

# 2020 HOWARD COUNTY WATERSHED REPORT CARD

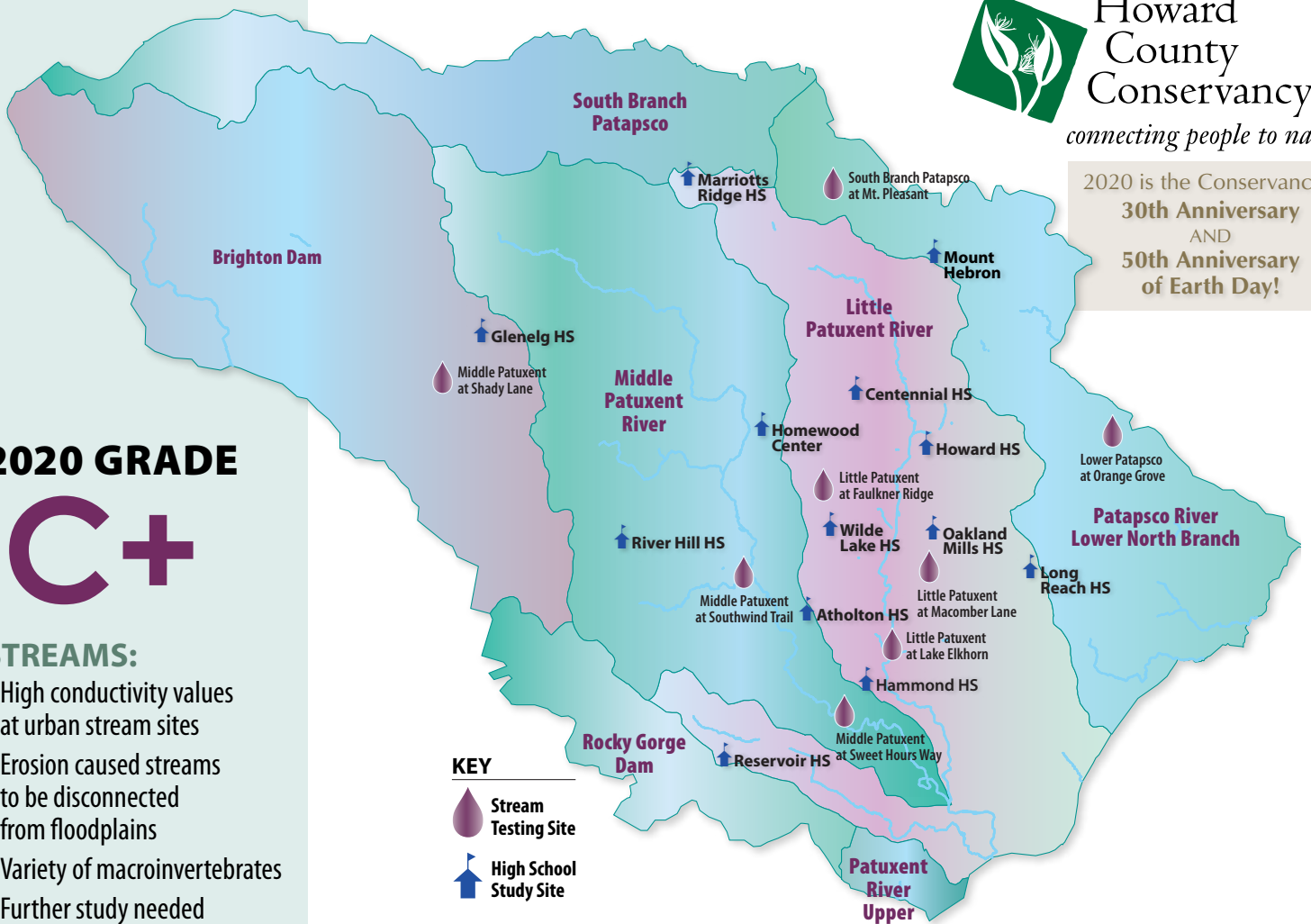
# Student Scientists in Action



Howard  
County  
Conservancy

*connecting people to nature*

2020 is the Conservancy's  
**30th Anniversary**  
AND  
**50th Anniversary**  
of Earth Day!



## 2020 GRADE

# C+

### STREAMS:

- High conductivity values at urban stream sites
- Erosion caused streams to be disconnected from floodplains
- Variety of macroinvertebrates
- Further study needed

### SCHOOLYARDS:

#### Areas of improvement:

- Environmental features

#### No change in the past year:

- Waste Management

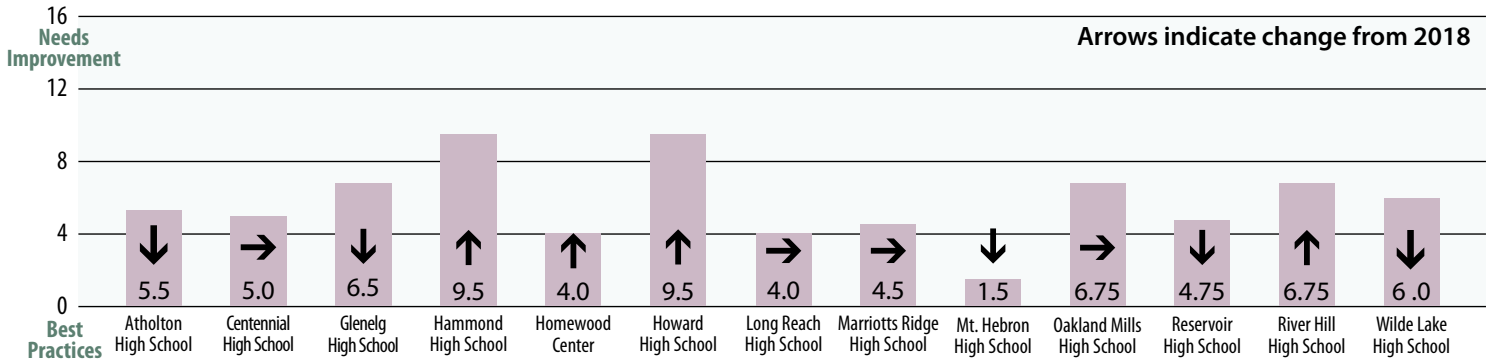


## ABOUT THE PROGRAM

This program was designed to provide a systemic opportunity for Howard County Public School 9th grade students to participate in a Meaningful Watershed Educational Experience. Students participate in data collection at their local schoolyard and stream, analyze data, examine and critique local policies, and advocate with decision makers in the county. More than 5,000 Earth Science and Biology students participated in this project! This experience provides the opportunity for students to engage in an authentic and meaningful exploration.



# Overall Schoolyard Data



Students collected data on erosion, downspouts, storm drains, parking lots, dumpsters, turf management, water chemistry, permeable surfaces, tree canopy, and existing environmental features to determine their schoolyard's overall score. The lower values reflect evidence of effective stormwater management practices. Schoolyard data was collected over a period of days in the fall and all student data was averaged.

## SCHOOLYARD FEEDBACK

### Atholton High School

- + Outdoor recycling bins
- Exposed bare soil spots

### Centennial High

- + Large no mow meadow
- Dumpster leakage during rain

### Glenelg High School

- + No mow zone with native plants
- Lack of forest canopy coverage

### Hammond High School

- + Outdoor recycling bins
- Lots of impervious surfaces

### Homewood Center

- + Increased native plants
- Campus wide clean up needed

### Howard High School

- + Stenciled storm drains
- Compacted soils and runoff areas

### Long Reach High School

- + Stormwater pond with expansive buffer
- Schoolyard litter

### Marriotts Ridge High School

- + Stenciled storm drains and native plant garden
- Campus wide clean up needed

### Mt. Hebron High School

- + Best overall rating, many native trees
- Litter found in schoolyard

### Oakland Mills High School

- + Native plant garden that supports biodiversity
- Dumpster juice leakage and schoolyard litter

### Reservoir High School

- + Compost bins and native plants
- Parking lot cracks and oil stains

### River Hill High School

- + Bike racks in use, outdoor recycle bins
- Rain garden maintenance needed

### Wilde Lake High School

- + Stenciled storm drains
- Concerns about amounts of impervious surfaces

PHOTO BY NICHOLAS GRINER



# Streams Studied

<b>Lower Patapsco</b> at Orange Grove .....	■	<b>Middle Patuxent</b> at Southwind Trail .....	■
<b>South Branch Patapsco</b> at Mt. Pleasant.....	■	<b>Little Patuxent</b> at Macomber Lane .....	■
<b>Middle Patuxent</b> at Sweet Hours Way .....	■	<b>Little Patuxent</b> at Faulkner Ridge .....	■
<b>Little Patuxent</b> at Lake Elkhorn .....	■	<b>Middle Patuxent</b> at Shady Lane.....	■

**KEY:** ■ Poor ■ Moderate ■ Good

## SENSITIVE MACROINVERTEBRATE CHART

	CADDISFLIES	MAYFLIES	STONEFLIES	WATER PENNIES	HELLGRAMMITES
Lower Patuxent at Orange Grove	●	●		●	●
South Branch Patapsco at Mt. Pleasant	●	●			
Middle Patuxent at Sweet Hours Way	●	●			●
Little Patuxent at Lake Elkhorn		●			●
Middle Patuxent at Southwind Trail	●	●	●		●
Little Patuxent at Macomber Lane					
Little Patuxent at Faulkner Ridge		●			
Middle Patuxent at Shady Lane	●	●	●	●	●

Macroinvertebrates are often used in studies to determine the water quality due to their known pollution tolerances, limited mobility and dependence on the land environment around the stream. The sensitive macroinvertebrates are of particular importance, because they do not tolerate high levels of pollution. At each stream site, students searched riffles, runs, pools, under cobbles and leaf matter and through root wads using D-Nets to find a variety of macroinvertebrates. Each stream was sampled twice in the fall.

## STREAM FEEDBACK

### Lower Patapsco at Orange Grove

- High amounts of sand and silt deposits
- Variety of macroinvertebrates found

### South Branch Patapsco at Mt. Pleasant

- Excess amounts of sediments
- Substantial erosion
- Low biodiversity of macroinvertebrates

### Middle Patuxent at Sweet Hours Way

- High nitrate values
- Eroded stream banks
- Wide diversity of macroinvertebrates found

### Little Patuxent at Lake Elkhorn

- Heavily eroded stream banks
- Embedded rocks in stream bed
- Low benthic macroinvertebrate count

### Middle Patuxent at Southwind Trail

- High levels of nitrates and substantial erosion
- Expansive riparian buffer

### Little Patuxent at Macomber Lane

- No sensitive macroinvertebrates found
- High amounts of sand and silt deposits

### Little Patuxent at Faulkner Ridge

- Significant conductivity values
- Moderate count for macroinvertebrates

### Middle Patuxent at Shady Lane

- High levels of phosphates and nitrates
- Highest scoring stream for benthic macroinvertebrates



# Stream Recommendations

## Lower Patapsco at Orange Grove

Stabilize stream banks with native plants and trees to reduce the rate of erosion. Weekend litter clean up program recommended.

## South Branch Patapsco at Mt. Pleasant

Decrease amount of lawn fertilizers used in surrounding residential areas. Increase width of riparian buffer and improve bank stability.

## Middle Patuxent at Sweet Hours Way

Improve habitat by planting trees and native plants in riparian buffer. Add large cobbles to stream bed to improve macroinvertebrate habitat.

## Little Patuxent at Lake Elkhorn

Trash clean up recommended. To stabilize banks and to reduce sediment deposition, plant more native plants alongside stream.

## Middle Patuxent at Southwind Trail

Enhance biodiversity of stream life by planting trees and increasing forest buffer.

## Little Patuxent at Macomber Lane

Educate local communities about reducing litter, picking up pet waste, and reducing fertilizer use.

## Little Patuxent at Faulkner Ridge

Reduce amount of impervious surfaces near stream. Replace path with pervious pavers, gravel, and mulch. Improve stream health by adding more vegetation and decreasing fertilizer use.

## Middle Patuxent at Shady Lane

Amend erosion areas by creating more no mow zones in surrounding areas and plant more native trees.

## SCHOOLYARD RECOMMENDATIONS

	Low Mow Meadow	Native Plants & Trees	Reduce Runoff	Green Roof	Outdoor Recycle Bins	Schoolyard Clean Up	Rain Barrels	Stormwater Pond Buffers
Atholton High School		●	●	●			●	●
Centennial High School	●	●	●				●	
Glenelg High School	●	●	●	●		●		●
Hammond High School		●	●			●		
Homewood Center	●	●	●			●		
Howard High School		●			●			
Long Reach High School	●		●			●		
Marriotts Ridge High School	●	●			●			●
Mt. Hebron High School	●	●				●	●	●
Oakland Mills High School	●	●	●			●		
Reservoir High School		●	●				●	
River Hill High School		●	●					
Wilde Lake High School		●	●					



**Thank you to the following for contributing numerous hours to the Watershed Report Card Program:**

- Conservancy Volunteer Naturalists
- HCPSS Earth Space Systems Science and Biology G/T teachers
- HCPSS Secondary Science Office

**THANK YOU TO OUR PARTNER**

