

Fall 2012

Traditional Wild Protein Collection Techniques of the Naso People: On The Verge of Change

Caldwell Rohrbach
SIT Study Abroad

Follow this and additional works at: https://digitalcollections.sit.edu/isp_collection

 Part of the [Agricultural and Resource Economics Commons](#), [International and Community Nutrition Commons](#), [Natural Resources and Conservation Commons](#), [Social and Cultural Anthropology Commons](#), and the [Sustainability Commons](#)

Recommended Citation

Rohrbach, Caldwell, "Traditional Wild Protein Collection Techniques of the Naso People: On The Verge of Change" (2012). *Independent Study Project (ISP) Collection*. 1473.
https://digitalcollections.sit.edu/isp_collection/1473

This Unpublished Paper is brought to you for free and open access by the SIT Study Abroad at SIT Digital Collections. It has been accepted for inclusion in Independent Study Project (ISP) Collection by an authorized administrator of SIT Digital Collections. For more information, please contact digitalcollections@sit.edu.

Traditional Wild Protein Collection Techniques of the Naso People:

On The Verge of Change

Caldwell Rohrbach

School of International Training

Fall 2012

Table of Contents

Acknowledgments.....	iii
Animals Consumed by the Naso People	iv
Resumen ejecutivo.....	v
Executive Summary.....	vi
Introduction	1
Research Question	2
Objectives	2
Justification	2
Methods.....	3
Hunting Techniques (Observed and/or Practiced)	4
Hunting Techniques (Discussed)	4
Discussion.....	5
Fishing Technique 1: Cast Net.....	6
Shrimp fishing	7
Hunting.....	9
First Hunt	10
Technique: Day Hunting.....	12
Technique: Night Hunting.....	16
Fishing Technique 2: Bow and Arrow	17
Figure 1. Trampa	18
Hgönlo Tree Hunting Technique	21
Dangerous Dbong Tang Tang.....	21
Dancing and Singing.....	23
Work Cited	26
Appendices.....	27

Acknowledgments

I would like to thank the Aguilar family for graciously accepting me as one of their own for my fifteen day study. They welcomed me with open arms, taught me loads of information, and made it difficult for me to leave. I would especially like to thank Rosario for his patience when dealing with my limited Spanish knowledge, for taking me into the mountains to hunt on numerous occasions, and for his kindness for sharing so much of his time. I would like to thank Jordan for being my copilot and right hand man every moment of everyday. I would also like to thank Lökes (Emanuel) and Tjër (Geines) for accompanying us hunting and teaching me how to butcher a pig.

I also need to thank Ruben González for helping negotiate and organize my home stay experience. Lastly I have to thank Edwin Sanchez who helped organize transportation to and from Changuinola as well as helping relay communications between Ruben and Breanna Canning.

Animals Consumed by the Naso People

Mammals (Mamiferos)

English	Spanish	Naso	Status
Northern Tamandua	Hormiguero bandera	Sabo	
Central American Agouti	Ñeque	Scle	
Paca	Conejo pintado	Culi	Endangered
Collared Peccary	Saíno	Sto	Endangered
Red Brocket Deer	Corzo	Shin (Shwuing)	Endangered
White Tailed Deer	Venado colablanca	Plunmi	Endangered
Central American Spider Monkey	Mono Colorado	Do	
Mantled Howler Monkey	Mono aullador	Bip	
Baird's Tapir	Macho de monte	So	Endangered

Threatened Species as listed by the ANAM, CITES, IUCN (Barro Colorado Island Wildlife Guide, 2010).

Birds, Aves, Cenua

English	Spanish	Naso
Great Tinamon	Tinamú grande	Sruñ
Crested Guan	Pava crestada	Wlenia
Keel-billed Toucan	Tucán pico iris	Sholon
Quatzal	Kuatzal	Paro
Great Curassow	Pavon	Roñ
Black Guan	Pava negra	Dua

Shrimp and Crawfish

English	Spanish	Naso
Shimp	Camarón	Kuswo
Crawfish	Cangrejo de rio	Shononeme

Fish

Naso	Spanish
Bumkuo	Mujara
Madremkuo	
Sekuo	
Diojuo	Chupapierda
Pimkuo	Sardina

Sekuo- Large bottom feeder, fished for with bow during clear river time

Resumen ejecutivo

Yo estudio en Syellick comunidad, El Teribe, Bocas del Toro. Yo estudio las techniques traditional de caceria con los Naso para quince dias y cómo niños aprenden casaria tambien . Yo aprende hacer los arco y flecha. Los materiales que necesita para hacer arco es Pifa. Para flecha, Caña Blanca, Cosel, y Pita. Los niños aprenden hacer arco y flecha despues de tener trece años. Los niños no aprenden antes de tener trece años porque es demasiado peligroso. Despues de los ninos aprender hacer los instrumentos de caceria, la primera caceria es rapido, durante de dia, y cerca de la casa. Antes de caceria, todos los cazadores necesitan bañarse en la humo de la Caraya porque es una técnica de protección de los serpientes, tigres, y accidentes. Los Naso cazan con un cañon porque esta más seguro.

El Teribe tiene mucho serpientes, tigres, y arañas peligrosos. Pero, solamente los fuerte y viejo cazadores puede matar y tocar los tigres porque los tigres tiene peligroso espíritu. Los fuerte cazadores cantar y bailar por seguridad tambien. Ellos dicen, el espíritu de tigre y serpientes salir rapido. Si los tigres presenten cerca de las casas, los cazadores proteger los familias por matanza. Ellos no lo comen pero usar los dientes para cueyo durante la bailen.

Mujeres y los niños no caceria porque es peligroso. En lugar, mujeres pescadan por Camarón, Cangrejo de rio, y Pescado. Los hombres caceria con arco y flecha, cañon, trampa, y un otro técnica de uso la Hgönlo árbol. Ellos no usan la arco y flecha mucho porque es dificil. Aunque, ellos hacen los arco y flecha por vender a las turistas. Es bueno, que los niños aprendan hacer los arco y flecha pero es un poquito triste no usar mucho. Modernización es bueno porque es preservació pero es malo porque es diferente de tradición.

Executive Summary

I studied the traditional wild protein collection techniques of the Naso people in the Syellick community Naso Territory, Bocas del Toro for 15 days during the end of November. The goal of this research was to record the various hunting techniques used by the Naso and determine whether those practices will disappear after the passing of this generation. I used informal and unstructured interviews as well as participant, objective, and passive observation (Master of Business Administration).

The Naso people complete at least one form of wild protein collection every day. The given technique is directly related to the weather on a given day. During my time, the rainy season, fishing was the most common technique used for wild protein collection including cast net, hook and line, spear fishing, and bow and arrow (note: some techniques were not observed due to water clarity). The most effective during my study was the cast net system which was also utilized during crawfish collection. In addition, shrimp were collected regularly using a sifting technique.

In one month, roughly 15 days are spent hunting in the mountains. Prior to hunting (and bow and arrow fishing), written permission must be granted from El Reyidor. If a hunter is caught in violation of this they are fined 30 days work, which prevents most poaching. Although traditionally a bow and arrow were used hunting, today a shotgun is used far more consistently.

The traditional hunting techniques will not be lost with the passing of the current generation because the children do learn every technique. However the art of hunting with a bow might disappear before long. The only thing encouraging bow and arrow production, thus

passing on the knowledge, is tourism. Tourists want to purchase small bow and arrows that are “traditional,” however these small versions are modified from their original counterpart.

Therefore, I believe that the use of a bow and arrow during hunting will disappear within the next few generations, while the general protein collection techniques will remain the same.

Introduction

Protein is a component in every cell within our body. These proteins are constantly being broken down and replaced by new amino acids (Centers for Disease Control and Prevention (CDC, 2012). 20 amino acids are the building blocks of protein and subsequently our cells. Essential amino acids are those that cannot be produced by the body alone, instead they can only be obtained through our diet (CDC, 2012). Essential amino acids are found in complete proteins such as meat, fish, dairy products, and eggs. Incomplete protein sources provide many, but not all essential amino acids. Some of these incomplete protein sources can be combined creating complete proteins. Therefore, by consuming complementary protein such as rice, beans, or corn, the essential amino acids are obtained (CDC, 2012). It is commonly recommended to consume 10-35% of your daily calories from a protein source (CDC, 2012). Therefore, it is no surprise that protein collection has been a critical aspect of human existence.

Scientists have argued that we evolved into bipeds because of persistence hunting (McDougall, 2011). A practice that once pushed our species to drastic alteration is almost nonexistent today. This technique was once used by tribes in Australia, Africa, South West America, and Mexico but has only been used by the Kalahari Bushmen in recent time (Bethea, 2011). This technique, which is rooted in our evolution is soon to be extinct if it hasn't already.

The Naso lived an autonomous life three or four generations ago (Paiement, 19). Sadly, the Naso people have already seen many important aspects of their tradition lost as a result of increasing pressure for modernization. This is evident in the disappearance of the Shaman, a wise man who knew the intricacies of both medicinal plants but also the spiritual aspect of the world. Unfortunately the spiritual knowledge is already gone. Thankfully they have recognized

their error and are teaching what is still known of medicinal plants to the next generation. For these reasons, I hope to learn more about the hunting techniques of the Naso Tribe in Panama before, they too, become extinct.

Research Question

Will traditional wild protein collection techniques and consumption become extinct as the current elder generation passes on?

Objectives

1. Observe and document the hunting practices of the Naso people.
2. Determine whether the next generation will continue traditional wild hunting techniques.

Justification

The Naso people share an intimate relationship with the ecosystem they live in. They also understand the importance of continuing and educating their traditions for future generations. This was evident during my first visit to El Teribe in which I observed their attempt to teach traditional medicinal techniques as well as dancing and singing to the youth. After watching the Naso perform their dance, I was saddened at how few people knew the traditional dance and how even fewer were singing. At the start of every dance, they counted in Naso “1 2 3” and very few people knew it. During my second trip, the reasoning was very different than previously thought. However, it still provided motivation for my follow up research.

With the pressure to westernize, traditional knowledge is becoming threatened. I hope to understand what the Naso tribe is doing in order to preserve their traditional practices.

During that effort, I will attempt to record some of these techniques to preserve valuable information that might soon disappear.

Methods

Research was conducted in the Syellick community, Naso Territory, Bocas del Toro (please see Appendix B for a map (Briceño 2004:242)). I stayed with a single family for 15 days comprised of Grandparents, a Mother and Father, and six children ranging from 20 to five years old. The majority of the children were males, creating the perfect opportunity to study if, and subsequently how, children are taught the traditional hunting techniques.

The first few days were spent building rapport with the family. I learned how to make bow and arrows and went on small rapid walks. These days helped build both trust and faith that my physical abilities were strong enough to handle difficult hunting conditions in the mountains. Various hunting techniques are limited by weather conditions, therefore, I could not plan in advance what technique I would observe each day, only that I was ready and willing to try anything and everything.

During every day interactions, I used informal interviews to gain valuable information about the Naso people, hunting, and traditions. When the opportunity arose, I completed unstructured interviews (Structured and Unstructured Interviews).

I used participant observation in order to learn the majority of information. This firsthand account of information provides me with more in depth and precise information than communication because of my limited Spanish speaking skills. If a situation was potentially dangerous, I used objective observation as well as passive observation (MBA). I used the skills I have gained throughout my interview experience and the information provided in both

Unstructured and Semistructured and Making words fly; developing understanding through interviewing. Lastly, I took as many notes as possible, recording the Spanish and Naso name of species and tools.

Note: The code used for citing interviews is the person followed by the day of the discussion followed by the approximate time. For example, Interviewee 12, 10-12-2012, 9:45 am refers to the 12th person interviewed on October 12, 2012 at approximately nine forty five in the morning. All communication was in Spanish with individuals from the Naso Community.

Hunting Techniques (Observed and/or Practiced)

- Fish
 - Cast Net
- Shrimp
 - Bed Sheet
 - Woven Basket
- Crawfish
 - Throw Cast Net
 - Cast Net Barrier
- Day Time hunting
 - Shotgun and Bow and arrow
- Birds
 - Trampa
 - Bow and arrow (Chipote)

Hunting Techniques (Discussed)

- Fish
 - Bow and Arrow (Chuso)
 - Spear Fishing
 - Hook and Line
- Birds
 - Hgönlo tree (Sticky Milk)
- Night Time Hunting
 - Shotgun and Bow and Arrow

Discussion

Wild protein collection is an everyday endeavor for the Naso people (Interviewee 1, 11-26-12, 6:40 am). However, this does not mean that the Naso hunt for big game or are successful every day. It does mean that they attempt to collect a form of protein from the wild every day. Almost every day someone in the family will fish for crawfish, shrimp, or fish. Fishing is the only wild protein collection that the women take part in. It is said that hunting is too dangerous for women to partake in. In one month, 15 days are spent hunting (Interviewee 1, 11-26-12, 6:40 am).

Even though lots of people hunt on a regular basis, the Naso people hunt with conservation on their mind. Every time a Naso hunter desires to hunt or fish during times of clear water, permission must be gained. El Reyidor, an employee of the King, is in charge of regulating the amount of hunters and number of days you are allowed to hunt. If a person would like to hunt, he must first go to the Reyidor for written permission. If the Reyidor believes that you have hunted too much he will not allow you to hunt. If permission is not gained prior to hunting, a fine of 30 days work is required.

The same holds true for fishing during times of clear water. Clear water allows for fisherman to pick only large fish and therefore it would be easy for the communities to overfish. Therefore, the use of written permission by El Reyidor regulates the possibility for overfishing. The threat of 30 days of work for poaching is enough to deter most fishermen and hunters.

Fishing Technique 1: Cast Net

Fishing was a daily activity, most commonly with a cast net, also known as a throw net. A cast net is a small circular net with weights attached to the outside edge. There is a hand line, in which one end is attached to the fisherman's wrist while the other is attached to small lines (brails). The brails travel through the center circular guide (horn) and are attached to the outside edge in equal intervals (Casting Net Tackle). When the hand line is drawn in, the brails and subsequent outside edge and weights of the net are pulled towards the horn trapping anything inside. We used this technique frequently because it is fast, efficient, and reliable. That is, if the fisherman has mastered the throwing motion.

One fisherman tied the hand line to the left wrist. He would first coil the hand line in the left hand until he reached the swivel. He would then grab the horn, with his left hand and examine the net, looking for any tangles while also cleaning any debris from the net. Next he would grab the net roughly 1.5 and 2 feet down from the horn with his right hand then folding it into his left hand. Next he bites the outside edge with his teeth and finally grabs the outside of the net with his right hand, in front of the section held by his teeth. He would rotate his body to the left, start forward motion with his right hand releasing his right hand first, followed by a simultaneous release of both his teeth and left hand. If this technique was done properly, the net would fly to the desired location in a full circle or parachute shape.

Once it it's the water, the weights draw the outside edges toward the bottom. The fisherman then pulls the hand line in, pulling the outside of the net and weights toward the center point. Without grabbing the horn, he would examine the net for any fish or crawfish. If no animal was present, he would grab the horn and repeat the process just up river. If an

animal was present, he would grab hold of it from the outside of the net, grab the horn releasing the weights, then either pull the fish through the net from the head or reach into the net depending on the size of the fish. This technique was our most effective fish collection technique gathering more fish and larger fish, ranging from two to 12 inches long.

Shrimp fishing

Shrimp fishing was another common technique used for wild protein collection during my study. This is because my stay was inundated with rain, creating the optimum conditions for shrimp collection. After these periods of high rain fall, the river level rises. During this time, the water is very murky and the water level reaches the existing vegetation on the bank of the river; normally higher than the water level. During the morning, the shrimp can be found in the shallow water along the edge.

Shrimp Fishing: Technique 1

This technique required two people, but was much more effective than the single person alternative because the sifting surface (twin bed sheet) was much larger, thus increasing the amount of water sifted considerably. Each person would grab two of the close corners of a bed sheet. Simultaneously, both people reach to the bottom with the lower hand while keeping the top hand above water. It is essential that there is constant forward motion, otherwise any fish or shrimp can escape. This technique focuses around the shore line and if possible, they would continue to sift through some vegetation. At times, someone would shake the plants that were slightly in the water in attempt to scare the shrimp out of the shallows toward the sheet.

Shrimp would be kept of all sizes, but we would only stop and retrieve the animals after a large one, or many small shrimp were collected. Often times we would experience by catch of small fish or, on the rare occasion, crawfish. All would be kept. After the main area was searched, we traveled down river following the bank. Please see Appendix C for a slight variation with only one fisherman.

Crawfish collection occurred immediately after the completion of shrimp fishing and was a two step process. Part one of crawfish collection used only one person and a cast net, also known as a throw net.

Crawfish collection started roughly between ten and eleven in the morning. One person would walk the shallow water, casting a throw net just down river of large rocks. This area was the ideal cast net location for both crawfish and fish. After a location was found with many crawfish, the second part of the technique was used.

The cast net was then utilized as a set barrier. Two people held the net, each using their feet to hold the bottom edge along the river bed, and their hands to hold the top edge above water. The third person would move rocks up river, disrupting the crawfish, which would activate their fight or flight response. Either response led them to be swept away down river directly into the set net. After thirty seconds to a minute, the net was lifted and specimens were collected. Again, all specimens were collected regardless of size, gender, or whether the animal was bearing eggs.

As opposed to hunting, these techniques were used regularly by everyone in the household, including women and children. The children would often go to the river for hours by themselves to collect protein for lunch or dinner. The younger children did not learn from

their parents, but instead from their older siblings. The seven year old never actively participated in the fishing but instead watched intently and helped place the captured animals into a bag for storage. However, the thirteen year old was the most active fisherman, taking any and every opportunity to fish as possible.

Hunting

Evidence of traditional hunting techniques were strangely absent from the family and house when I first arrived. I expected to see at least a bow lying around. What I found was very different. The only bow and arrows were in the Grandfather's household. There were two small sets, no larger than one and a half feet long, meaning that they were too small to use for hunting. These were tucked away to be sold to tourists. I also expected to see kids playing with bow and arrows, practicing hunting techniques on small birds around the house.

Instead, kids (ages 5-13) played soldier with carved wooden guns. It was only after Interviewee 1 and his father built a bow and arrow that the games started to change, at least for one 13 year old individual. At thirteen years old, he became old enough to begin the process of learning how to hunt. As I learned, so did he. We watched intently as the elders skillfully carved Pifa, cut Caña Blanca, applied cosel, and wrapped the traditional fiber (Pita) to fix the two together (Please see Appendix D for a description of the building process). Much of his time was now spent differently, not to say that he stopped playing soldier but that he now had a task. He quickly gathered Pifa wood and began to build his own bow. He made a flecha and even though it wasn't perfect, he was learning. We both practiced, and the elders would come by and test out the flex of our bow and recommend taking a little bit more off in a certain section to make the flex a little less stiff (*mas suave*).

We began practicing our shooting technique; the target a small cluster of banana trees. At first, we aimed at a trunk and were ecstatic to hit it. Within a few days, we were aiming at the flower just underneath the bananas. Our accuracy was rapidly becoming much better. The other kids in the area would watch intently and try for themselves.

The elders would show us how to build a chuso, traditionally used for fish, and a chipote for birds. (Please see Appendix E for a visual representation of the arrows). The boy would soak everything up and before you knew it he was building the next kind, never getting frustrated when an arrow broke. He would just make a new one. The most fragile piece is the shaft made of Caña Blanca, which was also the boys most frequently altered piece. He would adjust the length of the shaft as he built a slightly larger bow, or make them shorter when he wasn't shooting quite as well.

Whenever we were walking, our eyes were constantly searching for more Caña Blanca. This is because, we had a recently cut Pifa tree close to the house, had strong nylon string for the bow, and cotton thread to replace the natural fibers, but we did not have Caña Blanca on hand. We were taught that storing the un-used cane above the cooking fire would help keep bugs away and preserve the cane for more than a year. Everything was a learning opportunity, from where to search for materials to how to store them. The boy and I voraciously learned from the elders around us.

First Hunt

A few days after our first lesson in bow making, and subsequent lessons in arrow making and shooting we went out on our first hunt (11-16-12). Before we left, we completed an essential ritual burning of La Caraya (Naso), a tree resin. It was used as a purification and

cleansing technique in which each person bathed himself in the smoke for two reasons. First of all it helped protect us from snakes and other dangerous animals. Secondly it helped to cover the human smell associated with us, thus making it more difficult for animals to detect us.

It was an all day hunt, in which we walked for more than seven hours. Our teacher would point out tracks (huella) of various animals. Two hours into the hunt (9:30), we observed the signs of a small Jaguar, *Panthera onca* (Dbong Tang Tang=Naso). Its prints were clearly visible in mud and we could see what were called "bravo." These were times in which an animal displayed its power, similar to marking ones territory by scratching the ground or scraping the bark off of a tree. After following the prints for one hour and fifteen minutes, our teacher began shaving the bark off a tree much like a Jaguar would. He said it was a way to scare off the smaller cat, making it think that there was a larger Dbong Tang Tang in the area. This is a great way to protect the Naso people and help avoid potentially threatening situations. Again, we learned what were the tell tale signs of a Jaguar and how to intimidate it without physical harm.

The teacher knew the tracks were fresh, but I was unsure. My doubts vanished when we saw a Green and Black Poison Dart Frog (*Dendrobates auratus*) that was still in the track of the Dbong Tang Tang. It was living, but had not moved because it had a broken leg from the Jaguar. This ensured that we were within an hour of the Dbong Tang Tang. Due to our constant proximity to the large cats, our teacher was always cautious. In the beginning, I thought some of the precautions were over the top, a play if you will to get me excited. I didn't think that the Jaguar was a real threat, but I was wrong.

The threat of Jaguars was constantly front of mind for the Naso people. When we would approach a water source in the mountains, we were told to never drop our head to drink but instead to cup the water in my hands and bring my hands to my mouth. This is because the a common hunting technique of the Jaguar is to attack an animal's back, and sever the cervical vertebrae (Rabinowits & Nottingham, 2009). This is another reason why it is important to hunt with a few people, because they can literally watch your back, thus minimizing the likelihood of an attack.

Jaguars are not the only threat in the mountains. On the first hunt we saw three snakes, one of which one of the boys was inches away from sitting on. I noticed the small snake a few moments after he sat down. It was a baby *Bothrops asper* more commonly known as the Ultimate Pit Viper which is very poisonous (Lomonte, Lundgren, Johansson, & Bagge, 1994). This specific snake commonly bites humans due to its distribution in populated areas. According to Interviewee 1, the La Caraya worked well, protecting us. He then proceeded to kill the snake, because it was dangerous and on his farm.

Technique: Day Hunting

According to my family least three people are required to hunt together at a time. This is for safety from animals and accidents alike. If someone is injured, one person can go for help while the other looks after the injured. A shotgun (12, 16, or 20 gage) was also with us at all times for protection. The group departs into the mountains for two to five days. (Note: I participated in one-day hunts only). The group walks for hours in silence, communicating with hand signals, whistles, and grita (similar to bird calls). Everyone is constantly checking their surroundings, the ground for tracks, smelling for scents, and listening for sounds. The Central

American Agouti (Spanish=Ñeque, Naso=Scle), is a common target. On a few occasions, the lead hunter would spot the animal running across the path. He would quickly halt the group with a quick raised fist over his shoulder or an opened hand brushing backwards behind his back as he softly walked off. Swiftly, the dog would be restrained and hushed. At this point, the hunter would have the shotgun (12, 16, or 20 gage shotgun depending on the day), and creep forward, avoiding stepping on sticks, or other noisy maneuvers. During my hunts, a shot was never fired, and after the hunter had disappeared from view into the vegetation, we would hear him communicating through whistles. If the hunter no longer had a decent chance of approaching the animal, he would call the dog with another type of whistle.

Once the dog was released it would run off in search of the animal. The dog had been trained to bark when he found an animal. This is important for a few reasons. First it makes the hunter aware of an animal that was previously unknown. Secondly, it helps the hunter locate the potential animal. The hunter will grita if it desires a bark and call Suwe telling the dog to herd the animal towards the hunter. At times, the hunters will take off at a full sprint through the forest trying to close the distance, or cut off an animal's escape.

Other times, the dog will corner the animal. In which case the sound of the dog barking does not move. If the dog remains barking, the hunters quickly close in on the animal. During one attempt on 11-24-12, we cornered a Central American Agouti (Ñeque=Spanish, Scle=Naso). The animal had retreated to its burrow under a large tree with buttress roots. The dog repeatedly dug and entered the hole to no avail. It was determined that the animal was too deep and we would continue on with the hunt.

Although we did not chop down the tree in attempt to uncover the animal, we did see evidence of others doing so. When visiting Syekin we saw a downed tree that had been axed open in many places. I was told, that a Ñeque was cornered in the deteriorating trunk and was retrieved by cutting the tree open (Interviewee 1, 11-23-12, 10 am). The use of a dog is very important for the Naso hunter because the dog can cover much larger expanses than the human in much less time. It is common therefore, for the dog to find other animals than originally intended.

Although each hunt has a general animal in mind that does not mean that a hunter will pass up an easy opportunity. Early in the first hunt at roughly 10 in the morning on 11-16-12, we were walking along a high ridge. All of a sudden a group of large green parrots flew just over the ridge within reach, a few men swung their machete in attempts to hit one. When asked about it later one replied, “¿Por que no?” in english, “Why not?” (Interviewee 3, 11-16-12, 10:30 am). This taught the boy that it is important to always be ready for anything and to be constantly aware of your surroundings.

It was astonishing to see how sharp all of their senses are. Not only do they know what to look for but where to look. They know what to listen for and they can identify smells that I would have overlooked. Even so, as time went by I realized that I was reacting to the same sights and sounds. I become aware of the world and this is only enhanced by practice. Every incident, large or small, is a learning experience for the young hunter. The simple act of taping a felled tree before stepping over it helps scare any potential snake avoiding a possibly deadly situation.

Our teacher used many opportunities to educate. At the end of a long hunt on 11-24-12, we were traveling down the river bank and spooked a large white heron. The eldest hunter took the bow and the chipote. He removed his red shirt in attempt to blend in to the surrounding environment and began his approach. As he cautiously advanced toward the bird, he made sure to use the vegetation as cover while remaining low. As he crept closer and closer, he slunk lower and lower; until he was crawling on hands and knees. The hunter was relatively close to the bird, and could have easily used the shotgun, however with the bow; he needed to close the distance even more. The bird flew off before a shot was fired with the bow. Although the attempt was unsuccessful we learned that animals do react differently to colors and to use available cover as much as possible.

One chipote was shot as a demonstration of accuracy at a small bird that is normally not consumed by the Naso. He instructed that an arrow should never be shot towards the canopy if it is not relatively overhead. In other words do not fire at eye level towards a bird in a tree that's base is down a hill because you will never find your chipote. Instead shots should only be fired up because the arrow will land nearby. As described, the shot was fired up towards the animal; however the chipote got stuck in a tree. We attempted, in vain, to shake the arrow down. On top of that, the tree was difficult to climb. I expected us to go home and make another, but to my surprise he casually cut the tree down and retrieved the arrow (12-24-12).

We did come across a bird that is commonly consumed by the Naso, a Crested Guan (Pava negra=Spanish, Dua=Naso) that was roosting in a tree above the path (11-16-12). This to me, with my limited knowledge, was the perfect opportunity to use a bow. However, the lead hunter grabbed the shotgun instead. Although the traditional techniques are taught to the kids

of the community, when food is on the line, they are more confident in the gun than the bow. They do not want to risk the possibility of losing a kill. A shotgun has many advantages over the bow. It is more powerful, faster, and more accurate. Lastly, a bow shoots one projectile whereas a shotgun fires many small pellets creating a larger pattern thus increasing your chances of hitting a desired target. It is no surprise then that the younger generation enjoys using the shotgun over the bow and arrow (Interviewee 2 & 3, 11-27-12, 10 am). Although the majority of hunting observed utilized the shotgun, a few techniques still employ the bow and arrow. These include night hunting and clear water fishing.

Technique: Night Hunting

Most commonly, the hunter is attempting to get the Paca (Conejo pintow=Spanish, Culi=Naso), Benow, and Perdise. The flecha is used for both the Paca and Benow, however the Perdise is found roosting high in trees, therefore the shotgun is used to increase the chances of a successful hunt. Two hunters will start at dusk or a few hours before dawn. They will find a spot with lots of fresh Pifa on the ground, a favorite food of the Paca. They will each go to separate locations and keep their back against a large tree for protection from ambush predators. They will quietly sit and listen sometimes briefly searching with the flashlight for animals, both prey and predator. Sometimes, a new growth leaf will be used to create a strange whistling sound to peak animal's curiosity (Interviewee 1, 11-24-12, 7 pm). The interviewee noted that it is a very dangerous technique because often times, predators will inspect the noise as well (Please see Annex F for a story about this). The hunter normally has his machete out for self defense. Surprisingly, using the flashlight does not scare the animals.

When asked, the hunter's response was that the animals do not understand what the light is and therefore are not afraid of it (Interviewee 1, 2, & 3, 11-26-12, 6:40 am)

Note: This technique was never observed because of poor weather. Therefore, this technique was learned through discussion.

Fishing Technique 2: Bow and Arrow

During my fifteen day study it rained for 12 days (2000-3000 mm/year) (Paiement, 19). Therefore, the high river was constantly murky. Less rainfall means that there is less sediment, creating clear visibility in the water. When this occurs, normally from January to April, it is possible to see the fish and select which fish is desired (Interviewee 1, 11-21-12, 3 pm). Depending on your location, one can stand on the shore and watch fish pass by, shooting at a fish that is desired. Using a bow and arrow is beneficial for a number of reasons. First the arrow used for this technique is called the chuso, which has many barbs, making it difficult for the arrow to fall out of a fish (Please see Appendix E for a visual representation of the chuso). A single arrow can therefore remain in a fish for up to two days.

Secondly, the arrow floats, creating lots of resistance for the fish making it difficult to swim. Therefore, the first shot, which often does not kill the fish, acts as both an indicator and a drag. If the fish swims close enough to the shore, the arrow can be grabbed, extracting the fish, or a second shot can be fired. Another option is to use a small canoe while fishing, which helps during retrieval.

Note: Although this technique was never observed due to poor water quality, Interviewee 1 demonstrated how one would use the bow by the shore.

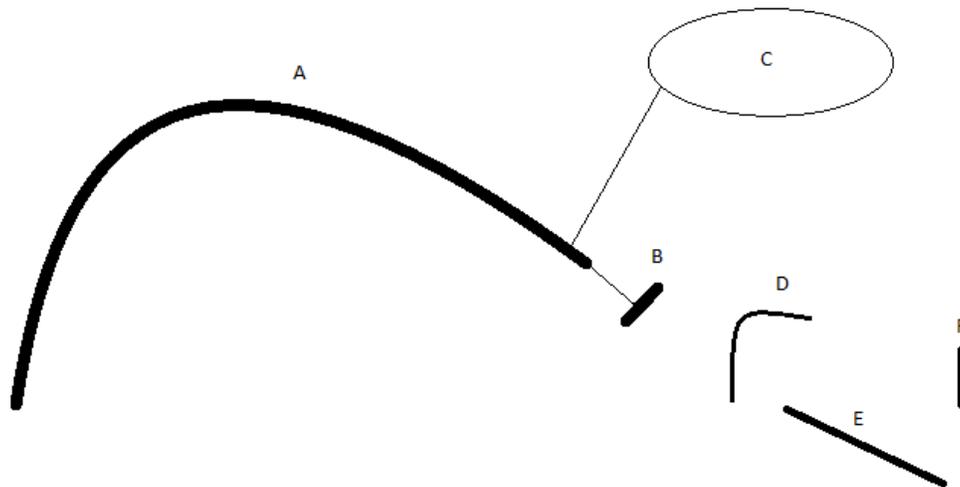
When using technique 3, permission must be given by El Reyidor. If permission is not granted, and a fisherman is caught fishing, a fine of 30 days work is given.

Please see Appendix G for two other fishing techniques used by the Naso Community.

Although the techniques I observed did not utilize the traditional bow and arrow as much as I had previously thought, there was one traditional technique that was used regularly. The snare, commonly referred to as a trampa. Trampa's are used to capture birds and other small animals. I helped build one of three versions used by the Naso. This technique is best used in a place with limited to no human traffic, with good cover and a few very scattered Pifa trees. We used three different locations, on farmed land with lots of Cocoa trees.

Please refer to Figure 1 for a visual guide to the trampa.

Figure 1. Trampa



A flexible new growth branch of roughly one meter is used to create the main arm of the Trampa (A). We used new growth Cocoa from one of the older main trunks. This single branch is cleaned so there are no offshoots or leaves present.

A small stick (diameter less than 1 cm) is cut to a length between $\frac{1}{2}$ and 1 inch long (B). The string is tied securely to this small stick which is then held to the main arm with about an inch of string between the two sticks. The other end of the string is anywhere from one foot to a foot and a half long and creates the noose for the snare (C).

Once the main arm is anchored, it is bent over to determine the correct distance needed for (D). D is a flexible shaft anchored on both sides creating a small arch with the peak height roughly three inches off the ground. Another stick is found roughly eight inches long (E). This acts as the trigger for the snare. One last small anchor stick (F) is needed to hold the trigger in place. This stick is jammed into the ground at the end of the trigger stick.

To arm the snare, A is pulled towards D, while B is placed over D. E is then jammed between B and F, thus locking the main arm in the bent position. The trigger (E) is then expanded by adding a few more broken sticks on top. Pifa is crumbled around the area, and finally the noose is gently placed over the triggers and food.

Normally ten to fifteen trampas are set up in a small area because the objective birds normally travel in flocks. The animal in theory should be caught by either then neck or leg of the animal, as seen by Appendix H.

There was one slight variation to this technique which was used for some over the small, non bird, animals such as a Central American Agouti (Ñeque). This variation includes a sharp spike attached to the main arm thus stabbing the animal once the trigger is activated.

Note: The variation was not viewed, only discussed.

On 11-21-12 Interviewee 1 as well as three sons hiked to a Cocoa farm on the top of a nearby mountain. Interviewee 1 demonstrated how to fabricate a trampa to the 13 year old and me while the 18 and 15 year olds completed their own. This was the first trampa that the boys had made without the help of an older hunter. This is because the technique is very dangerous and therefore, the younger kids were not supposed to practice this technique. We set up three different trampas within a two meter radius. Later, it was recommended to place 10-15 trampas in the same area in order exploit the flock behavior of birds. This technique is great because it is time efficient. It takes only a few minutes to construct one and needs very little maintenance. The amount of energy consumed while executing this hunting technique is infinitesimal making it a great collection technique.

Even though the older boys were not allowed to construct their own trampas until they were older, the 13 year old was constructing them within two days of learning how to build them. This fact confuses me and contradicts the information I was told. However the two boys stated it was their first build on their own due to safety reasons. My only justification for this contradiction is that the 13 year old showed a passion and a desire to learn and master every facet of hunting. Therefore, the older boys might have had the opportunity to build them but had not taken the time to execute one because they were disinterested. Also, the 13 year old did not set the trampa's as far away from the home, but instead was within 100 meters of the house. It was good practice, learning where to place the trampa, how to set it, how to maintain it and so forth. He successfully caught some chicken within 3 days of learning the technique.

Hgönlo Tree Hunting Technique

One other technique was discussed in which a very specific tree was required, the Hgönlo tree. This tree is essential for this hunting technique because it produces a white sticky milk. The hunter gathers Caña Blanca as well as ripe bananas and brings them to the Hgönlo tree. He then makes cuts in the trunk, which activates the secretion of the sticky milk. Stabs the Caña Blanca in the trunk close to the cuts and hangs the ripe bananas on the cane. When birds come to feed on the bananas, they get stuck in the sticky milk. The hunter merely has to leave the tree long enough for birds to arrive and eat. When he returns he uses his machete to kill the birds and eats an energy efficient meal.

Note: This technique was not observed and only discussed.

Dangerous Dbong Tang Tang

Protein collection is one important aspect for the hunters of the Naso communities. Another is protecting the families from predators. 15 days before my arrival on October 31, 2012 a Jaguar (Dbong Tang Tang) was in the village. The men hunted it down with their dogs and killed it. After inspecting the skin, it appeared that the Jaguar was shot in the head. Interviewee 1 stated that these were only killed when they were a threat to the community (Interviewee 1, 11-14-12, 5 pm). Dbong Tang Tang's are not consumed for a number of reasons. First of all the meat is duro (tough) and it smells badly. Secondly the spirit associated with the animal threatens those who touch it. Therefore, the dogs get to eat the animal after the head, skin, and teeth were collected. Traditionally the teeth were kept for necklaces (cueyo) used during the dances, however today they are sold (Interviewee 1, 11-22-12, 7 pm). These specific teeth were sold for \$20 a tooth. The pelt was dried and stretched while hanging

under a tin roof used to dry the cacao. A photo of the pelt was allowed for \$5 (11-20-12 observation). Tourists have a lot of power in this situation. If they decide to purchase a tooth or pelt they are giving monetary value to an endangered species thus increasing incentive for the Naso to hunt down and kill Jaguars rather than using techniques like the bark shaving observed on the first hunt. The modern practice of selling teeth and having pelts goes against some very serious cultural beliefs.

The Dbang Tang Tang is the King of the jungle. In Naso, Dbong is the equivalent of the Spanish term Tigre that encompasses all wild cats. Tang Tang is a phrase used as a sign of respect for your elders, teacher, or the King of the jungle. The Dbang Tang Tang has a very powerful spirit associated with it, therefore it is a dangerous animal living and also dead. In Naso tradition, the spirit of a dead Dbang Tang Tang will make someone sick or crazy (loco=Spanish, skwei=Naso). However, this is only the case of people whose spirit is not strong enough to fight off the animal, including women, children, and weak men. The spirit can attack the weak if they touch the dead animal, are too close to the animal, or if someone who has recently touched the animal touches them without first washing. Therefore, it is risky to kill the Dbang Tang Tang and even more risky to bring its body back to your home. Only brave, strong, and older hunters would dare to kill a Dbang Tang Tang. According to Interviewee 1, only those people who do not believe in the spirits are willing to bring the skin and head back to their homes, and within a few days their family becomes sick. Even so, for years, men have collected the teeth for cueyo, including Interviewee 1.

The Interviewee 1 had another story about his Great-Great-Grandfather which displays the power of the Jaguar as well as the desire for teeth. On an early warm, sunny morning,

Interviewee 1's Great-Great-Grandfather was out walking on a well cleared path. When he came to a straight away, he noticed what looked like a dead Dbong Tang Tang lying on its back, arms spread and mouth open. Even though it appeared to be dead, the Hunter was not going to take any chances, especially when the Dbong Tang Tang has such a powerful spirit. He slowly crept up to the animal, and drew his machete. He wanted the teeth. Therefore, he swiftly brought his machete down across the Dbong's nose. To his surprise, the Dbong jumped up and ran off never to be seen again. This story just demonstrates how powerful the King of the Jungle is. This story is important because it demonstrates a number of things. First is that they are teaching through oral stories as well as from hands on practice. Secondly it helps teach the power of the Jaguar while instilling fear into the youth. Lastly it teaches the kids to stay away from the Jaguar living or dead due to its dangerous spirit. My previous misconceptions and doubts of the power of Dbong Tang Tang's will forever be squashed.

Dancing and Singing

As I mentioned in the justification section, I felt that the children did not know how to dance and sing in the traditional fashion. However, I was very wrong. It is not that they do not know how to, but instead that they are not allowed to sing until their spirit is strong enough and able to kill a Jaguar. Therefore, the singer often wears a necklace (cueyo) of Jaguar teeth (diente deTigre).

The Dance of the Jaguar (Baile de Tigre) as well as the Dance of the Snake (Baile de Serpientes) both are dangerous if ones spirit is not strong enough. When singing the song of the Tiger they are speaking to the spirit of the animals. The song is instructing the animals to leave so that the Naso people will be safe. Subsequently, it is important to have a strong spirit

to influence the animals in the surrounding area. Therefore, hunters not only provide protein and protection from physical dangers, but spiritual dangers as well.

Although many traditional practices of the Naso people are intact, some pieces are teetering on the verge of disappearance. Bow and arrows are fabricated, but not for the purpose of hunting. Instead they are small copies of their traditional counterparts, for sale to the tourists. This, on one hand, can be good because tourism is preserving the traditional techniques needed to fabricate the instruments. However the Naso rarely use the bow and have even altered their weapons to fit into individual's luggage. Tourists can influence the future of Naso traditions through their purchases. Through purchases, their buying power could persuade a hunter to kill a Jaguar that was not a threat thus threatening an already endangered species. Modernization is therefore something that the Naso people must be cautious about.

Just like the machete, the shotgun has already solidified itself as a staple tool for the Naso hunter. It is difficult to blame the Naso for modernizing and using the stronger more reliable weapon however, it would be wonderful to keep the traditions and skills needed to hunt effectively with a bow while simultaneously using a shotgun. This idea that the bow is not regularly used could be very skewed because there were only fifteen days of study during the rainy season as combined with communication which provided only a small fraction of the big picture. It is quite possible that every hunter uses a bow for almost the entire year except for the rainy season.

Another traditional technique that could be lost is the Hgönlo tree sticky trap. This technique relies solely on the knowledge of the hunter. For instance, where a certain tree

exists, what direction is best to set up the technique, and how to attract the birds. It does not rely on guns, a motor, or fancy material. On top of that, everything needed for this technique is found in nature which leads to another problem, environmental restraints.

Hunting could fade into the past because it is more cost or time effective to buy from the city however the family of study was adamantly against this. Interviewee 1's Great-Great-Grandfather lived to be 105 years old for a number of reasons. First he was cautious about the powerful spirits, and secondly he only ate organic locally grown food. He refused to eat any processed, packaged, or preserved foods. Therefore, the family does not want to increase consumption of dangerous foods, but would rather consume those animals obtained in the mountains.

Therefore, in my opinion wild protein collection will continue for some time especially with the use of El Reyidor's conservation techniques. However, those techniques employed during hunts are on the verge of change. Therefore I think that it is a good thing that the Naso people continue to make bow and arrows, even if modified for the tourist because it helps preserve history and tradition. It is my hope that they continue to practice using the bow so that the skills do not fade from the community. The Naso people have done a wonderful job teaching and preserving the medicinal plant information and I hope that they continue to teach and encourage the next generation to practice their traditional hunting techniques.

Work Cited

- Bethea, Charles. (2011) Fair Chase: On the plains of New Mexico, a band of elite marathoners tests a controversial theory of evolution: that humans can outrun the fastest animals on earth. Outside Magazine. <http://www.outsideonline.com/outdoor-adventure/nature/Fair-Chase.html?page=2>.
- Briceño, A. 2004. *Historia y Sociedad de Bocas del Toro y de la Comarca Ngöbe Bugle del Siglo XV al XXI*. Panamá: editorial Universitaria “Carlos Manuel Gasteazoro”.
- Casting Net Tackle. <http://castingnet.cn/index.asp>.
- Centers for Disease Control and Prevention (CDC). 2012. Protein. *Nutrition for Everyone*. <http://www.cdc.gov/nutrition/everyone/basics/protein.html>.
- Lomonte, B., Lundgren, J., Johansson, B., and Bagge, U. (1994). The dynamics of local tissue damage induced by *Bothrops asper* snake venom and myotoxin II on the mouse cremaster muscle: An intravital and electron microscopic study. *Toxicon*. 32, 41—55.
- Making words fly: Developing understanding through interviewing.
- Master of Business Administration, What are the types of observation. <http://www.mbaofficial.com/mba-courses/research-methodology/what-are-the-types-of-observation/>
- McDougall, Christopher. (2011) Born to Run: A hidden tribe, superathletes, and the greatest race the world has never seen. Vintage.
- Rabinowits, A. R., and Nottingham Jr, B. G. (2009). Ecology and behavior of the Jaguar (*Panthers onca*) in Belize, Central America. *Journal of Zoology*. 210, 149-159.
- Unstructured and Semistructured Interviewing. Research Methods in Anthropology.

Appendices

Appendix A

Guideline for unstructured interviews:

Initial guidelines for research

How often do you eat protein?

Con que frecuencia usted come carnee or protein de animals?

Do you eat wild meat?

Como se come carne de monte?

Who eats wild protein?

Que come carne de monte?

How often do you eat wild protein?

Con que frecuencia usted come carne de monte?

What is the main source of wild protein?

Que typo es normal por carne de monte?

How often do you hunt for wild protein?

Con que frecuencia cazas carne de monte?

Is it harder to find (take longer and more skilled) wild protein today?

Es mas dificil cazas carne de monte hoy?

Has the amount of wild protein consumption decreased as population size increases?

Con mas gente, come menos carne de monte?

When wild protein is caught, is it shared throughout the community or just your immediate family?

Como se distribuye la carne de monte? Solo para su familia o de la comunidad?

How do you use excess meat and products?

Como se utilize el exceso de carne y otros productos

Are there animals they will not eat or kill because of evil spirits?

Hay animals que no cazan porque espiritus malos

Basic survival skills/fabrication of tools

What tools do they use to hunt or fish and how do they make them?

Que typo instrumentos usar para cazas y pescadas?

What materials do you use to build the tools?

Que material usar para hacer instrumentos?

What are the skills needed to track?

Cuales son las desterzas necesarias para realizar el seguimiento?

How do you start a fire in the rain forest?

Como se inicia un fuego en el bosque con mucho lluvia y agua?

Larger cultural issues

How does the conflict between Ngobe and Naso people effect hunting?

Como hacer la Ngobe influencia caza?

Are you afraid that the next generation will not know how to hunt?

Tienes miedo a la proxima generatcion no sabra como cazar?

What role do spirits play in Naso society?

Que papel espiritus tienen en Naso sociedad?

Appendix C

Shrimp Type 2

Materials

Small woven basket with roughly an 18 inch diameter.

Small bag inside of the basket.

Technique 2

One person used the basket to sift through the water making sure to keep the basket as close to the bottom as possible, ending each pass at the surface. The same method was used here as in the first however it was less effective due to a smaller catching surface area.

Appendix D

Making Bow (Arco=Spanish, Zabong=Naso) and Arrows (Flecha, Chuso, Chipote)

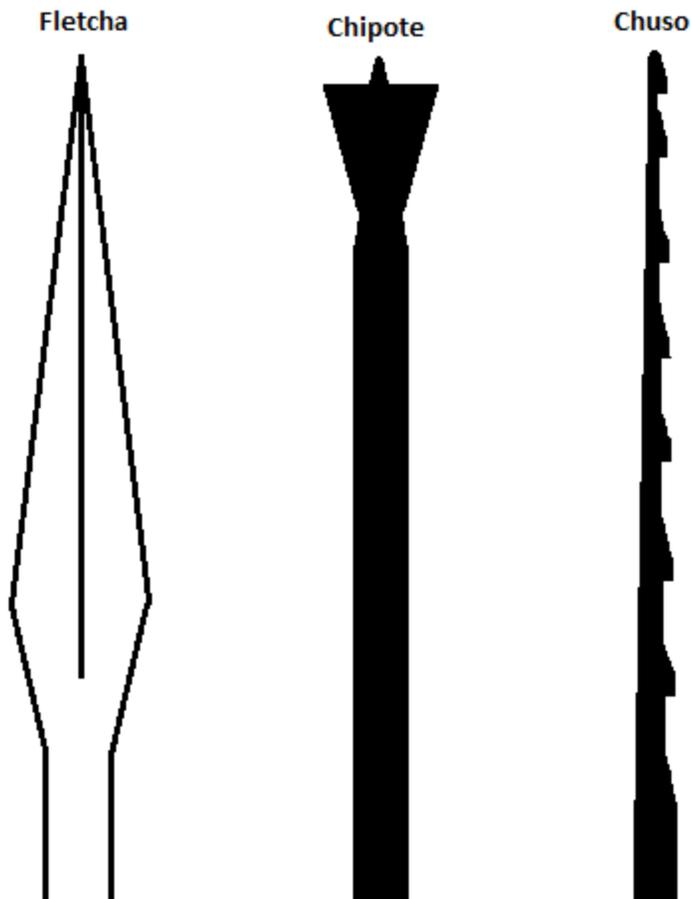
A recently felled Pifa tree is the best material for both the bow and the tips of all three types of arrows. The Pifa tree has an inch and a half of hard wood exterior with a spongy white interior to the tree. Therefore, we were limited by the thickness of wood. An ax was used to collect the desired size piece and a machete was used for the actual shaping of each piece.

Each arrow is comprised of a tip, made of pifa and a shaft, made of Caña Blanca. Cosel, a black grease, is applied to help keep the pita cord in place, cinching the two together. One last small piece of wood is jammed inside the rear of the arrow, strengthening the point of contact with the bow.

There are three types of arrows, each for different purposes. The first is a Flecha, your quintessential arrow. This is used for larger animals, wild pigs and even for self protection from Jaguars. The second is called a Chipote. The Chipote has a heavier semi-blunt tip used to hunt birds. This blunt tip is very important because it is less likely to get caught in a tree than a sharp tipped arrow. The last arrow is called a Chuso and is most commonly used for fish, however it can also be used for other small

animals. The most important aspect of this arrow is its multiple barbs, which is essential when an arrow must remain in the fish for up to two days.

Appendix E



Appendix F

Interviewee 1's cousin in law was out on a night hunt and was sitting with his back against a tree. He had been whistling, using the new growth leaf to peak animals curiosity to investigate. He was using his flashlight to inspect the area off and on for both predators and prey as mentioned before. At one point something brushed against his arm. He quickly checked to see what it was but didn't see anything. A few minutes later he felt it again. This time he jumped up turned around and checked behind the tree.

To his surprise, he saw an Ocelot (Manigordo) run off. He had been cautious and careful, taking preventative measures and yet he still was in a potentially dangerous situation.

Appendix G

Fishing Technique 3: Hook and line

“Carne” is used on a size 6 barbed hook. It is then cast into the river and slowly retrieved. This is continued repeatedly until a larger fish is caught. As with many of the other techniques, the desired target area was behind large rocks, or in the calmer water of the river. This technique did not supply as many fish as the cast net, but was used by other family members as one person used the only cast net the family owned. In the 45 minutes of fishing, one fish was caught that was roughly six inches long.

Fishing Technique 4: Spear fishing

This technique is only used when there are clear water conditions. A diver uses a mask and a metal spear to catch fish. This technique did not seem to be the most often used and they did not talk much about this technique.

Note: Due to poor water visibility, technique 4 was never used during my study time. Therefore, the descriptions are based solely off of communication which was especially difficult for this technique.

When using technique 4, permission must be given by El Reyidor. If permission is not granted, and a fisherman is caught fishing, a fine of 30 days work is given.

Fish, Crawfish, and Shrimp Consumption

The collected shrimp specimens would be boiled and consumed whole, shell and all. The crawfish, with harder shells, would be slightly modified. The last section of the tail (Uropods and Telson) would be broken off, extracting as much of the intestine as possible (Aquaticcommunity.com, 2008, Glossary of

Aquaculture). Next the Carapace, Mandibles, Rostrum, Eyes, and Antennules would be extracted as well. Consumption was slightly labor intensive because the shell was not consumed, therefore, each shell was broken and the meat was extracted.

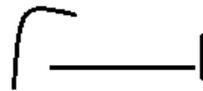
The fish were fried whole. The larger fish were divided between people and everything was consumed except for some of the bones.

Appendix H



This is the loaded Trampa.

Note:



Note: This is a successfully caught bird in the Trampa.

Appendix I: A funny story about a Dbong Tang Tang

This story was told one night after dinner. I interpreted it as a funny story that also taught me to stay alert when in El Teribe.

Interviewee 1's Great-Great-Grandfather was out digging yucca on a hill. In those times, the men wore loin cloths. He was busy working on all fours when all of a sudden; something tickled his "fruta" or testicles. He thought it was only a plant and when to brush it away but continued working without looking up. It happened a second time, and again he continued working, but took another swipe at the plant. When it happened a third time, he stood and turned to see a Dbong Tang Tang just as startled as he was.