



Animal Technology

Students learn how the Timucua utilized wild animals for everyday survival.



STUDENT LEARNING GOAL:

Students understand Timucua hunting methods, including which animals were hunted, how each animal part was utilized, and why the Timucua did not domesticate food animals.

SUNSHINE STATE STANDARDS ASSESSED:

Science

- SC.7.E.6.6 Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water.
- SC.7.P.10.2 Observe and explain that light can be reflected, refracted, and/or absorbed.

Social Studies

- SS.7.G.3.1 Use maps to describe the location, abundance, and variety of natural resources in North America.
- SS.7.G.2.3 Explain how major physical characteristics, natural resources, climate, and absolute and relative location have influenced settlement, economies, and inter-governmental relations in North America.

Language Arts

- LA.7.1.6.2 The student will listen to, read, and discuss familiar and conceptually challenging text.
- LA.7.4.2.2 The student will record information (e.g., observations, notes, lists, charts, legends) related to a topic, including visual aids to organize and record information, as appropriate, and attribute sources of information.
- LA.8.1.6.2 The student will listen to, read, and discuss familiar and conceptually challenging text.
- LA.8.4.2.2 The student will record information (e.g., observations, notes, lists, charts, legends) related to a topic, including visual aids to organize and record information, as appropriate, and attribute sources of information.

RESOURCES:

Ashley, Keith. “Beyond Potsherds – A Technofunctional Analysis of San Pedro Pottery from the North Beach Site (8SJ48)” The Florida Anthropologist, Vol. 54, No. 3 & 4. Florida Anthropological Society. September - December 2001.

Brown, Robin C. Florida’s First People. Pineapple Press, Sarasota, FL 1994.

Chaudhari, Sarit and Chaudhari, Sucheta. Primitive Tribes in Contemporary India, 2 Volumes. Mittal Publications. New Dehli. 1995.

“Chickens – Animal Domestications. 30 January 2012.

<<http://archaeology.about.com/od/domestications/ig/Animal-Domestication/Chickens--Chang-Mai--Thailand-.htm>>



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- Compton, Matthew J. Faunal Analysis from the Sapelo Shell Ring Complex (9MC23), McIntosh County, Georgia. University of Georgia. September 2004. 29 January 2012. <<http://compton.myweb.uga.edu/Sapelo%20shell%20ring.pdf>>
- Connaughton, Sean P. “Onset of Pottery in the Subsistence Economy of Prehistoric Hunter Gatherers of the St. Johns River.” Thesis by University of Florida. 2004. 29 January 2012. <http://sfu.academia.edu/SeanConnaughton/Papers/528980/Onset_of_Pottery_in_the_Subsistence_Economy_of_Prehistoric_Hunter-gatherers_of_the_St._Johns_River_Valley>
- “Coquina – Tasty Tiny Clam.” 28 January 2012. <<http://www.eattheweeds.com/coquina-tasty-tiny-clam/>>
- “Discover Florida Aquaculture.” 29 March 2012. <http://www.fl-seafood.com/pubs/pubform/pdf/English_Brochure_Discover_Florida_Aquaculture.pdf>
- D.S. Jones, I.R. Quitmyer and C. Fred T. Andrus. “Seasonal shell growth and longevity in *Donax variabilis* from Northeastern Florida: Evidence from oxygen isotopes.” 2004: Journal of Shellfish Research 23(3): 707-714. 28 January 2012. <<http://www.thefreelibrary.com/Seasonal+shell+growth+and+longevity+in+Donax+variabilis+fro m...-a0130777655>>
- “Figure 4 Deadfall.” 30 January 2012. <<http://www.wildwoodsurvival.com/survival/traps/figure4/figure4.html>>
- “Florida Alligator Hunting.” 30 January 2012. <<http://www.ronsguideservice.com/alligator>>
- “Harvesting Freshwater Mussels.” 28 January 2012. <<http://www.willghormley-maker.com/FreashWaterMussels.html>>
- “Hazel Primitive Bows.” 30 January 2012. <<https://sites.google.com/site/delsbows/home/hazel-primitive-bows>>
- “History of the Cow.” 30 January 2012. <<http://www.strausfamilycreamery.com/?id=72>>
- “History of the Domestication of Turkeys.” 30 January 2012. <<http://archaeology.about.com/od/tterms/qt/turkey.htm>>
- Horvath, Elizabeth. “The Lake Monroe Outlet Midden (8Vo53) – An Overview of a Middle – Late Archaic Period Site in the Upper St. Johns River Valley.” 29 January 2012. <<http://www.flmnh.ufl.edu/monroe/>>
- “Le Moyne Engravings.” 28 January 2012. <<http://fcit.usf.edu/florida/photos/native/lemoyne/lemoyne.htm>>
- Lee, Harry G. “Archaeology Team Really Digs Shells.” 28 January 2012. <<http://www.jaxshells.org/arko.htm>>
- Lorant, Stefan . The New World: First Pictures of America. Duell, Sloan & Pearce; 1st edition. 1946.
- Lutz, Peter L., Musick, John A., Wyneken, Jeanette. The Biology of Sea Turtles, Vol. 2. CRC Press. 2003. Boca Raton, FL.
- Milanich, Jerald T. Archaeology of Precolumbian Florida. University Press of FL. Gainesville.1994.
- “Mussels and Us – Prehistory.” 28 January 2012. <<http://molluskconservation.org/MUSSELS/Prehistory.html>>
- “Natural Bait.” 29 January 2012. <<http://www.takemefishing.org/fishing/fishopedia/bait-and-equipment/natural-bait>>



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- Nielsen, Allysum. “Weirs.” 29 January 2012. <http://www.clayoquotalliance.uvic.ca/es481a/pdf/ES%20481A%20Student%20practicals/ES481A_ANielsen_Weirs.pdf>
- “Night Time Flat Fish – Flounder Giggling.” 29 January 2012. <<http://saltfishing.about.com/od/flounderhalibut/a/aa060530e.htm>>
- “Oysters and Clams.” 28 January 2012. <<http://www.dnr.sc.gov/marine/pub/seascience/oyster.html>>
- Parsons, Alexandra. The Grand Shell Ring: A Study of Site Seasonality, Hard Clam, Exploitation, and Resource Scheduling. 25 January 2012. <http://etd.lib.fsu.edu/theses/available/etd-04142008-122142/unrestricted/ap_thesis.pdf>
- Quitmyer, Irvy R. “Zooarchaeology at the Lake Monroe Outlet Midden (8VO53)” 28 January 2012. <<http://www.flmnh.ufl.edu/monroe/animals.htm>>
- “Recreational Shrimping and Scaloping.” 28 January 2012. <<http://www.afn.org/~gofc/shrscall.html>>
- Reitz, Elizabeth E. and Scarry, C.Margaret. Reconstructing Historic Subsistence with an Example for Sixteenth-Century Spanish Florida. Elizabeth J.. Society for Historical Archaeology. 1985.
- Ste. Claire, Dana. True Natives – The Prehistory of Volusia County. Museum of Arts and Sciences Daytona Beach, FL. 1992. Hall Publishing Company.
- Schwartz, Marion. A History of Dogs in the Early Americas. Yale University Press. London. 1997.
- “Snails, Slugs, and Freshwater Mollusks.” 29 January 2012. <<http://www.eattheweeds.com/are-slugs-edible-what-about-snails-2/>>
- “Take Me Fishing – Natural Baits.” 28 January 2012. <<http://www.takemefishing.org/fishing/fishopedia/bait-and-equipment/natural-bait>>
- “The Apple Snail Website.” 28 January 2012. <<http://www.applesnail.net/content/ecology.php>>
- “The History of the Domestication of Goats.” 30 January 2012. <<http://archaeology.about.com/od/domestications/qt/goats.htm>>
- “The Timucuan Paddle Page.” 28 January 2012. <http://www.paddlethetimucuan.net/journal_mar_08.htm>
- “Uses of Domesticated Animals by Early Virginia Indians.” 30 January 2012. <http://www.encyclopediavirginia.org/Domesticated_Animals_During_the_Pre-Colonial_Era>
- Waselkov, Gregory A. “Evolution of Deer Hunting in the Eastern Woodlands.” 28 January 2012. Midcontinental Journal of Archaeology . 1978. Volume: 3, Issue: 1, Pages: 15-34. <<http://www.southalabama.edu/archaeology/writings/pdfs/evolution-of-deer-hunting-in-the-eastern-woodlands.pdf>>
- Weber, George. “The Shompen People.” 30 March 2012. <http://www.andaman.org/NICOBAR/book/Shompen/Shompen.htm>
- “What are the Alligators Doing this Spring?” 29 January 2012. <<http://srel.uga.edu/ecoviews/ecoview080511.htm>>
- White, Nancy Marie. “Testing Partially Submerged Shell Middens in the Apalachicola Estuarine Wetland, Franklin County Florida.” The Florida Anthropologist, Vol. 56, No. 1. Florida Anthropological Society. March 2003.



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PICTURE SOURCES (Image URLs and Permissions):

Alligator Hunt <http://fcit.usf.edu/florida/photos/native/lemoyne/lemoyne0/photos/lemoy025.jpg>

Apple

Snail http://upload.wikimedia.org/wikipedia/commons/thumb/3/38/Pomacea_paludosa_drawing.jpg/220px-Pomacea_paludosa_drawing.jpg

Blue

Crab http://upload.wikimedia.org/wikipedia/commons/thumb/9/99/The_Childrens_Museum_of_Indianapolis_-_Atlantic_blue_crab.jpg/220px-The_Childrens_Museum_of_Indianapolis_-_Atlantic_blue_crab.jpg

Coquina, courtesy of Kimber Herrera

Deer Hunting, courtesy of artist Brett Pigon, http://www.brettpigon.com/DeerHunting_s.jpg

Deer Hunt <http://fcit.usf.edu/florida/photos/native/lemoyne/lemoyne0/photos/lemoy024.jpg>

Dog Burial, courtesy of Jerald T. Milanich

European Red

Deer http://upload.wikimedia.org/wikipedia/commons/thumb/5/50/Red_deer_stag_2009_denmark.jpg/250px-Red_deer_stag_2009_denmark.jpg

Fish Hook, from *The Timucua Indians – A Native American Detective Story*, reprinted with permission from the University Press of Florida

Fishing Net, from *The Timucua Indians – A Native American Detective Story*, reprinted with permission from the University Press of Florida

Flounder http://upload.wikimedia.org/wikipedia/commons/thumb/2/2b/Pseudopleuronectes_americanus.jpg/250px-Pseudopleuronectes_americanus.jpg

Freshwater

Mussels http://upload.wikimedia.org/wikipedia/commons/thumb/1/11/Anodonta_cyanea1.jpg/148px-Anodonta_cyanea1.jpg

Freshwater

Snail http://upload.wikimedia.org/wikipedia/commons/thumb/3/38/Pomacea_paludosa_drawing.jpg/220px-Pomacea_paludosa_drawing.jpg

Knobbed

Whelk http://upload.wikimedia.org/wikipedia/commons/thumb/f/fb/Knobbed_whelk_shells.jpg/220px-Knobbed_whelk_shells.jpg

Modern Deer Hunt Painting http://www.brettpigon.com/DeerHunting_s.jpg

Oyster Midden <http://upload.wikimedia.org/wikipedia/commons/thumb/e/e5/OysterBed.jpg/220px-OysterBed.jpg>

Oysters in a Salt

Marsh <http://upload.wikimedia.org/wikipedia/commons/thumb/e/e5/OysterBed.jpg/220px-OysterBed.jpg>

Quahog

Clams http://upload.wikimedia.org/wikipedia/commons/thumb/3/3b/LittleNeck_clams_USDA96c1862.jpg/250px-LittleNeck_clams_USDA96c1862.jpg



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Small Modern Seine

Net http://upload.wikimedia.org/wikipedia/commons/thumb/6/6a/Seine_%28PSF%29.png/220px-Seine_%28PSF%29.png

Snapping

Turtle http://upload.wikimedia.org/wikipedia/commons/thumb/6/61/Snapping_Turtle.jpg/800px-Snapping_Turtle.jpg

Whelk on mud flat http://www.paddlethetimucuan.net/images/ftgeorgeriver_031008_049a.jpg

White

Shrimp http://upload.wikimedia.org/wikipedia/commons/thumb/2/20/Penaeus_line_drawing.jpg/220px-Penaeus_line_drawing.jpg

White-tailed Deer http://upload.wikimedia.org/wikipedia/commons/thumb/b/b7/White-tailed_deer.jpg/220px-White-tailed_deer.jpg

Photographs and illustrations without attribution were provided by Kelley Weitzel MacCabe.

Biology Note Regarding Shellfish Size: *By studying modern shellfish, biologists have learned that oysters from one area can grow significantly larger than oysters from another area. When archaeologists tell us that oysters gathered 120 years ago were 9" long, that data is really only telling us that oysters at a particular spot in Florida were 9" long. If modern data on oyster size were collected in exactly the same location, the comparison data would be valid. However, in most cases, prehistoric data and modern data are from differing locations in Florida. The size differences noted in this lesson (for oysters and coquina) are useful for demonstrating a trend, but they are not considered scientifically valid comparisons.*

MATERIALS LIST FOR “How Did They Use the Animals They Hunted?” ACTIVITY: No additional materials. Students should work in teams of two to try and guess which item was made from which animal part. In many cases, they’ll be able to use deductive reasoning. Some of the answers will be presented later in this unit. Some are scattered through the other units. The goal is for students to realize how little (or how much) they know about native processes.

ANSWER KEY FOR “How Did They Use the Animals They Hunted?” ACTIVITY

Item the Timucua Made	Animal Part It Was Made From
Clothing	Hide
Fish Hook	Bone
Net Floats	Fish Air Bladder



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Cup, Chisel, Axe	Shell
Tool Handle	Antler
Lotions & Conditioners	Animal Fat
Meat	Muscle
Glue	Hooves, Hide
Drill Bits	Sharks Teeth
Fletching on Arrows	Feathers

MATERIALS LIST FOR “Refraction and Giggling for Flounder” ACTIVITY:

Per Class: 2 large tote containers (approximately 18 gallons). Several meters of twine or yarn. 2 plastic fish (approximately 5” x 3” cut out from disposable Tupperware lids). A single-hole punch. 2 weights to hold the fish in place (large metal nuts or any other small heavy objects, even rocks, will do). 2 dowels approximately 3 feet long and ¼ to ½” in diameter. You may wish to have a spare or two in case aggressive giggling cracks a dowel. **NOTE:** In lieu of creating a plastic fish target, you can use weighted pool targets (the kind that kids swim to the bottom to recover. Using a hoop makes it much easier to tell if you’ve actually speared the fish. And with these, you don’t need to add a weight.

Preparation: Cut out the plastic fish. Punch four holes, one in each “corner” of the fish. You will also punch either one or two holes in the center for the purpose of tying on the weight. Use a short piece of twine to attach your weight directly to the bottom of your fish, or dangling just below it. (Remember, your plastic fish will float to the top of the water. If you give the weight too much line, it will not hold the fish the required 6” under the surface.) Next, cut eight 2-foot pieces of twine. Tie one to each of the four corner holes on your fish. Fill one tote about 2/3 full. Position your fish in the center of your tote and use the corner twines to suspend the fish in the tote. Lower the fish until it is at least 6” below the surface of the water, but not resting on the bottom. Tie the four corner ties to the handles. Tie the other fish in the same position in the dry tote.



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ARCHAEOLOGY
NETWORK

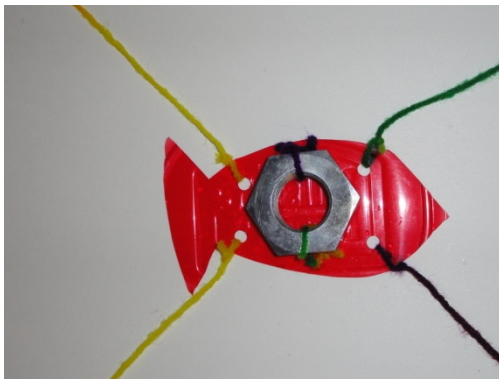
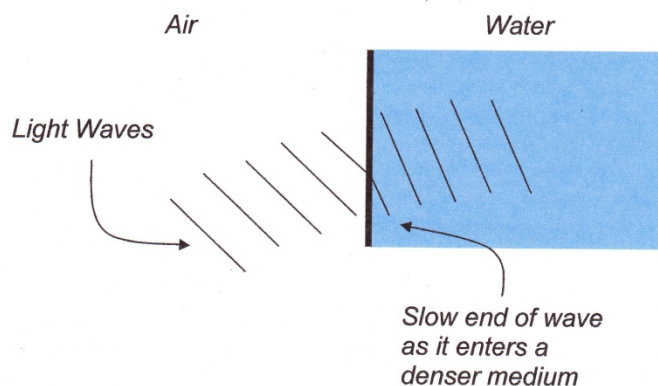
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Teacher Tips 1: *Splashing is a given. Do this activity outside or cover the floor with a tarp. For visibility, try to use a brightly colored lid to make your plastic fish. Try this activity yourself before running the lesson. Don't be surprised if you have 90-100% accuracy gigging in air, and 0% accuracy your first ten tries gigging in water. Once you do manage to hit the underwater fish a few times, you'll start to get a feel for how low you need to jab. Then you'll hit it more often than not. Fish-hunting birds like ospreys and eagles must also overcome the refraction problem when they are first learning to hunt.*

Teacher Tips 2: *Nearly every teaching resource tells us that light bends when moving into a denser material. Very few explain why. In a nutshell, one end of the light wave hits the water first. This end of the wave slows down. The other end of the wave is still travelling quickly. As a result, the wave appears to bend where it crosses into the water. Then the wave proceeds at the angle of the slower wave end.*

Visit <http://galileo.phys.virginia.edu/outreach/8thgradesol/RefractionFrm.htm>, the source of this illustration, to learn more.



ANSWER KEY FOR “Refraction and Gigging for Flounder” ACTIVITY

- 1) and 2) are individualized
- 3) You need to aim closer / lower because the fish is actually lower than it appears.
- 4) The answer is A, because the fish is lower than it appears.



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MATERIALS LIST FOR “Where Were Animals Domesticated?” ACTIVITY: You may wish to provide a reference for students to look up the locations of the countries listed in the table.

Teacher Tip: Many animals were domesticated more than once. Only the location of the first known domestication is indicated. The dates of domestication vary from source to source. Expect this information to change as new studies provide further information.

ANSWER KEY FOR “Where Were Animals Domesticated?” ACTIVITY

Animal Domestications Worldwide





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New Terminology

algae bloom, aquaculture, artifact, artificial selection, basking, bellow, domesticated, draw weight, dung, engraving, feral, filaments, filter feeders, gastropod, gigs, gill nets, hybrid, inaccuracies, intracoastal, midden, modern hunter-gatherer, musket ball, opportunistic, recurved bow, refraction, salinity, seine nets, terrestrial, weir.

ASSESSMENT OPTIONS:

Writing Prompt #1: Your teacher has decided not to teach students to construct deadfall traps as part of this native technology lesson. He is concerned that the knowledge may be used to kill neighborhood squirrels. Think about whether or not you agree with his decision to withhold this information. Write to a letter to your teacher to persuade him to agree with your opinion.

Writing Prompt #2: The Timucua used every part of the animals they hunted to make a wide variety of foods, tools, and other products. Think about the things you use and wear that might be made from parts of animals. Write to explain at least three things you use or wear that are made from animals.

Assessment #1: Based on your reading of the article titled “What is Animal Technology?” how would you define a “successful food choice” in a survival situation?

Assessment #2: Based on the articles titled “Let’s Talk Fish” and “Let’s Talk Land Animals,” explain how technologies like gill nets, fish traps, weirs, snares, and deadfall traps increased the hunting efficiency of native peoples.

Assessment #3: Based on your reading of the articles titled “That Brings Us to Alligators” and “Let’s Talk Land Animals,” you’ve learned about many of the inaccuracies of the de Bry engravings. Think about the best ways historians, archaeologists, and educators might use these images, since they are not historically accurate. Describe at least three ways these images can be useful, despite all of the misinformation they include.

A decorative scroll icon containing the text "Student Learning Enhancement".

Student Learning Enhancement

Questions to Generate Evidence of Learning

- If you changed _____, what might happen?
- If you had to choose between....
- If you were going to organize....



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Student Learning Enhancement

Pairs of students should construct their own Mini-Word Wall to share, illustrating it with the activities and images from this unit.

What’s a Word Wall? For middle school, it can be a collection of new vocabulary, words student have difficulties with, or words recently mastered, displayed prominently in the classroom. This display allows students to refer to the words while doing in-class writing, allowing greater writing independence and reading skill. A mini-word wall can do the same job (in this case for **New Terminology**), but it is created on a simple bi-fold, like a file folder. Words can be grouped according to definitions, phonetics, or other relationship. You can visit “*Instructional Strategies Online*,” at <http://olc.spsd.sk.ca/de/pd/instr/strats/wordwall/>, for a variety of articles on the use of Word Walls in the classroom.

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STUDENT ARTICLES, EXPERIMENTS, & ACTIVITIES:

- 1) What is Animal Technology?
- 2) Let’s Talk Shellfish
- 3) **ACTIVITY:** How Did They Use the Animals They Hunted?
- 4) Let’s Talk Fish
- 5) **ACTIVITY:** Refraction and Giggling for Flounder
- 6) What Other Water Animals Did They Hunt?
- 7) That Brings Us to Alligators
- 8) Let’s Talk Land Animals
- 9) Why Didn’t the Timucua Use Domestic Animals?
- 10) **ACTIVITY:** Domestication of Animals around the Globe
- 11) Where Were Animals Domesticated?