



OYSTERS IN NEW YORK HARBOR

Agata Poniatowski

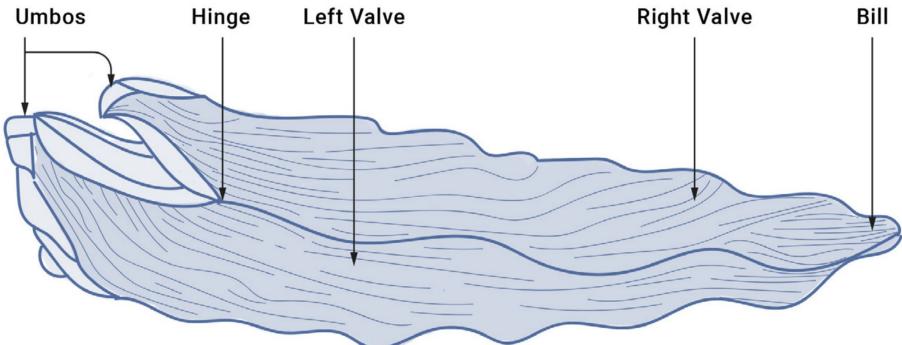
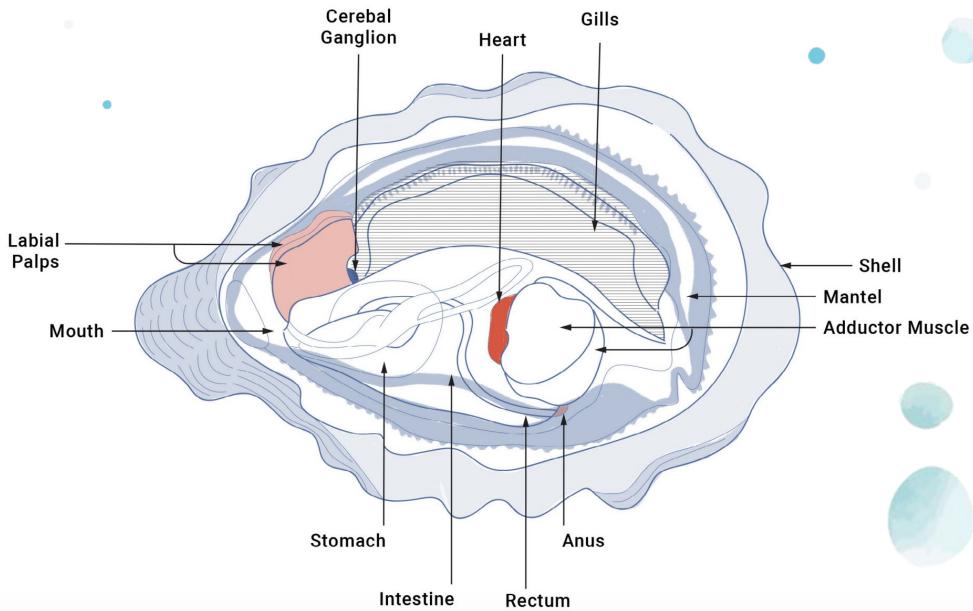




WHAT IS AN OYSTER?



OYSTERS



- Bivalve Mollusk
 - pear or oval shaped shells
- Sessile Organism
- "Filter" Feeders

Filtering the Water





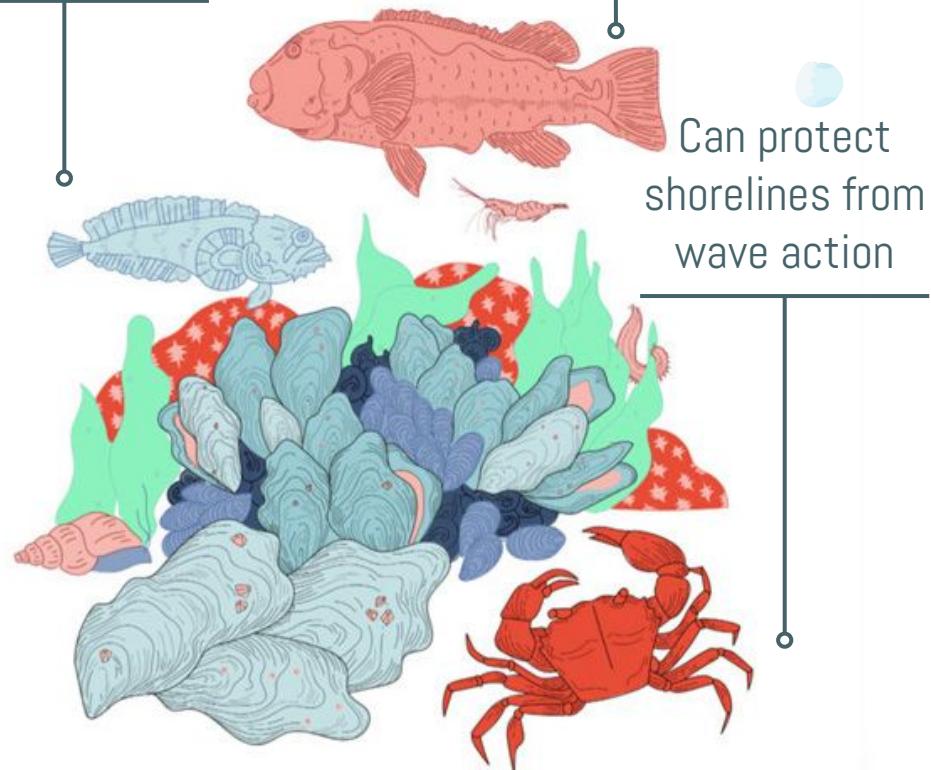
WHY ARE OYSTERS IMPORTANT?



3 ESSENTIAL FUNCTIONS OF OYSTERS

Can clear the water and move nitrogen out of the water

Increases biodiversity



Can protect shorelines from wave action





LIFE CYCLE OF A BOP OYSTER



Larvae



Shell pile



Bagged Shell



Spat



Oyster Structure



Adult Oyster Cluster

Watch Oyster Larvae Swim!

Naked Eye



Microscope





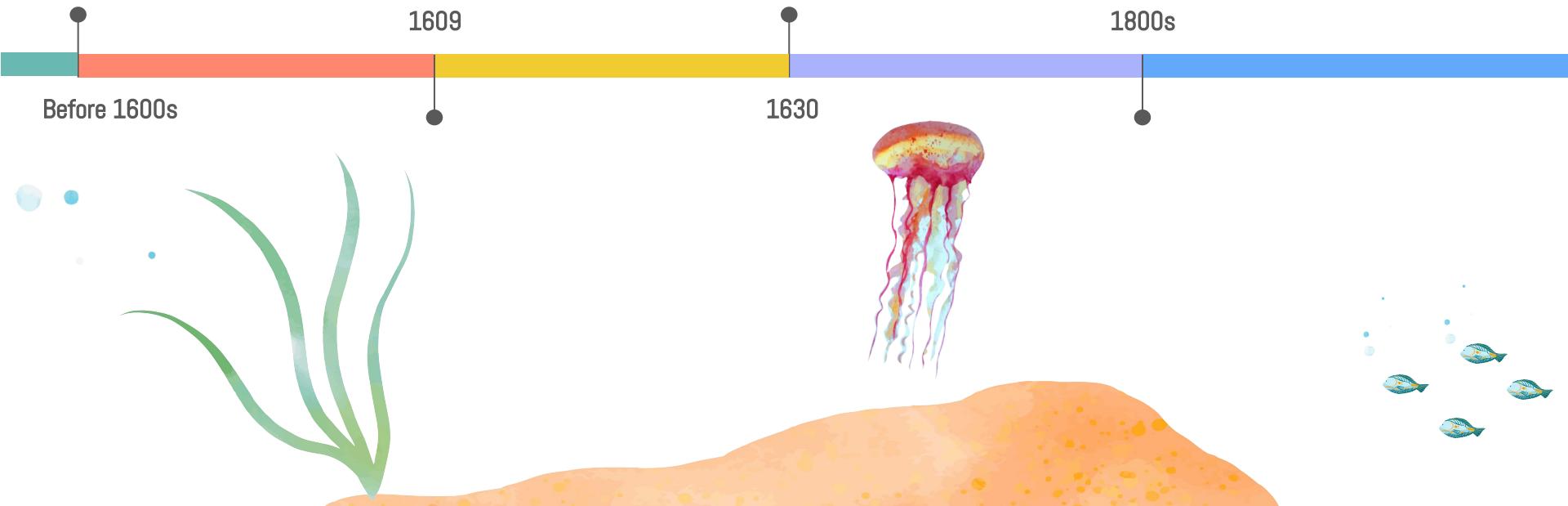
WHAT HAPPENED TO NEW YORK CITY OYSTERS?



HISTORY OF OUR HARBOR



Before New York was New York, before it was even New Amsterdam the New York area was settled by the **Lenape**. They lived in Manhattan, Westchester, Northern New Jersey and Long Island



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1609

Before 1600s

Henry Hudson arrived in New York to find **220,000 acres** of oyster reefs and a blossoming estuary.

Ellis Island or the 'Kioshk' or 'Gull Island' was purchased by the Dutch and renamed **Little Oyster**.

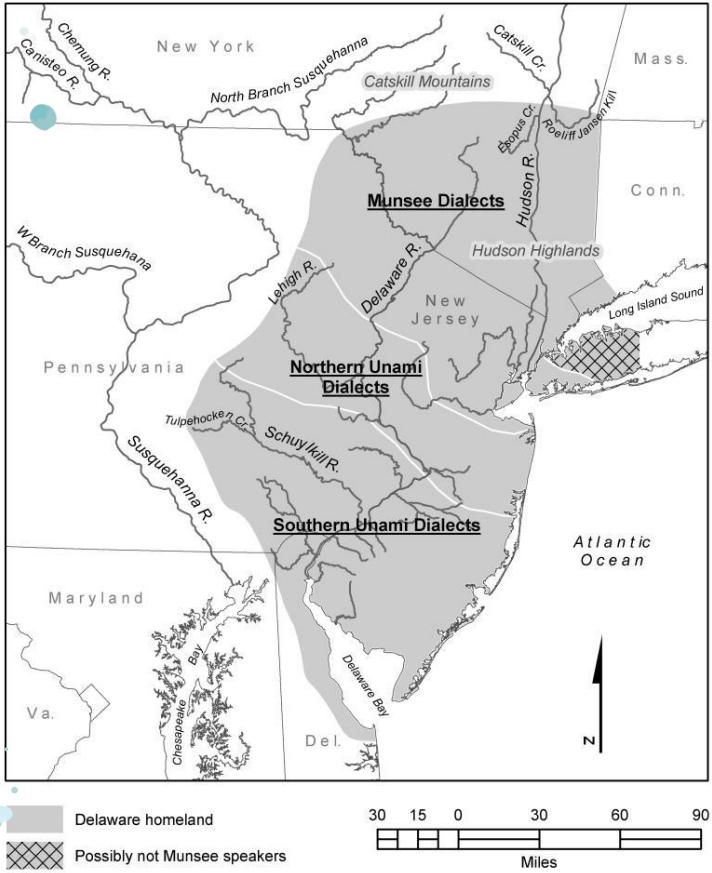


1630

1800s

Oysters were being harvested all over New York harbor. Sandy Ground, Staten Island was established by New York City's first community of formerly enslaved. They had been oystermen in Delaware and Maryland but migrated to NYC due to new laws prohibiting their oyster harvesting.

THE LENAPE



- When the colonists arrived the Lenape called them 'Shouwunnock' or 'Salty people'
- Lenape ate plenty of oysters, and created 'middens' or piles of oyster shell. These middens were mostly 4 feet deep, around 160 ft from the shore, and all over the coasts of the boroughs.



TWO TYPES OF OYSTER MIDDENS

KITCHEN MIDDEN



- Bones, nuts, other food scraps, sometimes tools such as axe heads
- These piles are thought to be the place for oyster shells after they were eaten

PROCESSING MIDDEN



- Exclusively oyster shells
- Thought that these were the sites of oyster preserves for the winter. Maybe where they smoked and dried the oysters prior to being eaten

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Before 1600s

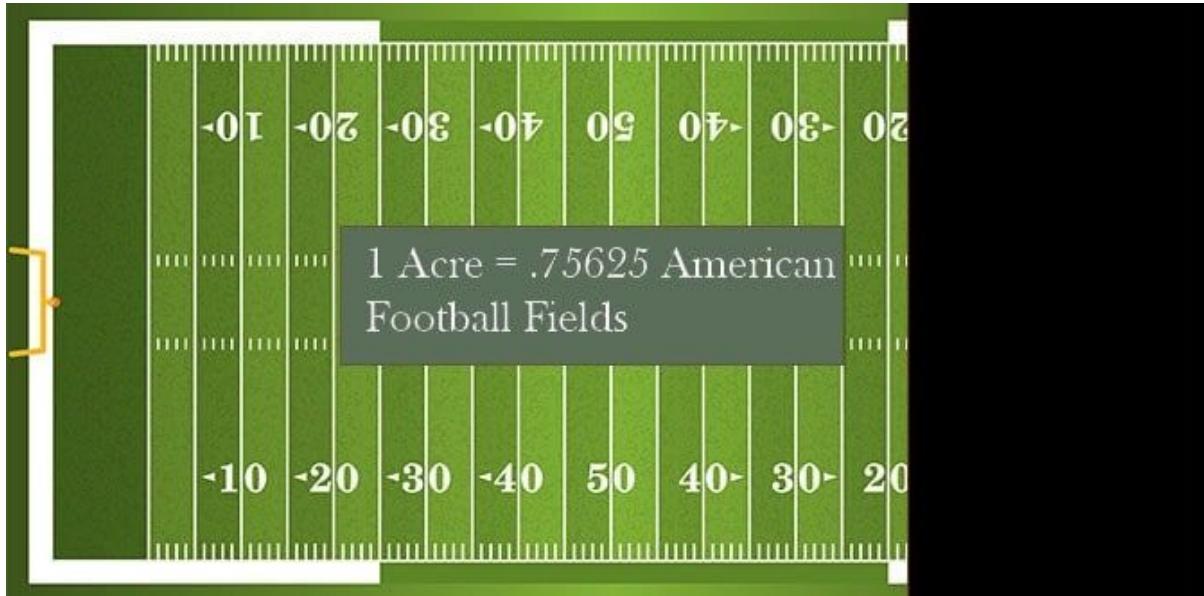
Henry Hudson arrived in New York to find **220,000 acres** of oyster reefs and a blossoming estuary.

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HOW MUCH IS 220,000 ACRES?



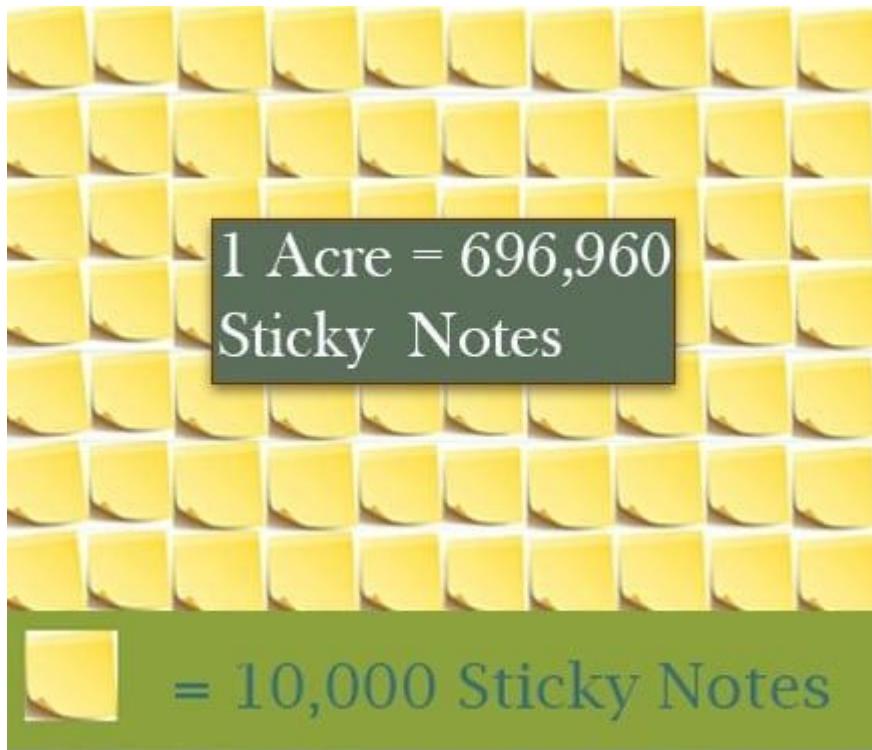
1 Acre = 0.75625 American Football Fields

$$220,000 \times 0.75625 =$$

166,375

Football Fields worth of Oysters

HOW MUCH IS 220,000 ACRES?



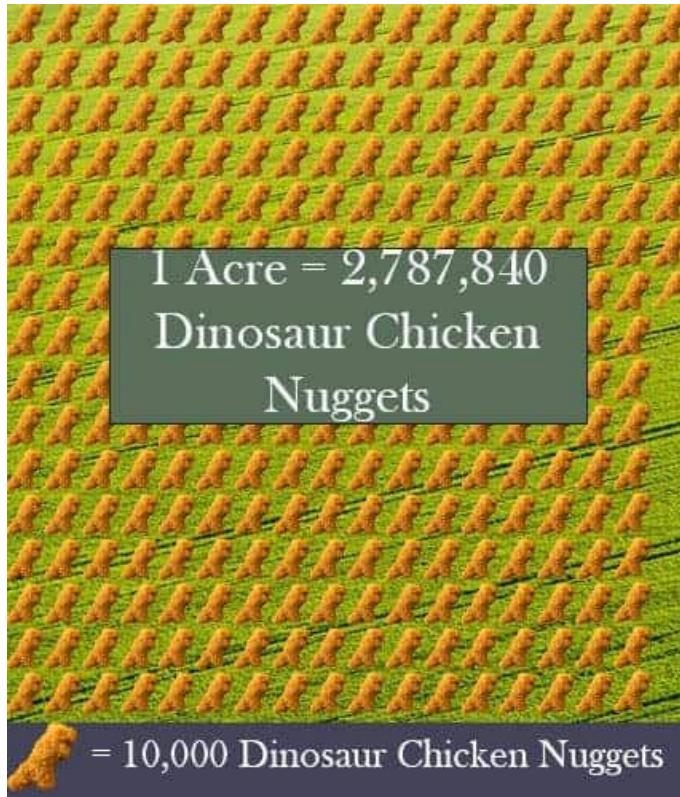
1 Acre = 696,960 Post-it notes

$220,000 \times 696,960 =$

153,331,200,000

post-it notes worth of oysters

HOW MUCH IS 220,000 ACRES?



1 Acre = 2,787,840
Dinosaur Chicken
Nuggets

= 10,000 Dinosaur Chicken Nuggets

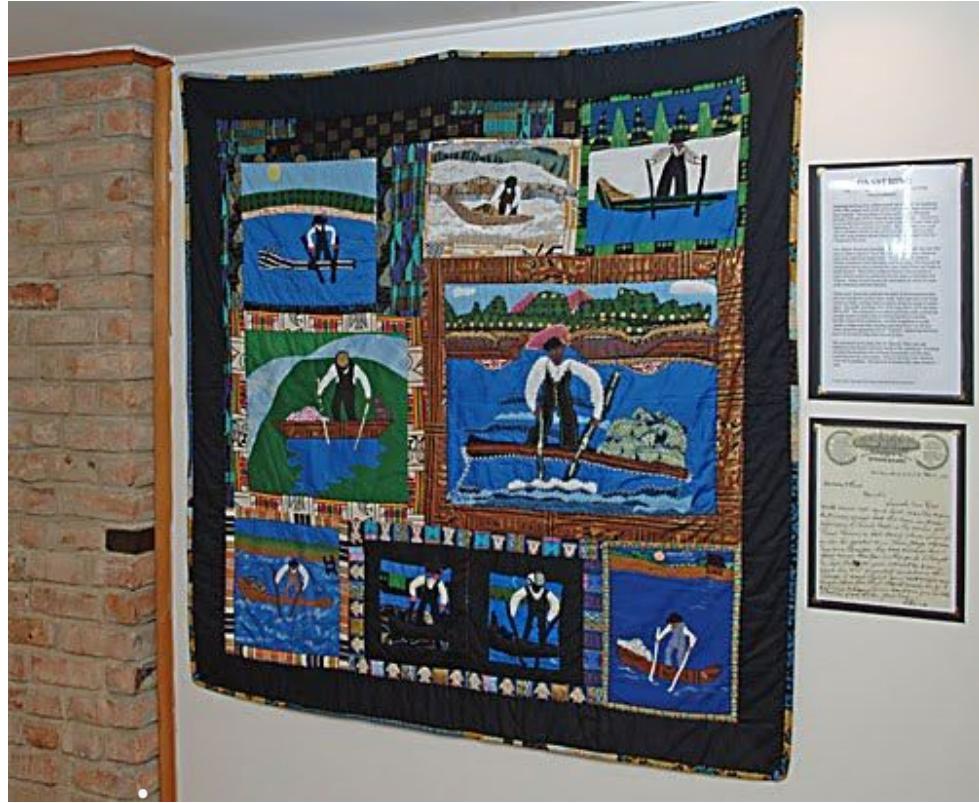
1 Acre = 2,787,840

220,000 x 2,787,840 =

613,324,800,000

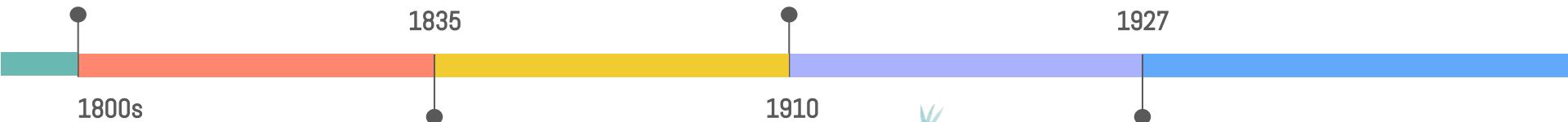
Dinosaur Chicken Nuggets worth of
oysters

SANDY GROUND, SI





Oysters are sold on the streets in place of modern day hot dog stands!





Oysters are sold on the streets in place of modern day hot dog stands!

1800s

1835



It was thought that at this time there were over 1,000 vessels engaged in NYC oyster harvesting.



Raw sewage is being dumped into New York harbor, while millions of dollars are being invested in the oyster industry.

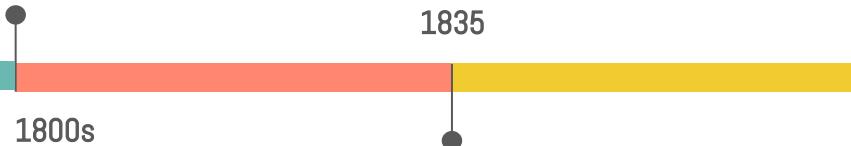
1910

1927





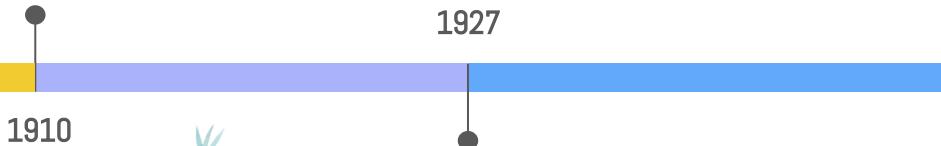
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Last of the New York oyster beds was closed due to toxicity.



OYSTER PAIL



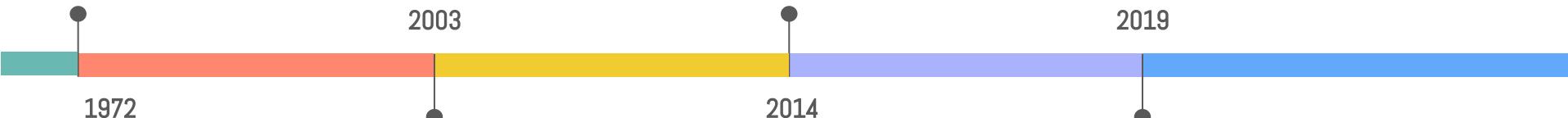
In 1894, paper pails we associate with Chinese food take out were invented in CHICAGO!

DISEASE STRIKES





The harbor was toxic and nearly lifeless for more than 50 years until the Clean Water Act of 1972





CLEAN WATER ACT 1972



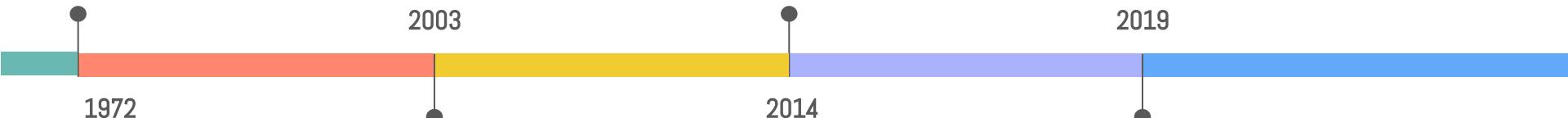
2 Goals

- 1. Stop pollution in American waters
- 2. Fishable, swimmable waters





The harbor was toxic and nearly lifeless for more than 50 years until the Clean Water Act of 1972



The New York Harbor School opens. Aquaculture students start an oyster garden at the South Street Seaport.



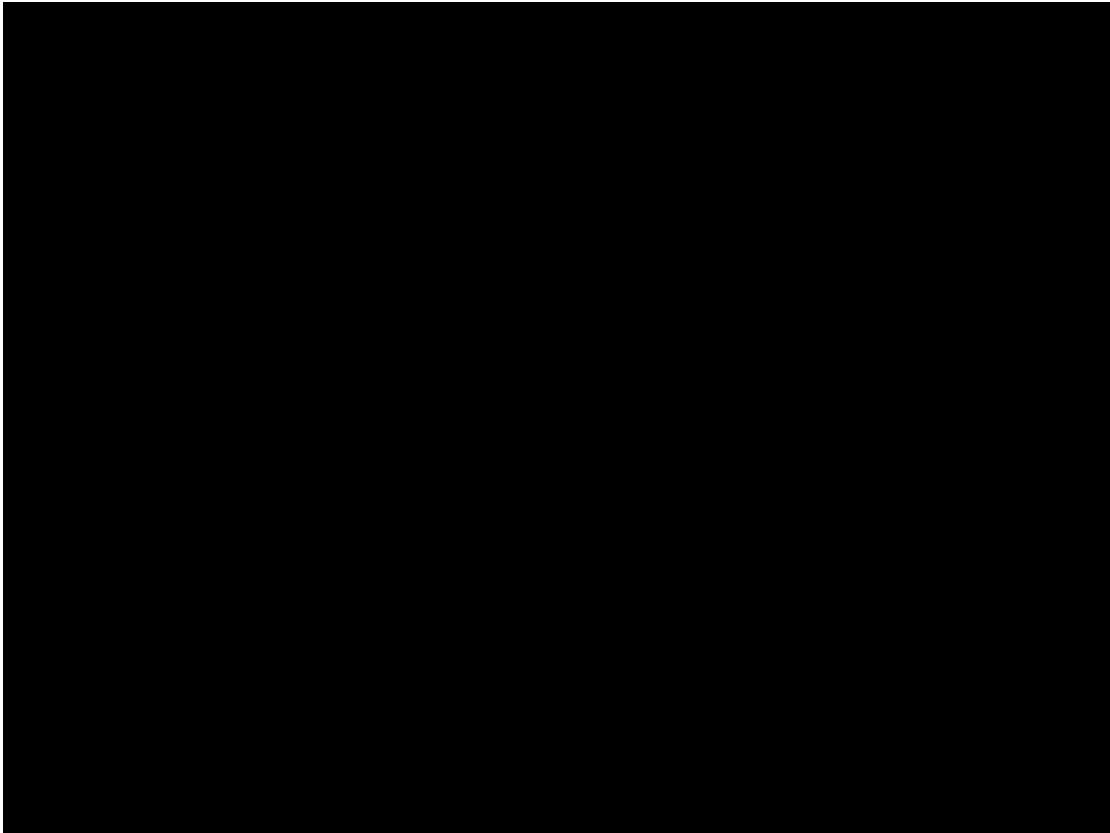
NEW YORK HARBOR SCHOOL



Aquaculture
Professional Diving
Marine Systems Technology
Vessel Operations
Ocean Engineering
Marine Biology Research
Marine Policy



NEW YORK HARBOR SCHOOL





The harbor was toxic and nearly lifeless for more than 50 years until the Clean Water Act of 1972

1972

2003



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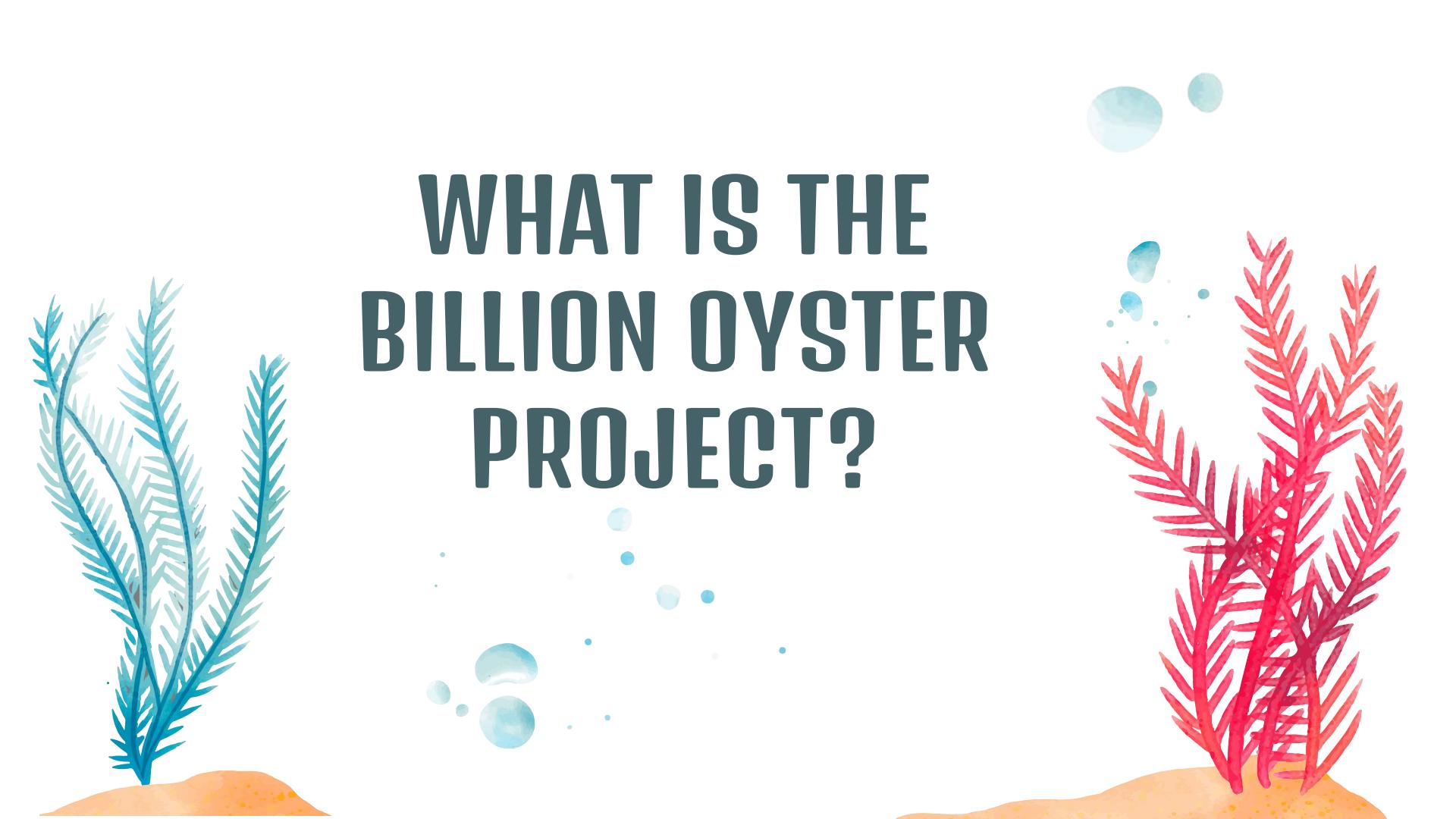
2014

2021

Billion Oyster Project has reinstalled 47 million oysters, diverted 1.7 million pounds of oyster shell in our own 'midden' and engaged over 75 NYC schools



WHAT IS THE BILLION OYSTER PROJECT?





Billion Oyster Project is a non-profit working towards restoring.

1 BILLION OYSTERS

into New York Harbor by 2035.

And we need your help!



Oyster Research Station (ORS)

Responsibilities

- Monitor oysters at least twice a year: once in fall, once in spring
- Send at least 2 datasets to Billion Oyster Project
- Leave your site better than you found it!



Counting Oysters



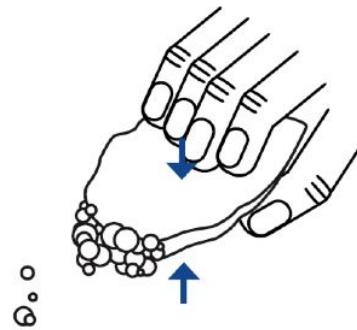
To Check If Oyster Is Dead, Gently Try to Pry It Open



Dead Oysters Sound Hollow When Lightly Tapped



A Dead Oyster Is Gaping Open



Dead Oyster Will Discharge Bubbles When Lightly Squeezed

Measuring Oysters



Annual Billion Oyster Project Research Symposium

- Held annually on Governor's Island in June
- 3 Research Categories:
 - Activism
 - Science Research
 - Engineering/Design
- Guest judges







Any questions?

Thank you!