

Oyster Research by
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NCSU



Eastern Oyster, *Crassostrea Virginica*

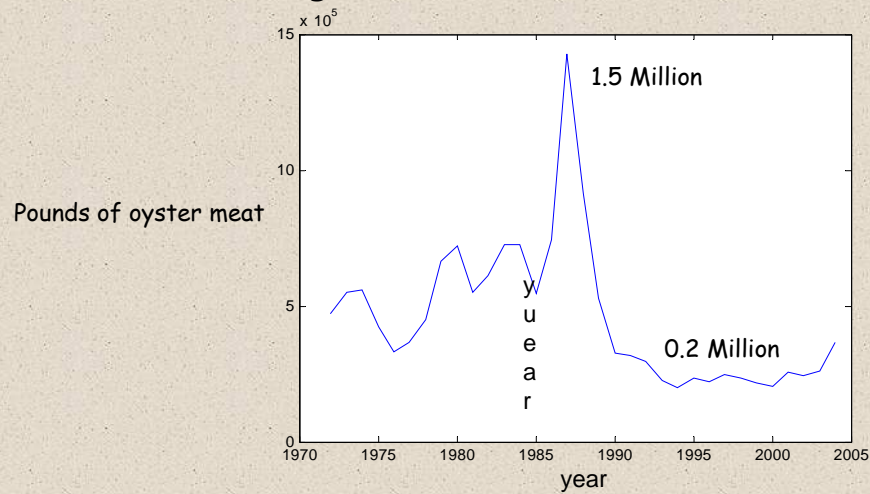
Oysters Filter Lots of Water

- 1 oyster cleans 6 liters of water/hour
- 7,000 oysters / square meter on a healthy reef
- in 4m water, a reef cleans an area
240 times the size of the reef



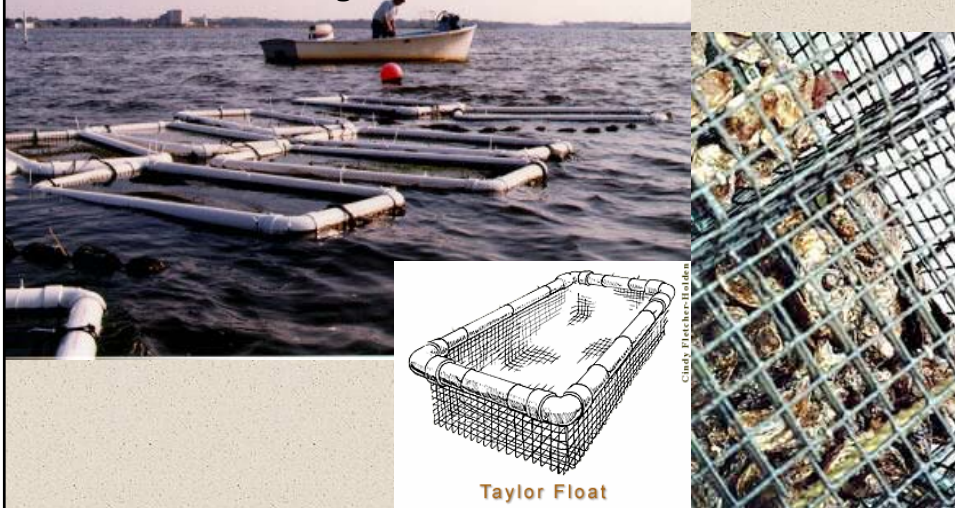
Oysters are in Trouble

- oyster landings about 1% of a century ago
- population collapse due to over-fishing, habitat loss, disease



Oyster Restoration Efforts: Oyster Gardens

- grow baby oysters in your backyard
- to about 1.5" long



Oyster Restoration Efforts: Artificial Reefs

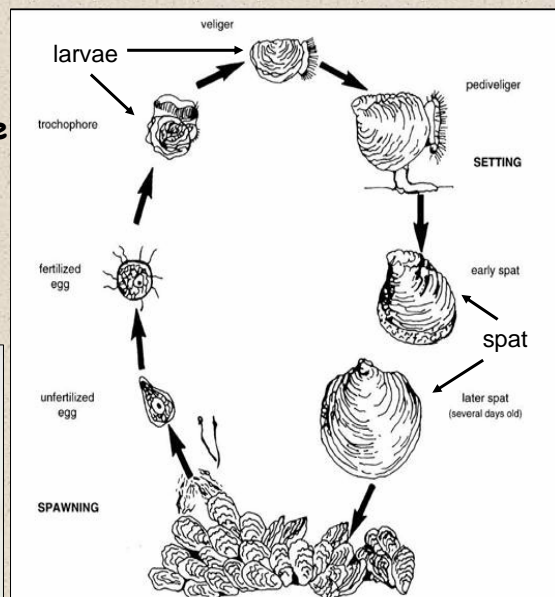
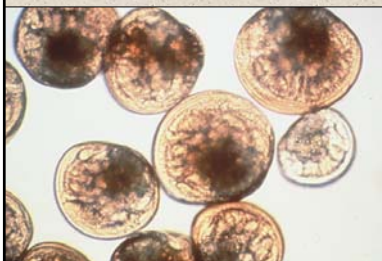
- artificial reefs - recycled oyster shells
- volunteers, researchers, governments



Artificial reefs can be safe spawning grounds

Oyster Life Cycle

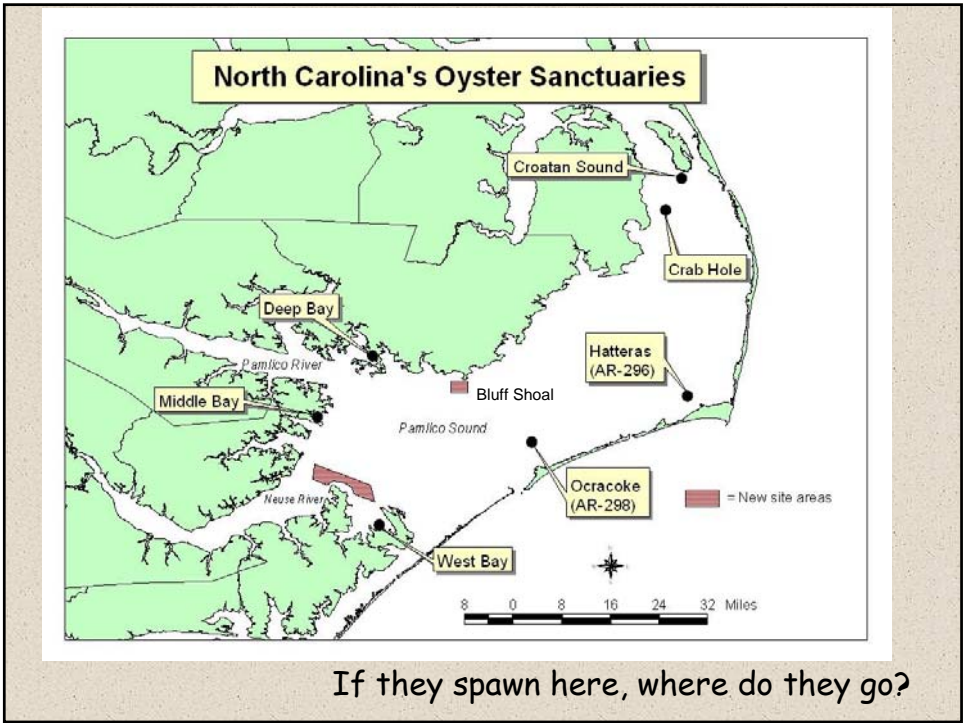
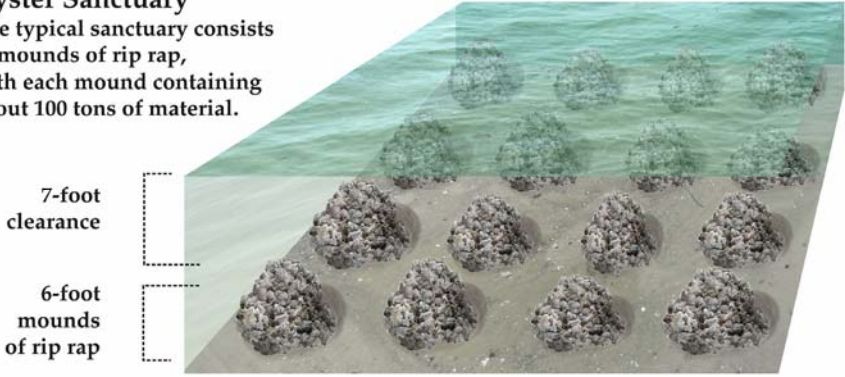
Oyster Larvae





lots of work and expense

Oyster Sanctuary
 The typical sanctuary consists of mounds of rip rap, with each mound containing about 100 tons of material.



If they spawn here, where do they go?

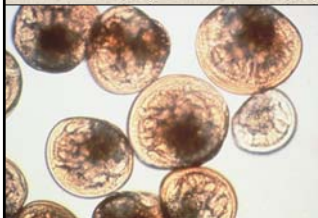
Artificial Reefs as Spawning Sanctuaries in Pamlico Sound

- built by NC Dept of Environment and Natural Resources
- Craig Hardy, Division of Marine Fisheries
- no fishing allowed
- not seeded with spat
- where do larvae come from to get to new reefs?
- where do next generation larvae go from new reefs?
- where should the reefs be built?
- who will pay to find out?



How to predict where larvae will go

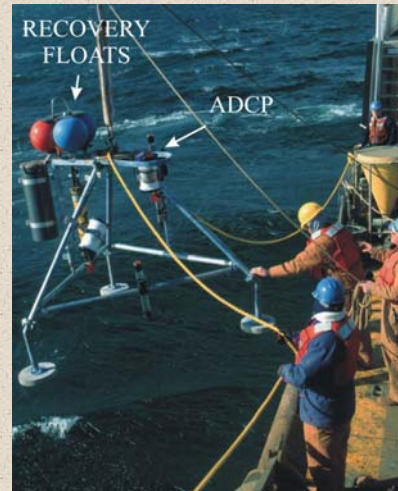
- chase tagged larvae around: difficult
- numerical model: test with observations
- measure currents at a single location
- use drifters





Acoustic Doppler Current Profiler (ADCP)

- bottom mounted, uses sound
- measures currents at all depths
- records data every 5 minutes
- works continuously for 3 months
- deployed in summer



Larval Transport Predicted from Observed Currents

Model adds a marker every few hours. Location depends on model currents

Q: how far can larvae go in 2 days?
A: far enough to cross sound

Q: what about 2 weeks?
A: can't run that long
they go to Georgia overland

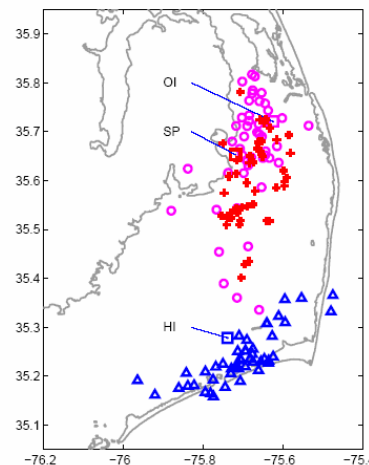
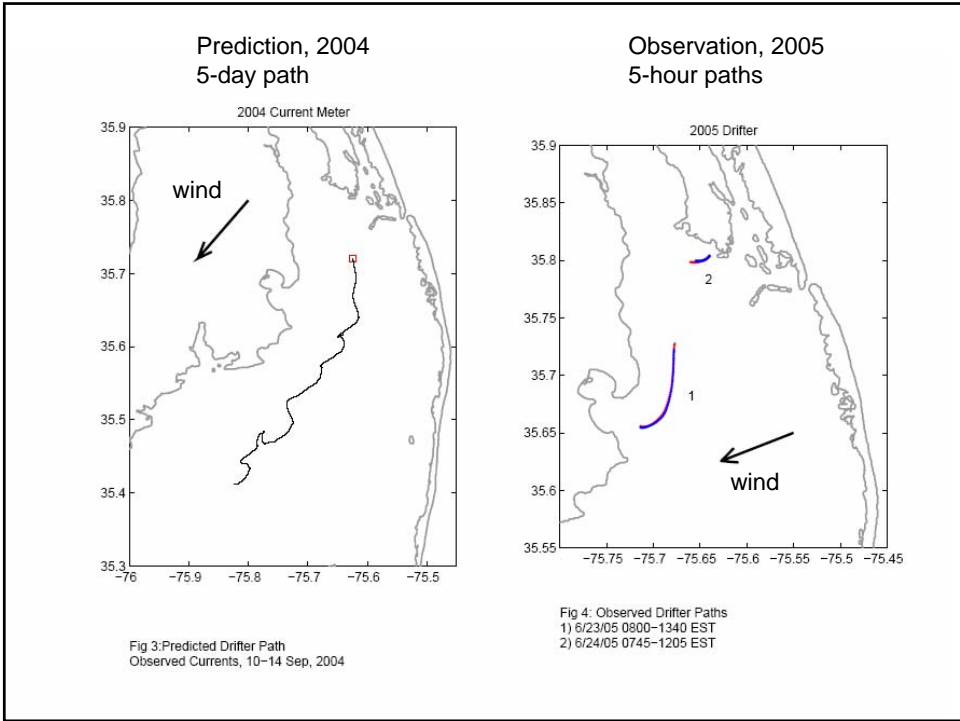
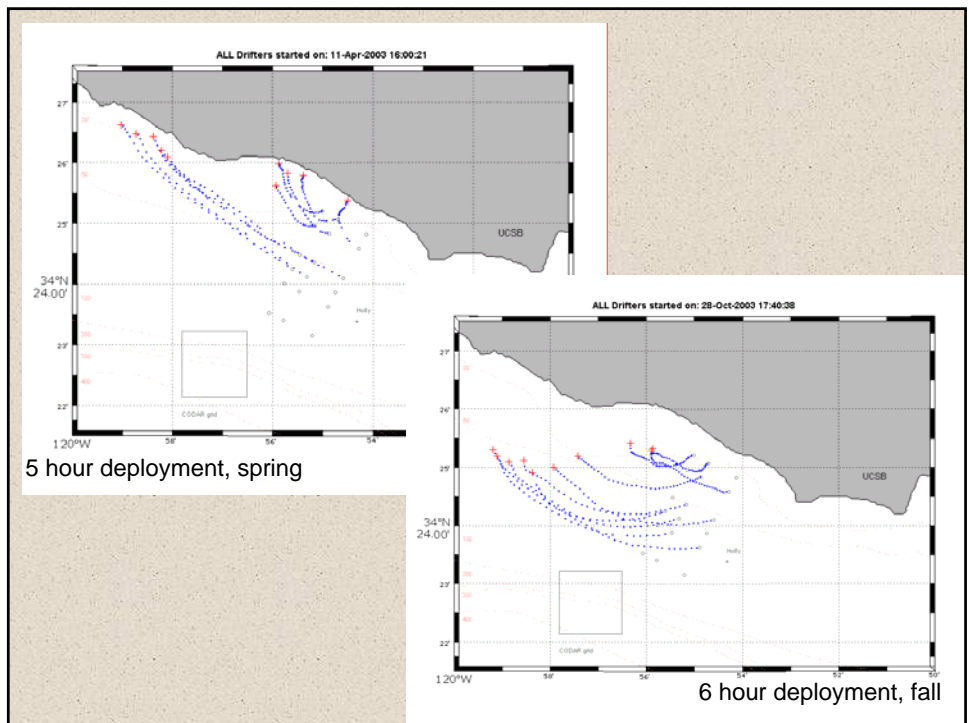
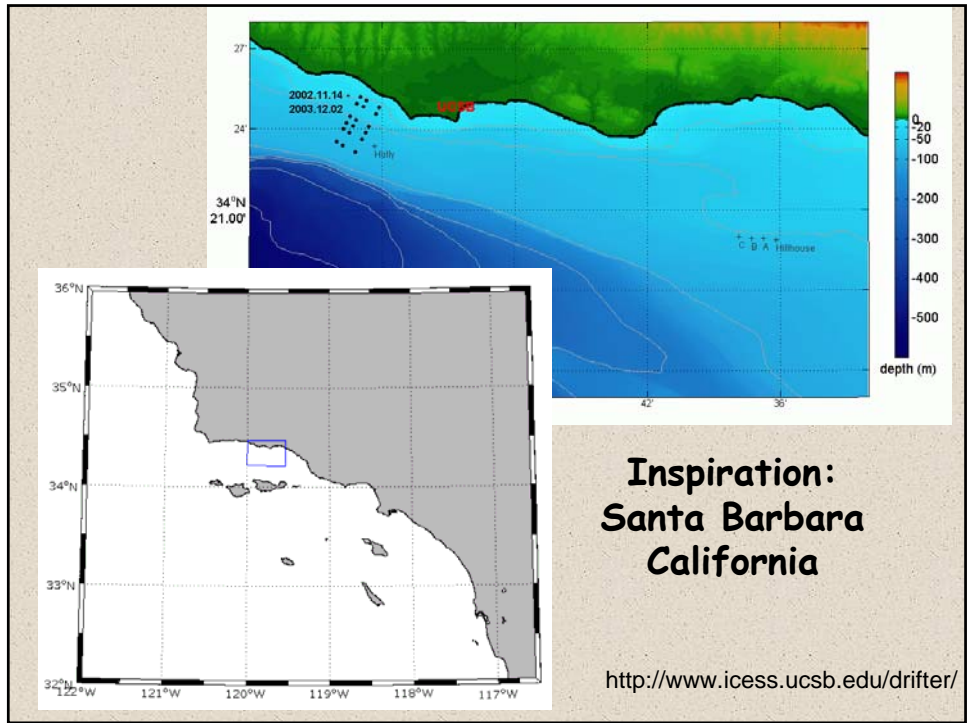


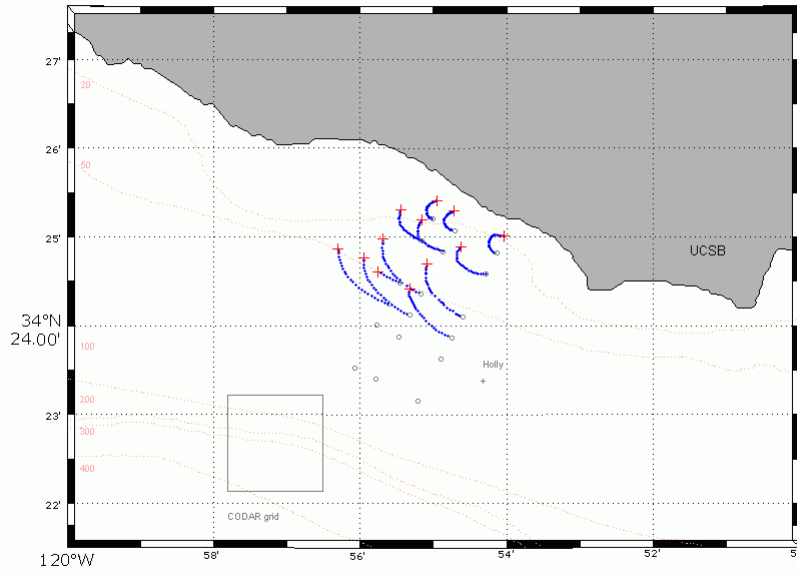
Fig 2: passive dispersal envelopes
three sources, two day dispersal





5.5 hour deployment, winter

ALL Drifters started on: 02-Dec-2003 17:10:14



The reason we need lots of drifter deployments It's different every day

Division of Marine Fisheries

**North Carolina
Department of Environment
and Natural Resources**
NCDENR

UNITED STATES COAST GUARD AUXILIARY
America's Volunteer Lifesaverssm

Capitol City Flotilla
Outer Banks Flotilla?
Pamlico Sound Flotillas?

