



Monitoring American eel migration for both conservation and constituency-building in the tidal Hudson River Estuary

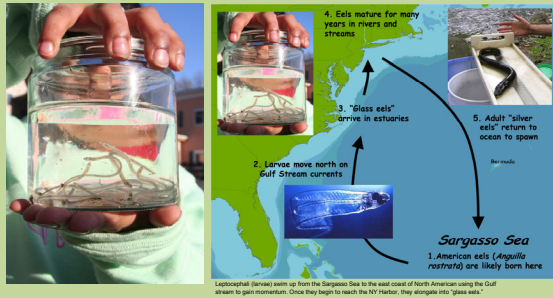
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Introduction

As a catadromous species, the American eel (*Anguilla rostrata*) migrates from the Sargasso Sea to spend the majority of its life in coastal freshwater or estuarine environments. Many eel populations have declined worldwide in recent decades, and in 2014, the IUCN declared the American eel as an endangered species. Diadromous fish managers now face the dual challenges of protecting eel populations while educating decision-makers and the public about this species. To address both conservation and stewardship goals, researchers work with trained volunteers to monitor the migration of juvenile eels throughout the tidal Hudson River estuary.



Leptocephal (larvae) swim up from the Sargasso Sea to the east coast of North America using the Gulf stream to gain momentum. Once they begin to reach the NY Harbor, they along into "glass eels."

Methods: Monitoring

Juvenile "glass eels" are caught with fyke nets and artificial habitat in tidal tributaries from March through May. Glass eels are counted, weighed, and released upstream. Environmental conditions, such as water temperature, and other species are recorded. All sampling sites use consistent methods based on Atlantic States Marine Fisheries Commission protocol.



Methods: Location & Audience

Fyke nets are installed at tributary mouths spanning 132 miles of the tidal Hudson River estuary. Volunteer researchers come from a wide range of demographics and backgrounds, including middle and high school students, college interns, watershed alliances, retirees, and environmental professionals. All necessary equipment is provided on site.



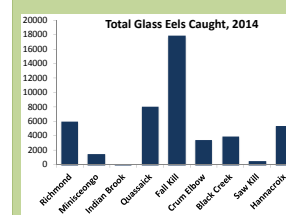
The following factors have allowed for successful community science:

- Direct conservation need
- Wide range of habitats
- Well-defined season
- Frequent data points
- Straightforward protocols
- Diverse volunteers
- Collaboration with multiple partners
- Comprehensive volunteer training

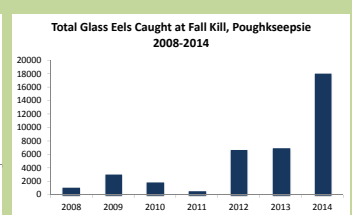


Sampling sites, indicated in yellow, range from Staten Island in the New York Harbor to the Albany region.

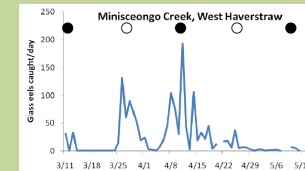
Results: Conservation



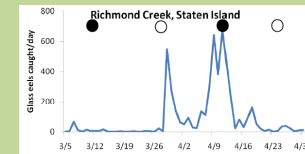
There is large spatial variation in glass eel catches between sites. These results help to prioritize future conservation initiatives.



Since the project began in 2008, volunteers have caught and counted over 250,000 glass eels, releasing most of them above upstream barriers to migration.



In 2013, several sites received the largest numbers of glass eels on only a few nights, usually around a full moon (○) or a new moon (●) when tides were strongest.



It is likely that glass eels ride these high tides upstream into tributaries. On one night, the Hannacroix Creek net in New Baltimore caught over 8,000 glass eels.

Results: Constituency-building

Through partnerships with many diverse community groups, the project successfully communicates the importance of ecological conservation. The use of volunteer researchers has created built-in local support resulting in several thousand hours of donated time towards stewardship goals.

The result is a richer picture of eel migration along the tidal Hudson River, as well as significant public attention to eels through print and online media, classroom programs, and social networking.



Conclusions

By effectively engaging local communities with ecological responsibility, this project provides both a spatial and temporal understanding of American eel migration. The data collected speak to the complexity of factors that may be affecting this endangered species. The project can be replicated in coastal areas from the Caribbean to Canada.

Acknowledgements

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