

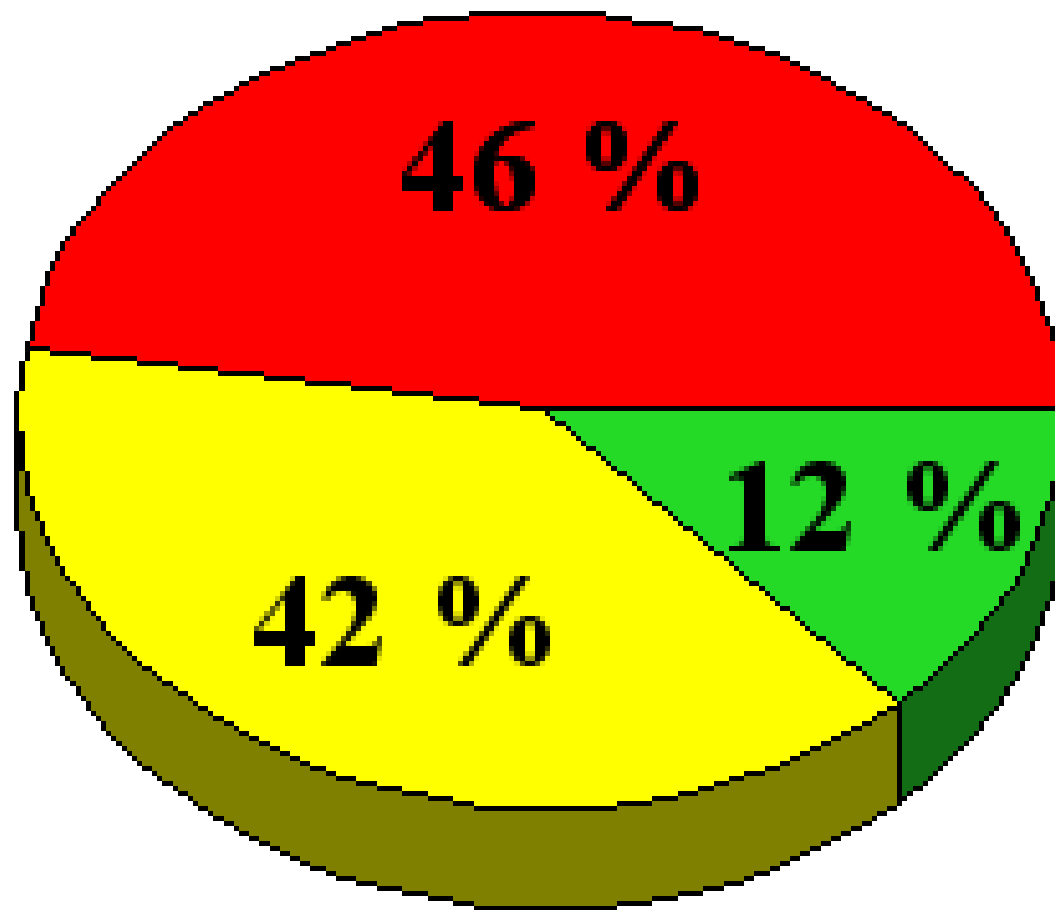
# Explore and Restore Maryland Streams



# Action Projects



# Health of Maryland Streams



Percent of Stream Miles



Poor



Fair



Good

Data From Maryland Biological Stream Survey



# Stewardship efforts



Address what  
students observed

## Threats to streams (and fish and wildlife)

- **EXOTIC SPECIES**
- **MINING**
- **CONSTRUCTION**
- **UNDERGROUND PIPING (BURIED STREAMS)**
- **NUTRIENT OVERLOAD**
- **TOXICS**
- **MIGRATION BARRIERS**
- **SILTATION**
- **ROAD SALT**
- **LOGGING**
- **IMPERVIOUS SURFACES**
- **ACID RAIN**
- **NO BUFFERS**
- **TRASH**
- **CLIMATE CHANGE**





Conduct a “Stream Walk Survey”  
“See Something, Say Something”



# STREAM CORRIDOR ASSESSMENT SURVEY

## SCA

### SURVEY PROTOCOLS

Excerpted from this document, used for assessing stream corridors.

[www.dnr.state.md.us/irc/docs/00005291.pdf](http://www.dnr.state.md.us/irc/docs/00005291.pdf)



Watershed Restoration Division  
Chesapeake & Coastal Watershed Services  
Maryland Dept. of Natural Resources  
Annapolis, MD

## Survey Goals

### “See Something, Say Something”

- **Identify observable environmental problems**
- **Determine potential action projects students can do**
- **Provide information to officials who can prioritize restoration projects**
  - Provide sufficient information to determine severity and correctability of a problem
    - Photo
    - Description
    - Measurement
    - Location



# MARYLAND DEPARTMENT OF NATURAL RESOURCES

## What's Wrong with this Stream?





# Erosion





# Inadequate Buffer





# Channel Alteration





# Fish Barrier



# Exposed, Broken Pipe



Pipe Outfall





# Unusual Condition





# Trash Dumping





# Livestock

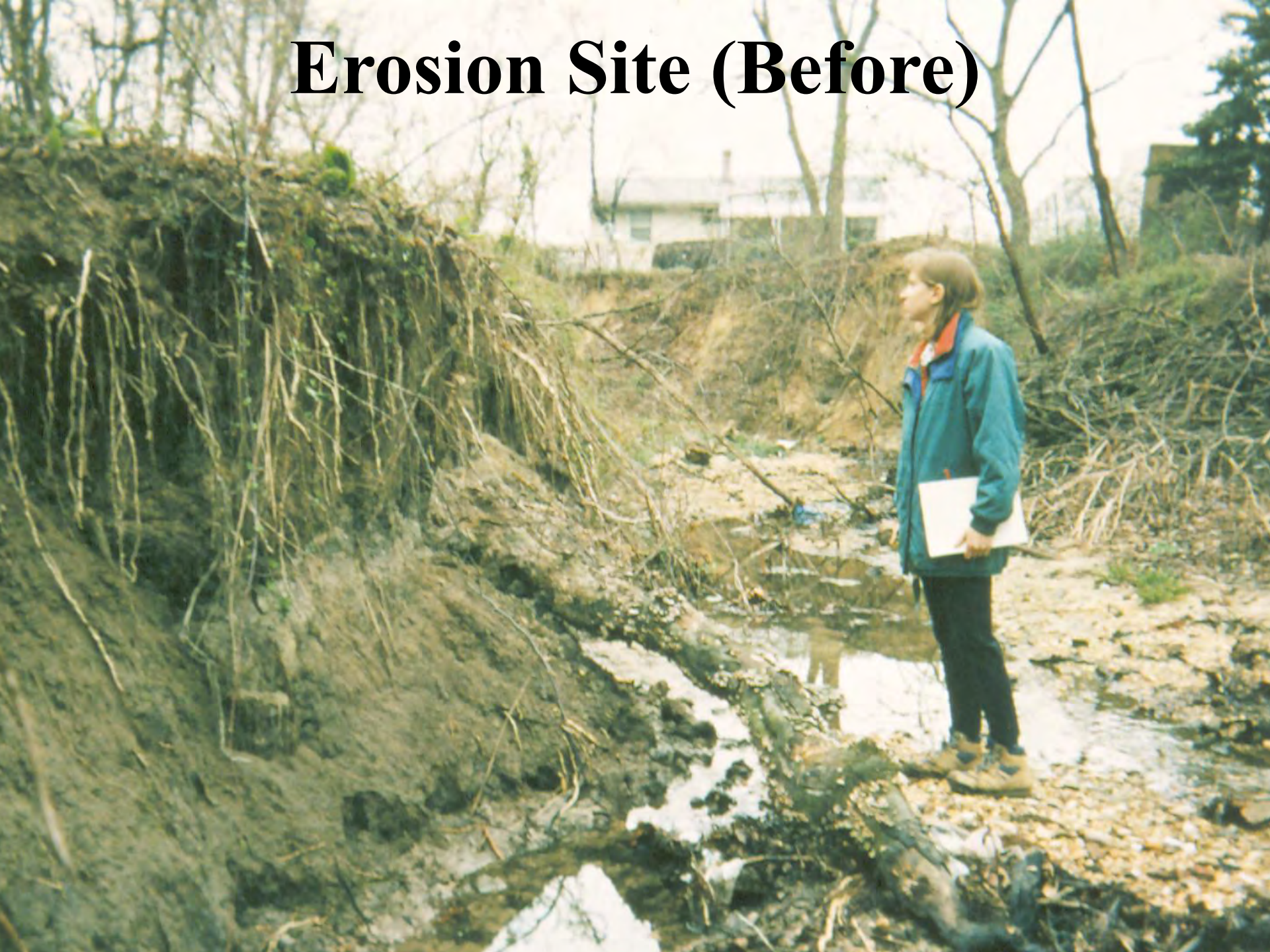


# **Environmental Problems Have Solutions**

All of these problems have existing programs in  
Maryland to fix them



# Erosion Site (Before)





# Erosion Site (After)





# Erosion Site (Before)





# Erosion Site (After)





**Before**



**After**





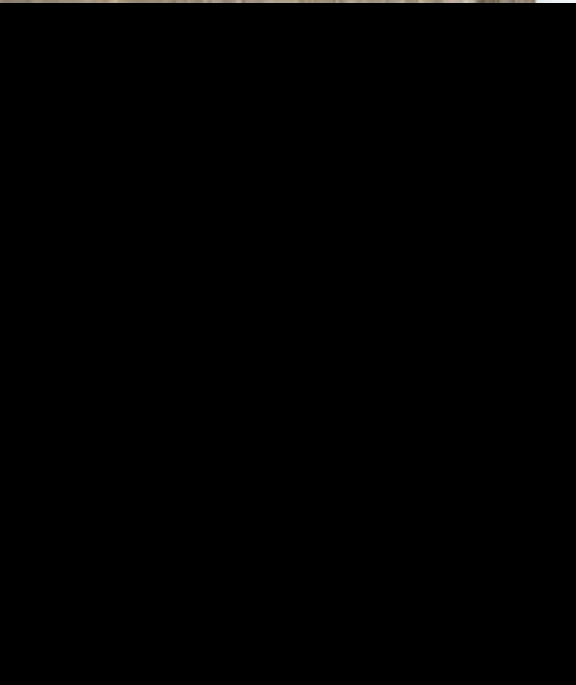


**Before**

**Hardened/  
Channelized**



**After**





**Before**

**Channel  
Alteration**



**After**



# Unusual Conditions (not necessarily “bad”)



**Tannins**

<http://www.fairfaxcounty.gov/dpwes/stormwater/stuffinstream.htm>



**ORANGE SLIME  
(IRON  
BACTERIA)**



*Filamentous  
Algae*



**Foam**



# Unusual Conditions

(not necessarily “bad”)



## Tannins

Tributaries swell their banks, flushing tannic acid from the decomposing forest duff.



## Unusual Conditions

(not necessarily “bad”)

Iron Bacteria



Iron Bacteria

This bacteria takes iron dissolved in groundwater and oxidizes it (similar to forming rust). Oxidation prevents iron from dissolving in the water and produces either an orange colored slime or an oily sheen. This indicates that the stream is partially fed by groundwater.



# Unusual Conditions

(not necessarily “bad”)



## Filamentous Algae

are single algae cells that form long visible chains, threads, or filaments. These filaments intertwine forming a mat that resembles wet wool. It starts growing along the bottom in shallow water or attached to structures in the water (like rocks or other aquatic plants). Often filamentous algae floats to the surface forming large mats.



# Unusual Conditions

(not necessarily “bad”)



<http://www.fairfaxcounty.gov/dpwes/stormwater/stuffinstream.htm>

## Foam

Foams are commonly seen on streams, rivers, lakes and sea water. They may appear in pristine environments indicating a natural origin, or may be the result human pollution. Foam is created when organic matter decomposes, releasing fatty acids that act as surfactants or surface active agents; or by cascading water creating bubbles.







**Problem:**  
**Nutrients,**  
**Phosphorous,**  
**Sediment, pH,**  
**low DO....**

**Identify possible  
sources, and then...**





## Solutions:

# Plant Trees

- **Why?**
  - Protect and buffer streams
  - Cool and clean the water, prevent erosion
  - Clean the air, sequester (trap) Carbon dioxide
  - Provide habitat for wildlife
- **Stream Restoration Challenge**
  - Project ideas:  
[dnr.maryland.gov/trustfund/streamchallenge/](http://dnr.maryland.gov/trustfund/streamchallenge/)
- **Backyard Buffers**
  - [dnr.maryland.gov/forests/pdfs/byb\\_program.pdf](http://dnr.maryland.gov/forests/pdfs/byb_program.pdf)
- **Choose native, long-lived species**  
[www.fws.gov/chesapeakebay/BayScapes/bsresources/bsnativeguides.html](http://www.fws.gov/chesapeakebay/BayScapes/bsresources/bsnativeguides.html)





## Solutions:

# Control Runoff

- **Rain Barrels:**
  - Install at school
  - Paint and sell in the community
- **Rain Gardens and buffers**





# Problem: Got Trash?

## Solutions:

- **Clean up:**
  - Stream cleanup events  
<http://fergusonfoundation.org/trash-free-potomac-watershed-initiative/>
  - Weigh/sort/count trash – upload data to FieldScope
  - Project Clean Stream  
<http://cleanstream.allianceforthebay.org/>

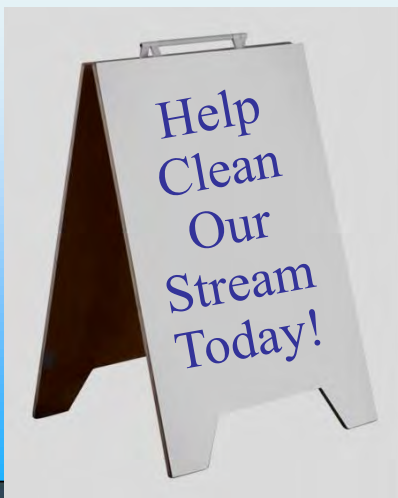




# Problem: Got Trash?

## Solutions:

- **Raise awareness:**
  - Stream cleanup events
  - Outreach to community
  - Stormdrain stenciling  
<http://www.dnr.state.md.us/education/are/stormdrain.asp>





# Problem: Got Trash?

## Solutions:

- Reduce waste:
  - Trash-less lunches
  - Recycling ... *more!*
  - Start community projects – student-designed solutions







More than 161 students from Easton High School, St. Michaels Middle and High School, Chesapeake Christian School and a number of volunteers took the day on Tuesday, Oct. 22 to plant more than 1,400 trees at RTC Park to improve the water quality of local streams.

**TREES**

From  
Page A1

the planning process. "We want it to be welcoming to wildlife but to people too," Hougren said.

Environmental Concern took plans for the layout of the park and walking paths from the sit-

dents and combined them to create what is now being implemented.

"I get to be out here making a difference more than just sitting on the couch watching TV," Chesapeake Christian student

James White said. "There are so many nonprofits that do similar things in this area, like Pickering Creek and (Environmental Concern) that

when we work together and we write grants together we can do a lot more positive impact on the area," Suzanne Pittenger-Slear, president of Environmental Concern, said.

"It's fantastic to be able to do this on publicly assessable land at Scallion, center director at Pickering Creek, said. "We all have different skills and

expertise. We wouldn't be able to do (a project like this) on our own."

The RTC is the largest of four locations in Talbot County that will be altered in the next two years as part of this grant.

For more information about this program and these organizations visit their websites at pickeringcreek.audubon.org and wetland.org.

**WEDNESDAY**  
OCTOBER 23, 2013



THE STAR DEMOCRAT

1799-2013

SERVING THE MID-SHORE FOR 214 YEARS

EASTON, MARYLAND \$1.00



PHOTO BY HENLEY MOORE

Students work together to spread mulch around the planted trees at RTC Park on Tuesday, Oct. 22.

# Talbot students plant 1,400 trees in park

By HENLEY MOORE  
hmoore@stardem.com

EASTON — Tuesday, Oct. 22 more than 161 students from Easton High School, St. Michaels Middle and High School, Chesapeake Christian School and a number of volunteers took the day to plant more than 1,400 trees at RTC Park to improve the water quality of local streams.

Working together, Talbot County, the Town of Easton, Environmental Concern Inc. and Pickering Creek Audubon Center earned a grant as part of a \$6 million dollar project: Gov. O'Malley's Stream Resto-

ration Challenge.

The Stream Restoration Challenge goal is to establish 1,000 acres of stream-side forests by 2015 in hopes of improving the health of the tributaries and watersheds of the Chesapeake Bay.

"Talbot County government really brought everyone together. We all knew we wanted to benefit from the grant opportunity," said Zach Smith, deputy town planner for Easton. "We partnered in the grant opportunity and now we are partnering in the implementation."

In August the Talbot County Environmental Science teachers took part in training and les-

son plans with Pickering Creek and Environmental Concern.

Then in September the students visited the site to collect baseline information in order to track the impact of the project. The students will then return in the spring to see the changes in the environment that they have been a part of making.

"They will be able to see the forest being created," said Krysta Hougren, a teacher and naturalist at Pickering Creek.

Not only did the students take part in gathering information, but they were also integral in

See TREES  
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Get  
Publicity  
newspaper  
television  
radio  
websites  
social media



# Maryland Green Schools



[www.MAEOE.org](http://www.MAEOE.org)



# Citizen Science Projects

- **eBird** –

Cornell Lab of Ornithology [www.ebird.com](http://www.ebird.com)

- **Project Budburst** –

National Science Foundation [www.budburst.org](http://www.budburst.org)

- **Classroom Feeder Watch** –

Cornell Lab of Ornithology [www.birds.cornell.edu/Publications/Birdscope/Summer2000/cfw\\_2000143.html](http://www.birds.cornell.edu/Publications/Birdscope/Summer2000/cfw_2000143.html)

- **Maryland Amphibian & Reptile Atlas** –

Natural History Society of Maryland and Maryland Department of Natural Resources  
<http://marylandnaturalist.org/mara/>

