

CHAPTER FOUR

ANIMAL TECHNOLOGY

STUDENTS LEARN HOW THE TIMUCUA UTILIZED WILD ANIMALS FOR EVERYDAY SURVIVAL.



WHAT IS ANIMAL TECHNOLOGY?

While some Timucua grew crops, all villages depended primarily on hunting and gathering. We normally think of “gathering” as something you do with plants. But coastal peoples, like the Timucua, spent a great deal of time gathering shellfish, including oysters, clams, mussels, whelks, and even tiny coquina. Can you imagine trying to shuck enough of those tiny clams to make a meal? Of course not. You’d spend more energy opening the shells than you’d gain by eating the tiny clams.



Coquina, photo courtesy of Kimber Herrera

For a food to be useful, it had to provide the people with more energy than they used up while catching it, processing it, and eating it. The Timucua had to make choices we never consider today, because we don’t hunt, gather, and process our own foods. Someone else, or a machine, spends all of the energy it takes to prepare food for consumption. The only part most modern Floridians participate in is the eating. Hmm. Maybe that’s why this country is facing an epidemic of obesity. We don’t use up any energy to get the foods we eat.

Well, that’s not quite true. Adults spend forty or more hours per week working to earn money that can be traded for food. Whether they’re building houses or typing at a computer, they’re using energy to earn that money. But even so, there’s still a huge disconnect between the food we eat and how it gets to our table. How many people do you know that have hunted their own food? Collected chicken eggs from a hen house? Eaten vegetables from their own garden? You may know a few, but the majority of people get their food solely from stores and restaurants.

Life for the Timucua was very, very different. Nearly every daily task related in some way to food: finding it, collecting it, hunting it, butchering it, preserving it, cooking it, storing it, protecting it from animals, and of course, eating it. So how did they effectively process coquina?

- 1) They rinsed handfuls of the tiny clams to remove sand.
- 2) They plopped them into a clay pot and added water.
- 3) They collected wood to build a fire and boil the water.
- 4) The water’s heat killed the tiny coquina clams and popped open the shells.
- 5) The nutrients in the tiny clams dissolved into the boiling water around them, creating clam broth (like chicken broth in a can, right?).
- 6) They strained out the shells, probably using an open weave basket.
- 7) The remaining broth was full of protein. They drank it alone or used it to boil vegetables and make a stew.

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The Timucua still used energy making the coquina broth, but nowhere near the amount they would have used prying open each ¼ inch clam individually. This is an example of food technology. It's not just about which animals you eat. It's about getting that animal into an edible form without spending too much of your own body's energy in the process.

Animal technologies depend in part on having the right tools – spears, traps, collecting baskets. But most animal technologies are about 1) gaining **knowledge** about the species you're hunting and then 2) developing **methods** for finding, killing, and processing that species.

LET'S TALK SHELLFISH

All Timucua groups lived near some kind of water body: a salt marsh, a beach, the intracoastal waterway, a river, or a lake. The kinds of shellfish they harvested depended on the water body they lived near. The Timucua living near the salt marsh collected millions of oysters. These sharp-edged shellfish thrive in the changing salinity of a marsh. How do we know the Timucua ate oysters? Archaeologists have found enormous piles of native trash, called middens. These piles include broken bits of stone tools and pottery, pieces of animal bone, and lots and lots of shells. Some of these shell middens reach 75 feet tall. Others, called sheet middens, are only a few inches thick, but might stretch for four miles. Archaeologists study these middens to learn what the Timucua were eating. Near the salt marshes, some middens are more than 90% oyster shell.



Above: Oysters growing in a salt marsh, photo by Wikipedia

Below: Whelk shell tool



How did the Timucua harvest oysters from the marsh?

First, they would go out into the salt marsh at low tide, when the oysters and the mud flats were exposed. They could just walk up to the big clusters of oysters and pick them up. (Don't you try it without leather hand protection. Oyster shells are sharp.) The Timucua probably didn't bring the whole cluster of oysters home, though. The oysters on the bottom and in the middle of the cluster were often dead, and many young oysters – too small to harvest – were also attached to the cluster. So, how did they break off the edible ones? The Timucua probably used a whelk shell hammer to bash adult oysters off of large clusters. Then they tossed the rest back into the marsh mud. This served three purposes.

- 1) It lightened the harvester's load.
- 2) It returned young oysters to the marsh to continue growing.
- 3) The returned clusters provided hard surface for future baby oysters to attach to.

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Florida middens do NOT contain huge clumps of oysters that were harvested dead and never opened. This suggests that the Timucua brought back edible individual oysters, not entire clumps of shell.

They probably tossed the collected oysters into baskets slung across their backs. This allowed them to gather without interruption throughout the low tide period. It takes a lot of effort to harvest oysters, but it is a fairly safe activity, and it doesn't require years of skilled training. As a result, many native societies considered shellfish gathering a task for women and children.

Ribbed mussels are another type of shellfish that grows in the salt marsh, often in and among the oyster clusters. They were probably collected right along with the oysters. **How did the Timucua gather mussels?** These shellfish are about 10 cm (4") in length and have thin dark brown shells. They attach to each other or to the base of marsh grasses with thin, hair-like filaments. The Timucua did not need prying sticks to harvest the mussels. Instead, a sharp bone or stone knife would have been helpful for cutting the attaching filaments.



Atlantic ribbed mussel,
photo by Wikipedia

Have you ever heard the saying: "Only collect oysters in months with an 'R'?" In modern times, pollutants and bacteria in coastal waters make it unsafe to harvest shellfish during summer months (May, June, July, and August). Many shellfish are filter-feeders, meaning they suck nutrients and dead bits of plants and animals from the water. They also suck in the pollutants, including a deadly toxin created by an algae bloom called Red Tide. Today, the Florida Fish and Wildlife Conservation Commission tests waters all over the state and makes announcements to alert citizens to the presence of Red Tides. Four hundred years ago, the Timucua didn't need these alerts. Red Tides and coastal pollution were not big issues back then, so they could collect oysters and mussels during summer months if they wanted to.

Some Timucua lived near intracoastal areas, instead of living on the mainland side of a marsh. The intracoastal area is found where narrow barrier islands run along the coasts of Florida. For the Timucua, the western side of these islands was bordered by salt marsh. (The marshes were created gradually as rivers dropped their silt before flowing into the ocean.) The environment on the eastern side of these islands was totally different--sandy beaches and the waves of the Atlantic Ocean. This beach habitat provided the Timucua with several useful shellfish species, including clams, whelks, and - of course - coquina.

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*Small Quahog Clams,
photo by Wikipedia*

How did the Timucua harvest quahog clams? As with oysters, this was a low-tide harvest, perhaps by women and children. Tiny holes in the sand indicate the presence of a clam below. They could have dug up the clams with hands or a simple digging stick. Often, several clams could be found together, then tossed into a collecting basket. Clam shells found in shell middens are often 12 cm across (5”), large enough for use as bowls and dippers. Archaeological studies show that these clams were occasionally gathered in the summer, but more often in winter and spring. Why? During the summer, clams undergo heat stress, and as a result, they weigh less. Harvesting them in summer would provide less food per clam. Also, the clams breed in summer, and many modern fishermen note that clams taste bad while breeding. So, the Timucua’s focus on winter and spring harvest could have been practical or just a matter of taste.

How did the Timucua harvest whelks? These gastropods (snails) can reach 41 cm (16”) in length, and can provide much more meat than a clam or oyster. In addition, archaeologists have found a variety of tools (axes, hammers, and chisels) as well as ceremonial bowls made from this species’ large shells. Whelks can be hand-



*Two Live Whelks on a Mud Flat
in North Florida, courtesy of
The Timucuan Paddle Page*

collected in spring through fall in shallow, coastal waters. Whelks eat other shellfish, like clams, but they only eat about once a month. They spend the rest of their time buried under the sand. It is during these hunting forays that they are easy to collect.

And what about the coquina we spoke of earlier? They burrow just beneath the surface of the sand – not where the waves are crashing – but further upland, where a bit of water washes gently over the sand. The Timucua probably watched as a soft wave retreated to the ocean, looking for the tiny feathery filters that these mollusks use to capture bits of food. The filters retreat as the wave leaves. But since coquina tend to live in colonies, one whelk-shell-shovel could scoop a hundred of these tiny shells. They may have been tossed into a loosely woven basket, so that waves could wash through it and remove some of the sand. Because coquina live in colonies, once the Timucua had scooped an area clear, they would probably move down the beach searching for more of the tiny filter feeders. These shells are found in intracoastal middens, along with a mixture of whelks and quahog clams. They’re also found in tiny middens on their own. Perhaps these locations were used by individual families to process coquina.



*Knobbed Whelks,
photo by Wikipedia*

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Donax variabilis,
photo by Kimber Herrera

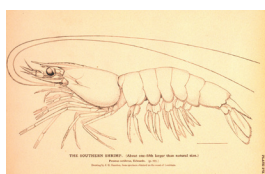
Archaeology Note: When you find coquina on the beach today, they're often 10-11 mm long (< 1/2"). In archaic shell middens (3000 BCE – 500 BCE), *Donax* shells were substantially larger, with most between 10 and 22 mm (0.4" – 0.86"). They even found one 25 mm *Donax*, which is an inch long! The difference between a half inch and a whole inch may not seem like much, but when it describes a 100% increase in length, it really is a big deal. Scientists don't know yet why this clam's size decreased so much over the past 5000 years. Was climate change a factor in their growth? Or environmental toxins? Further studies are needed to figure out this change.

How did the Timucua harvest crabs and shrimp?

Blue crabs can be captured using baited lines as well as traps. A baited fishing line dangled in the water will often attract a crab in less than five minutes. When the crab pinches on to the bait, the line is pulled up, and the crab is scooped in a dip net. Some native peoples fashioned crab traps from saplings and baited them with dead fish. These worked just like modern metal traps.



Blue Crab,
photo by Wikipedia



Shrimp,
photo by Wikipedia

Catching shrimp required a different technique. Here's what modern shrimpers have learned.

The best shrimping in the St. Johns River is during the months of July, August, and September. During the day, shrimp stick to the deeper channels in the middle of the river, so fishing with a cast net that will sink 20 feet or so is a good way to harvest them. Did the Timucua make nets that would sink that far? Because nets aren't preserved in middens, archaeologists can't say for sure. Deep nets aren't needed for night shrimping, because shrimp migrate into the grassy shallows at river edges each night. To catch shrimp at night, you need bait. Modern shrimpers use bait made of ground, dried fish and clay – two things the Timucua had in abundance. Modern nighttime shrimpers toss bait into shallow water from a canoe. Then they shine a light. When the shrimp come for the bait, they use a cast net or fine-meshed dip nets to haul in the catch. Did Timucua use bait? These biodegradable materials would not last in a midden, so we may never know. However, crab shells, as well as the tiny mandibles (mouth parts) of shrimp, have been found in middens, proving that the Timucua possessed the technology to harvest these tasty crustaceans.

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While many Timucua groups lived near salty or brackish water, others lived further inland near ponds and along freshwater rivers. At these inland sites, the Timucua gathered freshwater shellfish, including mussels and snails. Freshwater mussels look similar to their salt marsh cousins. Most species prefer to live in the muddy bottoms of streams and rivers, though some live in lakes as well. The Timucua may have waded into these shallow waters, squishing their toes through the mud to feel around for the smooth shells. Freshwater mussels can be pulled up by hand and tossed into a collecting basket, then cooked like a clam or oyster. To modern Floridians, salt marsh mussels are tasty, while freshwater mussels are not. The Timucua living near fresh water clearly utilized the freshwater mussels – regardless of our modern sense of taste.



*Freshwater Mussels,
photo by Wikipedia*

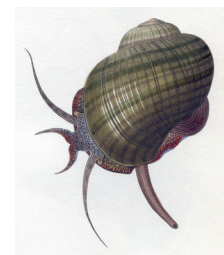
Archaeology Note: In one study, archaeologists counted the number of fresh water mussel shells in middens found across Kentucky, Tennessee, Ohio, Mississippi, Illinois, and Alabama. They found that the numbers of one mussel species were consistently high for nearly 5,000 years. Then, about 1,000 years ago, the number of mussels in these middens dropped sharply. This occurred just as corn agriculture was becoming well established in that part of North America.

Were the native people filling up on corn instead of mussels? Or did this midden change have more to do with habitat destruction? Agriculture opens up fields, allowing rains to carry extra soil into streams, rivers, and lakes. It's tough for filter feeders (like mussels) to filter food from the water when it is choked with dirt.

Even today, many mussel species are disappearing because human activities disturb their habitat. What kinds of human activities?

- 1) Deepening rivers by dredging
- 2) Straightening river channels to ease boating
- 3) Reinforcing river banks to create safe, solid banks for water recreation
- 4) Creating pollution as a byproduct of daily life
- 5) Overharvesting (collection of mussels for their pearls)
- 6) Accidental introduction of exotic zebra mussels

In addition to mussels, the Timucua also collected freshwater snails, including the Florida Apple Snail. These snails often hide in the plants floating near the edges of lakes and streams. They are very well camouflaged. Apple Snails have both a gill and a primitive lung, so they can breathe both in the water and out. This allowed them to leave the water at night to search for plant foods and to lay their eggs. The Timucua probably collected them by hand. It required no tools



*Apple Snail,
photo by Wikipedia*

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and little strength, but did require skill at spotting them. Snails would have been cooked thoroughly because they can carry diseases deadly to humans.

Archaeology Note: If you're interested in seeing a freshwater snail midden, visit Lake Ashby Park in Volusia County. A road was cut right through this midden, so you can get a good look at all of the snail shell refuse that created this ancient trash pile. Hontoon Island and the Ocklawaha River are also good spots to look for snail shell middens.

ACTIVITY - HOW DID THEY USE THE ANIMALS THEY HUNTED?:

BACKGROUND: The Timucua utilized every part of the animals they hunted, wasting nothing. Many modern products are still made from animals, but we no longer know which animal parts are used. The Timucua were intimately aware of where their food, tools, and other products came from.

List of Animal Parts: Antler, Bone, Fat, Feathers, Fish Air Bladder, Hide, Hooves, Muscle, Sharks' Teeth, Shell

INSTRUCTIONS: Work in teams of two. Use deductive logic (make your best guesses) to match each item in the table to the animal part it was made from. When completed, discuss as a class to form a consensus about which items were made from which animal part.

ANIMAL PARTS THEY UTILIZED

Item the Timucua Made	Animal Part it was Made From
Clothing	
Fish Hook	
Net Floats	
Cup, Chisel, Axe	
Tool Handle	
Lotions and Conditioners	
Meat	
Glue	
Drill Bits	
Fletching on Arrows	

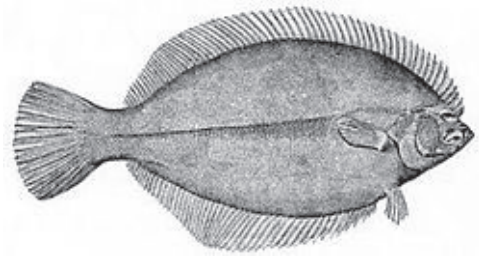
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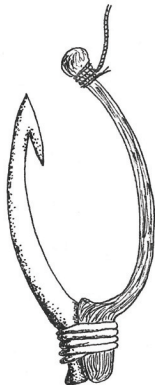
LET'S TALK FISH

Fish made up a huge portion of the Timucua diet. Native peoples possessed a variety of technologies for hunting fish, including gigs, baited hooks, gill nets, seine nets, cast nets, hand-held nets, fish traps, and weirs.

Gigs – What's a gig? It's a long wooden pole, about 2.5 to 4 meters (8-14') long, tipped with three or four sharp tines (made of wood or stingray spines). It is a stabbing tool used to hunt fish that rest on the sandy bottoms of the intracoastal. The Timucua probably giggered flounder from a canoe during late fall and early winter nights. We think they lit a small fire in their canoe, built atop a fireproof platform of clay. The flounder's body was hidden under the sand, and the light helped the Timucua to spot the flounder's eyes. Then they stabbed at the eyes, pinning the fish to the sandy bottom until it was still. Female flounder reach 63 cm (25"), so this was sometimes a real challenge.



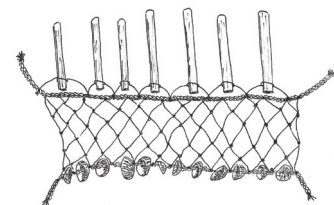
*Flounder,
photo by Wikipedia*



*Fish hook,
courtesy of the
University
Press of Florida*

Baited Hooks – The Timucua did not use fishing poles, but they did use lines and hooks. Straight bone hooks are called gorges (gor-jez). More advanced curved hooks, made of bone and wood combinations were also used. Bits of cut up fish, crab, or shellfish served as bait. When trying to catch sea trout, red drum, and black drum, the Timucua dropped a single baited line from a boat in the salt marsh or intracoastal. In freshwater lakes, bass could be caught on hooks and lines baited with crayfish. Trout and sunfish hit better on baits like grubs, caterpillars, or grasshoppers. Tidal and freshwater creeks were a great spot to catch catfish using cut bait on a trotline. What's a trotline? It's a long piece of cord stretched across a creek. Several lines are tied along the cord, each dangling into the water with baited hooks. The Timucua needed to watch their trotline carefully to prevent scavenging crabs from stealing their catch.

Gill Nets – The Timucua manufactured nets with holes in many sizes, designed to catch differently sized fish. Long gill nets may have been rolled out into intracoastal waters from a canoe. How did these gill nets work? Gourds, lightweight wood, or inflated air bladders could be attached to the top to provide floatation. Shell or clay weights were attached to the base of the net. The combination of floats and weights held the net like a wall in the water. The holes were made big enough so that a fish could get its head part way in, and then become tangled around its gills. Strong, medium-sized fish, like sea catfish, pinfish, and jacks were captured with gill nets.

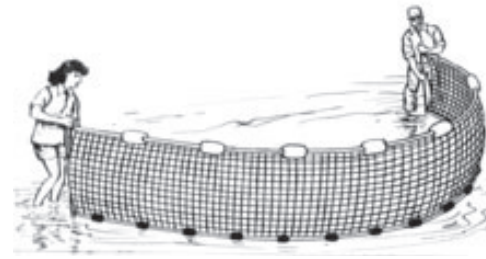


*Prehistoric Gill Net, courtesy
of the University Press of Florida*

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Seine nets – These nets work a bit differently. The holes in the net are smaller, meant to trap rather than entangle. One end is held at the shore, while the other is deployed in a large half-circle. Smaller seine nets can be played out by hand (like the one illustrated). Longer ones could be lowered into the water from canoes. As the deep end of the net is dragged toward shore, all of the fish trapped within the arc are beached.

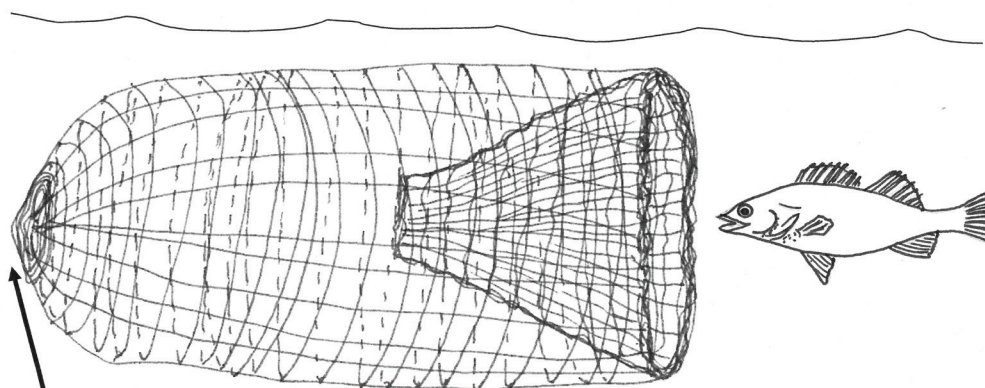


A Small Modern Seine Net, image by Wikipedia

Cast Nets – These nets were made to be thrown. A long cord attaches at one end to the wrist of the thrower and at the other end to a large panel of net. Around the edges of the net are shell weights. When the net is cast, the edge weights drag the panel of netting towards the bottom. When the caster tugs on the cord, any fish or shellfish caught under the panel are scooped into the net's center. Pinfish, mullet, shrimp, and bait fish can be caught when casting from the shore into marsh grasses. They could also cast into deeper waters from a canoe.

Dip Nets – These hand held nets had a very fine mesh. In addition to shrimp, they could be used to capture bait fish and other small edible fish (around 20 cm or 9”), including silver perch and star drum.

Fish Traps – These basket traps were woven from long, slender saplings. They were constructed with one long, narrow basket inside another. One end was wide open, allowing the fish to enter as it sought the bait. The back of the inner basket was narrow. It allowed the fish to swim through into the big outer basket to get the bait. But it didn't allow the fish back out again. Catfish and black crappie are two examples of fish caught in traps.



Bait at This End

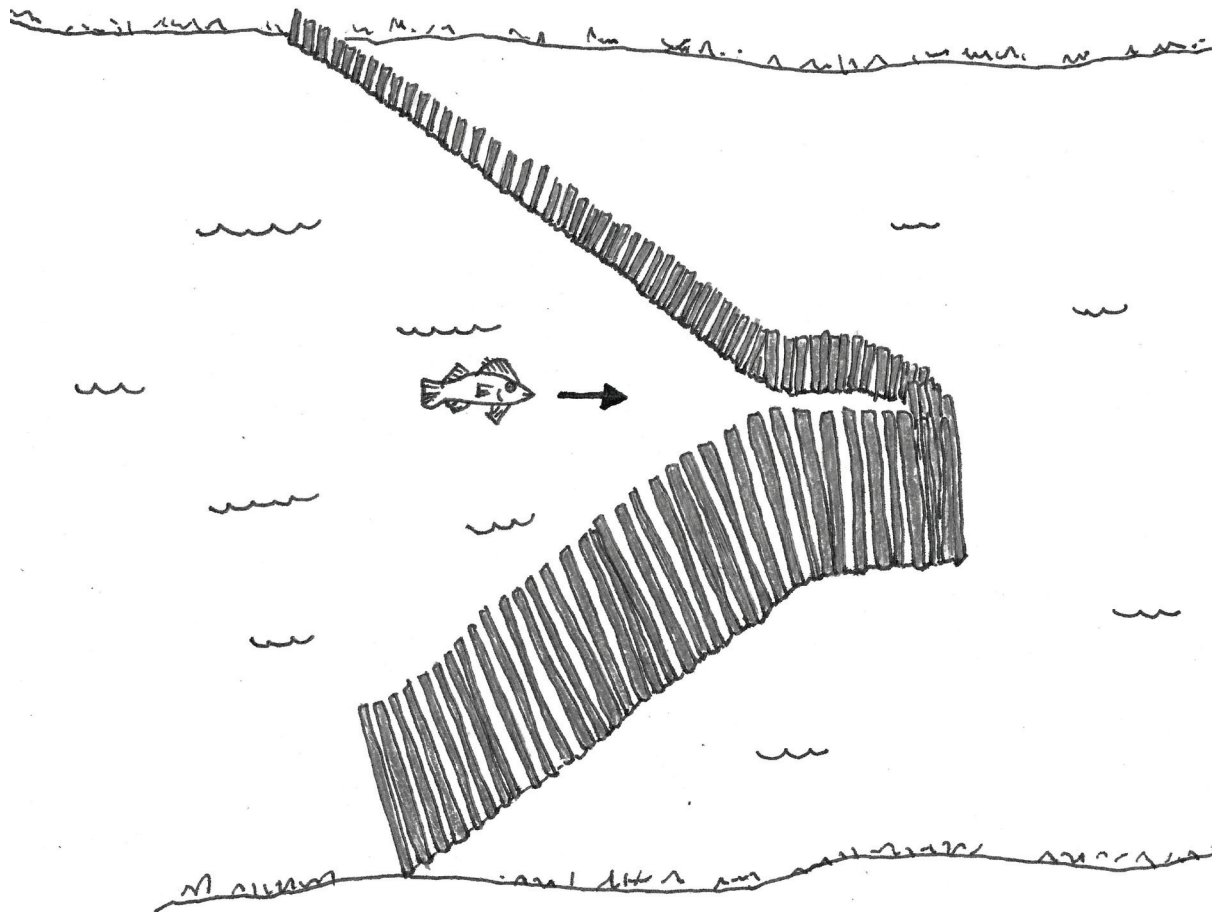
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Weirs – What’s a weir? It’s a semi-permanent fish trap, a bit like a fence, set up in a tidal creek. French explorers described Timucua weirs as mazes in the water. Some weir fences spanned the entire creek, funneling the fish towards a trap or pen. The trap could be gated shut at low-tide, blocking the fish’s escape with the outgoing tide. The trapped fish could be netted or speared by people in canoes. Many mullet, black crappie, and sharks were caught in weirs.

Some native cultures built weirs that prevented fish from escaping at high tide too. Trapped fish could live in these man-made enclosures for days, weeks, or longer - until they were needed for food. The fish were actually living in these watery pens. Weirs that included long-term pens may have been a form of early aquaculture (fish-farming).

Aquaculture is a thriving industry in modern Florida. Alligators, shellfish, and catfish are examples of water animals raised for food today. In addition, water plants and tropical fish are raised in Florida for non-food purposes, like landscaping and the pet trade.



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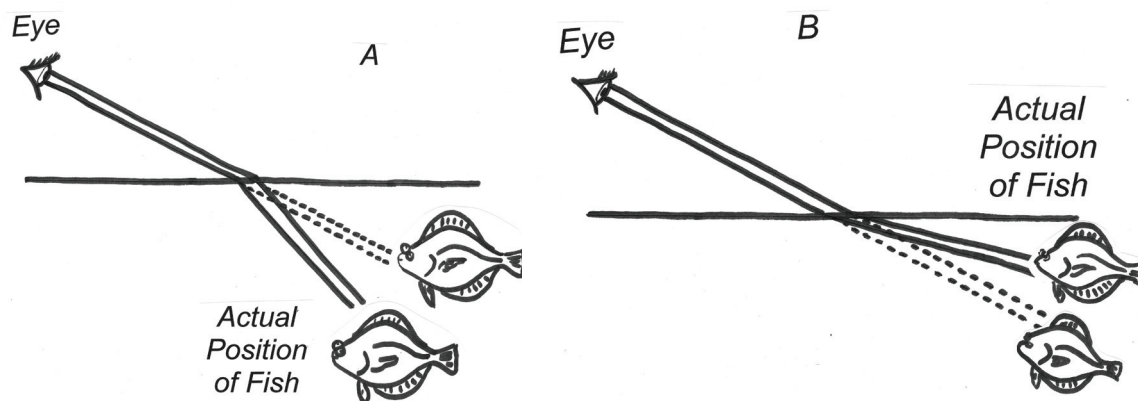
ACTIVITY - REFRACTION & GIGGING FOR FLOUNDER:

BACKGROUND: Light travels at different speeds through air than it does through water. So, when light passes from air into water (a denser medium), it bends. This is called refraction, and it causes items in the water to appear in a different place than their actual location. The bending of light makes hitting your target more challenging. When someone is gigging for flounder, they jab the gig from the air into the water. They are looking through two substances (air and water) with differing densities, so the flounder's position will be distorted. In the following activity, you will practice "gigging" in the air, then "gigging" in the water and compare the two experiences.

INSTRUCTIONS, Part I: Fill a clear glass with water. Place a colored straw or a pencil in the glass. Observe that the straw appears broken because light bends as it travels from air into water.

INSTRUCTIONS, Part II: Stand about two feet from the fish target. Use your dowel (model gig) to take ten stabs at the fish suspended in air. Gigs are stabbed, not thrown, so the dowel should not leave your hands. Stand in an upright position with the tip of your gig at least a foot away from the fish. Record the number of stabs that hit the mark. Next, use your dowel to take ten stabs at the model fish suspended in water. Once again, record the number of stabs that hit the mark.

- 1) Gigging in the Air - Number of Stabs (out of 10) that Hit the Mark: _____
- 2) Gigging in the Water – Number of Stabs (out of 10) that Hit the Mark: _____
- 3) As time allows, continue stabbing until you are hitting the fish regularly. You are now getting a sense of how to adjust your aim. Do you need to aim closer (lower) or further away (higher) to actually hit the fish? _____
- 4) Which diagram accurately shows how light bends when it passes into water?



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WHAT OTHER WATER ANIMALS DID THEY HUNT?

The Timucua hunted other water animals, including mammals, birds, and reptiles. Let's start with mammals. River otter bones are present in Florida middens. These animals were probably tracked to locations where they slid down into the water. Here, they could be hunted with snares or bow and arrow. Dolphin bones have been found periodically in middens. These may have been hunted or simply found when dead dolphins washed up on the beach. Manatees were not hunted in Florida. The Caribbean and Mexican Indians did hunt them, and in these locations, archaeologists find ceremonial and everyday items made from manatee parts. Because archaeologists do not find manatee-related artifacts in Florida, we assume the Timucua did not hunt these animals.

What about Aquatic Birds and their Eggs? Water birds, including ducks, herons, egrets, cormorants, pelicans, gulls, and more, were hunted with spear or bow and arrow. Eggs could be collected by hand.

What about Aquatic Amphibians and Reptiles? Bones of aquatic frogs, turtles, snakes, and alligator have been found in Timucua middens. Turtle eggs were probably collected by hand. Alligator eggs...well, that's a bit more dangerous.

Pond Frogs were hunted at night, using a gig (like a flounder). Frogs were not pinned to the deep bottom of a pond the way flounder were pinned in shallow intracoastal waters. Instead, the fisherman makes a sharp stab and pulls the frog from the water.

Turtles were hunted in different ways depending on the species. Soft-shell and other aquatic turtles could be scooped up with long-handled nets. Sliders and other hard-shelled pond turtles could be caught using baited hooks and lines.

Florida snapping turtles were probably hunted with a digging stick. How did that work? Ponds with plenty of vegetation around the edges are excellent snapper habitats. The murky water makes it tough to see the snappers though. That's where the digging stick comes in. The turtle hunter paddles his canoe along, poking down into the pond muck with a stout stick. If he pokes something hard, he's found a snapper's shell. Snapping turtles can deliver savage bites, so the goal is to swirl the stick around until the snapper bites it. Hopefully, the snapper will continue to bite the stick, while the turtle hunter reaches down and grabs both the front and back of the snapper's shell. With care, a 25-pound snapping turtle can be hefted out of the water.



Snapping turtle hiding under a log, photo by Wikipedia

What about marine turtles? Archaeologists have found evidence of sea turtle bones in Timucua middens, but most of the evidence for turtle hunting is in South Florida and the Caribbean. It is likely that sea turtle hunting in Timucua territory was opportunistic. "Hey, there's a turtle laying eggs on the

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beach. Let's grab it!"

Aquatic snakes could be hunted with spears or bows and arrows.

THAT BRINGS US TO ALLIGATORS

Alligators can be hunted with stone-tipped spears. They can also be hunted with long bows, if the bow has at least 35 pounds of draw weight. This provides enough force to pierce a young alligator's hide. Alligator bones are found in Timucua middens. This suggests that the Timucua possessed the technology to make spears and bows strong enough to hunt them.



De Bry engraving of an alligator hunt

The text below is attributed to the French artist Le Moyne, based on his experiences in Florida in 1564.

“This is how they attack alligators. Near the river they put up a little hut full of cracks and holes. In this hut, one of their men keeps watch. From his hiding place he can see and hear the animals, even if they are a long way off. Then the alligators, driven to the shore by hunger, give themselves away by their loud bellowing, which can be heard at a great distance. The watchman in the hut now calls his companions, who are waiting in readiness, and they set out for the hunt. They take with them a ten-foot pointed pole, and when they come upon the monster – who usually crawls along with open mouth, ready to attack – they push the pole quickly down its throat. The rough tree bark of its sides prevents the pole from slipping out again. Then the beast is turned over on its back and killed by beating it with clubs and piercing its soft belly with arrows. The alligators are such a menace that a regular watch has to be kept against them day and night. The Indians guard themselves against these animals just as we guard ourselves from our most dangerous enemies.”

A Year-Round Menace? Unlikely. April and May begin alligator mating season. It is only during

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the spring that males bellow to attract females, and females respond with bellows of their own. This is probably what the French heard. Male alligators travel overland for great distances to find females. Perhaps the use of guard huts to protect the village took place only in the spring each year, when male alligators ventured beyond their normal range.

Historical Note: Did you know that the French originally named the St. Johns River the River of May because they landed there on May 1st? This puts them in Florida right in the middle of alligator breeding season. Hmmmm.

Alligators generally hunt in the water or at the water's edge. They use a dash and grab technique, not a "run across the land, mouth wide open, straight at a bunch of guys with a really long pole" technique. During times of drought, alligators will move overland in search of a new water source. However, humans are not their normal prey. Displaced from their homes, alligators would have been even less interested in confronting a group of hunters.

Mouth Wide Open? Alligators do bask on land with their mouths open; it's how they cool off. So perhaps, unlike the French description, Timucua hunters focused on resting alligators. When alligators are on the move, their mouths are usually shut or just barely ajar. One exception is a female protecting her nest. She will dart forward with her mouth open to scare off a potential egg predator. Hatching usually takes place in August and September; however, a female alligator would not put her nest near an area used by people. It's unlikely the Timucua would choose such a dangerous target anyway.

Jamming a Pole in the Alligator's Mouth? Maybe so. On the Nicobar Islands (between India and Thailand), there's a group of people called the Shompens. They are modern hunter-gathers living in a tropical climate, which includes crocodiles. To hunt these crocs, they approach them while they're basking (sound familiar?) and push a pole that is long, but soft, into the crocodile's mouth. Gators and crocs have a bite reflex. If anything touches the area near their back teeth, they bite down – really hard. The croc's teeth embed in the soft wood, making its teeth useless as a defensive weapon. (Of course, whipping its tail or slamming its head back and forth can still create plenty of damage.) The Shompens hunters, even today, use this pole-and-spear method to hunt crocodiles. The Shompens don't flip the crocs though. Maybe the Timucua didn't either?

Historical Note: Take a look back at de Bry's alligator hunt engraving. We'll take a moment to review the parts we KNOW are false. The alligator in the front would be over 40 feet long. Even 400 years ago, gators weren't that big. The Timucua are hunting two of these large dangerous animals at the same time right next to each other. Does that seem wise? Where are the plants? Florida was a wild place. The only smooth ground was the salt marsh at low tide, not the best place to hunt gators since the hunters would sink and get stuck. The bows the Timucua used were long bows, not European recurved bows as shown. The men should be wearing loin cloths. Why go naked around

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something as dangerous as an alligator's jaws? In addition, this engraving was clearly made by someone who had never seen an alligator. The external ears, eyebrows, and long wiggly fingers make this creature look more like a dragon than an alligator.

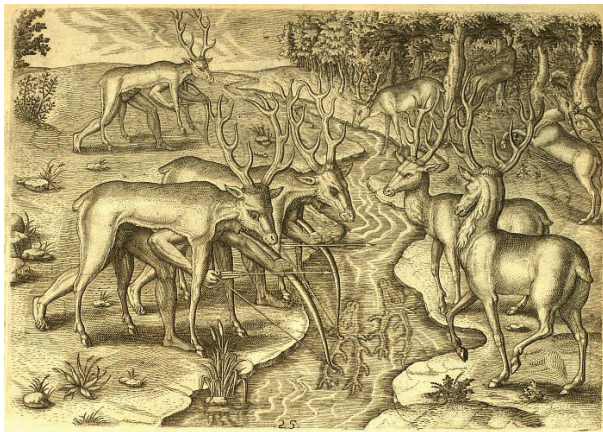
LET'S TALK LAND ANIMALS

The Timucua collected a few terrestrial animals by hand, including box turtles and gopher tortoises. Most other species moved quickly enough that the Timucua needed hunting tools to catch them. Animals like bear, deer, wolf, fox, raccoon, panther, squirrel, beaver, muskrat, snakes, quail, and turkeys were all hunted with **spear** or **bow and arrow**. Small to medium-sized mammals were also hunted using snares or traps.

Deadfall traps involved balancing a heavy log on a stick. A trigger with bait is added. When the animal grabs the bait, it pulls on the trigger stick, dropping the heavy log. The animal (perhaps a raccoon) is trapped underneath. **Snares** are made of loops of cord that are hung vertically in a narrow animal path. When the animal charges down this path, its head goes through the loop. When it struggles, the movement releases a catch that springs the cord high. This strangles the animal and lifts it out of the reach of scavengers.

Fire drives increased the efficiency of bow hunting because smoke and fire drove the animals towards waiting hunters.

Tracking technologies leave no mark in the archaeological record, but this sort of wisdom was indispensable in hunter/gatherer/agriculturist societies like the Timucua. We know they possessed these technologies because we see the evidence of successful hunts in the middens, but we really don't know exactly how they stalked animals. It's only by comparing them with other groups (like the Shompens) that we can make educated guesses.



De Bry engraving of a deer hunt

For example, **deer hide disguises** were used by native peoples across eastern North America. Deer hides were processed with the head and antlers still attached. Hunters wore these hides draped over their head and back. Then they crouched down on all fours, moving in ways that mimicked natural deer movements. This helped to camouflage them as they approached the deer downwind (so the deer couldn't smell them.) Because other native groups on the East Coast used deer hide disguises, we can surmise that the Timucua did something similar. Because deer hides don't last in the archaeological

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record, we have to rely on historical documents (like de Bry's engraving) for clues about their use. Look back at the unit on de Bry's engravings to review this piece of artwork.

WHY DIDN'T THE TIMUCUA USE DOMESTIC ANIMALS?

The only domestic animal the Timucua used was *Canis familiaris*, the dog. Domestic dogs travelled across the Bering Land Bridge with the Paleoindians around 10,000 BCE. The descendants of these dogs were part of Florida's native cultures long before the Spanish arrived.

What did these dogs look like? European explorers described the domestic dogs living with tribes far north of the Timucua. These northern dogs weighed about 20 pounds and were the size of a Shetland sheepdog. They often lived on the fringes of a village (not inside the homes), and only accompanied humans on hunting trips. These dogs were not the cuddly little puppies that share our homes today. They were working dogs that earned food and protection from predators by helping with hunting. European descriptions also note that they howled (like wolves) rather than barking.

Dogs were domesticated 12,000 years ago, and there is evidence of dog burials on the east coast of North America as early as 2000 BCE. How were dogs domesticated? Wolf packs have a natural dominance structure. There's an alpha male and an alpha female. Wolf cubs who could accept humans as their alphas were able to be domesticated. Wolf puppies are playful, just like dog puppies. But as they grow up, they lose their playfulness and no longer accept new members to the pack. This means that your wolf would try to kill every new person visiting (invading) your home. So what changed? Basically, a few alterations in DNA (mutations) stopped wolves from growing up. Sure, they became physically mature, but emotionally, they stayed puppies. This produced the playful, friendly animals we know as dogs today. During this transformation, dog faces became shorter and wider, and they changed from howlers to growlers. They are still happiest in a pack and are loyal to their alphas (owners).



Interesting Fact: The wolves living in Florida during Timucua times were not gray wolves (*Canis lupus*). They were red wolves (*Canis lupus rufus*), which are now believed to be a hybrid species between gray wolves and coyotes. They are largely extinct in their former habitat (up the East Coast into Canada), but have been reintroduced in South Carolina, North Carolina, and to islands off the west coast of Florida.

Archaeologists discovered this dog adorno near Shields Mound in Duval County (dated 900-1,200 CE). It is a decorative element, once part of a clay pot.

Courtesy of archaeologist, Dr. Keith Ashley

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Archaeology Note: Timucua dogs were about the size of a small collie (20-60 pounds), fairly small compared to the 200-pound war dogs (mastiffs) that the Spanish brought. Archaeologists discovered a dog burial in the northern part of Timucua territory (up in Georgia). The dog had a musket ball in its leg and was buried in a shallow grave. This, along with other nearby artifacts, demonstrates contact between the Timucua village and the Spanish in the early 1500s.



Photo of Dog Burial, provided by archaeologist, Dr. Jerald T. Milanich

The Timucua didn't domesticate dogs. They inherited them. So why didn't they domesticate cows or goats, pigs or horses? Simply put, those animals didn't live in Florida. Horses became extinct along with the mammoth 10,000 years ago. Pigs and cows were introduced by the Spanish. To domesticate something, you have to have the raw materials: an appropriate animal species. The only animal living in Florida that has been domesticated elsewhere is the turkey. In Central America, turkeys were domesticated by the Aztecs around 800 BCE, mostly for ceremonial use of their feathers. Later, around 200 BCE, they were domesticated again by the Ancestral Puebloans in the American Southwest. If corn domestication made it across North America, the idea of turkey domestication probably did too. So why didn't the idea catch on? Taking care of animals is a lot of work. The Timucua had no big cities requiring large-scale food production. Why bother domesticating animals if you don't have to?

The Spanish did introduce domestic animals to mission sites. These pigs, chickens, and cows were raised for use by the Spanish missionaries and the citizens of Spanish St. Augustine. There are Spanish records of complaints by the Timucua about the habitat damage caused by cows grazing on native hunting grounds. The Timucua themselves preferred hunting wild animals to caring for domestic ones. They did hunt feral pigs released into the forest by the Spanish, but they never fed these animals or tried to domesticate them.

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DOMESTICATION OF ANIMALS AROUND THE GLOBE

	Animal Species	When it Was Domesticated	Where it Was Domesticated	What the Animal Was Used For
A	Dog	12,000 BCE	Middle East	Meat, Hunting Aid, Labor
B	Pig	10,000 BCE	Middle East	Meat, Hides
C	Goat	9,000 BCE	Middle East	Meat, Milk, Fur, Hides, Dung for Fuel
D	Cow	6,000 BCE	Middle East	Meat, Milk, Hides, Labor
E	Chicken	6,000 BCE	Southeast Asia	Eggs, Meat, Feathers
F	Horse	4,000 BCE	Eastern Europe	Meat, Labor, Transportation
G	Alpacas	3,500 BCE	South America	Fur to Make Cloth, Transportation, Meat
H	Guinea Pig	3,500 BCE	South America	Meat
I	Turkey	800 BCE	Central America	Feathers, Meat, Eggs

ACTIVITY – WHERE WERE ANIMALS DOMESTICATED?

BACKGROUND: Some animals, like the pig, were domesticated in several locations. Others, like the alpaca, were domesticated in only one spot. Once domesticated, these animals were traded to nearby peoples, eventually crossing oceans to other continents.

INSTRUCTIONS: Use the information in the table titled, “Domestication of Animals Around the Globe,” to fill in the map below. Write the appropriate letters in the circles on the map to show which animals were domesticated in each region.

