The Eel Project: Fish conservation through citizen science

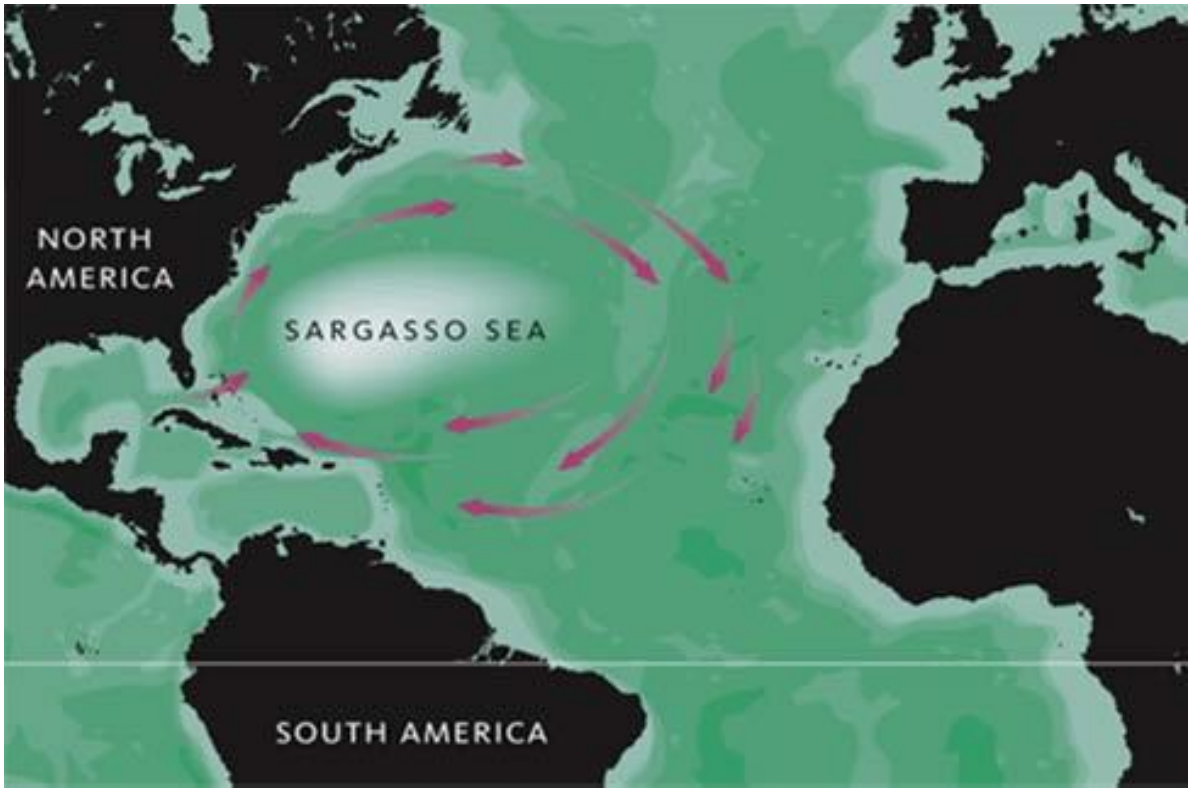
NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE OF OPPORTUNITY | Hudson River Estuary Program

A Program of the New York State Department of Environmental Conservation


American eel
Anguilla rostrata
Migratory
"Freshwater eels"


Mmm…tasty!


NORTH
AMERICA
SARGASSO SEA
SOUTH AMERICA


4. Eels mature for many years in rivers and streams
3. "Glass eels" arrive in estuaries
5. Adult "silver eels" return to ocean to spawn
Bermuda
2. Larvae move north on Gulf Stream currents
Sargasso Sea
1. American eels (Anguilla rostrata) are likely born here

4. Eels mature for many years in rivers and streams

Eel numbers are going down ☹

eels"
uaries

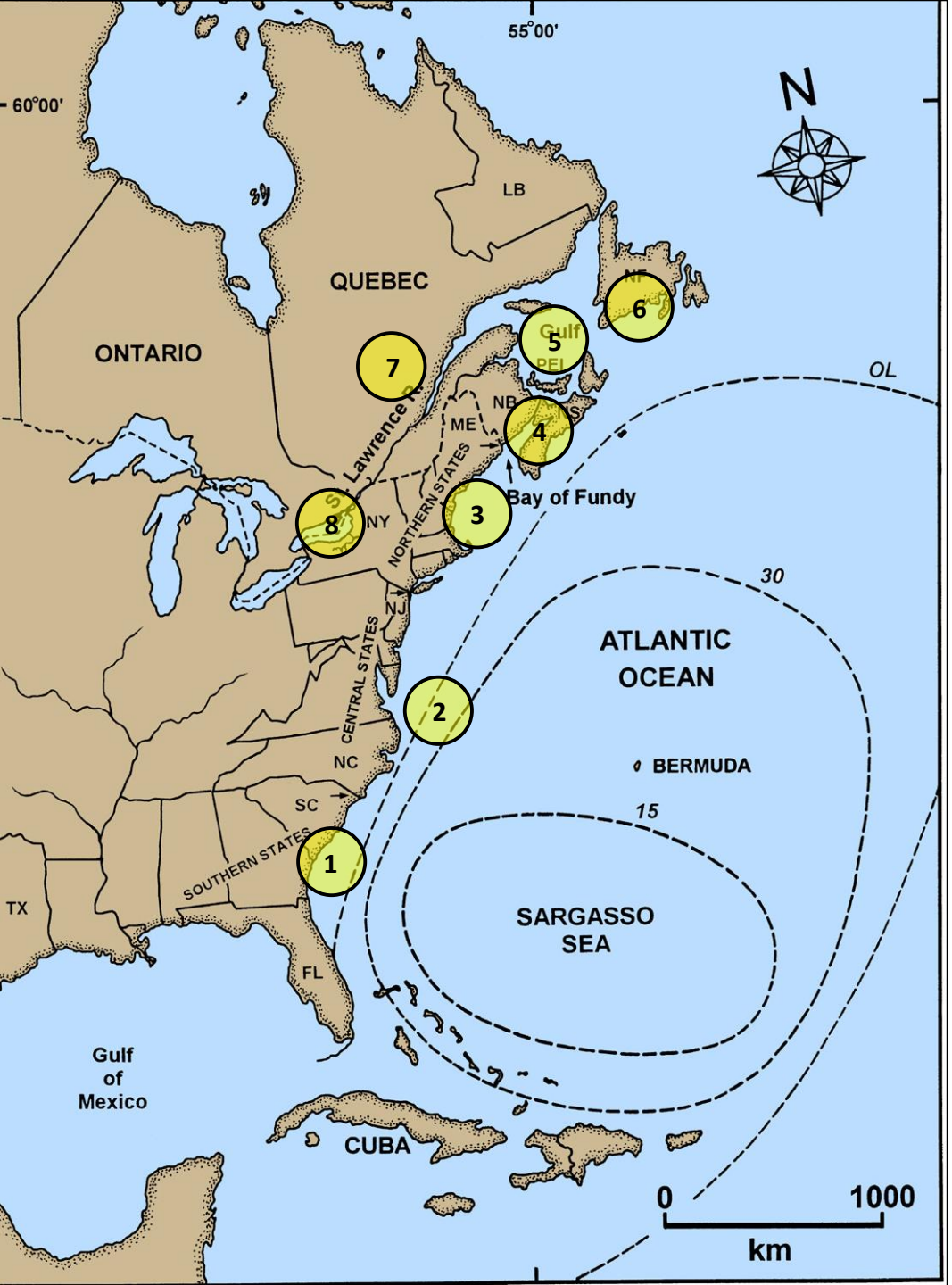
5. Adult "silver eels" return to ocean to spawn

Bermuda

2. Larvae move north on Gulf Stream currents

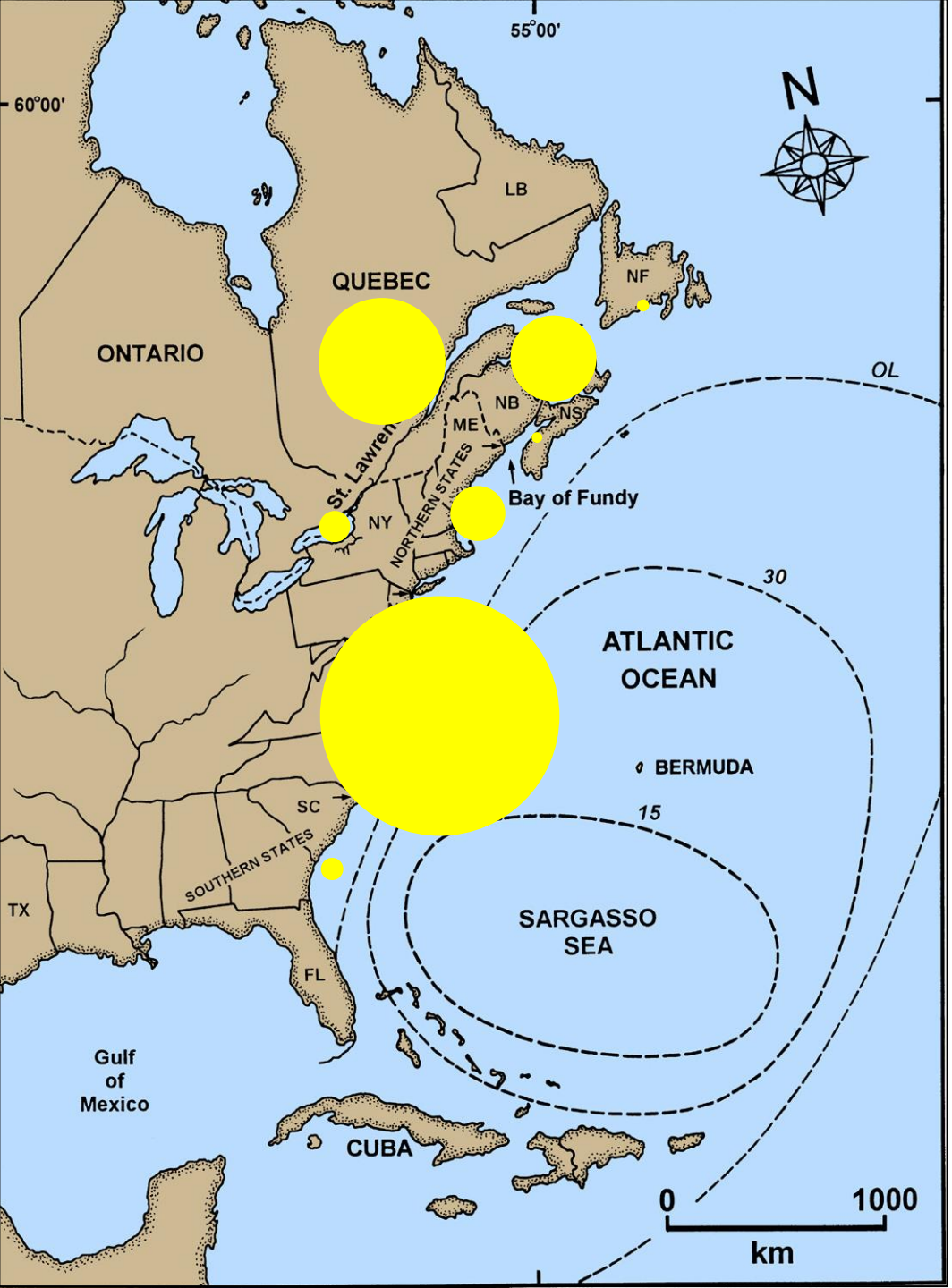
Sarg

1. American eels (*Anguilla rostrata*) are likely born here



American Eel Harvest Regions

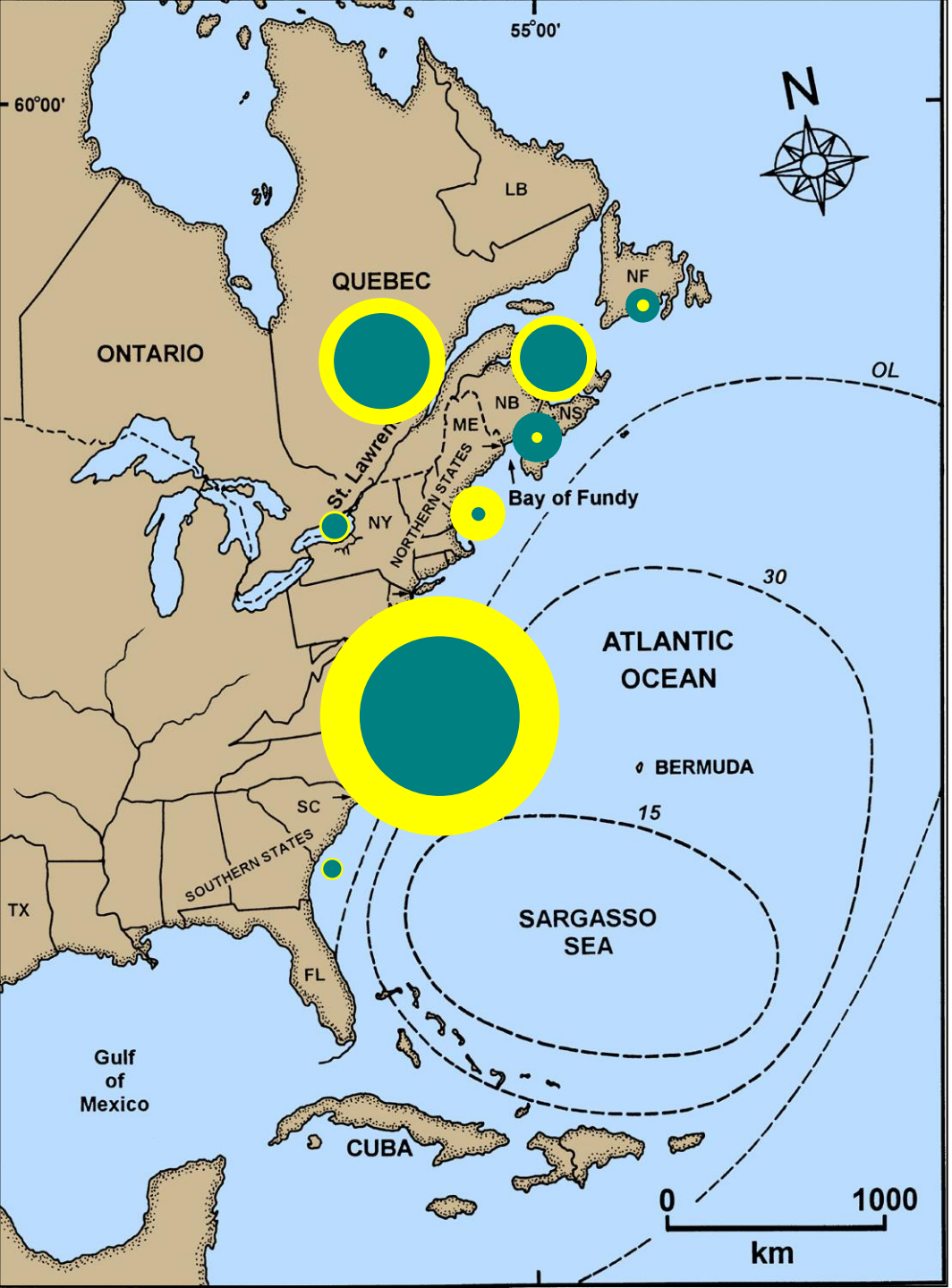
1. Southern States
2. Central States
3. Northern States
4. Scotia–Fundy Region
5. Gulf Region
6. Newfoundland Region
7. Lower St. Lawrence River
8. Upper St. Lawrence River and Lake Ontario



Mean Harvest (x 1000 kg)

1980-1984

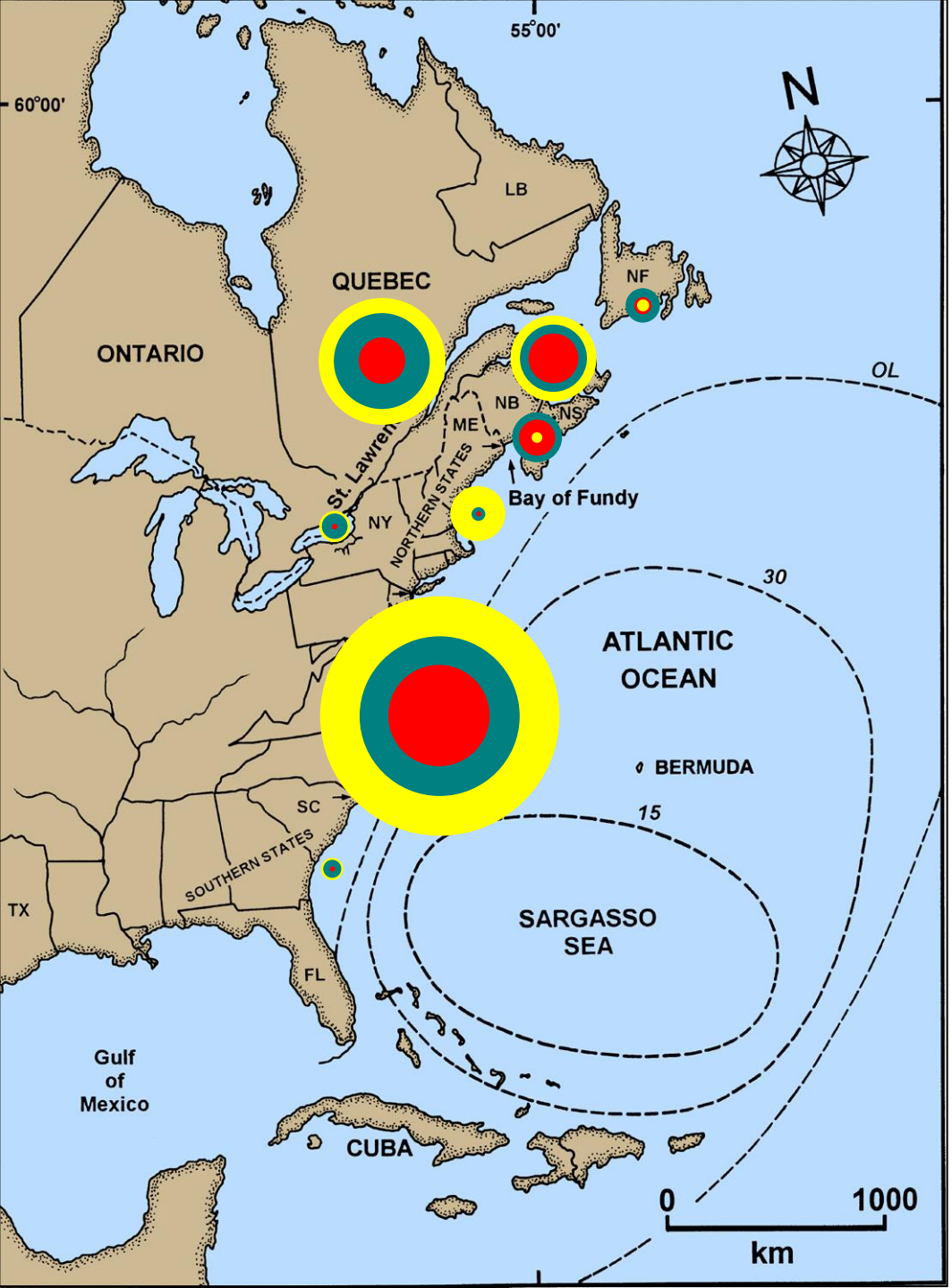
Southern States	79.0
Central States	876.7
Northern States	202.3
Newfoundland Region	40.8
Gulf Region	318.2
Scotia–Fundy Region	31.8
Lower St. Lawrence River	461.9
Upper St. Lawrence River and Lake Ontario	117.5
Total	2,128.2



Mean Harvest (x 1000 kg)

1990-1994

Southern States	70.4
Central States	589.9
Northern States	51.4
Newfoundland Region	119.6
Gulf Region	244.8
Scotia–Fundy Region	153.8
Lower St. Lawrence River	347.7
Upper St. Lawrence River and Lake Ontario	109.2
Total	1,686.8



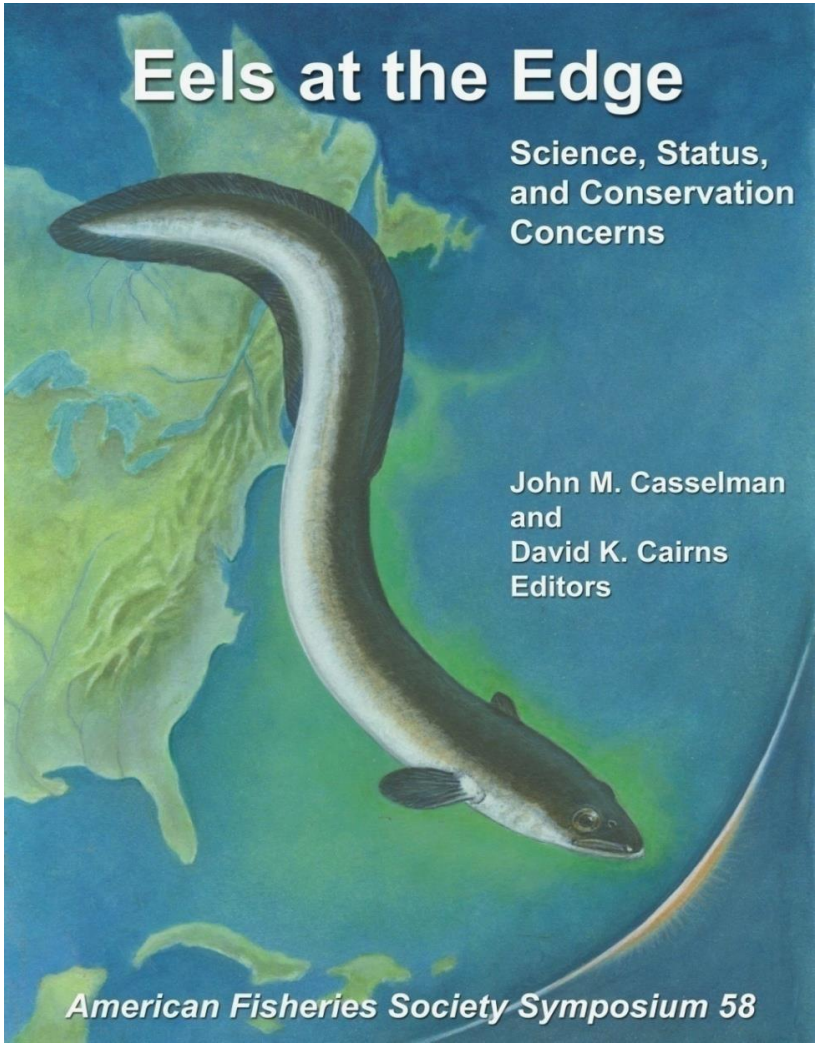
Mean Harvest (x 1000 kg)

2000-2004

Southern States	4.2
Central States	369.9
Northern States	11.0
Newfoundland Region	56.0
Gulf Region	180.0
Scotia–Fundy Region	111.8
Lower St. Lawrence River	168.4
Upper St. Lawrence River and Lake Ontario	20.8
Total	922.1

Possible Factors Causing Recent Eel Declines

Historic order of impact:

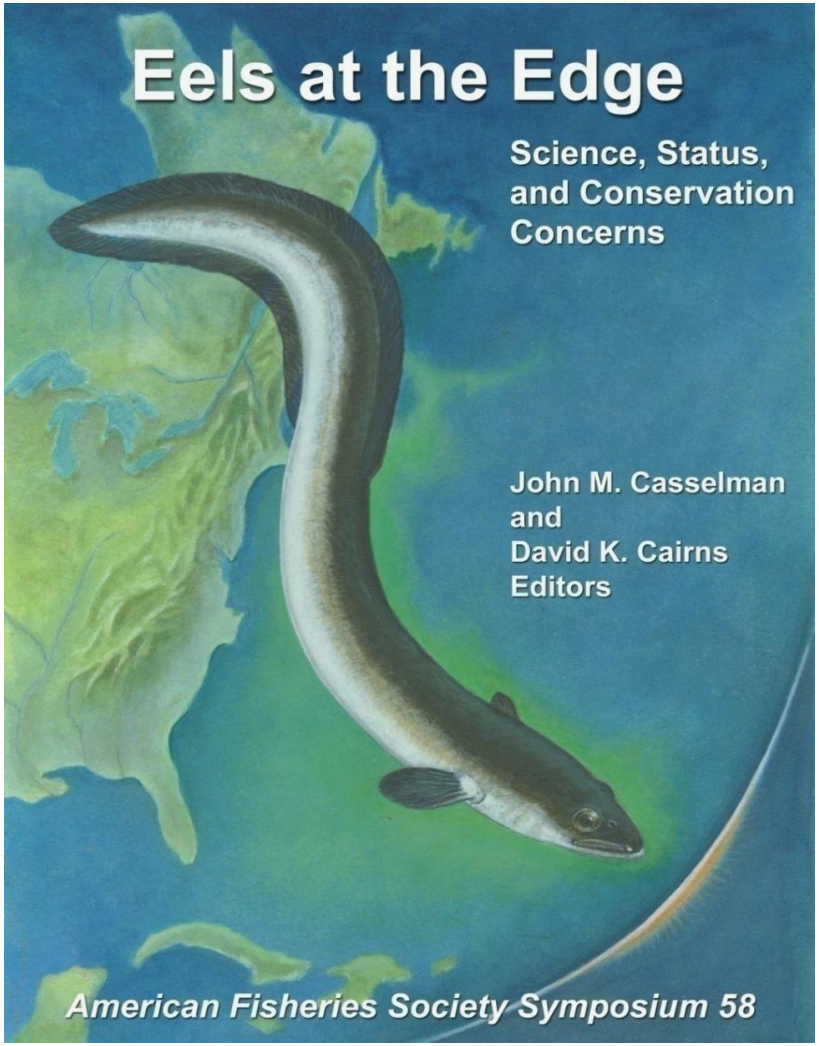


(adapted from John Casselman, Queens College)

Possible Factors Causing Recent Eel Declines

Historic order of impact:

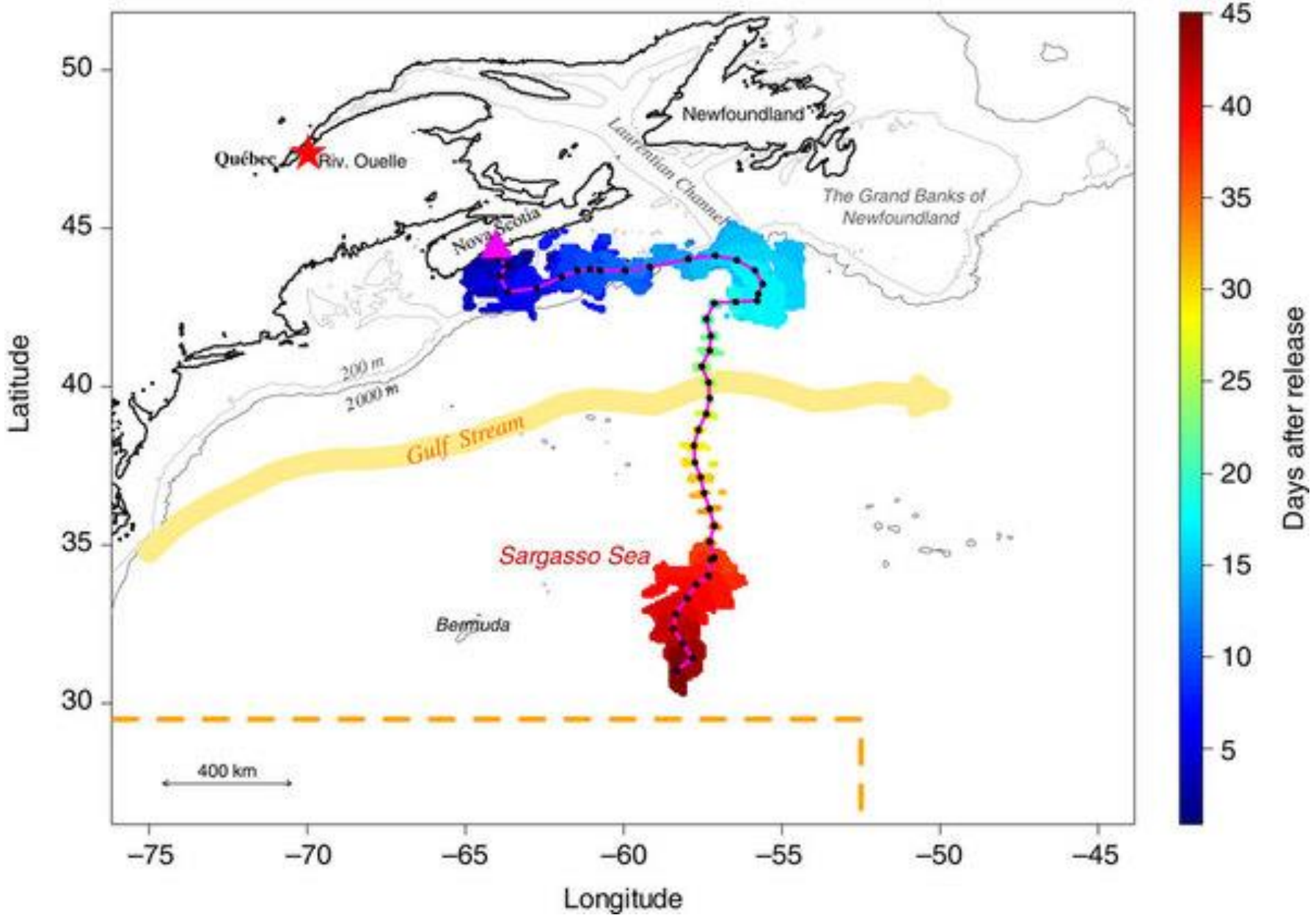
1. **Habitat loss**
2. **Dams and barriers**
3. **Water pollution**
4. **Overfishing**
5. **Hydroelectric turbines**
6. **Climate change**
7. **Food web changes**
8. **Parasites**



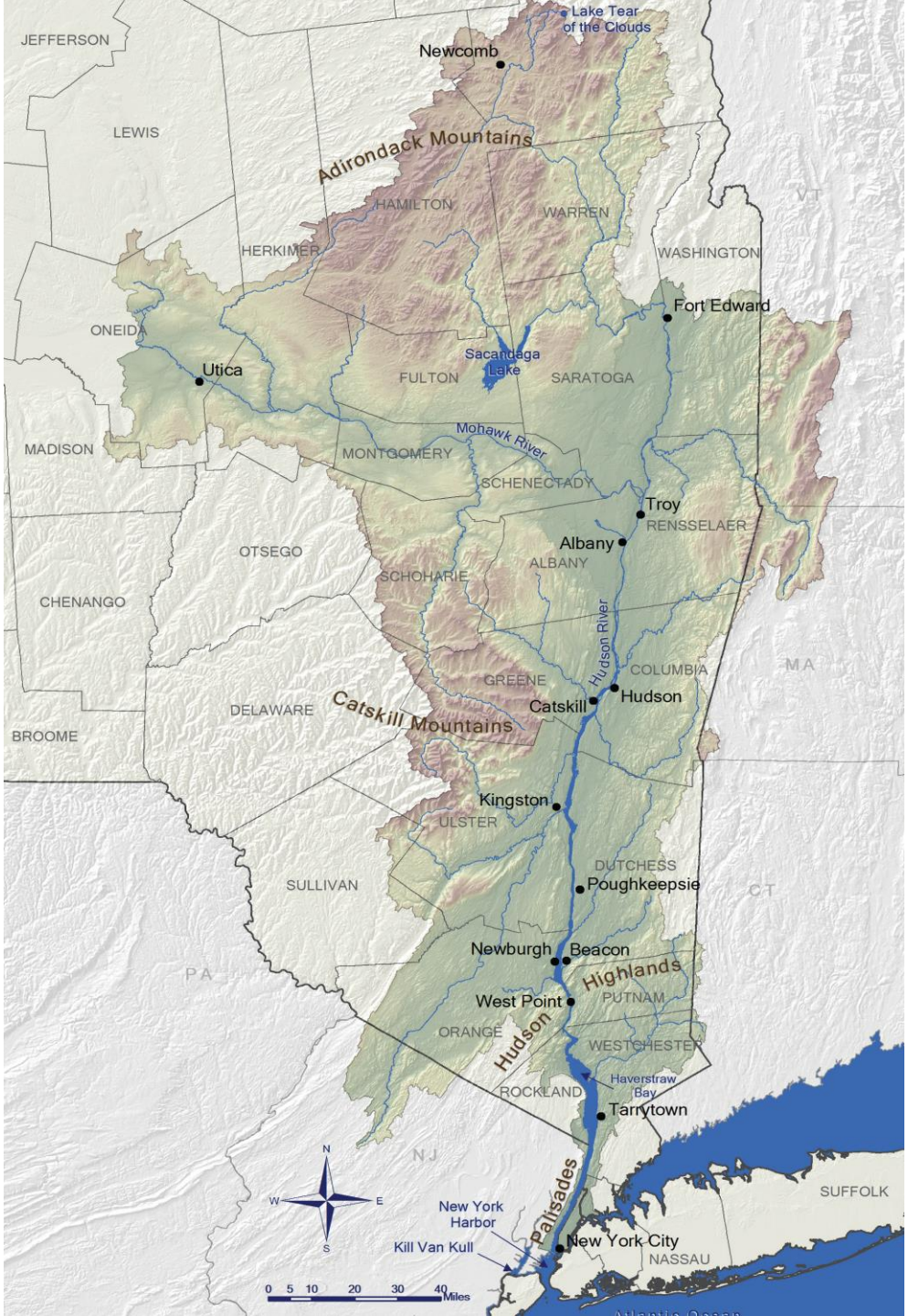
(adapted from John Casselman, Queens College)

Mélanie Béguer-Pon et al. October, 2015

- 3 year study
- 38 eels tagged with PSATs
- Released offshore Nova Scotia



Pon et al. 2015


Lake Tear of the Clouds
Newcomb
JEFFERSON
LEWIS
Adirondack Mountains
HAMILTON
WARREN
VT
HERKIMER
WASHINGTON
Fort Edward
ONEIDA
Sacandaga Lake
Utica
FULTON
SARATOGA
Mohawk River
MADISON
MONTGOMERY
SCHENECTADY
Troy
RENSSELAER
Albany
OTSEGO
ALBANY
SCHOHARIE
CHENANGO
Hudson River
COLUMBIA
MA
GREENE
Hudson
Catskill
DELAWARE
Catskill Mountains
BROOME
Kingston
ULSTER
DUTCHESS
SULLIVAN
Poughkeepsie
CT
Newburgh
Beacon
Highlands
PA
West Point
PUTNAM
ORANGE
Hudson
WESTCHESTER
Haverstraw Bay
ROCKLAND
Tarrytown
NJ
N
W
E
S
Palisades
SUFFOLK
New York Harbor
New York City
Kill Van Kull
NASSAU
0 5 10 20 30 40 Miles

Netting Tiny Eels and Big Profits

Craig Dilger for The New York Times

Suzanne Smith, left, and John Taylor on Thursday gathered the elvers that they caught in their nets overnight in Pemaquid, Me.

By ABBY GOODNOUGH
Published: March 29, 2012 | 36 Comments

The next two months will bring sleepless nights and high anxiety — and quite possibly an extraordinary windfall — for a small universe of people in Maine. They are the lucky few with licenses to catch elvers — young, tiny eels that look like cellophane noodles and by some accounts are fetching up to $2,200 per pound this spring.

What *is* the eel project?

Fyke nets are set in tributaries of the Hudson. Each day in the spring volunteers and students check the nets, count the eels, record the data, and release the eels above the next barrier to migration.

Eel and Herring

Date:_____ Time of S

Names of Samplers:_____

ENVIRONMENTAL DATA

Air Temp:_____°F _____°

Stream Flow Direction (circle one)

Tide Period in Hudson River (refer

Cloud Cover (check one)

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

GLASS EELS

Glass eels refers only to those sma
yellow eels that have been in the

Number of glass eels caught:___

Other animals caught in the net, i

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:

Contacts:Chris Bowser (NYSDEC Estuary Program):cel (845)264-5041; Lisa DiMarzo (Mid Hudson Children's Museum):(845)471-0589
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION HUDSON RIVER ESTUARY PROGRAM

Is it a Glass Eel or an Elver?

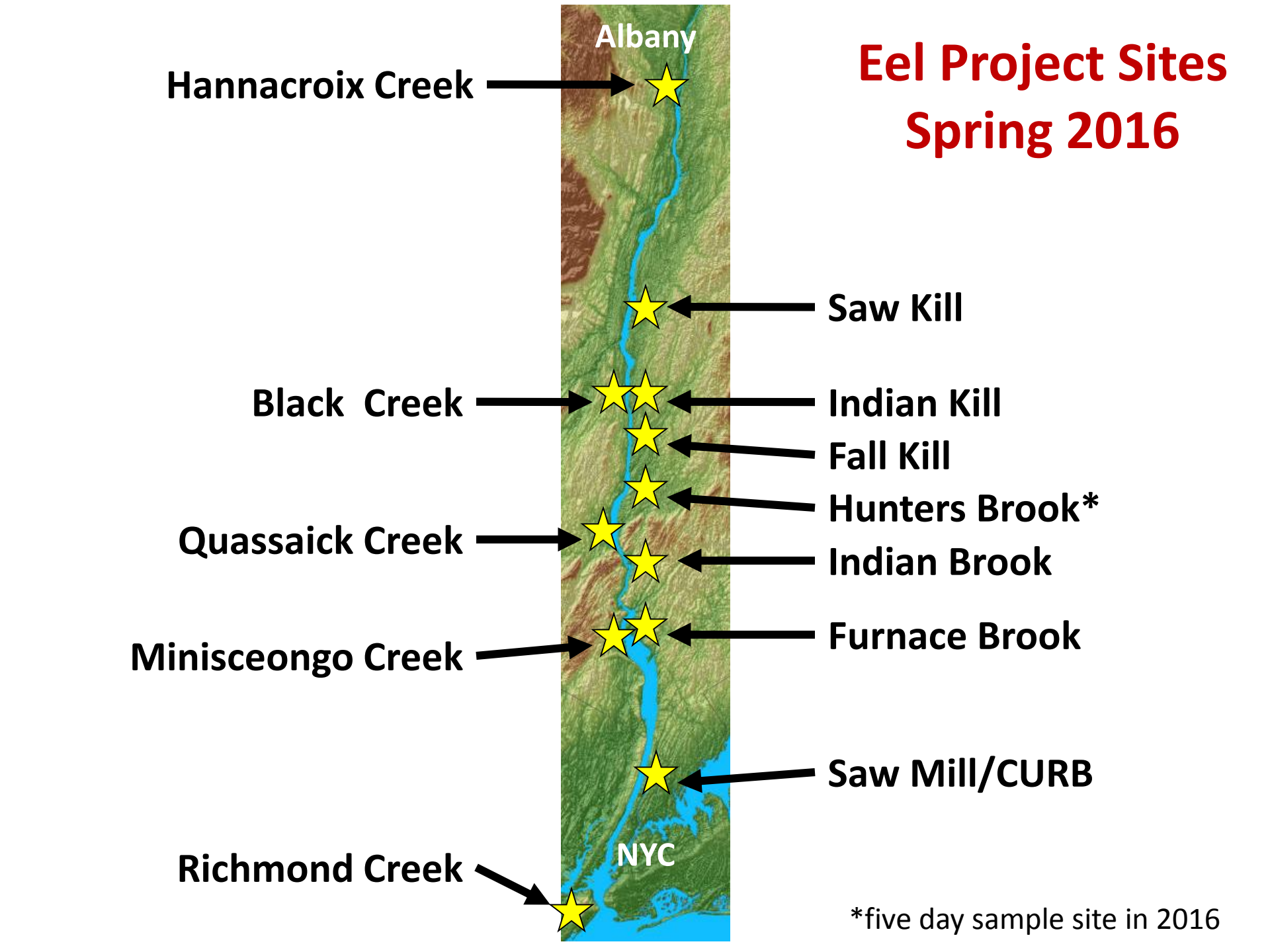
The fyke net can catch both **glass eels**: eels that are just entering the Hudson, and **elvers**: eels that have been in the stream for a year or two

"Glass eels" and "elvers" are names for different ages of the **same** animal, the **American eel**

GLASS EELS	ELVERS
•Glass eels are about two inches long. •Early in the season, they can be almost entirely see-through. Later into the season, they get darker. •Head is a little wider than their body	•Elvers are larger (3-6 inches long). •Elvers are a dark green or brown, with a lighter colored belly •Head is same width as their body

These photos show how **glass eels** get darker through the spring

Early in season (April) — Mid-late season (late April, early May) — End of season (May)

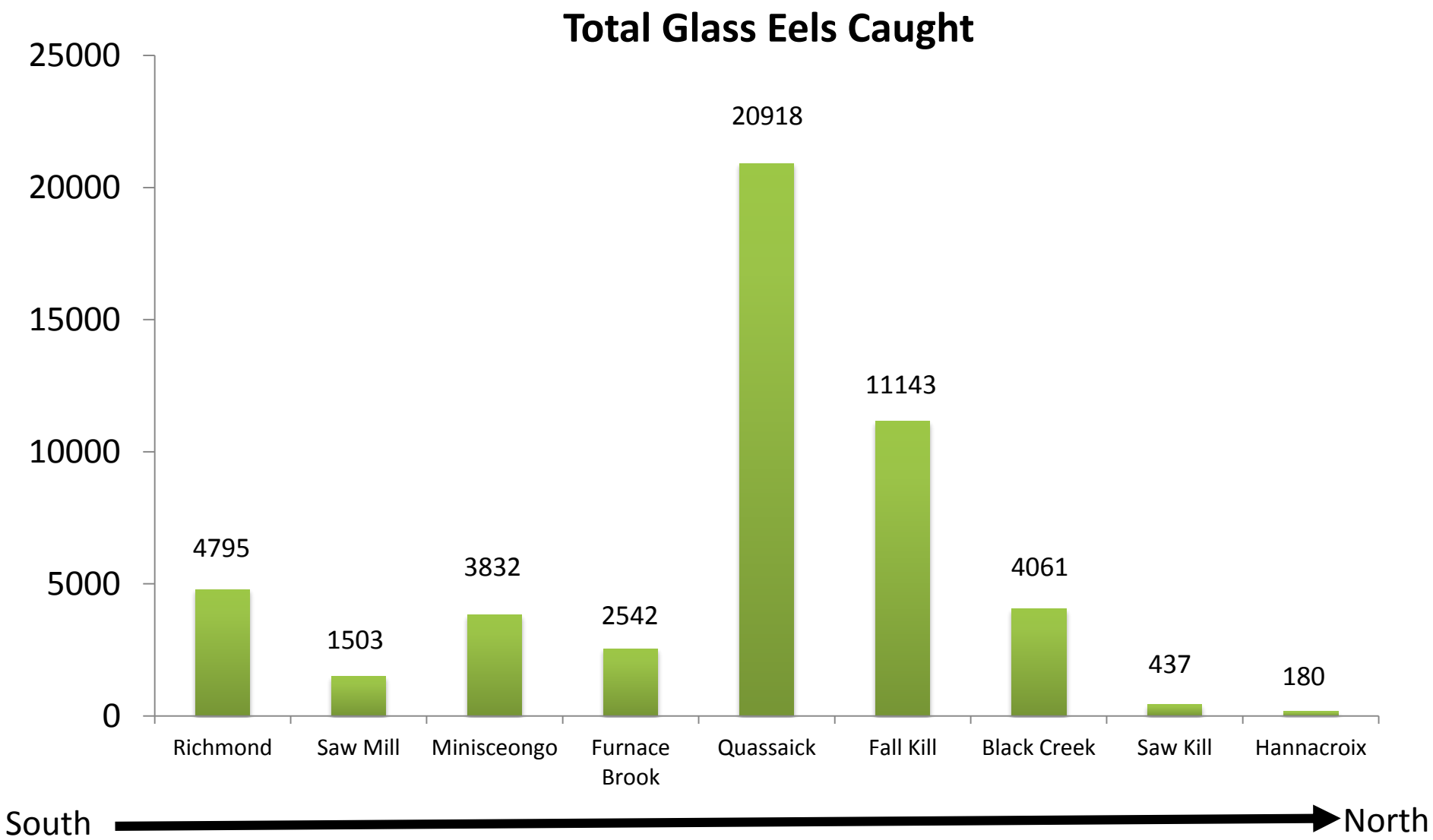


Eel Project Sites Spring 2016

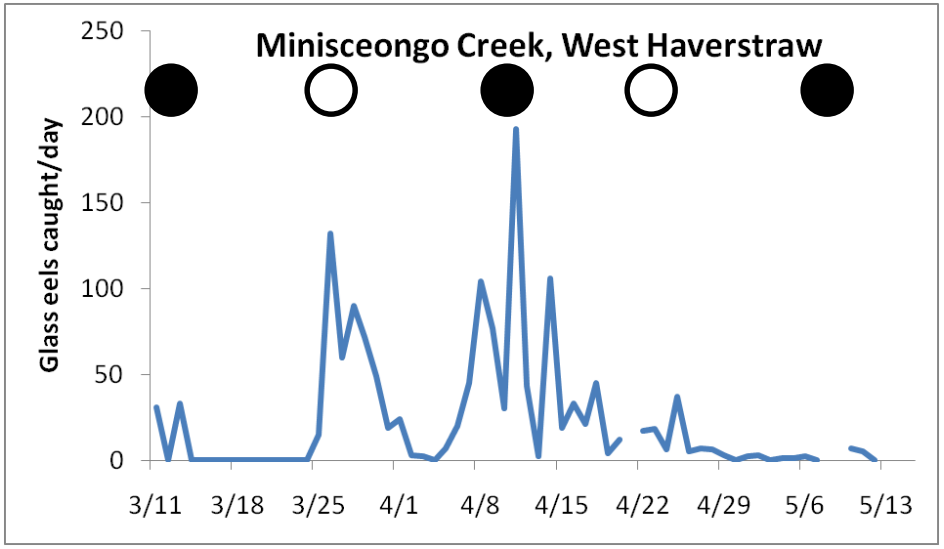
*five day sample site in 2016

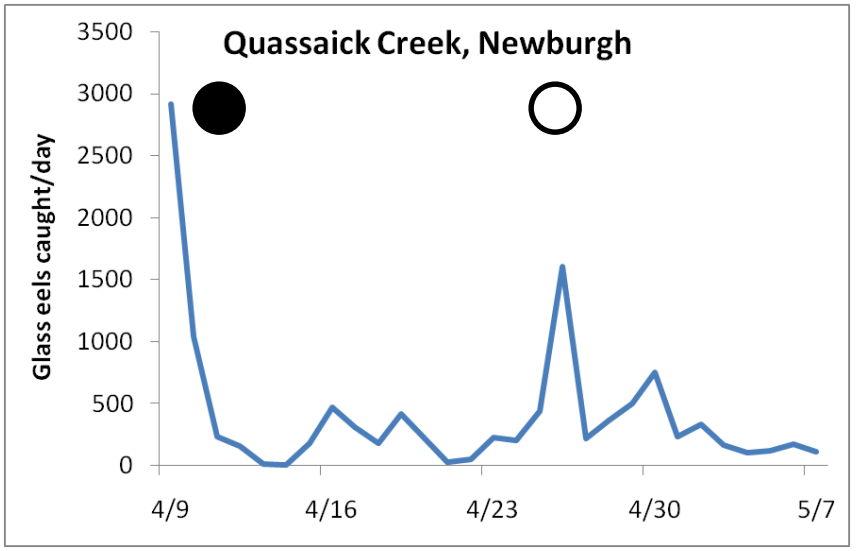
450,000+ eels caught & released above barriers since 2008
500 volunteers at 12 sites in 2015

Totals for 2015: over 49,000



Date stories:
Moon Correlations in 2013

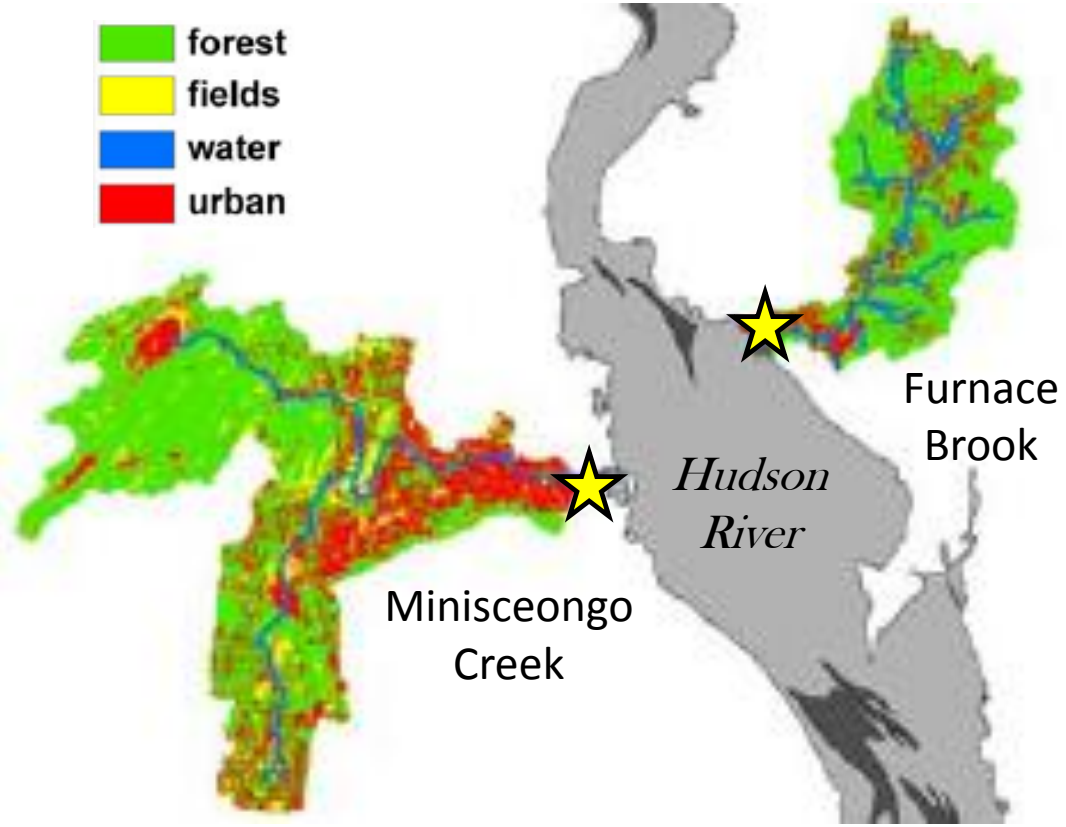


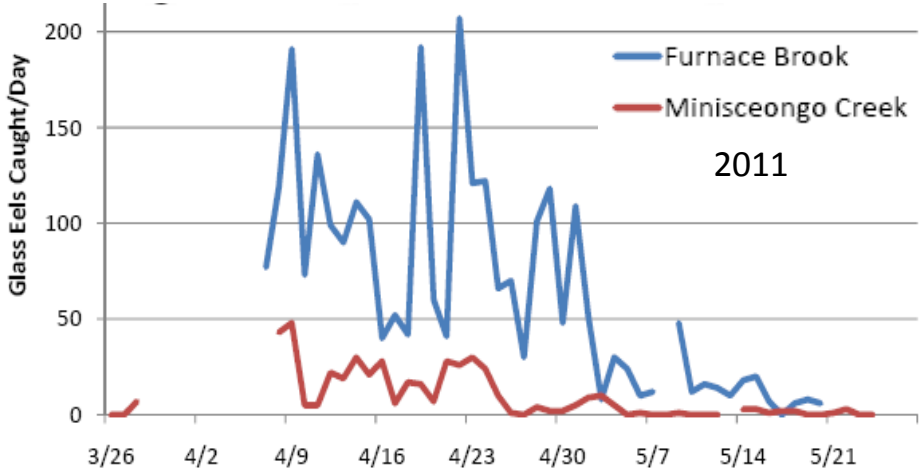


New Moon: ● Full Moon: ○

Why does the moon have this effect?

Land use in the surrounding watershed





How does land use impact eel counts here?


Working with students and volunteers!

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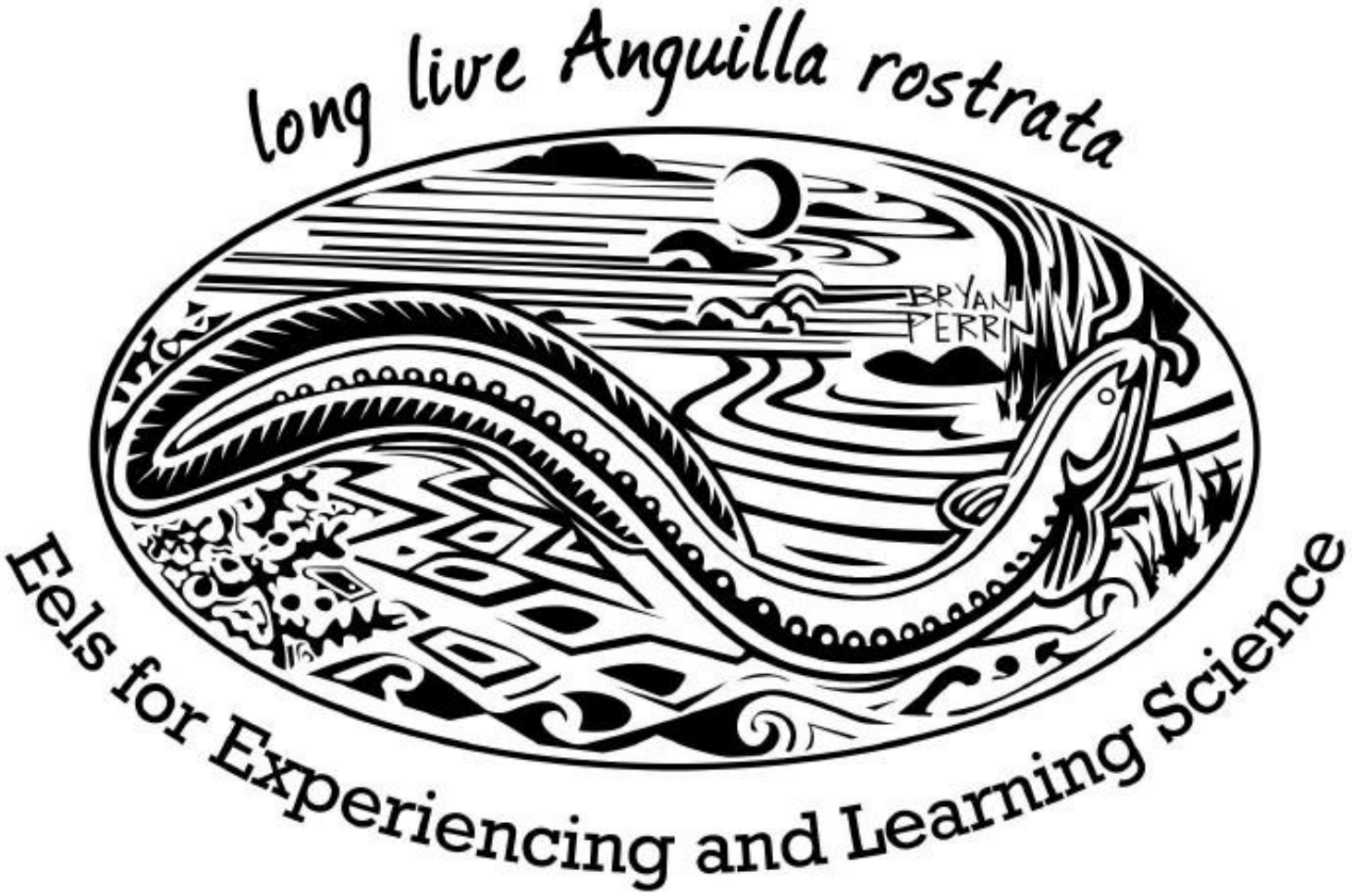

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