



Girl Scout Council of the Nation's Capital

Chesapeake Treasures

Our Own Troop/Group's Interest Project

The Chesapeake Bay-it's landscape, history, ecology, recreation, and conservation

Skill Builders

- 1 What makes a bay different from other bodies of water? What is an estuary? What is a watershed? On a map mark the Chesapeake Bay watershed. Then label the bays, the rivers feeding the bay, and any other special water features. Mark landmarks on the map. Make a Chesapeake Bay fact sheet. Include some history, dimensions, and climate,
- 2 Visit an aquarium that includes estuary exhibits. Find some facts about estuary creatures that you didn't know. Share your results. Find out what is required of animals living in a controlled environment (aquarium) vs. in the wild.
- 3 Pick one species of plant or animal living in or near the Chesapeake Bay to study in depth. Find out what it eats, what endangers it, what is its habitat, and what is its life cycle. Take its picture or sketch it in its home. Is it endangered? Why or why not? How can it be protected? What is being done to protect it? Can you do anything to help? Some examples: crab, rockfish, flounder, shad, duck, bald eagle, osprey, terrapin, frog, sea gull, jellyfish, river otter, grasses, cattail, buttonbush, wild rice, cord grass, algae, zooplankton, phytoplankton, or oyster.
- 4 People eat many foods that come from Chesapeake Bay creatures. Collect recipes using Bay creatures. Try a food dish by making or eating it. Ideas: oyster stuffing, raw oysters, crab feast, crab balls, or grilled rockfish.
- 5 Learn about tides, wave patterns, and shore erosion. How do these affect the Chesapeake Bay? Try an experiment to show/explain one of these events in the Bay.
- 6 What types of pollutants are affecting the Bay? What is being done about these pollutants? Are there any new techniques to help reduce pollution? Are there any laws to protect the bay and its creatures? What are some long and short-term effects of pollution in the Bay?
- 7 Find remains of plants and animals that once lived in the bay. Explain how nature preserved these items? What would you do to keep them preserved? Ex. sharks teeth, shells, and other fossils. Label and display items you have or found for others to enjoy.

Technology

- 1 Observe plants and animals near/on/in the Chesapeake Bay. Identify the plants and animals that you see. What animals are unique to the Chesapeake Bay? Has the variety of life changed over time? Explain.
- 2 Describe how a lighthouse works. What lenses are used? Find out if the lights work by hand or by computer, or both? Visit a lighthouse in person or on the Internet. How has technology advanced to help the “keepers of the light”? Discuss the old ways and the newer, more modern ways to “keep the light”.
- 3 Go to a biological research lab. What do the researchers do at the lab? What kind of tools do they use? What things are they investigating?
- 4 How did American Indians or early American people living along the banks of the Bay use the Chesapeake Bay resources? Is this use the same as we use the resources today? How has the use changed? How is life on the Bay different today then when early Americans lived here? How has technology changed the way we live and work around the Bay? .
- 5 Try tools that a Chesapeake Bay Waterman uses by dredging for oysters or working with crab pots. How has harvesting changed over time?

Service Project

- 1 Share your creation and enjoyment with others. Create a poem, song, or craft with the theme of the Chesapeake Bay. OR, photograph or sketch creatures or scenes with this theme. Organize an event to teach the songs, the craft, read poems, show your pictures, or share folklore about the Chesapeake Bay.
- 2 Make a display for your Council, library, or other community group. Show what you have learned about the Chesapeake Bay and Bay facts. It can be a hands-on activity, a window display, or a combination.
- 3 Help a younger group get ready for a water activity by showing them how to use and put on a PFD, help them practice floating and swimming while wearing a PFD, and help teach safety practices while in the water-ex buddy system. Always follow Safety-Wise while in the water.
- 4 Help protect the watershed. Plant sea grasses, trees, or other erosion control plants in or near drainage areas, such as: a beach or dune, or along stream banks.
- 5 Help seed oysters or work with oyster beds to help increase oyster numbers in the Bay or its tributaries. Or, do the same for crabs, American shad, yellow perch, trout, or other Bay species.
- 6 Turn a neighborhood sediment pond or wetland area into a habitat for wildlife.
- 7 Paint “Don’t Dump! Chesapeake Bay Drainage” around water drains on school grounds, along streets, in areas of business, or any place that has drains that empty into the Chesapeake Bay watershed. Check with the local authorities for permission before you start stenciling.

- 8 Volunteer to help for an event held at a marine museum or aquarium, or at a Bay exhibit in a fair. Events could be: shark day, Patuxent River Appreciation Days (PRAD), Chesapeake Bay Discovery Day, hands-on exhibit, park exhibit, dolphin day, camp-in, etc. Greet the public and help them do the project you were assigned to do. Projects could include: event greeter, interpreter, help at a children's activity area, help at a craft table, plan an activity for a camp-in, be a counselor for others, help run an exhibit, or lead a walk, etc.
- 9 Visit or investigate marine museums or labs on the topic of Chesapeake Bay or the Bay watershed, found in or around Washington, DC, Maryland, & Virginia. Develop a hands-on booklet of these places for Girl Scouts to visit. Describe Bay activities for girls. Give your booklet to your Council for other troops to enjoy.

Career Exploration

- 1 Find out about careers in the Coast Guard or Marine Police. List types of jobs available. What schools do employees attend? What are the job requirements? If possible, interview a person who is, or has been, in the Coast Guard or Marine Police.
- 2 Learn about those "who kept the lights". What types of jobs are still available today?
- 3 What contributions do research scientists make when they study the Bay? Investigate or talk to a scientist studying the Chesapeake Bay or its resources. What is he/she trying to prove or impact?
- 4 List careers or possible summer/seasonal recreational jobs working around the water. Choose one job and look up a school or college that offers training in the area of interest. What classes would you have to take to be certified for this job? Would you need on-the-job training instead?

And Beyond

Find interesting information and freshwater and saltwater activities in the Girl Scout book *Exploring Wildlife Communities with Children*.

If you want to dive into the waters further or try water adventures, try these IPs:

All About Birds
 Build a Better Future
 Digging Through the Past
 Eco-Action
 From Shore to Sea
 Plant Life
 Wild Life
 Museum Discovery
 Camping
 Paddle, Pole, and Roll Smooth Sailing

To order: [Order Form for IP](http://www.campsomd.org/forms/ipa_order.doc) (http://www.campsomd.org/forms/ipa_order.doc)

Chesapeake Treasures IPA Suggestions

Places to visit:

- www.skipjacktours.com - Chesapeake Bay Lab – tours on a working Skipjack boat, shore base programs, and service projects. Good with scout groups.
- Calvert Marine Museum – <http://www.calvertmarinemuseum.com/> - offers PRAD, shark days, exhibits with aquariums and touch tanks, lighthouse, boat rides. Special programs and sleepovers can be arranged.
- National Aquarium in Baltimore - <http://www.aqua.org/home.html> - live dolphin show, live animals, rain forest, special tours and sleepovers.
- <http://www.nationalaquarium.com/> - National Aquarium of Washington, DC; 14th St. and Constitution Ave., NW. – Aquarium, special events.
- University of Maryland –Chesapeake Biological Lab in Solomons, MD –a visitor’s center, will take scout groups on tours of the lab. <http://www.cbl.cees.edu/Education/index.html>



• <http://www.serc.si.edu/> - offers educational programs for K-12. Located on the shore of Chesapeake Bay near Annapolis, MD, SERC uses the geographic features of the nation's largest estuary to investigate interconnections of aquatic, terrestrial and atmospheric components of complex landscapes. Offers field trips to groups or classes with hands-on learning for small fee.

- <http://patuxent.fws.gov/> OR <http://www.pwrc.usgs.gov/> Patuxent Wildlife Refuge – Laurel, MD or use this website for info: <http://www.llbean.com/parksearch/parks/html/7003gd.htm>. Has trails, visitor’s center, and programs.
- <http://www.lighthousefriends.com/light.asp?ID=437> - Piney Point Lighthouse (Piney Pt, MD) looking on the Potomac River. Site includes other links too. For more information, please call the St Clement's Island-Potomac River Museum at (301) 769-2222. A guided 1-hour tour can be setup for \$1/person. Or can walk around grounds and read interpretive signs for free. Has a walking pier, osprey nests, sand dunes, and picnic area with port-a-pots available. Gift shop open Friday-Monday.

Other Internet Resources:

- www.cbf.org - Chesapeake Bay Foundation – a conservation organization dedicated to saving the bay.
- **Chesapeake Bay Walk** - book
Reading level: Ages 4-8
Hardcover - 30 pages (August 1998)
[Click here to purchase this book](#) and 5-15% of the cost will benefit the Bay
- Music CDs - **Made of Water: Songs and celebrations of the Mid-Atlantic Rivers into Chesapeake** – written and performed by Tom Wisner, accompanied by John Cronin, Al Petteway, Frank Schwartz and Teresa Whitaker, a host of children's voices, Mary Sue Ross, and Dram Tree-o. Order from the [Chestory website](#). \$20 + S&H. CD ok, has water sounds, songs with guitars. Tom W. is from Calvert Co, MD.
- http://www.calvertmarinemuseum.com/links_lighthouses.htm - good source of lighthouse links.
- http://www.cbf.org/site/PageServer?pagename=resources_facts_general - Chesapeake Bay facts
- <http://www.wetland.org/> We're all about Wetlands.



- <http://www.baygateways.net/index.cfm> Chesapeake Bay Gateways Network



- <http://www.nwf.org/>

Chesapeake Classrooms Links

Check back for more links to other useful sites:

Bay Schools Project: http://www.cbf.org/site/PageServer?pagename=edu_educators_bsp_index

State Environment Education Roundtable (SEER): <http://www.seer.org/>

Maryland Department of Natural Resources: <http://www.dnr.state.md.us/index.asp>

Pennsylvania Department of Conservation and Natural Resources: <http://www.dcnr.state.pa.us/>

Virginia Department of Environmental Quality: <http://www.deq.state.va.us/>

Chesapeake Bay Program: <http://www.chesapeakebay.net/>

Chesapeake Bay Trust: <http://www.chesapeakebaytrust.org/>

US Fish & Wildlife: <http://www.fws.gov/>

Maryland Student Service Alliance (MSSA): <http://www.mssa.sailorsite.net/>

National Wildlife Federation: www.nwf.org

Bay Glossary

Algae - group of primitive, non-flowering plants which include certain seaweeds and microscopic phytoplankton

Anadromous fish - fish such as American shad that migrate from their primary habitat in the ocean to freshwater to spawn

Anaerobic - not containing oxygen or not requiring oxygen

Anoxic - a condition where no oxygen is present. Much of the "anoxic zone" is anaerobic, with absolutely no oxygen, a condition in which toxic hydrogen sulfide gas is emitted in the decomposition process

Benthic organisms - plants and animals living in or on the bottom in aquatic habitats

Brackish water - mixture of fresh and salt water

Catadromous fish - fish such as the American eel that migrate from their primary habitat in freshwater to the ocean to spawn

Copepods - minute shrimp-like crustaceans; often they are the most common zooplankton in estuarine waters

Decomposers - organisms (chiefly bacteria and fungi) that break down dead organic matter

Detritus - decomposed or partly decomposed plant and animal matter

Dissolved oxygen - microscopic bubbles of oxygen that are mixed in the water and occur between water molecules. Dissolved oxygen is necessary for healthy lakes, rivers, and estuaries. Most aquatic plants and animals need oxygen to survive. Fish will drown in water when the dissolved oxygen levels get too low. The absence of dissolved oxygen in water is a sign of possible pollution

Ebb tide - falling or lowering tide

Ecology - the study of interrelationships of living things to one another and to their environment

Ecosystem - an interactive system of a biological community and its non-living environment

Erosion - the wearing away of land surface by wind or water; erosion occurs naturally but it is often intensified by man's land use practices

Estuary - semi-enclosed, tidal, coastal body of water open to the sea in which fresh and salt water mix

Eutrophication - the fertilization of surface waters by nutrients that were previously scarce. Eutrophication through nutrient and sediment inflow is a natural aging process by which warm shallow lakes evolve to dry land. Human activities are greatly accelerating the process. The most visible consequence is the proliferation of algae. The increased growth of algae and aquatic weeds can degrade water quality

Flood tide - rising tide

Food chain - the sequence in which energy as food is transferred from one group of organisms to another

Food web - complex interaction of food chains in a biological community

Habitat - the place where a plant or animal lives

Marsh - low, wet grassland without trees, periodically covered by water

Nekton - free swimming aquatic organisms such as fish

Nitrogen - an inorganic nutrient essential for plant growth and reproduction when in oxidized forms (nitrate, nitrite, ammonia); excess can cause eutrophication; problems are usually associated with agricultural runoff and sewage

Non-point source pollution - pollutants entering waterways from a general area such as runoff from farmland or suburban communities

Nutrients - chemicals (primarily nitrogen and phosphorous) necessary for organisms to live

pH - a measure of the acidity or alkalinity of a material, liquid or solid; estuarine water is naturally, slightly base
strong acid - 0.0 neutral - 7.0 strong base - 14.0

battery acid - 0.2
blood - 7.5

orange juice - 4.2
Clorox bleach - 12.6

Phosphorous - an inorganic nutrient essential for plant growth and reproduction; excess can cause eutrophication; problems are usually associated with farmland runoff, sewage, and detergents

Phytoplankton - the plant form of plankton, most are microscopic; they are important as primary producers in an estuarine ecosystem

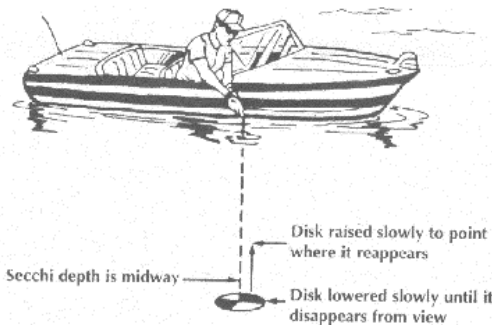
Photosynthesis - the process by which plants convert sunlight into living tissue using carbon dioxide, water, and nutrients; primary production

Plankton - passively drifting or weakly swimming organisms living suspended in the water column, often microscopic but sometimes visible to the naked eye

Point source pollution - pollution from a definable source, such as an outfall pipe

Pollution - the addition of a substance(s) to an environment in greater than natural concentrations as a result of human activity producing a net detrimental effect on the environment

Salinity - the measurement of the amount of dissolved salts in water, usually measured in parts per thousand; 35 ppt is average for seawater, 0 ppt for freshwater



Secchi disk - is a tool to measure the clarity of the water, and a quick, simple, and accurate method for estimating water quality. A black and white disk (called a secchi disk) is lowered into the water until it just disappears from sight--this depth measurement is recorded. The deeper the measurement, the clearer the water. Secchi disk measurements give a general indication of problems with algae, zooplankton, water color and silt.

Sediment - particles that accumulate on the bottom of a waterway

Sewage treatment -primary = screening or settling large solids out of sewage (only removes visible material)

secondary = removal of organic material in sewage by aeration and bacterial action

tertiary = removal of nutrients and traces of toxic organic material from sewage by additional treatment processes

Submerged Aquatic Vegetation (SAV) - rooted vegetation which grows beneath the water surface

Tides - periodic movement (raising and lowering) of a body of water by the gravitational attraction of the moon and sun with the rotation of the earth

Tributaries - streams and rivers that supply a larger body of water

Turbidity - the measurement of water cloudiness; it may be affected by sediment and plankton concentrations

Watershed - an area of land that is drained by a river or other body of water

Zooplankton - the animal form of plankton