beach. Also to get the geography of the beach sampled we used a device to measure the beach elevation every 7.5 meters along the transect.



Top LEFT: The crew headed out to Tsoo-Yess for sand sampling; Top RIGHT: Zach Dulik setting up a transect perpendicular on the beach; Bottom LEFT: Reggie Buttram and Kevin (OCNMS) taking sand samples; Bottom RIGHT: Interns using sieves to find and identify invertebrates in the sand samples

CLEAN UP FOR TRIBAL JOURNEYS

We cleaned up Front Beach by the Makah Senior Center. The main reason for cleaning up the beach was to make the town look better for Tribal Journeys that passed through Neah Bay on their way to Quinault. Most of the trash we picked up was fireworks that were not picked up after the Fourth of July. Here is a picture of all the trash picked up by the entire Fisheries Department around town.



From LEFT: Noah Rascon, Reggie Buttram, and Alex Wise

ČIBU·D PROJECT

We are making traditional halibut hooks, also known as čibu·d, to test how they affect the bycatch versus a contemporary circle hook. The setup will be the same as today's contemporary long line setup, consisting of a mainline with a snap gear attachment to the hook. Although we will alternate the čibu·d and contemporary circle hook to make sure that they both have the same exposure. With this project we attached hose to the čibu·d. We also experimented with foam insulation. We filled the hose with the foam to see if we could get the hook to float in the water. We did this to mimic the way the čibu·d was traditionally fished. This experiment was not successful due to the weight of čibu·d. Troubleshooting is needed to determine how to suspend the čibu·d off the bottom.

We worked with Billy Parker to make wooden čibu·d from steamed hemlock. This is a contemporary design compared to the traditional way of steaming and shaping. The first step to this was to gather hemlock branches. We then steamed them with three gallons of water. While the branches were steaming we created a jig made from a 2" x

12” board and stationary pieces cut from a 1” x 4”. After the branches were done steaming we quickly bent the branches into the jig. This is important to know because traditional čibu-d were made out of hemlock. čibu-d were made from this until we discovered metal.



PHOTOS: Interns working with Billy Parker to steam and shape hemlock branches to make traditional wooden čibu-d

ACKNOWLEDGEMENTS

Thank you to the staff of Makah Fisheries Management, Liam Antrim from the OCNMS, Tom and Curtis from USGS, Billy Parker, and Brian Walker from WDFW for the opportunity to job shadow and learn about their jobs.