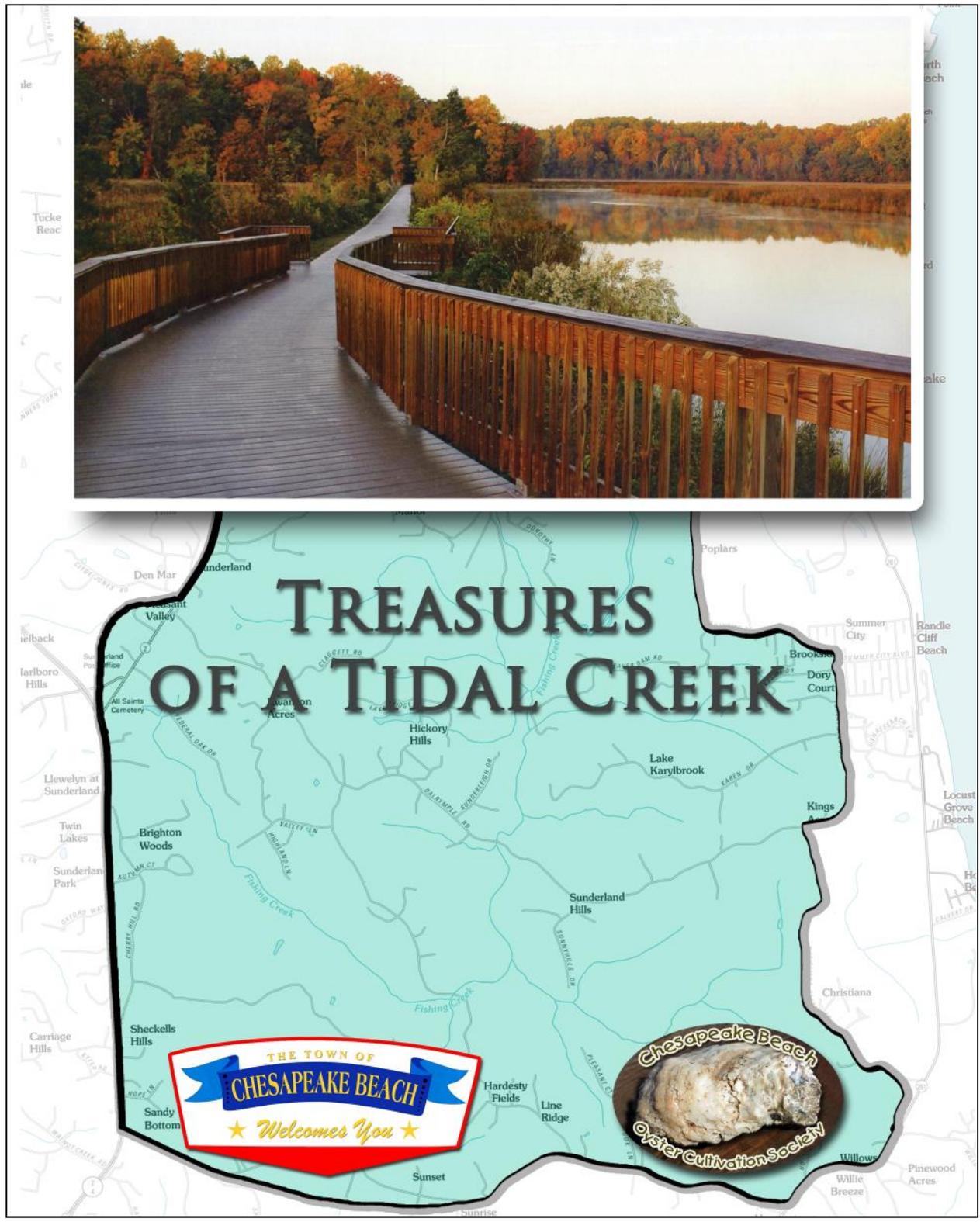




TREASURES OF A TIDAL CREEK



Fishing Creek History

Fishing Creek is indeed a treasure! It is treasured not only for its scenic beauty and bounty of wildlife, but also for its contribution to the history of the Town of Chesapeake Beach.

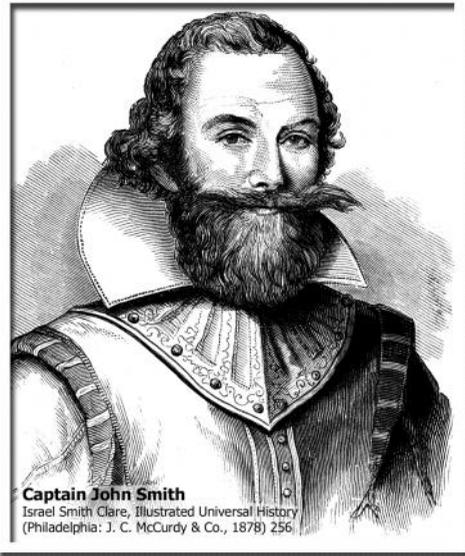
The formation of the Chesapeake Bay goes back 35 million years. Since then, ice ages and climate changes have all contributed to the size and shape of the Bay we see today. More than 100,000 streams, creeks and rivers thread through the Chesapeake Bay watershed. Fishing Creek is one of those tributaries.

Fishing Creek is documented on many early maps, including the maps of Captain John Smith. He cited the location of the Creek in the summer of 1608. Based on his diaries, his exploration party probably spent the night between what we now call Fishing Creek and Randle Cliff. He noted that the waters north of the cliffs were full of woods, and were well stocked with wolves, bears, deer and other wild animals. The streams were "crystal clear and full of fish."

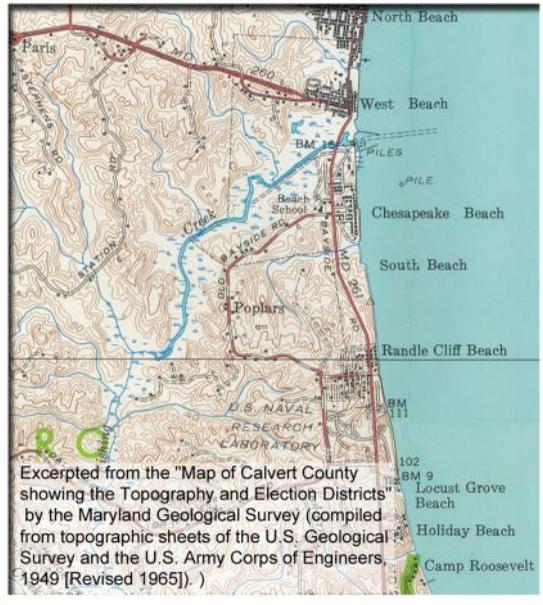
Although Native Americans, Patuxents, lived in Calvert County, John Smith did not see any people on his sleepover in Chesapeake Beach.

The area around Fishing Creek did not become very populated until after 1894, the year the Town of Chesapeake Beach was incorporated. The Town was created for the purpose of connecting Washington, D.C. by railway, with a new resort which was being created along the shores of Chesapeake Bay. The railway builders had many obstacles to overcome, including crossing Fishing Creek in two places and dealing with the marshy land and smaller streams on both sides of the mouth of the Creek. They

decided to re-direct some of the Creek, by dredging a half mile canal, 60' wide and 20' deep, which is the straightest part of the Creek you see today. The results of the dredging were used to fill in the swamp on the north side where Kellam's Field and the Town Hall are



Captain John Smith
Israel Smith Clare, Illustrated Universal History
(Philadelphia: J. C. McCurdy & Co., 1878) 256.



Excerpted from the "Map of Calvert County showing the Topography and Election Districts" by the Maryland Geological Survey (compiled from topographic sheets of the U.S. Geological Survey and the U.S. Army Corps of Engineers, 1949 [Revised 1965].)

now located, and on the south side where the Railway Museum is now located.

The Chesapeake Beach Railway brought thousands of visitors to the Beach, each getting a firsthand look at Fishing Creek as the train ran alongside the picturesque waterway, which had been nicknamed "Honeysuckle Route." Sadly, the train stopped running in 1935, partly due to the Great Depression gripping the whole country.

In the winter of 1934, a program of President Roosevelt's New Deal put men to work in the Beaches. They drained parts of Fishing Creek's marshy areas in an effort to control mosquitoes.

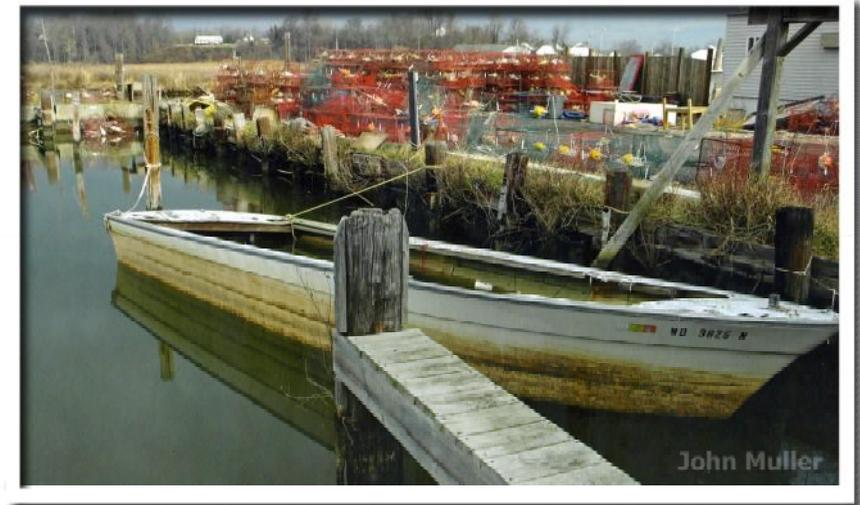


Bob Munro

Long after the last train had left the station, Mayor Bruce Wahl moved to town and started to investigate the possibility of using the abandoned rail bed along Fishing Creek as a Rail Trail. Like the early dreamers of the Railway, there were many obstacles to cross, and it took the Town more than 20 years for Mayor Wahl's dream to come true!

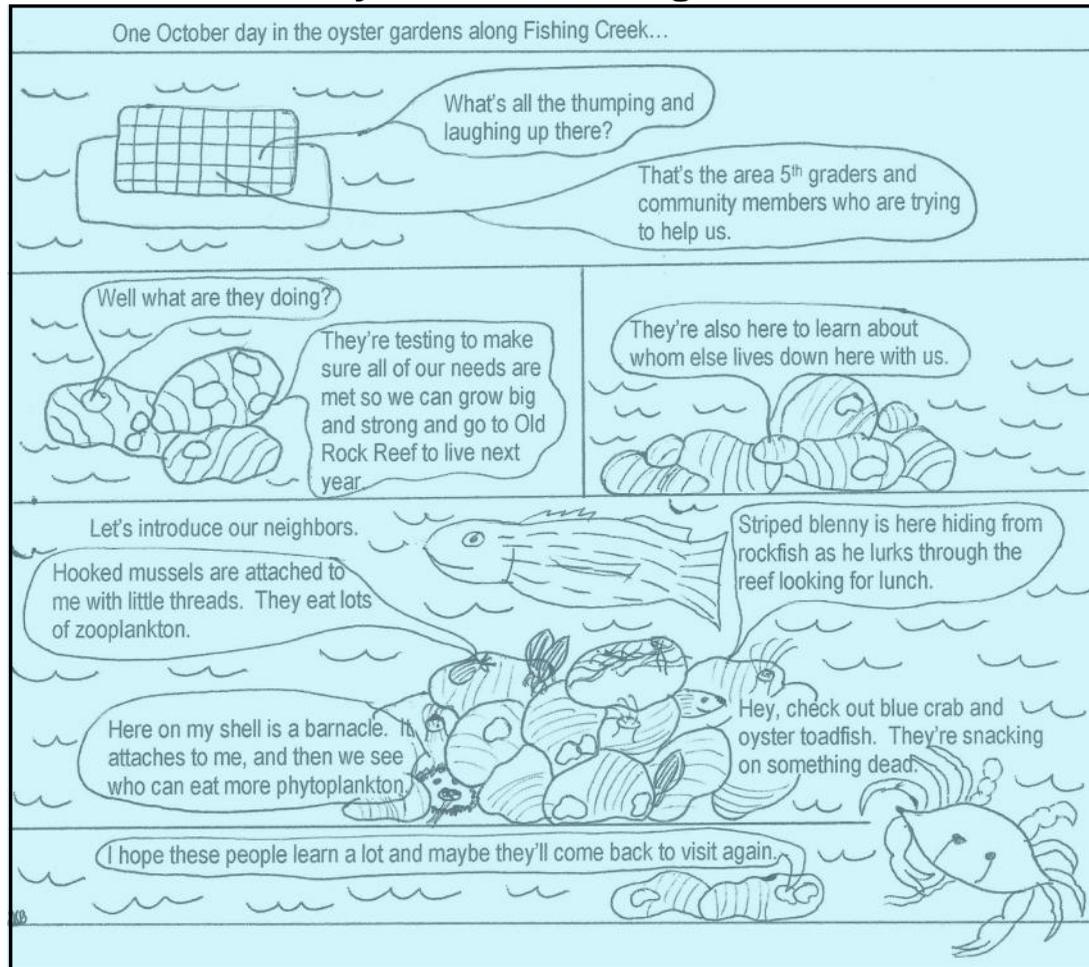
Another dream has come true under the Rail Trail... The Chesapeake Beach Oyster Cultivation Society (CBOCS) has been using the protected waters of Fishing Creek to grow baby oysters to help replenish the Bay with this wonderful seafood.

Fishing Creek is an important landmark that provides home to many plants and animals, as well as water-related businesses such as fishing, crabbing, trapping, canoeing, and restaurants with a great view. Enjoy this activity booklet that describes some of the things you can see, hear and do when you go up the Creek!!



John Muller

Oysters of Fishing Creek



Count, record and measure oyster spat on 5 shells
 Number of oyster spat _____ Average per shell _____
 Average size of spat _____ mm, Range _____ to _____ mm

Oysters of Fishing Creek

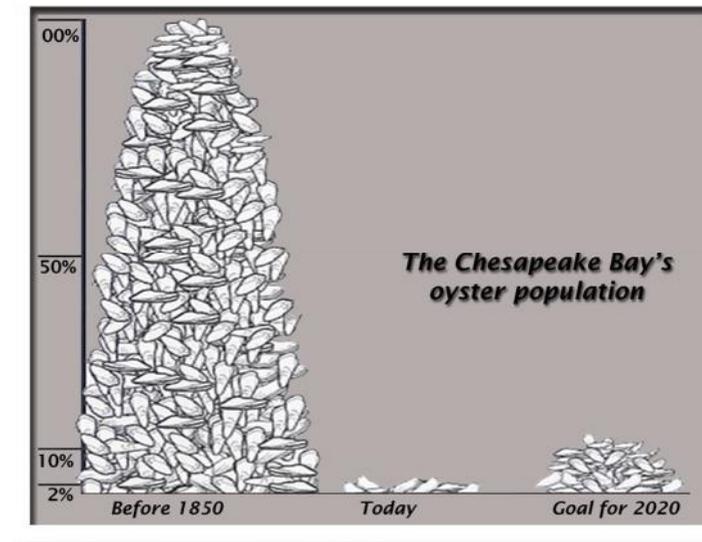
The oyster is a "bivalve" mollusk. This means they have two ("bi") hard shells ("valves") and a soft body protected by the shells. There are many kinds of oysters; however, the oysters that live in the Chesapeake Bay are the "Eastern Oyster." Their scientific name is *Crassostrea virginica*.

An oyster shell grows in layers, starting from the pointed end. It takes about a year to grow one inch. Although it doesn't look like it, each oyster has a mouth, stomach, gills, heart, digestive system and muscles - they all work together to bring water in and through its body.

Oysters are "filter feeders" and this is why they are so important to the health of the Chesapeake Bay. They help improve and maintain the water quality by removing algae, which they eat, and sediment from the water column. The sediment and other indigestible bits are excreted as little pellets called pseudo-feces that drop to the Bay floor. A single adult oyster can filter up to 50 gallons of water per day. Filtering helps improve oxygen levels, and allows more light to penetrate the water, permitting important submerged aquatic vegetation to grow. A handful of oysters can clear a small aquarium filled with cloudy Bay water in less than an hour! Now imagine what



the Bay would look like if wild oyster populations were restored to the levels found in the 1800s.



Oysters anchor themselves to hard surfaces in the water. As other oysters attach themselves to each other, they form huge clusters called oyster "reefs," which provide a habitat for many Bay creatures, including barnacles, mud crabs, blue crabs and rockfish.

Oyster Friends and Associates

Barnacles

Related to crabs and shrimp, they live in a hard volcano-like shell. Their feet are adapted to filter food from the water (they eat with their feet).



Photo credit: Andrew Butko

Bent Mussels

Mussels are filter feeders that attach to shells, oysters, and rocks. They live on the bay bottom as part of the oyster bar community. Like oysters they require hard habitat, but instead of gluing themselves to it, they attach with dark byssal threads.



Photo credit: Christopher Judy

Oyster Friends and Associates

Sea Anemones

They are like sea nettles (they have tentacles), but instead of floating in the water they attach themselves to hard objects. Here they are attached to mussels and oysters. Sea anemones are very small, about 1" or less in size.



Photo credit: Christopher Judy

Clam Worms

These worms can be very abundant and are easily seen moving around the oysters. They are important food for the small fish that live with oysters.



Photo credit: Christopher Judy

Oyster Friends and Associates

Goby

Gobys are small, about 1.5 inches, and some people think they look like tadpoles. Dozens may live in one cage, among the shells and oysters. On an oyster bar, hundreds can be found in a small area but they are secretive, hiding in and under the oysters for protection.



Photo credit: Christopher Judy

Toad Fish

When small, like this 2 inch in the palm of a gloved hand, they hide on the bar. Larger, they are quite formidable. They are dark and irregular in surface texture, like the shells and oysters they hide around.



Photo credit: Christopher Judy

Oyster Friends and Associates

Blennie

Blennies are larger than Gobys as can be easily seen here – Blennie on the bottom and Goby on top. Blennies and gobys hide among the shells and oysters. Often they live in dead oysters called "boxes" – good habitat for small fish.



Photo credit: Christopher Judy

Sunfish

In low salinity areas, you may see young sunfish in your cages.



Photo credit: Christopher Judy

Oyster Friends and Associates

Skillet Fish

Also called Cling Fish, they use the shells and niches like the other small fish above – for habitat, protection and egg laying surfaces. They cling to flat shells with a sucker-like fin on their stomach and are hard to pry off.



Photo credit: Christopher Judy

Sea Horse

These live in moderate to higher salinity areas. Only a few have been found in the oyster cages. In their natural habitat, they prefer grass beds.



Photo credit: Christopher Judy

Oyster Friends and Associates

Grass Shrimp

They can be very abundant in the oyster cages. Grass shrimp are excellent fish food. They have a sharp spine between the eyes so be careful picking them up.



Photo credit: Christopher Judy

Amphipods

These shrimp-like creatures are flattened sideways and are very abundant. Like worms, they are food for oyster bar fish. A few mud-tube worms are also in the photo as are some minute, black lophophores.



Photo credit: Christopher Judy

Oyster Friends and Associates

Bryozoans

These soft bryozoans look like brown moss but are actually a colony of animals, which filter feed. There are naturally found on oysters and oyster shells, but they can also grow on cage wire: covering it some or almost completely. Another type of bryozoan looks like delicate lace growing flat on shells.



Photo credit: Christopher Judy

Mud-tube Worms

These small worms live in muddy tubes that they build. What looks like slimy, bothersome mud is a colony of worms.

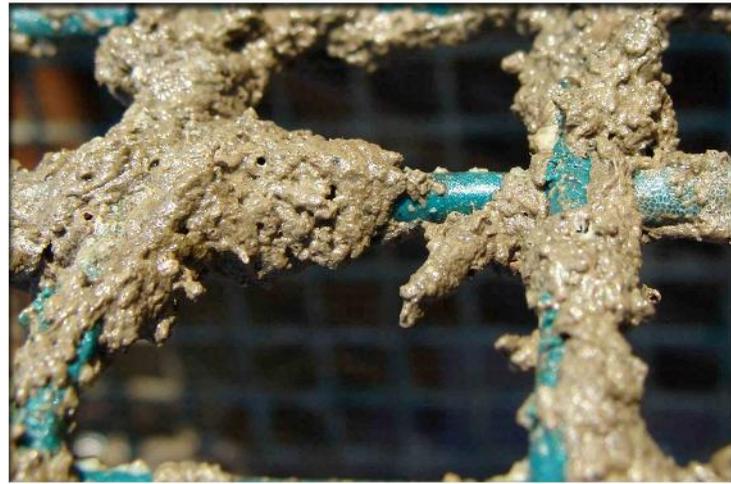


Photo credit: Christopher Judy

Oyster Friends and Associates

Fish eggs

Various fish that live among the oysters lay eggs under oyster shells, using the protected niche habitat for their developing young. The dark spots are the eyes of the fish prior to hatching.

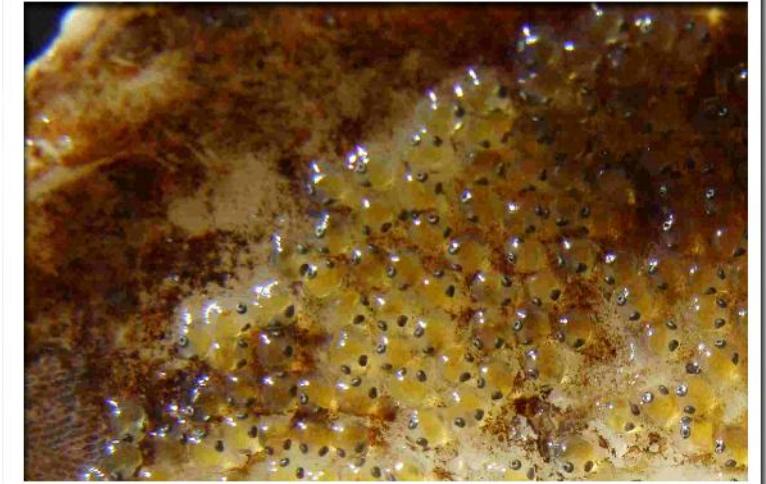


Photo credit: Christopher Judy

Algae

There are various types of algae that can grow on oyster cages (and on oysters on an oyster bar). Algae can be a real nuisance on the cages because they may grow so thick they impede water flow to the spat and because they make the cage very heavy. But usually, algae are not a problem.



Photo credit: Christopher Judy

Water Quality

Definitions, Measurements and Calculations

Physical and chemical parameters are necessary to determine the health of Fishing Creek oysters and the pollutants flowing to Chesapeake Bay. This activity includes recording that information and making determinations about the health of Fishing Creek.

Measure and record oyster health parameters

Parameter	Acceptable Range	Your Reading	Good/Bad
Dissolved Oxygen	> 3.0 mg/l	_____	_____
Salinity	> 0.5 ‰	_____	_____
pH	6-8.2	_____	_____
Temperature	0-30° Celsius	_____	_____
Turbidity	>50 cm or 0.5 m	_____	_____

mg/l = milligrams per liter

C = Celsius

cm = Centimeter, m = Meter



Stream Flow Measurements and Calculations

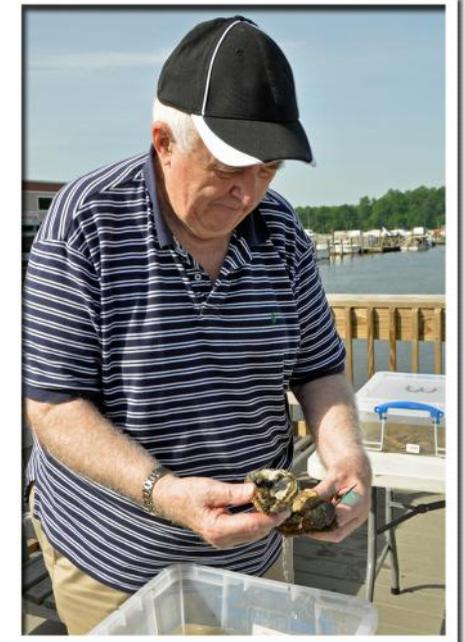
Net stream flow in a tidal creek requires measuring both tide in and tide out. Today we are measuring (tide in) or (tide out). You determine!

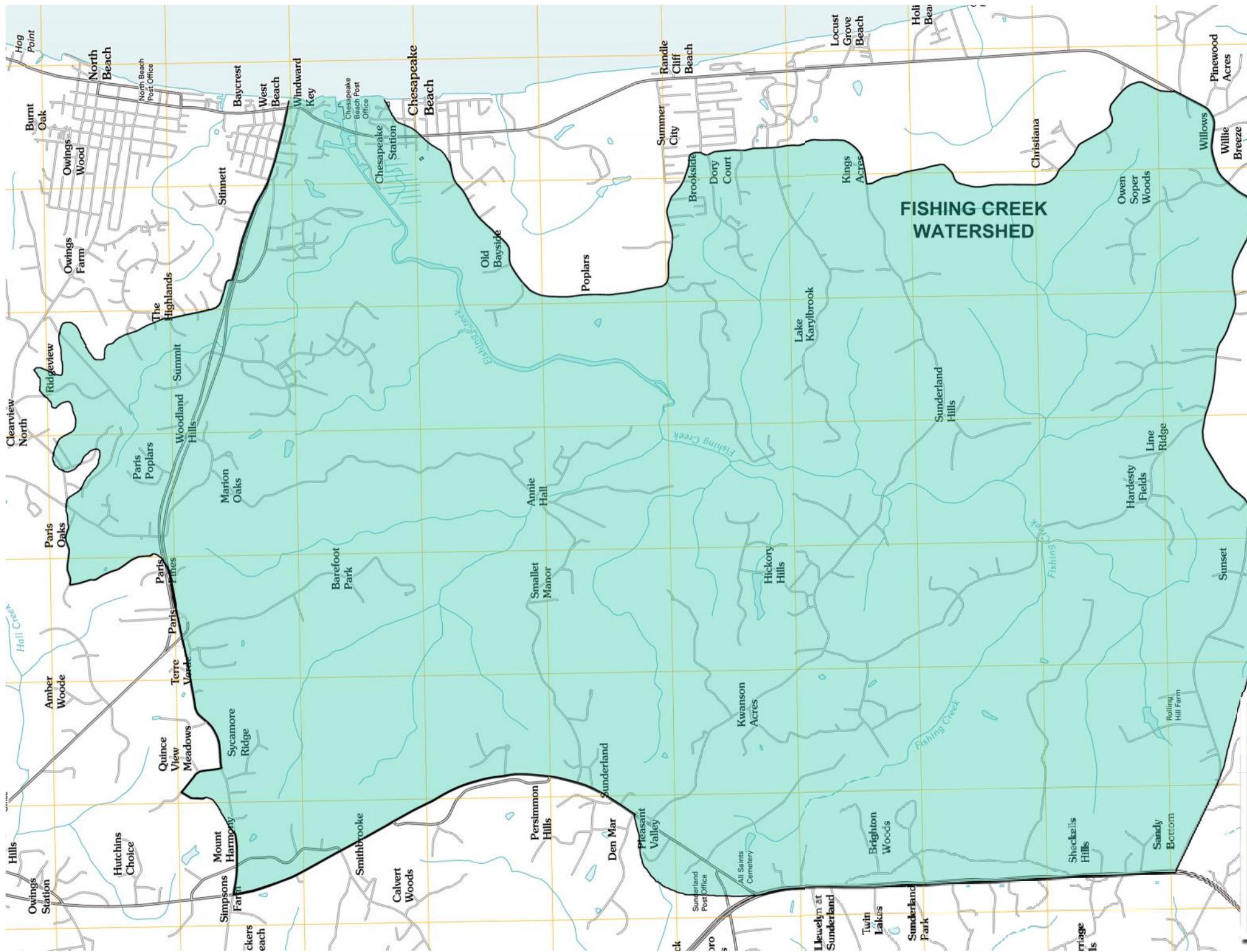
Using bottle floats record time ____ minutes ____ seconds to travel ____ feet

Calculate flow in feet per minute _____, miles per hour _____

Cross section area of Fishing Creek is 750 square feet

Calculate water flow (feet per minute X 750 X 7.485) = _____ gallons per minute





Fishing Creek Watershed

Fishing Creek is located in Northern Calvert County Maryland. It empties into the Chesapeake Bay at Chesapeake Beach. The vast majority of the watershed is rural, consisting mostly of forest and farmland. A small portion encompasses planned subdivisions and the town of Chesapeake Beach.

Using the grid on the map, determine the size of the Fishing Creek Watershed. Each square equals 0.37655 square miles.

Your calculation is _____ square miles.

Trace all the branches of Fishing Creek.

To obtain a satellite map of Fishing Creek go to www.earth.google.com



Residents of Fishing Creek

Eastern Painted Turtle

- Small water turtle with yellow, orange, and red stripes on its head and neck
- Eat algae, fish, insects, and aquatic plants
- This turtle is the most common species of turtle found in the United States



Photo credit: flickr user GregTheBusker

Residents of Fishing Creek

Northern Water Snake

- Non-venomous snake that can get up to 4 ft. long
- Eat fish, frogs, crayfish, and worms
- Excellent swimmers
- Hibernate in the winter and may share dens with other snakes



Photo credit: Don Biresch

Black and Yellow Garden Spider

- Harmless to humans
- Build webs with a zigzag pattern in the center
- Eat insects up to twice the spider's size that become caught in the web

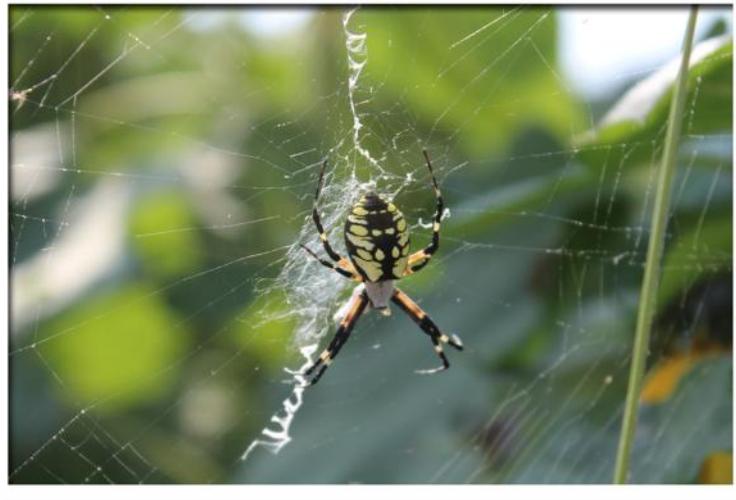


Photo credit: flickr user Kiasog

White-Tailed Deer

- Medium-sized deer that are very common in the area
- Eat grasses, acorns, fruits, corn, mushrooms, and even poison ivy
- Males grow a new set of antlers every year



Photo credit: flickr user Bill Thompson

Residents of Fishing Creek

Eastern Box Turtle

- Small land turtle with yellow or orange markings and a domed shell
- Eat earthworms, insects, berries, grasses, and mushrooms
- Move very slowly
- Males have red eyes, females have brown eyes



Photo credit: flickr user ShenandoahNPS

Yellow Swallowtail Butterfly

- Can be seen flying during the spring and summer
- Metamorphose from egg, to caterpillar, to pupa, to butterfly
- Eat nectar from flowers
- The caterpillars look like bird droppings to keep from being eaten by predators



Photo credit: flickr user Jim-The-Photographer

Residents of Fishing Creek

Common Tern

- Small seabird that spends the summer in the area to breed
- Has gray wings, a black cap, and orange legs
- Dive for fish from up to 20 ft. above the water, and then may submerge below the water to catch the fish



Photo credit: flickr user ahisgett

Mummichog

- Small minnow that provides food for many animals
- Can be seen in the area traveling in large schools of hundreds of fish
- Mummichogs were the first fish in space, where they taken as part of an experiment



Photo credit: flickr user Brian.Gratwicke

Residents of Fishing Creek

North American Beaver

- Largest rodent in the United States
- Eat leaves, flowers, and bark from trees, and also cattails and water lilies
- Build dams and lodges out of logs, sticks, mud and rocks
- Have large paddle-shaped tails



Photo credit: flick user stevehdc

Osprey

- Large bird of prey with a wingspan of up to 6 ft.
- Color is dark on the back and white on the belly, with some speckling
- Eat a diet of mostly fish
- Can be seen in the area during spring summer, and migrate south for the winter



Photo credit: flickr user Acrylic Artist

Residents of Fishing Creek

Striped Bass (Striper, Rockfish)

- State fish of Maryland, commercially and recreationally important in the area
- Silvery color with dark stripes, can weigh up to 100 lbs.
- Eat smaller fish



Photo credit: Lake Meade Imagery

North American River Otter

- Live in close families and love to play
- Eat fish, crayfish, frogs, and insects
- Build dens near the edge of the water
- Have webbed feet and use their tail to help swim more quickly



Photo credit: flickr user Jason Pratt

Residents of Fishing Creek

Bald Eagle

- Large bird of prey with a wingspan of 6-7 ft.
- National bird of the United States of America
- Eat mostly fish and build some of the largest nests of any bird
- Adults have white feathers on head and tail and dark bodies



Photo credit: Amenda and Dennis Brown

Chesapeake Blue Crab

- Crab is green-blue but turns red when cooked
- Commercially and recreationally important in the area
- Will eat just about anything it can find
- Uses its back legs as paddles for swimming

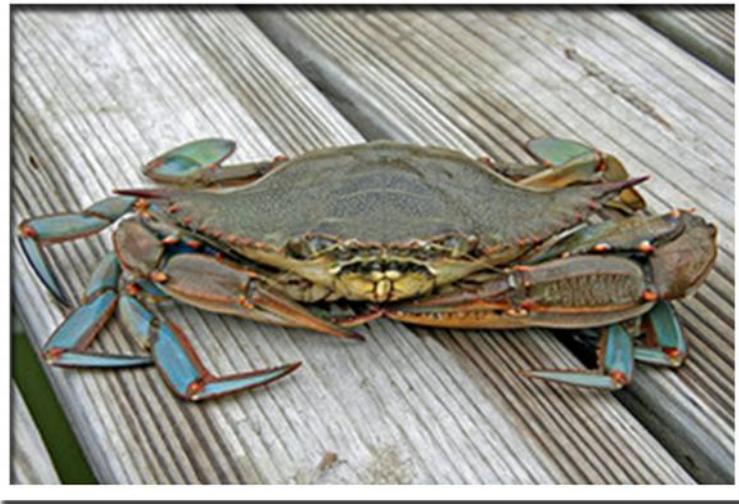


Photo credit: flickr user lulucat

Residents of Fishing Creek

Great Blue Heron

- Largest wading bird in the United States, and is present in the area year-round
- Eat mostly fish, but will also eat frogs, insects, shrimp, crabs, and small mammals
- Will use its sharp beak to spear food and then swallow it whole



Photo credit: flickr user gdahlman

Red-winged Blackbird

- Songbird that lives in the area year-round
- Eat seeds, grains, insects, and sometimes frogs and snails
- Males have red and yellow markings on their shoulders, but females are all brown and black



Photo credit: flickr user cuatrok77

Observation Questions:

Birds:

Where was the bird you saw?

What was it doing?

What evidence of birds did you see today?

What was the biggest bird that you saw today?

What was the smallest bird that you saw today?



Fish or amphibians or reptiles:

Where was the fish you saw?

What did it seem to be doing?

Where was the reptile (turtle?) that you saw?

What did it seem to be doing?

How many did you see?



Animals:

Which animals did you see today?

What evidence of animals did you see?

What was the animal doing?

Directions:

Turn and face the Bay. You are now facing East.

Turn to your right. What direction are you now facing? (South)

What man-made items do you see?

What natural items do you see?

Turn to your right again. What direction are you now facing? (West)

What man-made items do you see?

What natural items do you see?

Turn to your right again. What direction are you now facing? (North)

What man-made items do you see?

What natural items do you see?

Face the Bay again:

When you look East, why is Fishing Creek such a straight line?

When you look West, why is Fishing Creek such a curvy line?

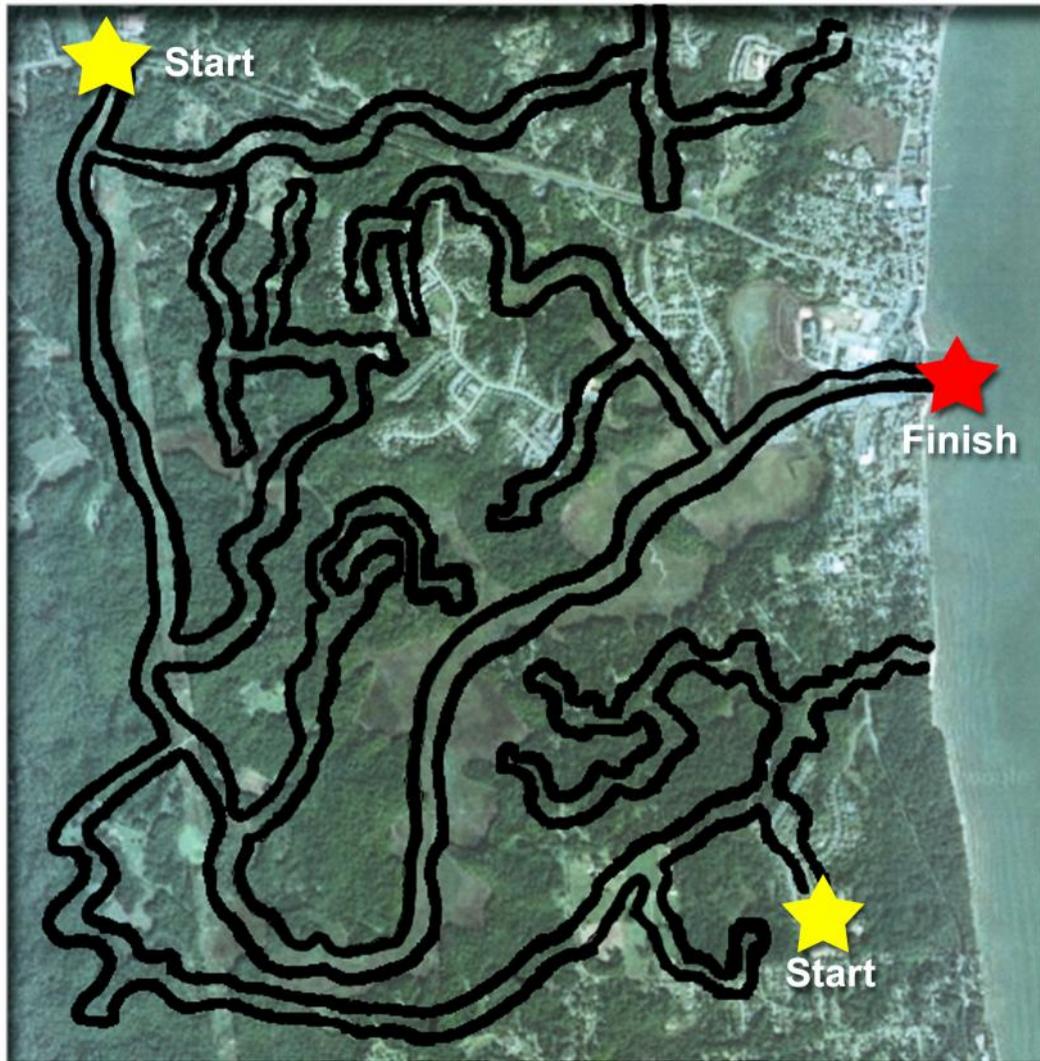
Watch and Listen: (over PawPaw Gut / at Trail's end)

Face South. Be silent for 60 seconds. What do you hear? What do you see?

Face North. Be silent for 60 seconds. What do you hear? What do you see?



Fishing Creek Watershed Maze



Fishing Creek Treasures Word Search



- | | | | |
|----------------|-------------------|----------------|-----------------|
| BALD EAGLE | BEAVER | BLACK CHERRY | BLACK LOCUST |
| BLACKBIRD | BLUE CRAB | CALVERT COUNTY | CANADA GOOSE |
| CHESAPEAKE BAY | CHESAPEAKE BEACH | DEER | ECOSYSTEM |
| EGRET | FILTER FEEDER | FISHING CREEK | FOX |
| HERON | KINGFISHER | MALLARD | MARYLAND |
| MINK | MONARCH BUTTERFLY | MUSKRAT | NITROGEN |
| OSPREY | OXYGEN | PHOSPHORUS | POTASSIUM |
| RAILROAD | RAILWAY TRAIL | REEF | RIVER OTTER |
| ROCKFISH | SALINITY | SEAGULL | SNAPPING TURTLE |
| SPAT | SWAN | SWEETGUM | SWITCHGRASS |
| TERN | TERRAPIN | TREE CANOPY | WATER SNAKE |
| WATERFOWL | WATERSHED | WETLAND | WOOD DUCK |
| | WHITE PERCH | | |

Color Me Now or Color Me Later!

Great Blue Heron



Red-winged Blackbird



Notes & Sketches!

To learn more about Fishing Creek

Places:

Calvert Library Twin Beaches Branch 3819 Harbor Road, Chesapeake Beach, MD 20732
410-257-2411

Chesapeake Beach Railway Museum 4155 Mears Avenue, Chesapeake Beach, MD 20732
410-257-3892

Chesapeake Beach Town Hall 8200 Bayside Road, PO Box 400, Chesapeake Beach, MD 20732
410-257-2230

Books:

The Heritage of Calvert County, Maryland for the Young Reader, by Susan M. Sieglein

John Smith's Chesapeake Voyages: 1607-1609, by Helen C. Rountree, Wayne E. Clark, and Kent Mountford

Otto Mears Goes East: The Chesapeake Beach Railway, by Ames Williams

Websites:

www.chesapeakebay.net/

www.dnr.state.md.us/bay/cblife/

www.chesapeakeconservancy.org

www.co.cal.md.us/ Click on County Maps

www.dnr.state.md.us/wildlife/Plants_Wildlife/



**PRESERVE YOUR TREASURES
SO YOU CAN
COME BACK AGAIN AND AGAIN
BRING FAMILY AND FRIENDS**

**FISHING CREEK
WATERSHED**

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