

Maritime Thematic Unit



Aventura Waterways K-8

21101 NE 26th Avenue

Miami Fl, 33180

Principal: Luis A. Bello

Assistant Principals: Lakesha Wilson-Rochelle and Scott Saperstein

Science Department Chair/Science Club Sponsor: Daniel Barreras

Curriculum Created by: Daniel Barreras, Luis A. Bello, and Science Club Members

Maritime Thematic Unit Schedule of Assignments

Date	Assignments
Week of April 6, 2010	Introduction to curriculum for Maritime Theme projects and discuss, as applicable, webcast or project requirements for students (what the end product will be).
Week of April 12, 2010	<p>Research and discussion of the habitats or organisms included in the particular ecosystem of study.</p> <p>Review project requirements and teacher monitors completion of project whether web based or on poster board.</p>
Week of April 19, 2010	<p>Research and discussions of current state of habitats or organisms including statistical data of ecosystem.</p> <p>Review project requirements and teacher monitors completion of project whether web based or on poster board.</p>
Week of April 26, 2010	<p>Research and discussions of the benefits to our environment from thriving ecosystems and how to protect the habitats or organisms of said ecosystem.</p> <p>Review project requirements and teacher monitors completion of project whether web based or on poster board.</p>
May 10, 2010	Completed projects turned in to classroom teacher (video casts or poster board).
May 13-14, 2009	Classroom presentations followed by teacher and classroom selection of one top project. Criteria: Included all components in a comprehensive, original manner.
May 17, 2009	Send to Media Center for display. If project is a video cast, please label thumb drive appropriately as it will play on the interactive white board in media center.

Maritime Thematic Unit Objectives by Grade Level

Kindergarten

K. Marine Ecosystems and the Organisms They Contain

K.1- Students will be able to understand that marine ecosystems include oceans, estuaries (bays), coral reefs, and mangroves.

K.1.1- Students will be able to compare and contrast parts of oceans (deep ocean, costal shorelines, etc.) and estuaries (where fresh water and salt water meet).

K.1.2- Students will be able to investigate what makes up coral reefs and mangroves.

K.2- Students will be able to identify the organisms that make up many marine ecosystems.

K.2.1- Students will be able to identify the plant life and large organisms that live in the oceans and smaller organisms that live in estuaries and bays.

K.2.2- Students will be able to discover the plant life and smaller organisms that live in the coral reefs and mangroves.

K.3- Students will be able to recognize how all the living organisms in the many marine ecosystems depend on each other to survive.

K.3.1- Students will be able to identify how plant life gets its energy from the sun and transfers its energy to other organisms in the marine ecosystem (food chain).

Resources

<http://www.epa.gov/bioindicators/aquatic/marine.html>

<http://www.mbgnet.net/>

<http://www.discoverbiscaynebay.org/>

<http://www.seaworld.org/infobooks/coral/home.html>

<http://www.oceanoasis.org/fieldguide/mangroves.html>

<http://www.epa.gov/nep/kids/>

<http://www.estuaries.gov/>

<http://www.estuaries.org/>

<http://web.vims.edu/bridge/?svr=www>

First Grade

1. Estuaries and Bays

1.1- Students will be able to understand how estuaries and bays are alike and different.

1.1.1- Students will know that estuaries are areas where fresh water from rivers meets and mixes with the salty ocean water, and are protected from the oceans waves and winds.

1.1.2- Students will be able to know that bays are areas of water bordered by land on three sides and usually have calm waters.

1.1.3- Students will be able to understand the differences and similarities between the Atlantic Ocean and Biscayne Bay.

1.2- Students will be able to discover why estuaries are important in the marine ecosystem.

1.2.1- Students will understand that plants and animals need each other to survive (food chain).

1.2.2- Students will be aware that estuaries and bays protect water quality by filtering out pollution.

1.3- Students will be able to evaluate the significance of protecting estuaries in marine ecosystems.

1.3.1- Students will be able to understand that pollution is slowly creating habitat loss in the estuaries and bays.

1.3.2- Students will recognize some ways that people can help protect and conserve our estuaries and bays.

Resources

<http://www.estuaries.gov/>

<http://www.estuaries.org/>

<http://www.epa.gov/bioindicators/aquatic/marine.html>

<http://www.mbgnet.net/>

<http://www.dep.state.fl.us/coastal/sites/biscayne/info.htm>

<http://web.vims.edu/bridge/?svr=www>

Second Grade

2. Mangroves

2.1- Students will be able to identify various types of mangroves.

2.1.1- Students will discover similarities and differences between the species of mangroves (red, white, black and sweet).

2.2- Students will be able to understand what mangroves are and how they provide shelter for animals.

2.2.1- Students will examine how mangrove forests begin as prop roots (seeds).

2.2.2- Students will be able to analyze the variety of animals that use the mangroves as a shelter.

2.3- Students will research where the ideal location mangrove forests are found.

2.3.1- Students will be aware that mangroves are found along the coastlines and in abundance around South Florida.

2.4- Students will be able to research the status of mangroves in South Florida.

2.4.1- Students will research how pollution has affected the growth and development of mangrove forests.

2.4.2- Students will identify the ways we can help protect and conserve the many mangrove forests found in Southern Florida.

Resources

<http://www.oceanoasis.org/fieldguide/mangroves.html>

<http://www.sfrc.ufl.edu/Extension/pubtxt/for43.htm>

<http://www.floridaplants.com/horticulture/mangrove.htm>

<http://mangrove.org/>

<http://www.epa.gov/owow/wetlands/types/mangrove.html>

<http://web.vims.edu/bridge/?svr=www>

Third Grade

3. Coral Reefs

3.1- Students will be able to identify various types of coral reefs.

3.1.1- Students will discover similarities and differences between the types of coral reefs (barrier, fringing and atoll).

3.1.2- Students will know about the characteristics of different species of corals in a reef (brain, fire, elkhorn, sea fans)

3.2- Students will be able to understand what corals are and what they provide for marine life.

3.2.1- Students will be introduced to how corals are living animals called polyps that live in colonies.

3.2.2- Students will be able to understand the symbiotic relationship between the corals and the algae that grows on them.

3.2.3- Students will be able to discover the variety of marine life that makes coral reefs their home from vertebrates to invertebrates.

3.3- Students will be able to evaluate the current status of coral reefs in South Florida and around the world.

3.3.1- Students will be able to analyze current threats to many coral reefs around the world.

3.3.2- Students will synthesis the ways we can help protect and conserve the many coral reefs found in Southern Florida and around the world.

Resources

<http://www.seaworld.org/infobooks/coral/home.html>

<http://www.coralfilm.com/about.html>

http://www.coris.noaa.gov/about/what_are/

http://www.eoearth.org/article/Coral_reef

http://encarta.msn.com/encyclopedia_761572186/coral_reef.html

http://www.tooprecioustowear.org/resources/Coral_Threats_Importance_000.pdf

<http://web.vims.edu/bridge/?svr=www>

Fourth Grade

4. Deep Ocean

4.1- Students will be able understand that there are different Ocean zones (sunlight, twilight, midnight, abyssal, deep sea trench) that reach the ocean floor.

4.1.1- Students will be able to determine how plate tectonics on the ocean floor create the geography of the deep ocean floor.

4.1.2- Students will know the geography of the deep ocean that includes mountains, volcanoes and trenches.

4.2- Students will discover how the exploration of the deep ocean has shown us a world we did not know existed.

4.2.1- Students will be able to learn about the tools and techniques used to explore the deep ocean.

4.3- Students will be able to discover the variety of inhabitants in deep ocean ecosystems.

4.3.1- Students will be able to investigate predator/prey relationships found in the deep ocean ecosystems.

4.3.2- Students will examine the biodiversity of Deep Ocean ecosystems.

4.3.3- Students will be able to study the status of endangered whales that make their home in the deep ocean.

4.4- Students will be able to learn about how humans are affecting the Deep Ocean.

4.4.1- Students will understand the benefits and dangers of Deep Ocean drilling.

Resources

<http://www.mbgnet.net/salt/oceans/index.htm>

<http://www.extremescience.com/DeepestFish.htm>

<http://oceanexplorer.noaa.gov/explorations/03mountains/background/education/education.html>

<http://venturedeepocean.org/>

<http://www.naturalsciences.org/education/deepsea/curriculum-download.html>

<http://pubs.usgs.gov/gip/dynamic/exploring.html>

<http://www.deepoceanexpeditions.com/>

<http://www.fathom.com/course/10701050/session2.html>

<http://web.vims.edu/bridge/?svr=www>

Fifth Grade

5. Frozen Seas

5.1- Students will be able to study the areas where the seas are frozen (North and South Poles).

5.1.1- Students will understand that frozen seas are located in the arctic regions of the world.

5.2- Students will be able to discover the variety of marine animals that live in the frozen seas.

5.2.1- Students will be able to classify marine life that calls the sea ice their home, which includes diatoms, arctic cod and hydroids.

5.2.2- Students will be able to classify marine life that calls the water column their home, which includes jelly fish, shrimp and doliolids.

5.2.3- Students will be able to identify physical factors that affect the interrelationships among living things in an Antarctic ecosystem.

5.2.4- Students will be able to identify members of the Antarctic food web and their interrelationships.

5.3- Students will gain knowledge of the human impact on frozen seas.

5.3.1- Students will analyze the reasons why the arctic ice caps are melting and how it will affect the marine life in that area.

5.3.2- Students will synthesis the ways that humans can help conserve the arctic marine life by not over fishing.

Resources

<http://www.botos.com/marine/antarctic01.html>

<http://www.worldwidelearn.com/northpole/thepole/arctic-wildlife.htm>

<http://www.arctic.noaa.gov/education.html>

http://www.windows.ucar.edu/tour/link=/earth/polar/arctic_marine_life.html

<http://www.arcodiv.org/>

<http://www.buffalonews.com/248/story/580250.html>

<http://web.vims.edu/bridge/?svr=www>

Sixth Grade

6. Fish, Rays and Invertebrates

6.1- Students will be able to identify various types of fish, rays and invertebrates.

6.1.1- Students will discover similarities and differences between the species of fish, rays and invertebrates.

6.1.2- Students will know about the characteristics and anatomy of various species of fish, rays and invertebrates.

6.1.3- Students will be able to identify the local fish, rays and invertebrates specific to South Florida and the Caribbean.

6.2- Students will be able to discover the biodiversity and interdependence of the fish, rays and invertebrates.

6.2.1- Students will be able to create a food web, showing how the various species of fish, rays and invertebrates all depend on each other for energy.

6.3- Students will be able to evaluate the main factors of decline for fish, rays and invertebrates.

6.3.1- Students will be able to analyze the impact of the over harvesting of fish, rays and invertebrates.

6.3.2- Students will investigate how other environmental issues like the Red Tide and desert dust from Africa have affected species of marine life in the Caribbean Ocean and Gulf of Mexico.

Resources

<http://marinefisheries.org/fishid/>

http://www.floridamarine.org/features/category_main.asp?id=1289

http://science.nasa.gov/headlines/y2001/ast30aug_1.htm

<http://www.enchantedlearning.com/subjects/sharks/rays/>

<http://www.flmnh.ufl.edu/fish/gallery/Descript/MantaRay/MantaRay.html>

<http://www.cyhaus.com/marine/inverts.htm>

<http://www.seasky.org/links/sealink02.html>

<http://www.nmfs.noaa.gov/pr/species/invertebrates/>

<http://web.vims.edu/bridge/?svr=www>

Seventh Grade

7. Marine Mammals

7.1- Students will be able to identify various types of marine mammals, including but not limited to whales, porpoise and seals.

7.1.1- Students will discover similarities and differences between the species of marine mammals.

7.1.2- Students will know about the characteristics and anatomy of various species of marine mammals

7.1.3- Students will be able to identify the local marine mammals specific to South Florida and the Caribbean.

7.2- Students will be able to recognize migration patterns of marine mammals and identify the reasons for the migration.

7.2.1- Students will know that some marine mammals migrate to colder waters to find food and to warmer water to give birth.

7.2.2- Students will learn about the locations where some marine mammals give birth in the Atlantic and Caribbean Oceans.

7.3- Students will know that the preservation of marine mammals is essential to life in marine ecosystems.

7.3.1- Students will be able to conduct research on which marine mammals are on the endangered species list.

7.3.2- Students will investigate the reasons why mammal stranding occurs and how rescue efforts increase survival rates.

Resources

<http://www.afsc.noaa.gov/nmml/>

<http://www.marinemammalcenter.org/>

<http://www.ganesha.org/misc/dolphin.html>

<http://www.mmc.gov/>

http://www.gma.org/marinemammals/whale_or_fish.html

<http://octopus.gma.org/surfing/ocean/migration.html>

<http://www.nmfs.noaa.gov/pr/species/esa/mammals.htm>

<http://web.vims.edu/bridge/?svr=www>

Eighth Grade

8. Human toll on the oceans resources

8.1- Students will be able to examine that there are many resources that we harvest from the ocean and they are important for us exist.

8.1.1- Students will identify the different types ocean resources available: food, transportation, recreation, minerals and drilling for oil.

8.1.2- Students will be able to question and evaluate ways humans benefit from all the thriving ocean resources.

8.2- Students will be able to identify how humans have affected our oceans resources in the past.

8.2.1- Students will be able to understand that many kinds of pollution have impacted directly and indirectly the ocean resources.

8.2.2- Students will analyze how pollution has caused global warming to be one of the biggest threats to our planet as well as the oceans resources.

8.2.3- Students will investigate how transporting certain species of marine life from one place to another have affected the some of the oceans resources.

8.3- Students will explore how we can protect our ocean resources so that we can live harmoniously on this planet.

8.3.1- Students will understand that if people work together on common goals to conserve the ocean and its resources we will all benefit from it.

8.3.2- Students will be able to evaluate and rate the importance of the different ways of protecting our oceans resources.

Resources

<http://marinebio.org/Oceans/OceanResources.asp>

<http://home.earthlink.net/~boytan/oceans/kids.htm>

<http://www.waterencyclopedia.com/Mi-Oc/Mineral-Resources-from-the-Ocean.html>

http://library.thinkquest.org/CR0215471/ocean_pollution.htm

<http://www.odec.ca/projects/2006/kutp6p2/>

<http://www.eco-pros.com/humanimpact.htm>

http://seawifs.gsfc.nasa.gov/OCEAN_PLANET/HTML/search_educational_materials.html

<http://web.vims.edu/bridge/?svr=www>

Second through Seventh Grade Project Components

In Second through Seventh Grade each student, with the involvement and guidance of his or her Homeroom/Science teacher, is responsible for his or her Maritime Project.

- General description of habitat or organisms studied.
- Inhabitants of the ecosystems (five minimum).
- Pictures and/or drawings.
- Statistical data of habitat or organisms studied.
- Current global state of habitat or organism studied.
- How do we as humans benefit from the thriving habitats or organisms studied?
- What can we as conservators of the environment do to protect the habitat or organisms studied?

Option 1- Students create an individual Video “Podcast” utilizing the Apple computers, or their own video recording device. It can include video narratives, slides with pictures or drawings, and music to describe the components of the Maritime Project.

Option 2- Students can create an individual presentation board describing the components of the Maritime Project.

General Description of Habitat or Organisms	Pictures and/or Drawings	Current Global State of Habitat
<p data-bbox="289 1549 529 1667" style="text-align: center;">Inhabitants (five minimum)</p>	<p data-bbox="716 1549 953 1587" style="text-align: center;">Statistical Data</p>	<p data-bbox="1019 1318 1442 1457" style="text-align: center;">How does humanity benefit from this thriving habitat or organisms?</p> <p data-bbox="1013 1659 1448 1797" style="text-align: center;">How can we as conservators, ensure the preservation of this habitat?</p>

