

NEW YORK STATE

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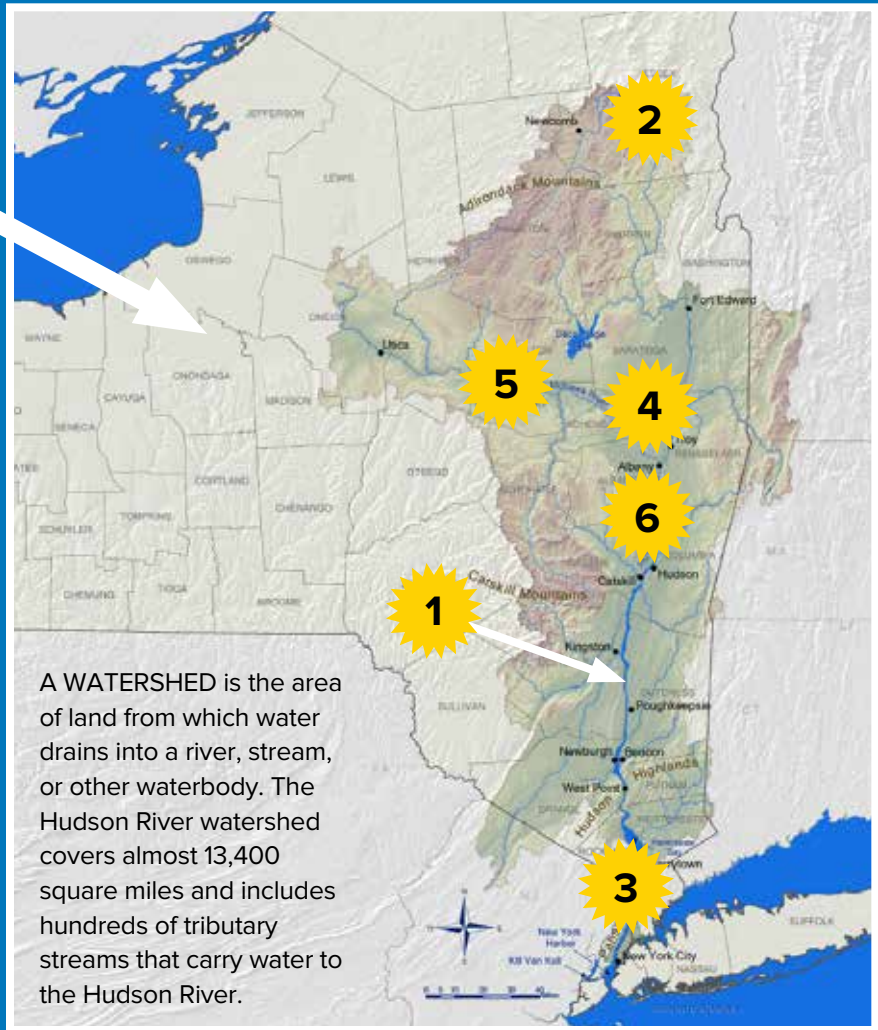


EXPLORING THE HUDSON RIVER

WELCOME TO THE RIVER!



1. Hudson River: The Hudson River extends 315 miles from the High Peaks in the Adirondacks, all the way to New York Harbor and out to the Atlantic Ocean.
2. Headwaters: The highest point of the Hudson River is in the Adirondack Mountains at Lake Tear of the Clouds on Mount Marcy. This peak is also known as Tahawus, a Native word meaning "cloud-splitter."
3. Mouth: The Hudson River empties into the Atlantic Ocean.
4. Federal Dam in Troy: The lower Hudson from Troy to the Battery in New York City is an Estuary.
5. Mohawk River: The largest tributary to the Hudson River. A tributary is a stream or river that flows into a lake or larger river.
6. Albany: The capital of New York State.



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THE HUDSON RIVER ESTUARY

The Hudson is unique among New York's rivers. Did you know the Hudson River is an **ESTUARY**? An **ESTUARY** is a place where fresh water from a river joins with salt water from an ocean. The area of mixing in the Hudson River estuary is called **BRACKISH** water.



High Tide



Low Tide

The Hudson River's water levels rise and fall with the tides all the way to Troy. The Indigenous Stockbridge-Munsee Community's name for the river is "Muhheacannituck" which means "the waters that are never still."



Many tributaries in the watershed are planted with vegetation to improve stream habitat and protect water quality.



The estuary is an important migratory destination for animals such as the endangered shortnose sturgeon.

The Hudson River estuary contains very diverse habitats, from saltwater marshes to freshwater coves; they support a wide range of plants and animal species that call the Hudson their home.



NYSDEC

In New York Harbor, near the Atlantic Ocean, the salty water provides habitats for animals such as the seahorse, oyster, and many other saltwater species.

BIODIVERSITY

in the Hudson River Watershed



Mount Marcy

Troy

Albany



Poughkeepsie

Hudson River

New York City

The Hudson River watershed is rich in biodiversity, with many different plants and animals living in habitats from mountaintops to the bottom of the harbor. Forested hills are home to bears and bobcats, while small woodland pools cradle breeding frogs and salamanders. River residents include fish in both fresh and saltwater, including the giant sturgeon and delicate seahorse. Our towns, farmlands and cities also support many surprising species.

SPOTLIGHT ON AMERICAN EELS

American eels are one of the many animals that can be found in the Hudson River estuary. More than 230 different species of fish have been found in the Hudson, each with a different story to tell. Eels are just one fascinating fish, with a unique life cycle.

Anatomy of an Eel

BODY: Eels have cylindrical snake-like bodies, but they are FISH! They have gills, fins, and scales.

GILLS: Eels absorb oxygen through their gills and skin.

NOSE: Eels have a great sense of smell that helps them locate prey.

SCALES: You can't see them, but eels do have scales! They're just tiny and embedded in their skin.

FINS: Eels have one long continuous fin that helps them swim. They also have small pectoral fins by their gills.

DID YOU KNOW?

Eels have a coat of slimy mucus on their body, which helps protect them from disease.

American Eel Life Cycle



eggs/leptocephali

American eels MIGRATE; they hatch in the Atlantic Ocean but spend most of their lives in freshwater rivers and streams before heading back to the ocean to spawn (lay eggs).



glass eels



elvers



adult silver eel



yellow eel

Community Science

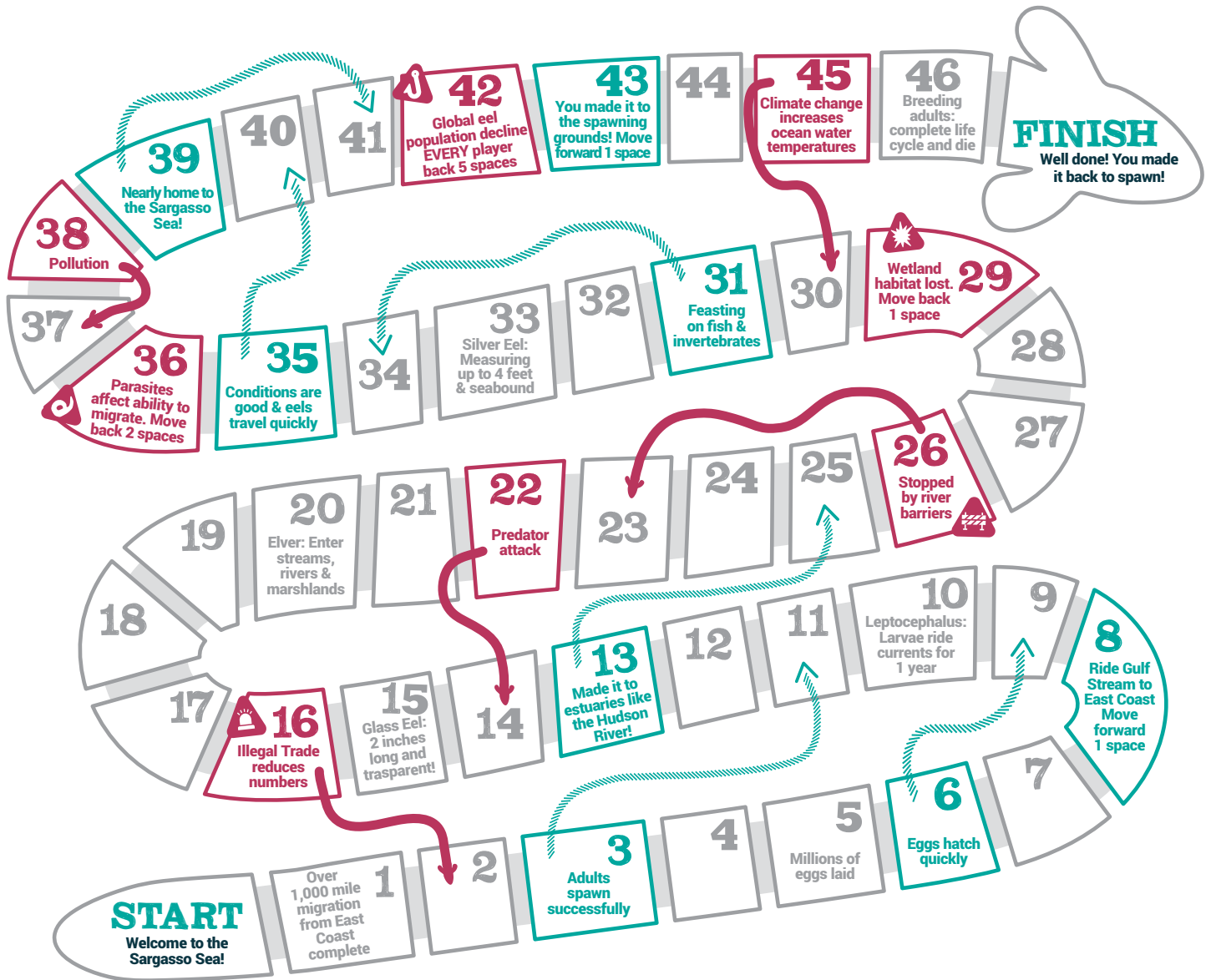
Community members have been working with scientists for years to study eels in Hudson River streams.



EELS AND LADDERS

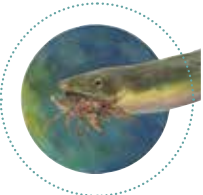
CAN YOUR EEL MIGRATE TO SAFETY FIRST?

You will need a dice, counters, 2+ players



CLIMB UP THE LADDERS AND SLIDE DOWN THE EELS

Eel ladders at the base of barriers to their migration (such as dams and poorly designed culverts) can help eels get to important upstream habitats



Cut out player pieces to move around the board.



Adapted From
FORGOTTEN FISH PROJECT
for American Eel

Outside Page!

Below are some words from this issue.
See if you can unscramble them.

SETRAYU

HBTATAI

SDITIOBYVIER

IKBRCSHA

DKICSORDNAA

INTTCLAA ENCOA

ALTDI

SUNHDO VERRI

RTHAEWDSE

Go outside and observe your schoolyard or neighborhood.

Can you find...(check the boxes)

- ☐ ANIMAL'S HOME
- ☐ INSECT
- ☐ TWO DIFFERENT KINDS OF LEAVES
- ☐ WATER
- ☐ SOMETHING HARD
- ☐ SOMETHING SOFT
- ☐ SEED
- ☐ EVERGREEN TREE
- ☐ CLOUD
- ☐ A BIRD SONG



Find a quiet place to sit and observe your surroundings. What do you see? What do you smell? What do you hear?
Write or sketch here.



People of all ages can engage with the river through the Hudson River Estuary Program, and the Hudson River National Estuarine Research Reserve. Find out more by visiting <https://www.dec.ny.gov/lands/4920.html>.



Word Scramble Answers: Estuary, Habitat, Biodiversity, Brackish, Adirondacks, Atlantic Ocean, Tidal, Hudson River, Watershed

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Kathy Hochul, Governor
Basil Seggos, Commissioner
Leo Rosales, Deputy Commissioner for Public Affairs
DEC Office of Communication Services
Harold Evans, Director
Jeremy Taylor, Editor
Jennifer Peyser, Designer



Department of
Environmental
Conservation

Biodiversity poster – Ram Papish
Heron with Eel – Ram Papish
Eel with Crayfish – Ram Papish
Leptocephali – Ram Papish
Eelie the Eel – Bella Dalton-Fenkl

Photos: Chris Bowser, unless indicated otherwise.

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Conservationist for Kids

Supplement for Classroom Teachers – Exploring the Hudson River! Spring 2022

Lesson Plans

Explore the Hudson River - Students watch a video about the Hudson then read a short article, interpret and label a New York State relief map, and listen to a story about the River. Follow up with live video footage from three geographic areas of the Hudson River estuary.

- Video: *Source to Sea*: <https://tinyurl.com/2c2j2a4b>
- From the Mountains to the Sea (PDF): <https://tinyurl.com/3bfnaku6>
- Rivers Run Through It: (mapping) Student Worksheet (PDF) <https://tinyurl.com/2p8tm4p2> and Teacher Information (PDF) <https://tinyurl.com/yc2df7nx>
- River Storytime: Video recording of the book *River* <https://tinyurl.com/3wfcpr34>
- Exploring New York's Rivers: *Conservationist for Kids* (PDF) <https://tinyurl.com/mr2zadsm>
- Video: *Day in the Life of the Hudson and Harbor* <https://tinyurl.com/bdfkrmvs> Student Worksheet (PDF): <https://tinyurl.com/mpw44pvx> (watch live footage from three geographic areas of the Hudson River estuary and use the accompanying worksheets to explore the Hudson)

Mapping the Migration of American Eels - Students follow the life cycle of the American eel by mapping their migration routes. Using graphs and videos, students pose questions about eels and their reliance on many aquatic habitats.

- Video: *Eli the Eel, A Mysterious Migration* <https://tinyurl.com/w79fnd5b>
- Video: *American Eel* <https://tinyurl.com/32jxkcep>
- Mapping the Migration of American Eels: Student Activity (PDF) <https://tinyurl.com/ebtr37bz> Student Worksheet (PDF) <https://tinyurl.com/bdrxx68m> and Map (PDF) <https://tinyurl.com/mvk93wuh>
- Migration Story Time: Video recording of the book *Bird, Butterfly, Eel* <https://tinyurl.com/2p84r58p>
- Migration of the American Eel Presentation (PPT) <https://tinyurl.com/bdd79nwu> and Student Worksheet (PDF) <https://tinyurl.com/2p8mw8wt>
- The Eel's Incredible Journey: Student Reading (PDF) <https://tinyurl.com/37cuj9bd> and Teacher Section (PDF) <https://tinyurl.com/bdcvn22d>
- Create an Eel Habitat Diorama (PDF) <https://tinyurl.com/ycku38tz>
- Eel Life Cycle Poster (PDF) <https://tinyurl.com/2p82xu7k>



Department of
Environmental
Conservation

What is a Watershed? - Students watch a video about what a watershed is, create their own watershed model, and use maps to become familiar with local waterways and illustrate how they are connected to their local environment.

- Video: *What is a Watershed?* <https://tinyurl.com/4b7zvcnt>
- Hudson River Watershed Map (PDF) <https://tinyurl.com/ysme6ftm>
- Build a Watershed (PDF) <https://tinyurl.com/zfk9vdsf>
- Watershed Address Lesson (PDF) <https://tinyurl.com/3n8cr2wc> and Presentation (PDF) <https://tinyurl.com/3rwwmeeaa>
- River Runner: Online Interactive <https://tinyurl.com/55pwux8m>

Children's books

- *Bird, Butterfly, Eel* by James Prosek
- *Ellie and Ollie Eel, a Tale of a Fantastic Voyage* by Susan Tate
- *Hudson River: An Adventure From the Mountains to the Sea* by Peter Lourie
- *Over in a River flowing out to the Sea* by Mairanne Berkes
- *Riparia's River* by Michael J. Caduto
- *River* by Elisha Cooper
- *River of Dreams: The story of the Hudson* by Hudson Talbott
- *River Story* by Meredith Hooper
- *Song of the River* by Joy Cowley & Kimberly Andrews
- *Think of an Eel* by Karen Wallace
- *Voyage of the Half Moon* by Tracey West
- *Where the River Begins* by Thomas Lochner

Online Resources

- Hudson River Estuary Program Lesson Plans <https://tinyurl.com/4jx7yhbvw>
- The Hudson River Eel Project <https://www.dec.ny.gov/lands/72898.html>
- DEC Education <https://www.dec.ny.gov/26.html>
- A Day in the Life of the Hudson and Harbor <https://tinyurl.com/yeyzdp58>
- All About American Eels <https://tinyurl.com/ycynhamp>
- Billion Oyster Project <https://www.billionoysterproject.org/>
- Brooklyn Bridge Park Education <https://www.brooklynbridgepark.org/education/>
- Hudson River Virtual River Series <https://tinyurl.com/2p9766ca>
- Hudson River Park Environmental Education <https://tinyurl.com/2p8wr5hp>
- Hudson River Sloop Clearwater <https://www.clearwater.org/>
- Hudson River Foundation Educational Resources Guide <https://tinyurl.com/2p868wpk>
- LDEO Hudson River Educational Resources <https://tinyurl.com/yc8mcwaw>
- Orange County Water Authority Education <https://tinyurl.com/msjpakvr>
- Sarah Lawrence College Center For the Urban River at Beczak Educational Resources <https://tinyurl.com/4w62jw3r>
- Video: *The Mystery of Eels: The Eel Project* <https://tinyurl.com/2p838p9h>

Please note: most links have been shortened using TinyUrl.com; a clickable version is available on the Conservationist for Kids webpage at <https://www.dec.ny.gov/education/100637.html>

Conservationist for Kids and an accompanying teacher supplement are distributed free of charge to 4th grade classes throughout New York State three times per school year (fall, winter, and spring). If you would like to be added to or removed from the distribution list, need to update information, or if you have questions or comments, please e-mail the editor at KidsConservationist@dec.ny.gov. Limited quantities of some back issues are also available on request. The full archives can be found online at <https://www.dec.ny.gov/education/100637.html>