

Student Research on American Eels: catching inspiration from tiny slimy creatures



NYSDEC Hudson River Estuary Program,
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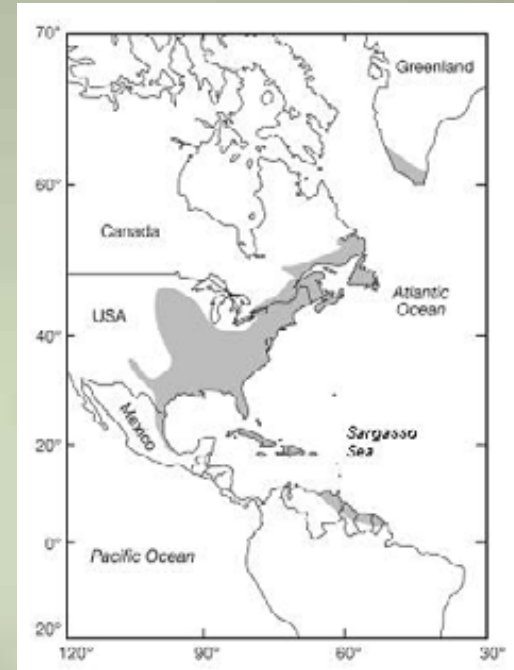


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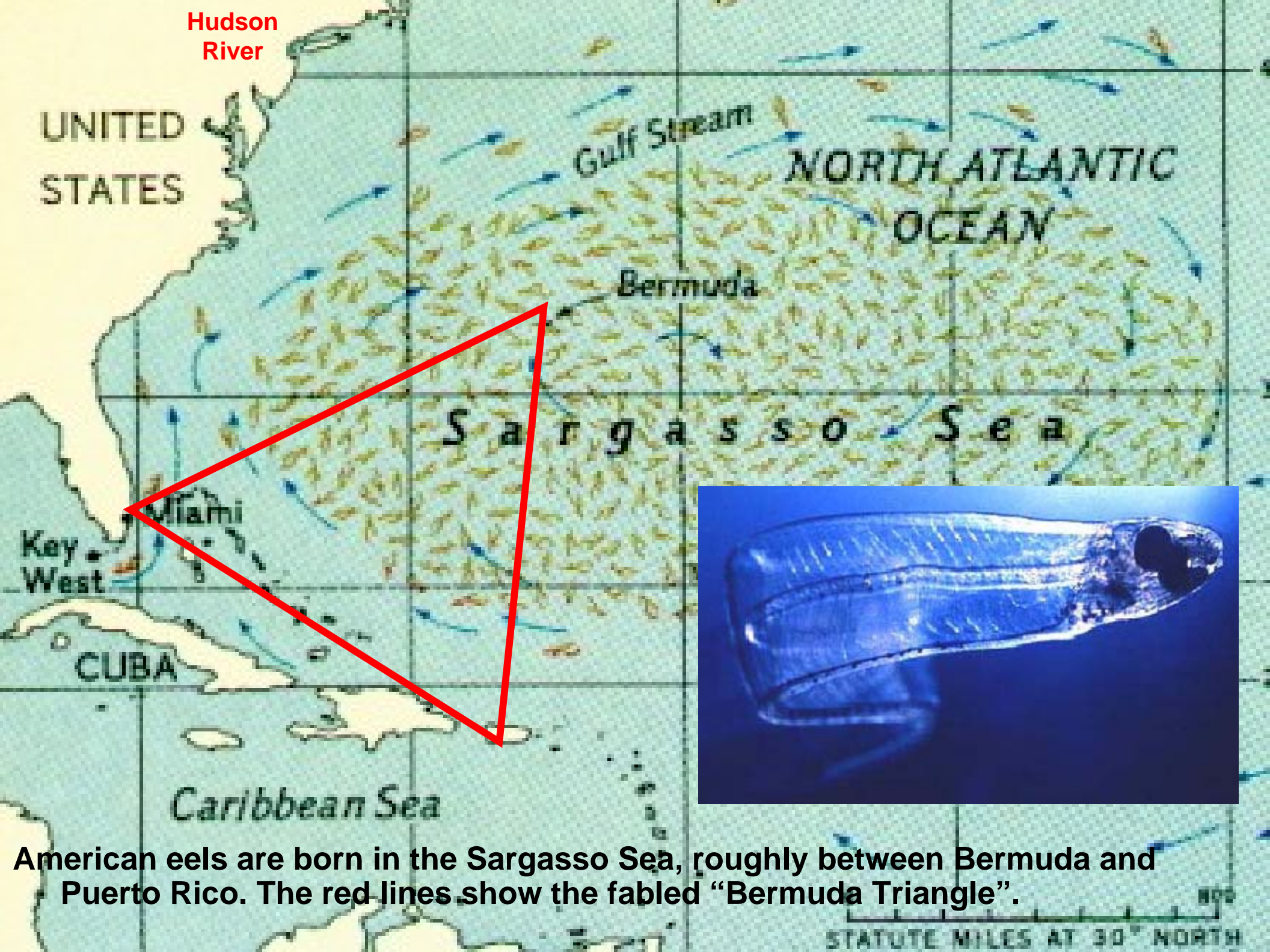


American eel

(*Anguilla rostrata*)



American eels are bony fish, found in many eastern rivers and coasts.



Hudson River

UNITED STATES

Gulf Stream

NORTH ATLANTIC OCEAN

Bermuda

Sargasso Sea

Miami
Key West

CUBA

Caribbean Sea



American eels are born in the Sargasso Sea, roughly between Bermuda and Puerto Rico. The red lines show the fabled "Bermuda Triangle".

STATUTE MILES AT 30° NORTH

A species in decline



Eels enter rivers as tiny “glass eels”. They mature for decades before returning to the sea as “silver eels”. Scientists note declines in eel populations of many areas.



Need for baseline studies

Student project modeled on previous work



Scientists use nets and traps to study glass eel migrations. These methods can be adapted for educational research by students and community groups.



Goals

- Involve students in community-based scientific research
- Gather baseline information about eel migration

Questions

- Do these tributaries support an eel migration?
- What environmental conditions affect this migration?



Students work with NYSDEC staff to come up with research goals and questions relevant to their local ecosystem.



Study design with partners



Eel and Herring Research Project at Fall Kill, Poughkeepsie

Date: _____ Time of Sampling: _____ Time of Low Tide (from table): _____

Names of Samplers: _____ School/Group: _____

ENVIRONMENTAL DATA

Air Temp: _____ °F _____ °C Water Temp: _____ °F _____ °C

Stream Flow Direction (circle one): upstream downstream slack

Tide Period in Hudson River (refer to table and circle one): high low ebb flood

Cloud Cover (check one)

- Clear (0-10%)
- Partly cloudy (10-50%)
- Partly to mostly cloudy (50-90%)
- Overcast (>90%)
- Foggy
- Hazy

Precipitation (check one)

- None
- Drizzle
- Light Rain
- Heavy Rain
- Squally (rainy with gusts of wind)
- Snow or Sleet

GLASS EELS

Glass eels refers only to those small eels that are partly transparent. You may also catch small brown or yellow eels that have been in the stream for a year or two. Remember to close the net when done!

Number of glass eels caught: _____ Number weighed: _____ Total Weight: _____ grams

Other animals caught in the net, including small yellow and brown eels (record number and species): _____

HERRING

Choose a spot not interrupted by the eel net and watch for herring for 15 minutes. Polarized glasses will help. Herring are usually about a foot long, are swimming upstream, and have a blue/gray color.

Start Time: _____ End Time: _____

First observer, number of herring: _____ Second observer, number of herring: _____

OTHER NOTES AND OBSERVATIONS including fishermen, animals, and things you see:

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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION HUDSON RIVER ESTUARY PROGRAM

Teachers, students, and volunteers maintain schedules and data collection protocols.



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Hudson River sampling sites

Saw Kill (Bard College, Tivoli Bays)

Indian Kill (Dutchess BOCES Env. Academy)

Crum Elbow Creek (new for 2009)

Fall Kill (Poughkeepsie); urbanized watershed, freshwater outlet

Hunters Brook

Indian Brook (new for 2009)

Furnace Brook; suburban watershed, brackish outlet

There are multiple sites along the Hudson. This presentation features the Fall Kill and Furnace Brook.



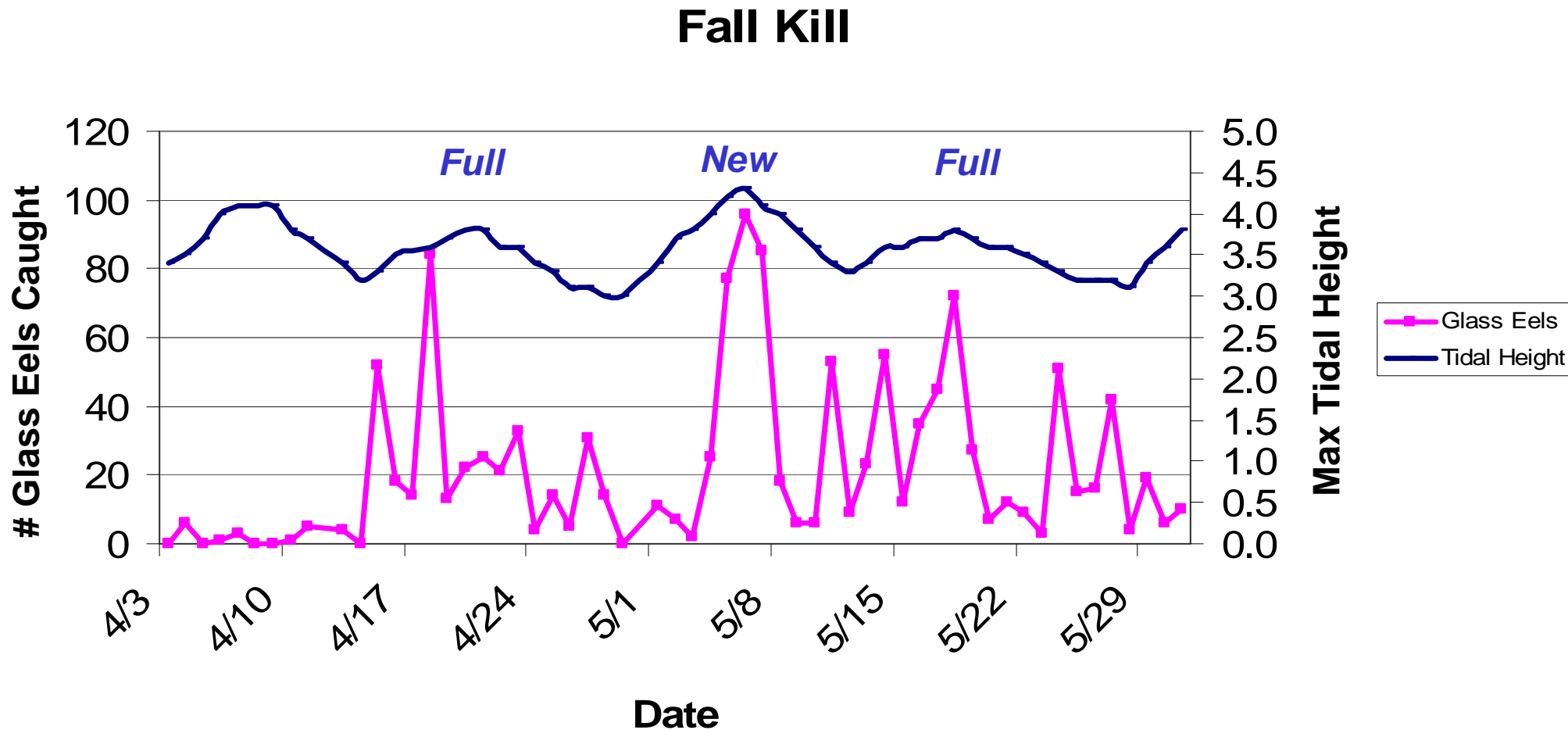
Fall Kill study

- Poughkeepsie HS and community partners
- Daily teams of students with teacher leader
- Highly visible urban site



Fall Kill results

- Migration peaks correspond to higher tides during full and new moons.
- Scattered results in later weeks suggest we're recapturing some eels. Students will study this question further in 2009.



Furnace Brook study

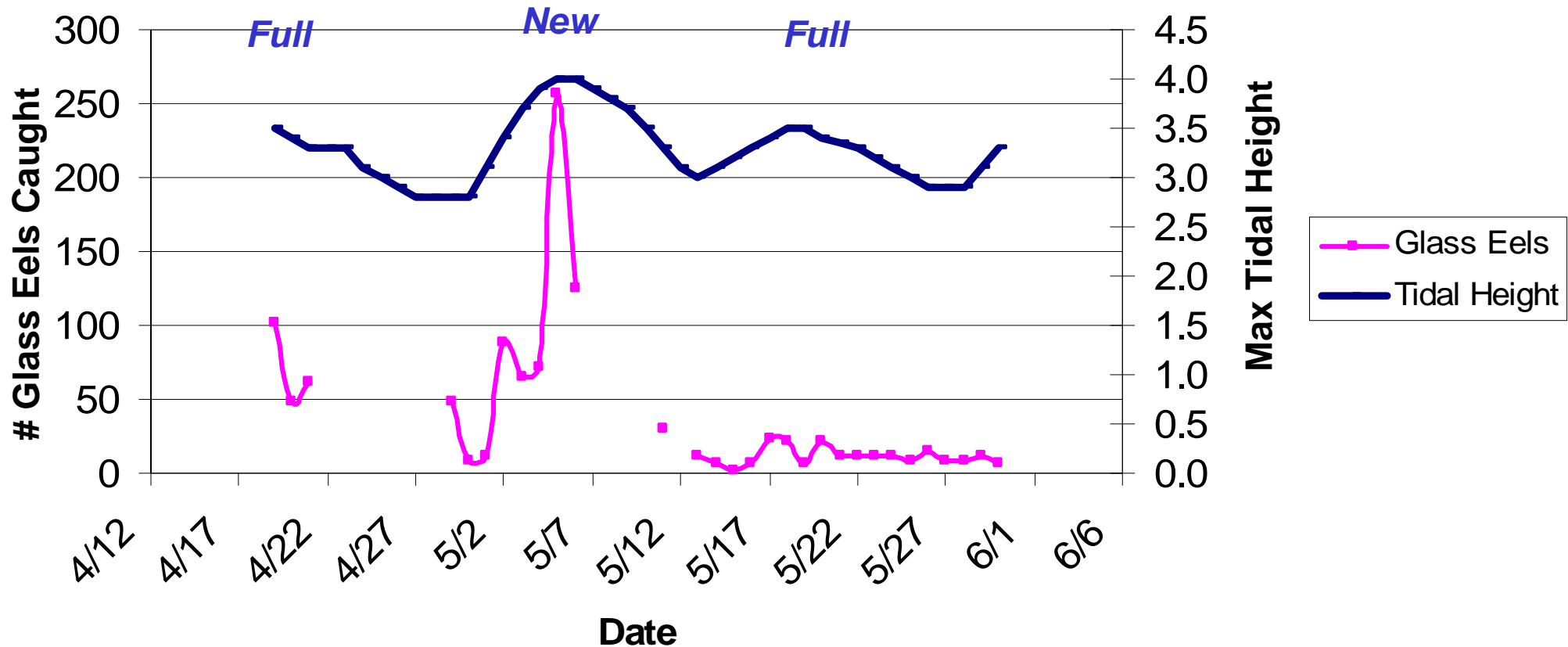
- Westchester County
- Ossining HS research program
- Focus on lunar cycle
- Low tide sampling



Furnace Brook results

- Fewer students focused their sampling on lunar cycle
- Found a huge peak during May's new moon
- 2009 efforts will start earlier to catch early part of migration, and look at eels upstream

Furnace Brook



Added Community Benefits

- Public outreach and presentations
- Involved family and friends
- Place-based research close to home



Extension topics

- Teacher Resource
- Student Research
- Advocating for citizen-science
- Sharing science is critical for students and managers



This project has led to other connections, including science fairs, research on other species, and a focus on eel habitat in tributaries.



Further reading

- Schweid, Richard. *Consider the Eel*. 2002. University of North Carolina Press, Chapel Hill, NC.
- Schmidt, R., Lake, T., and R. Peterson. Hudson River tributaries in the lives of fishes with emphasis on the American eel. 2006. *In American Fisheries Society Symposium* 51:317-330.

Acknowledgments

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- New York State Water Resources Institute of Cornell University
- Catherine O'Reilly (Bard College)
- Encyclopedia of Life, Harvard University



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- Cornell Cooperative Extension of Dutchess County
- Poughkeepsie High School
- Ossining High School
- Dutchess BOCES Environmental Academy
- Roy C. Ketcham High School
- The Randolph School
- Hudson River Sloop Clearwater



Thank You!



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