Working with Municipalities to Initiate Stocking Activities: Winter Flounder in the Northeast US

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Winter Flounder

Pseudopleuronectes americanus

Important to both commercial and recreational fishermen in the Northeast US

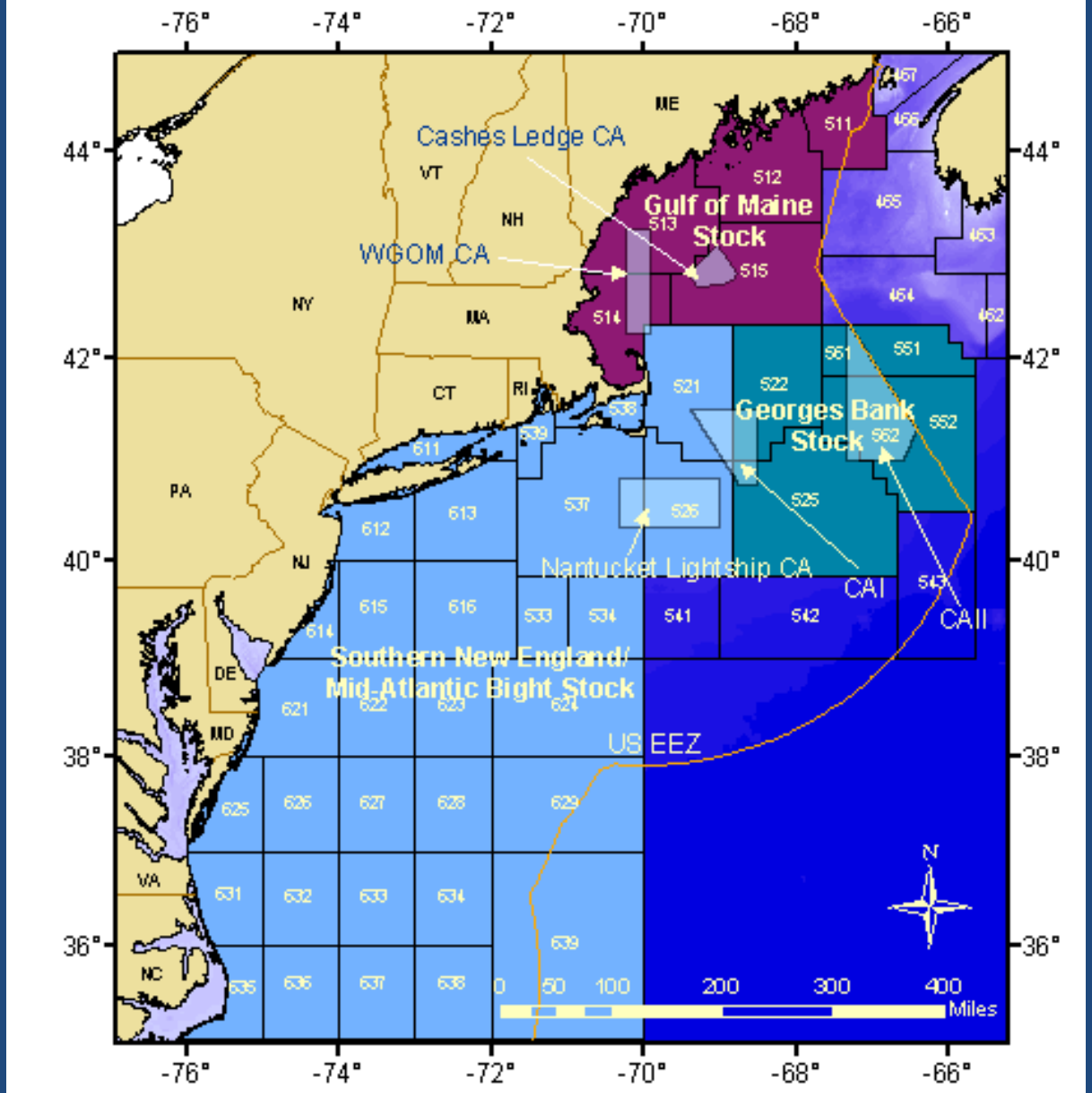


Figure 11.1. Statistical areas used to define the Gulf of Maine, Georges Bank, and Southern New England/Mid-Atlantic Bight winter flounder stocks.

$SSB < SS_{BMSY}$

All overfished

SNE/MA SSB 2007 ~ 9% SS_{BMSY}

If F = 0 for 2009-2014, only 1% chance stock can be rebuilt to SSB_{MSY} for 2014

(GARM III Report, NEFSC, 2008)

Stricter Regulations

- In federal waters:
  - No possession of SNE fish for federal multi-species permit holders
- In coastal waters:
  - Addendum I to FMP (ASMFC): help rebuild inshore stocks, protect spawning stocks
  - Daily limits
- CCA pushing for total closure, including state waters and recreational fishers

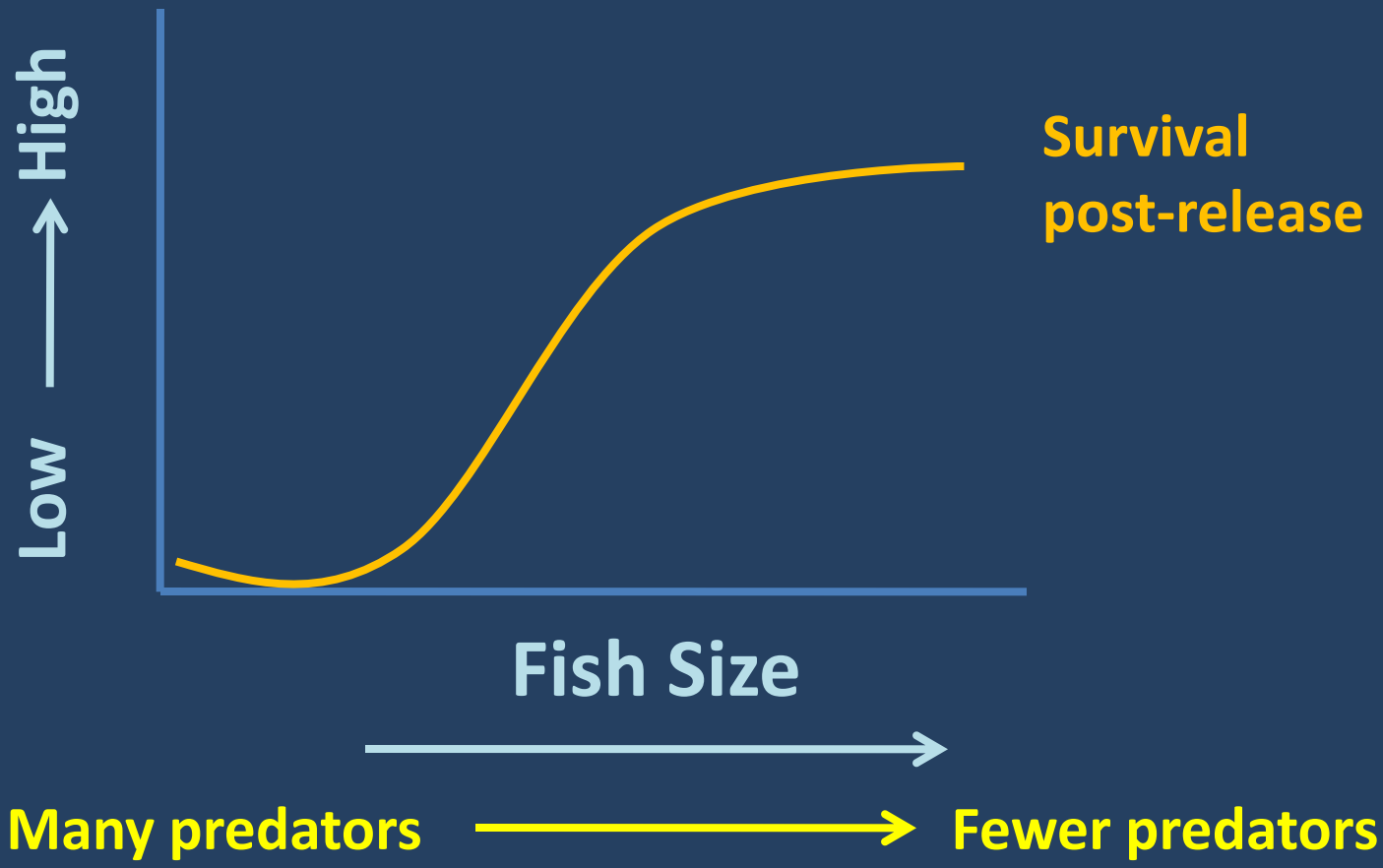
STOCK	COM.	REC.
SNE/MA	50 lbs	2 fish
GOM	250 lbs	8 fish
GB	250 lbs	8 fish

Culturing Techniques

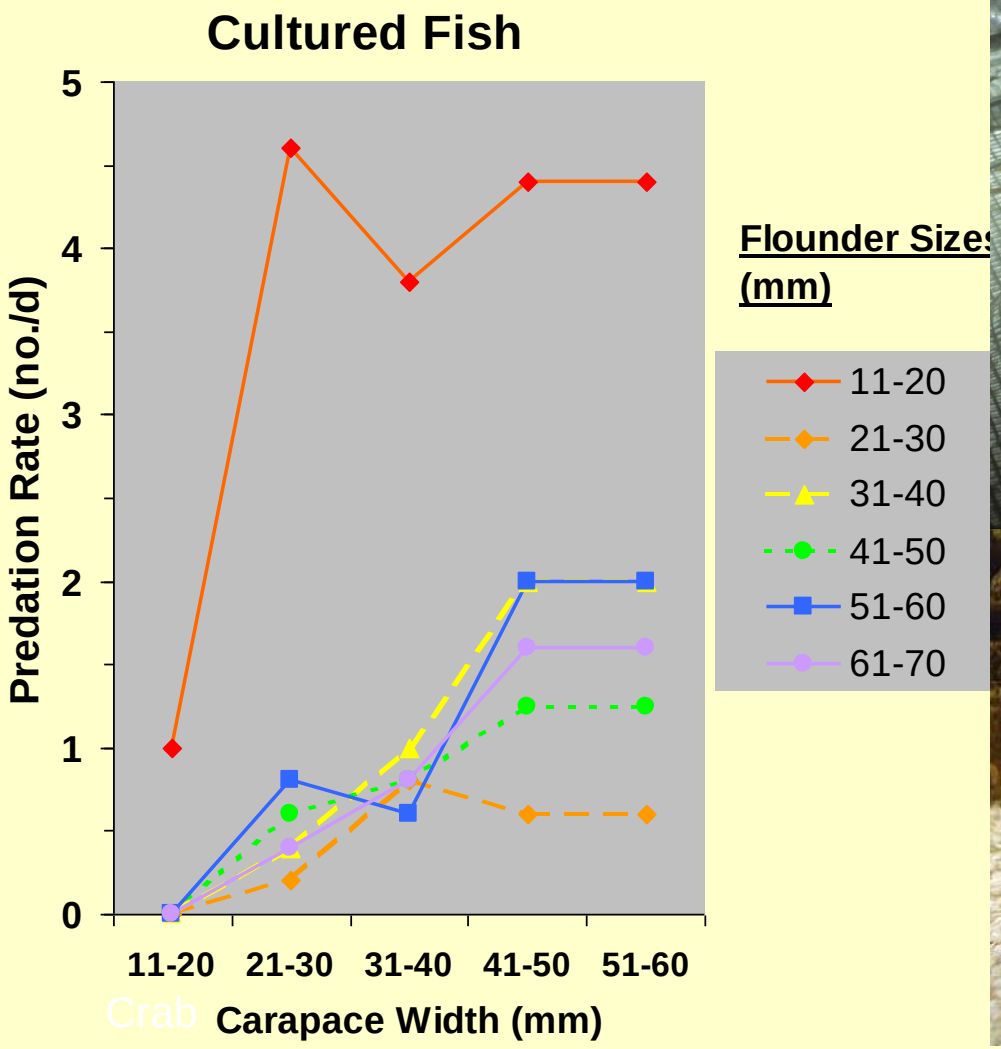
FROM WILD

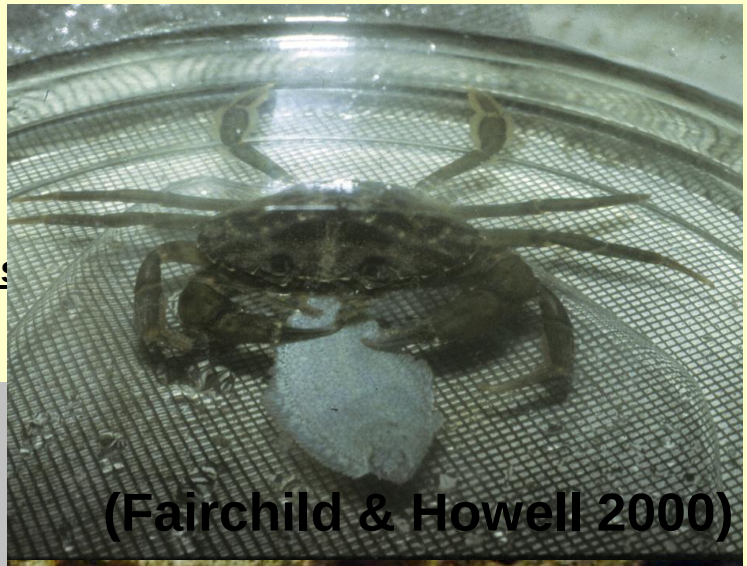
TO WILD

Size at release

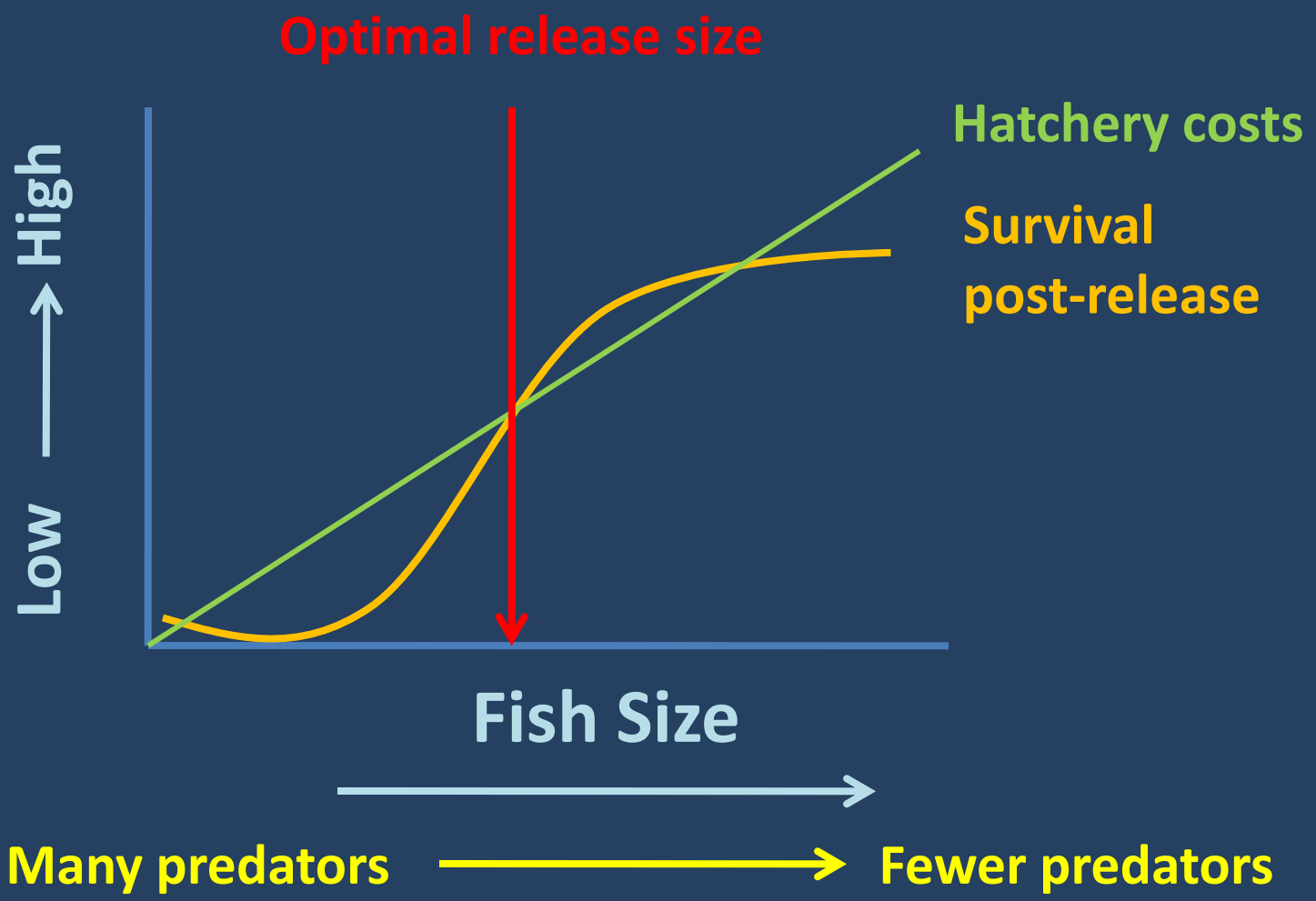


Release Size

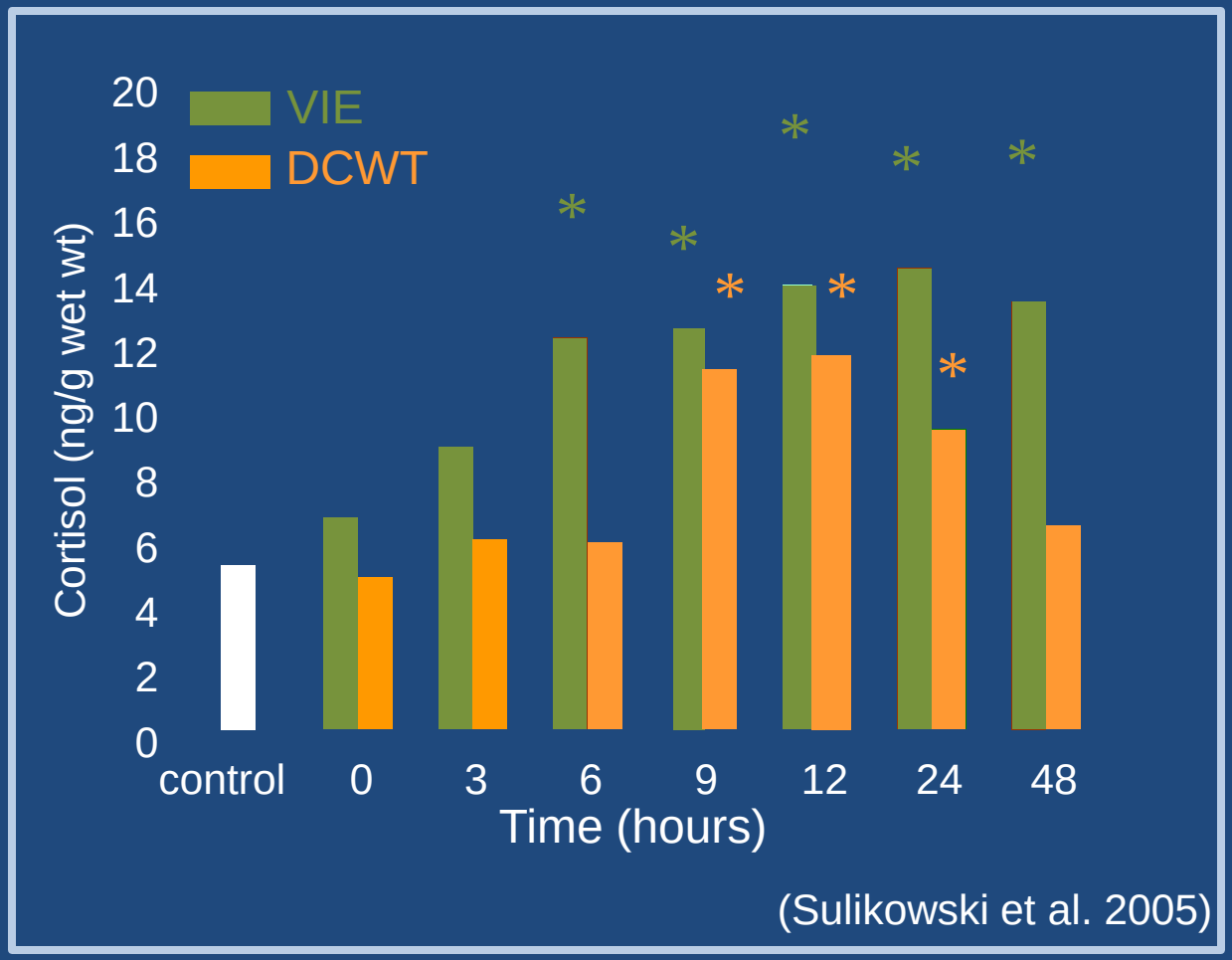




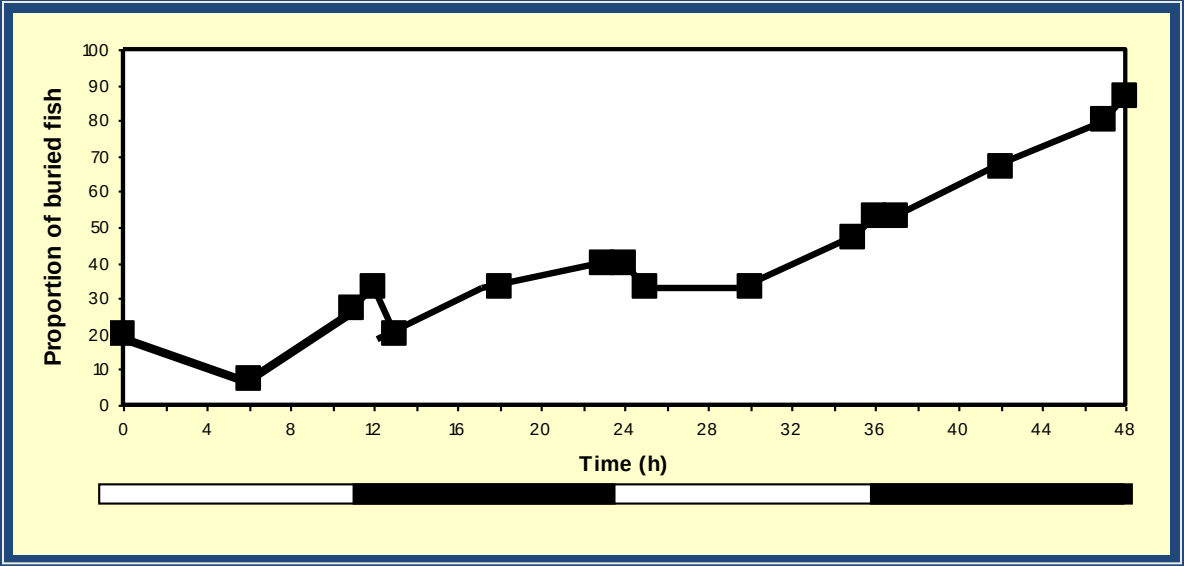
Size at release

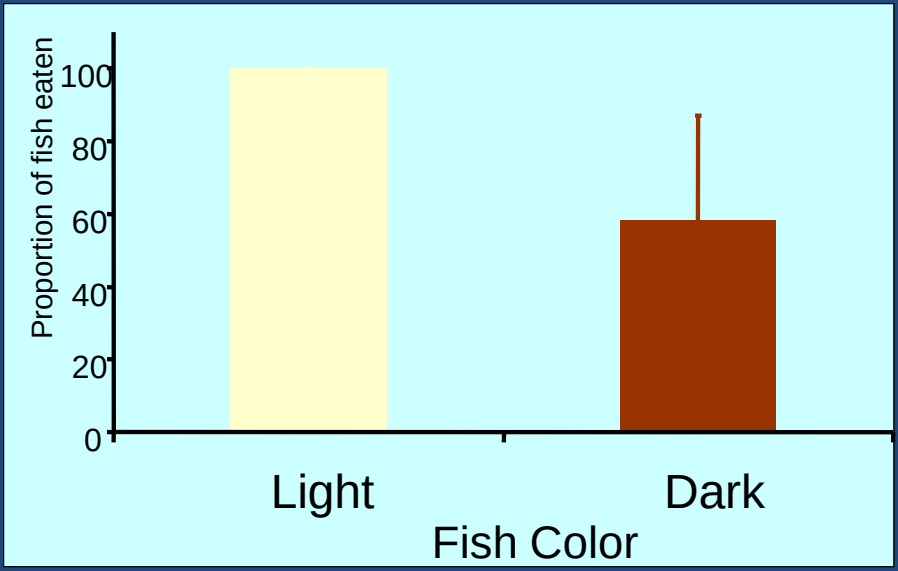


Tagging Methods

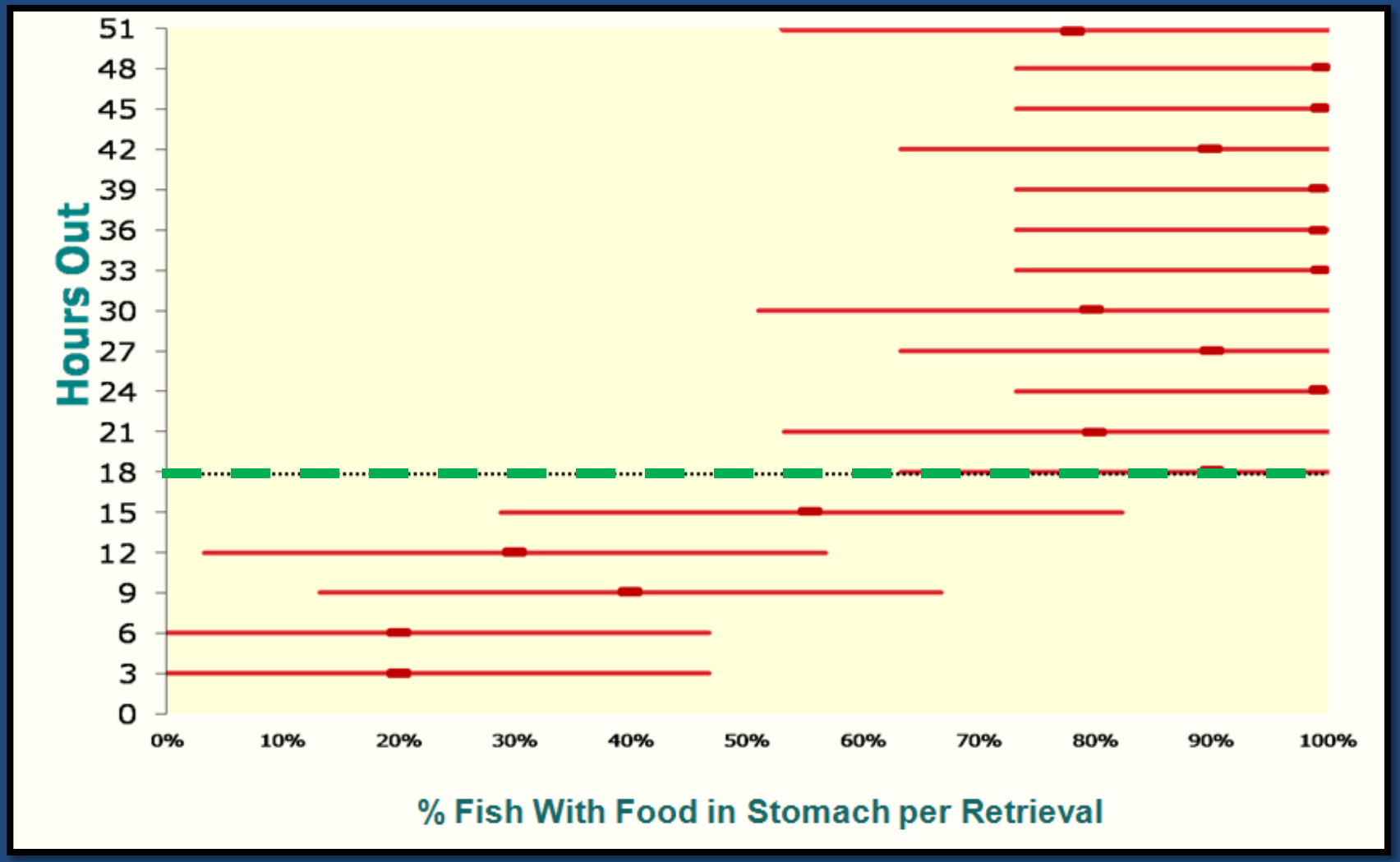


Conditioning – Cryptic Behavior



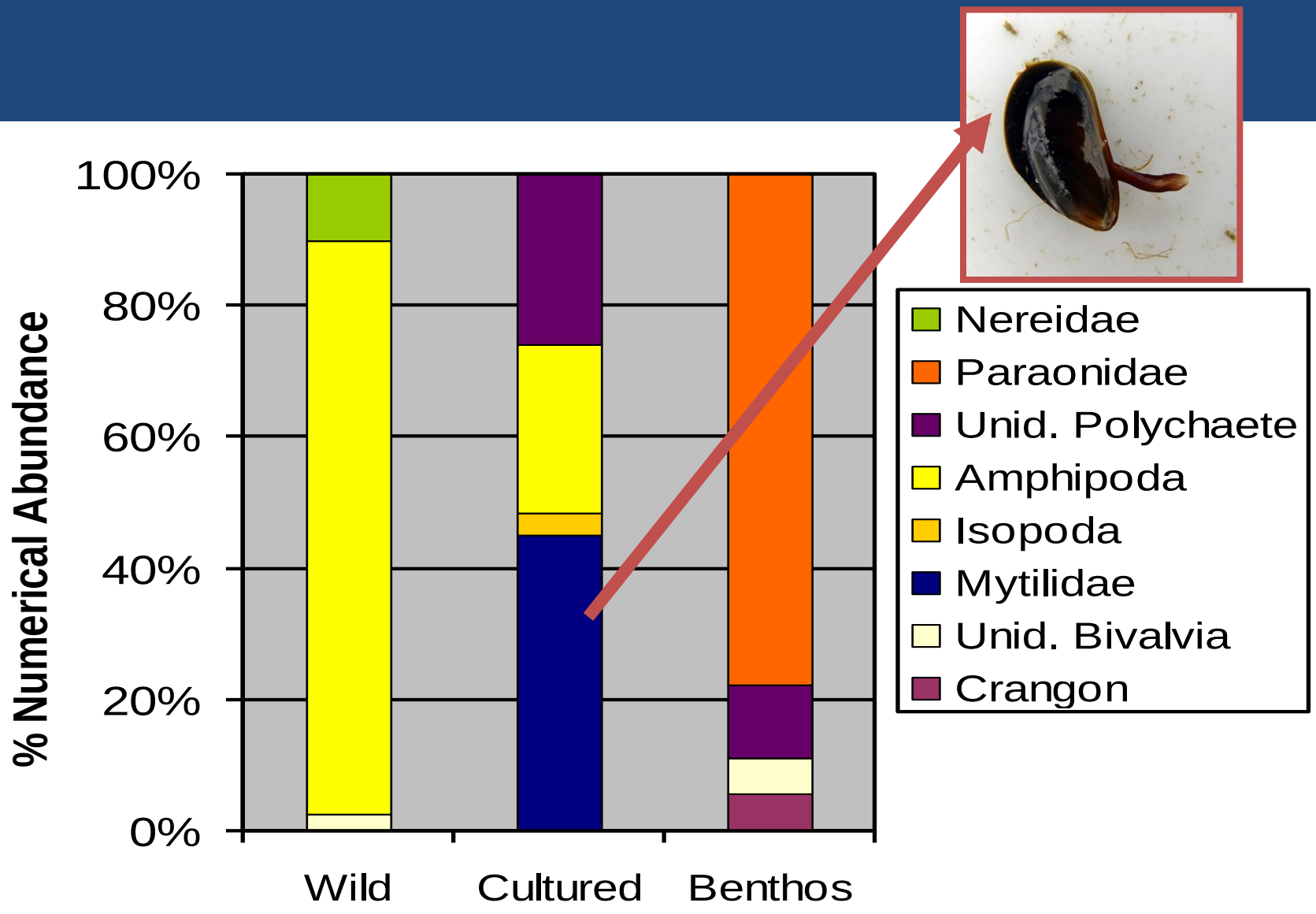


Conditioning – Foraging Behavior

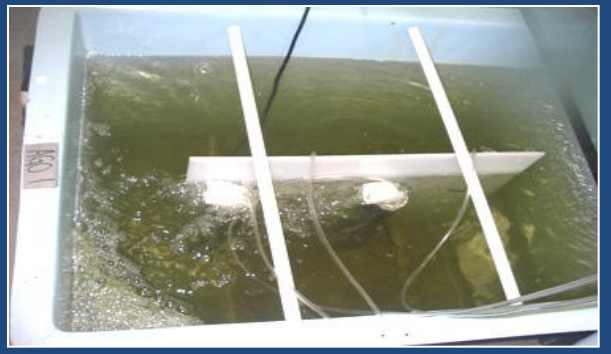


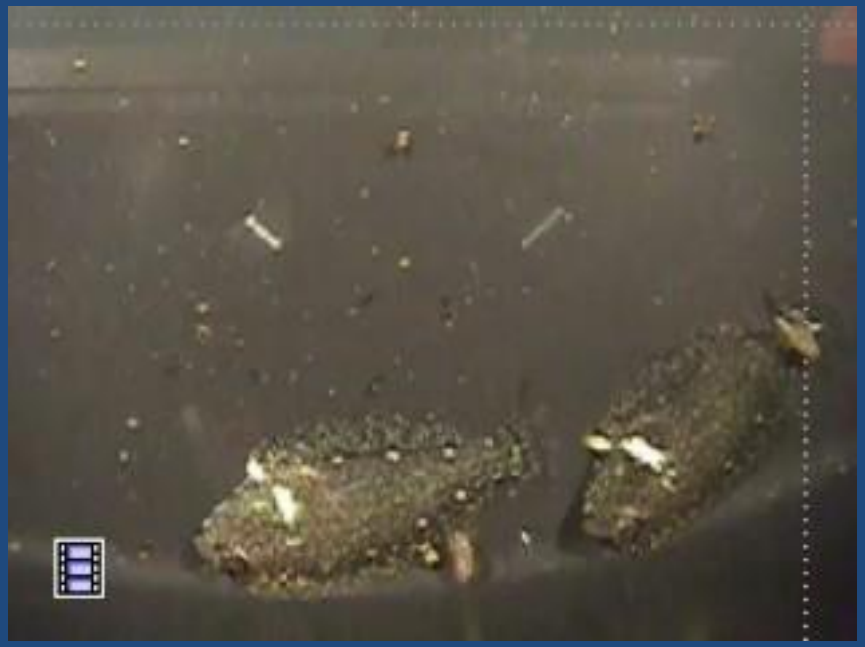
(Walsh, 2012)

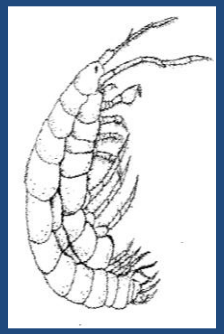
Conditioning – Foraging Behavior



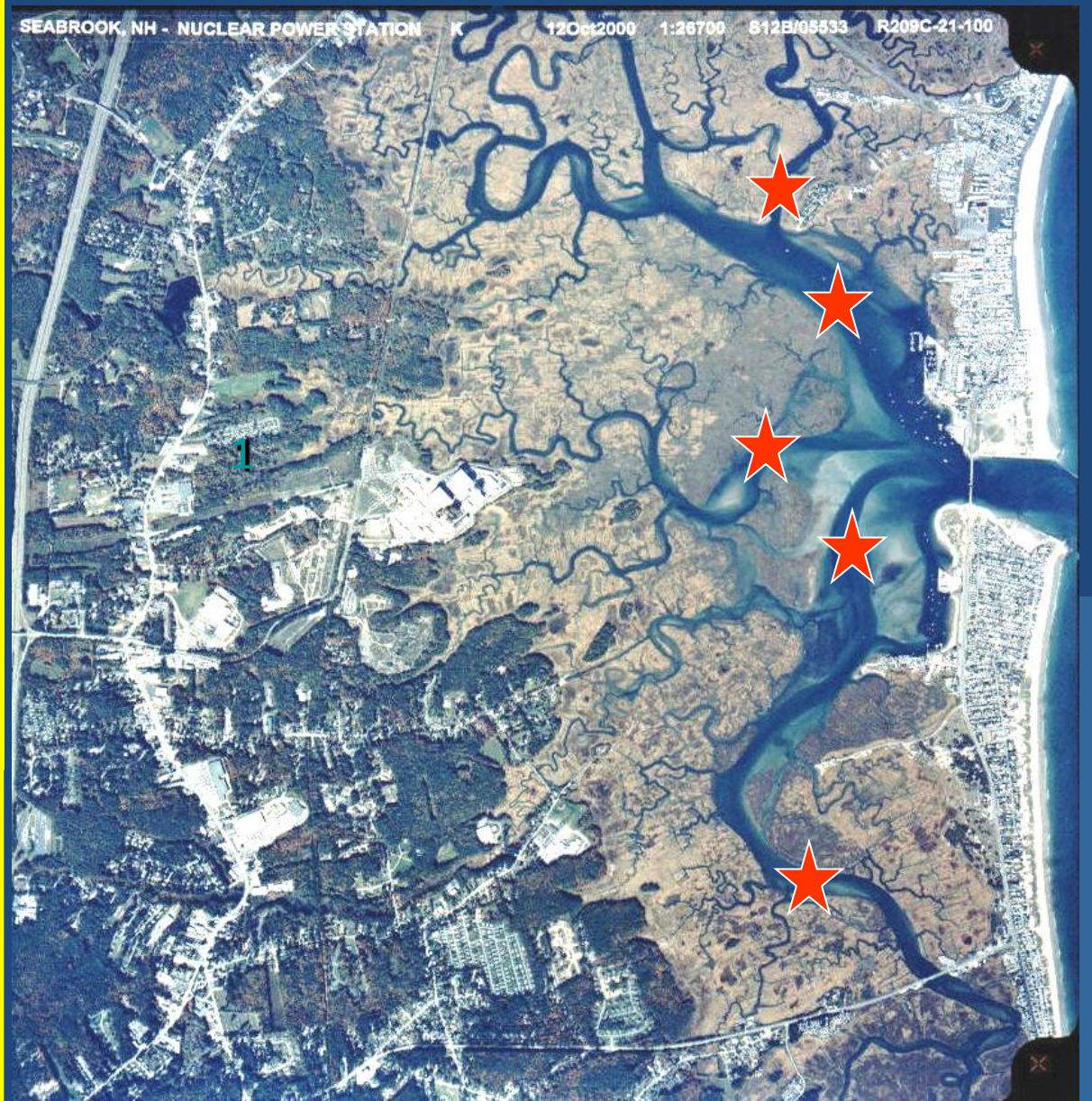
SKRETTING



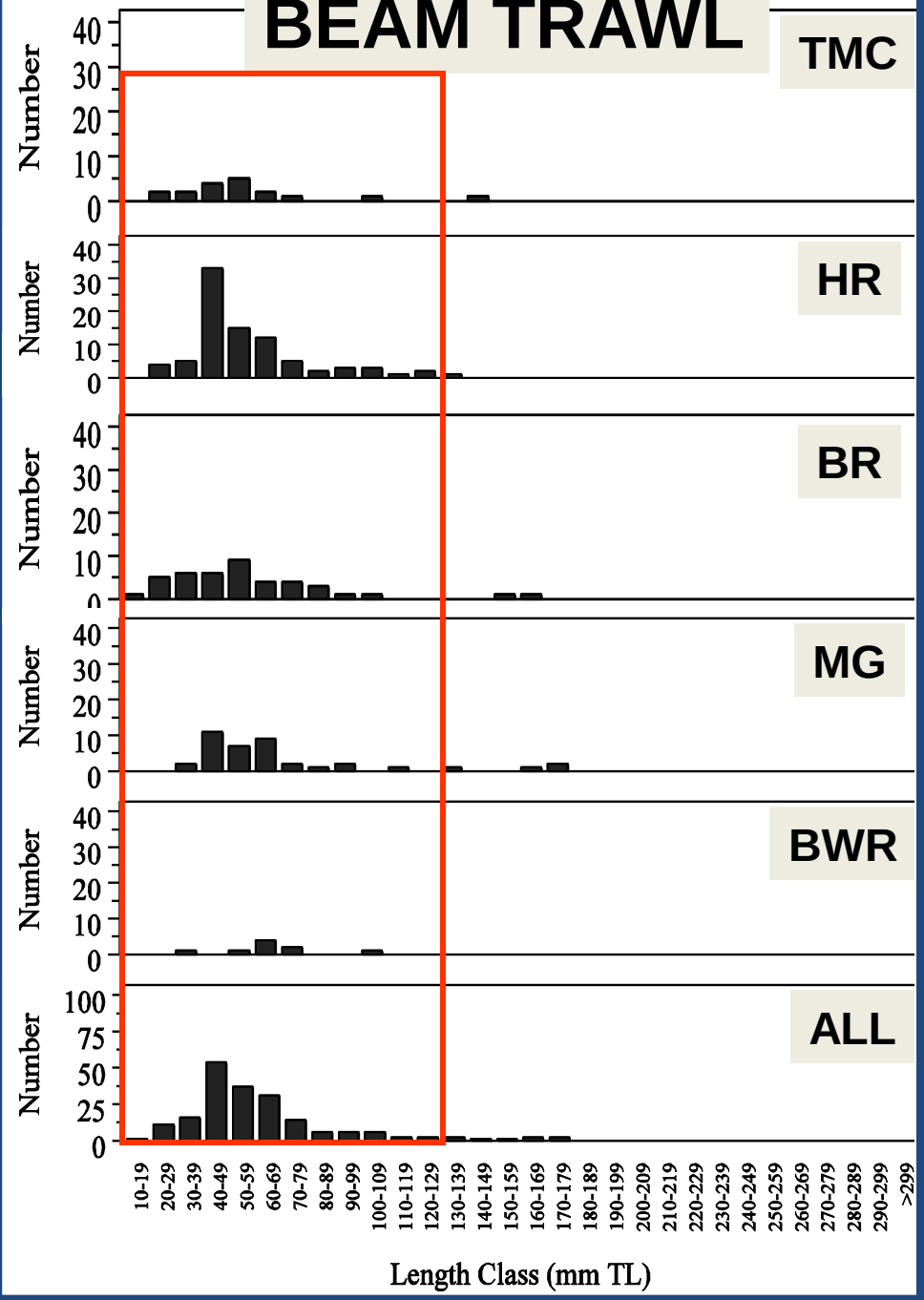




Release Site



BEAM TRAWL



CAGES

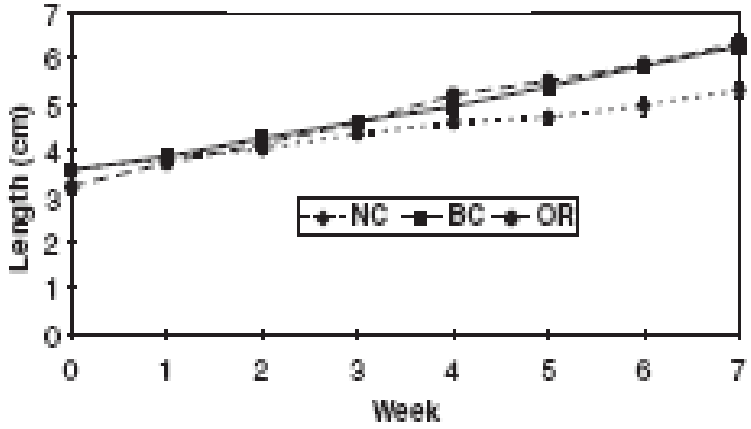


Figure 2 Mean growth (± 1 SEM) in length of cultured winter flounder held in pens at the three sites.

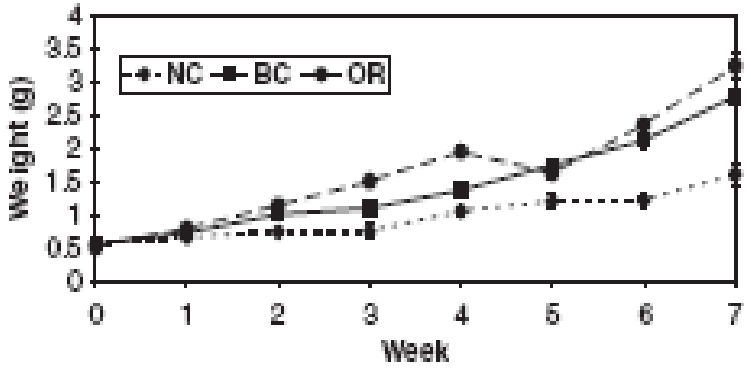


Figure 3 Mean growth (± 1 SEM) in weight of cultured winter flounder held in cages at the three sites.

Release Site

Stress: 0.09

BWR 9

BWR 3

BWR 5

BWR 7

TMC 3

MG 3

BR 7

MG 9

TMC 5

BR 9

TMC 9

MG 7

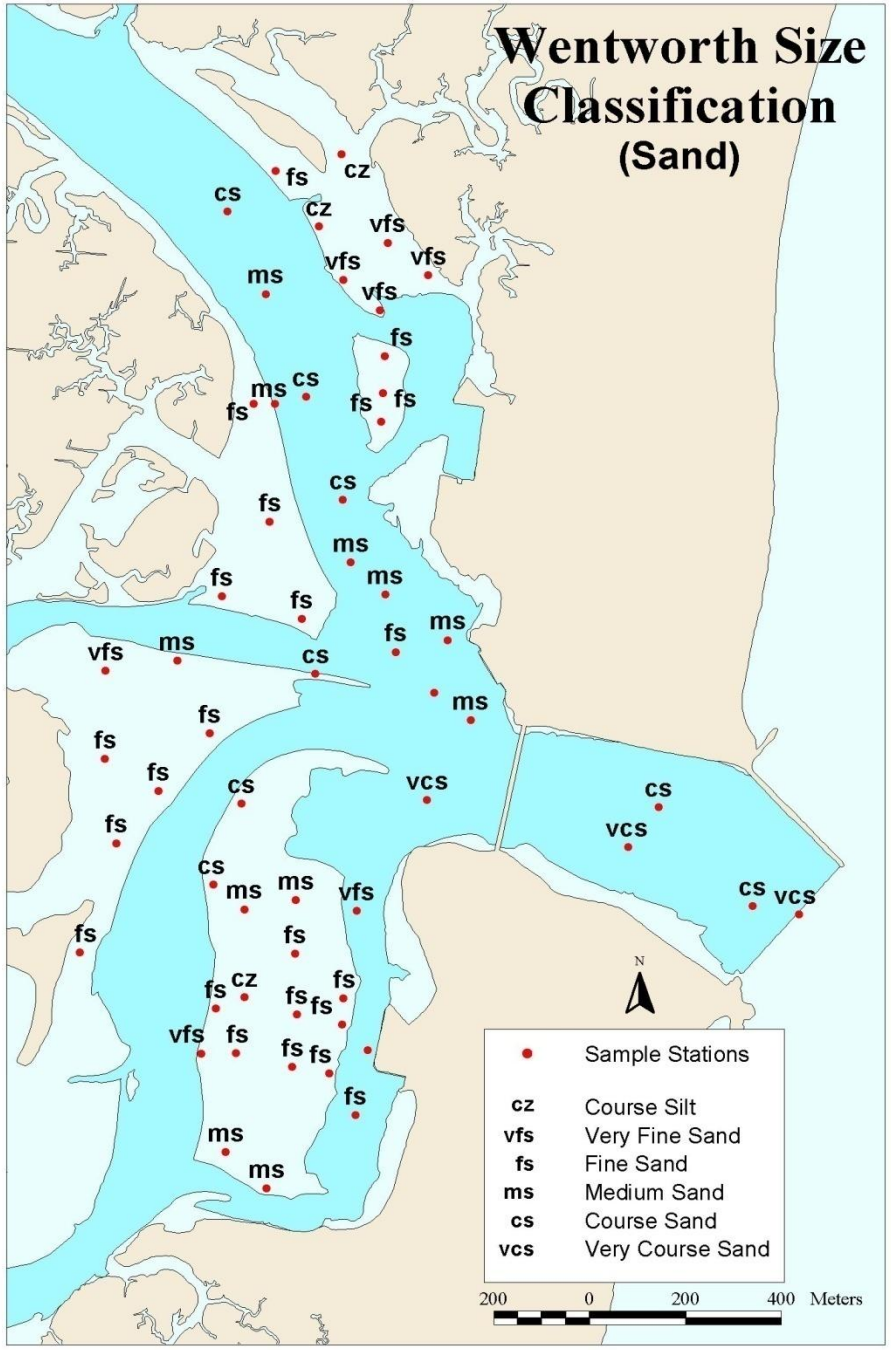
BR 1

HR 9

HR 7

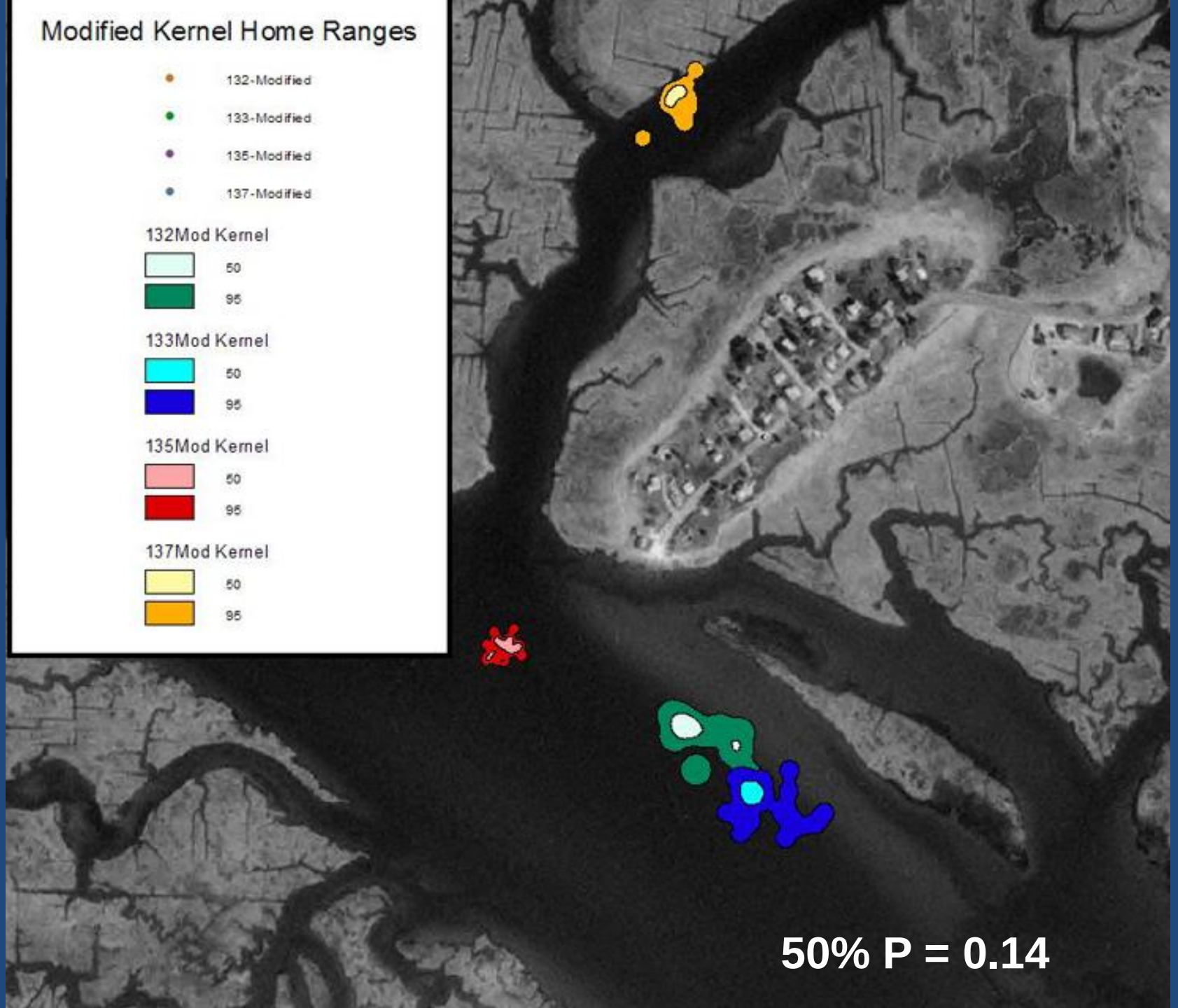
HR 5

HR 3

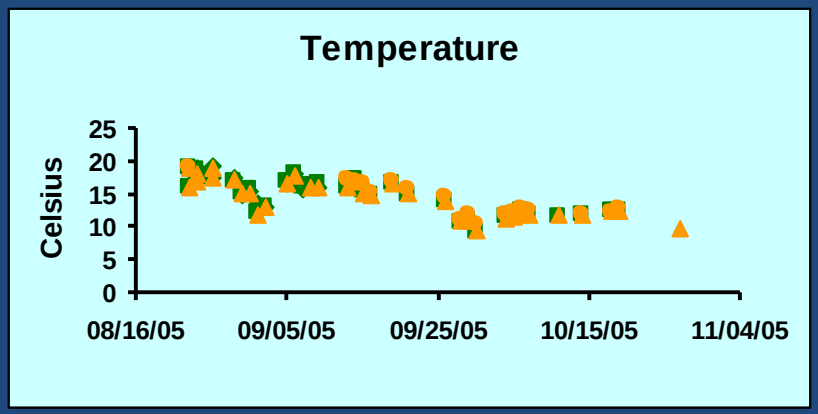


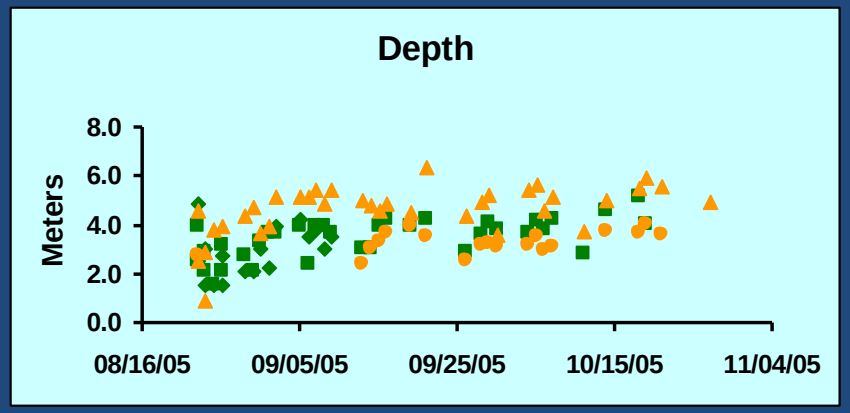
Courtesy of L. Ward, UNH

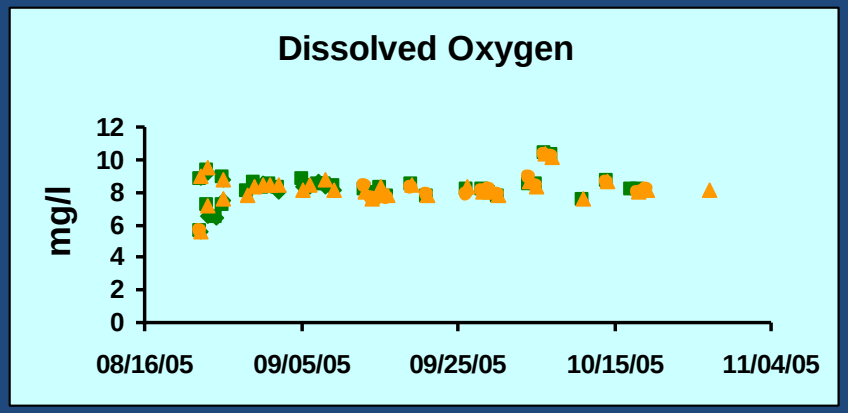
Benefits of Acclimization

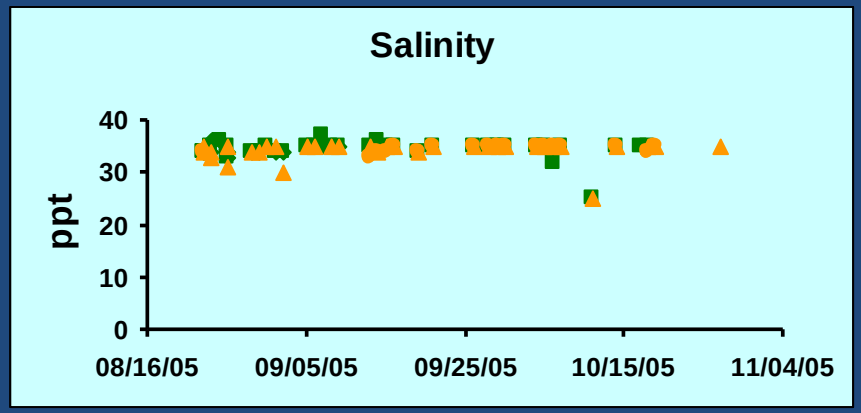

Modified Kernel Home Ranges
132-Modified
133-Modified
135-Modified
137-Modified
132Mod Kernel
50
95
133Mod Kernel
50
95
135Mod Kernel
50
95
137Mod Kernel
50
95
50% P = 0.14

Similar Habitats









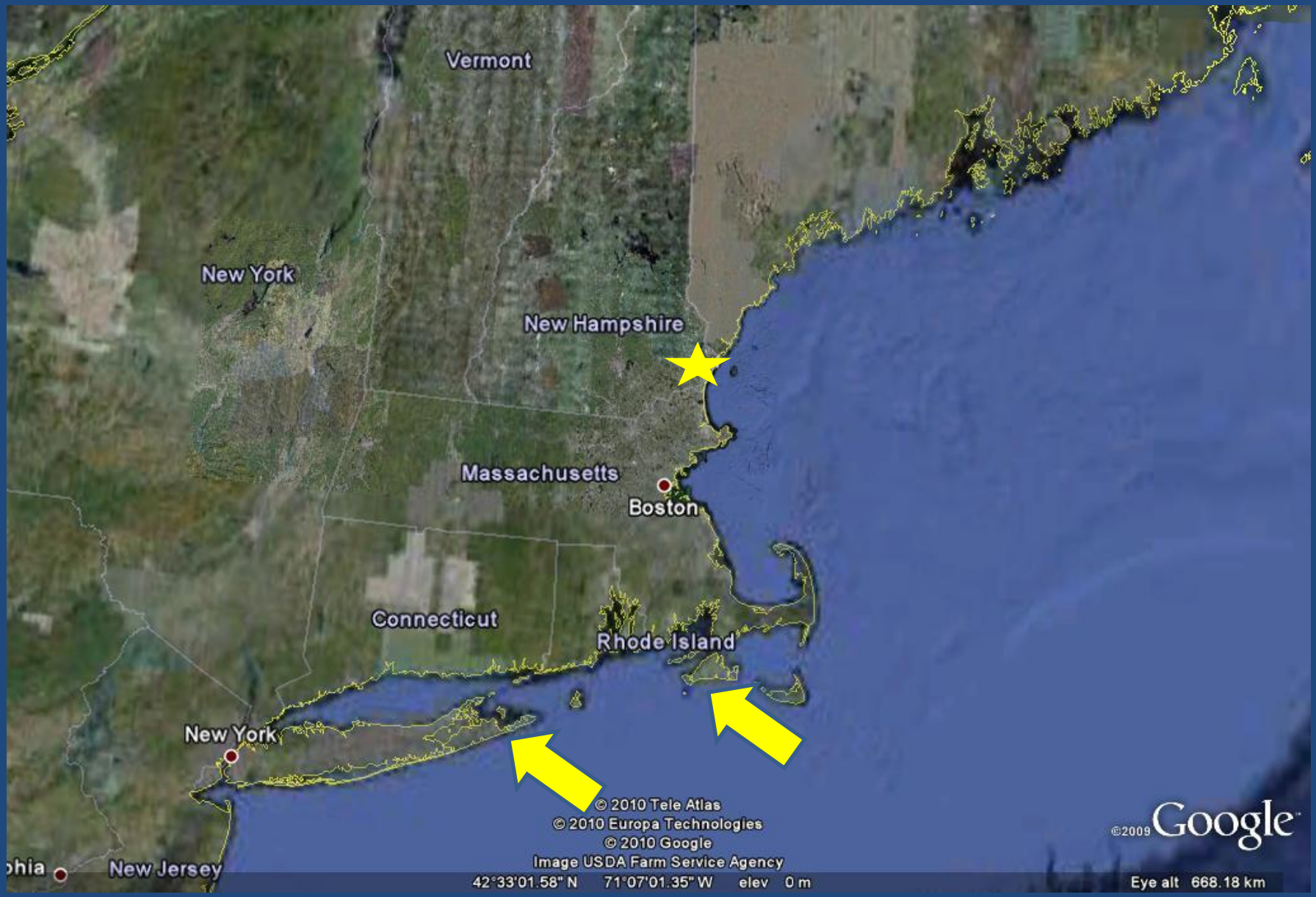
Research Phase - Experimental Releases

- ✓ Culturing techniques established
- ✓ Tagging studies completed
- ✓ Acclimation needs researched
- ✓ Acclimization benefits known
- ✓ Release strategies determined

Next step…large-scale pilot releases to validate experimental studies

Problem: Space limitations at UNH

A Regional Effort



Martha’s Vineyard Group

Wampanoag Tribe of Aquinnah

Martha's Vineyard / Dukes County Fishermen's Association

2 potential release areas

East Hampton, NY Group

Town of East Hampton

Multi Aquaculture Systems Inc.

2 potential release sites

Action Plan

- Employ local work force to carry out project
- Use responsible approach
- Begin with eco-system analyses at potential release sites
- Evaluate if restocking makes sense
  - Habitat quality, prey availability, predator complexes, wild flounder population, water quality, carrying capacity
- Determine if subpopulations exist to determine broodstock origin

Potential Problems

- Lack of control of municipalities
  - Maintain scientific approach
  - Reign in gung-ho participants
- Common resource but municipalities feel ownership
- Expensive
  - Who pays? How?
- Regulatory framework for regionally stocked species doesn't exist yet

Bottom Line

- Still lots of uncertainties

Whole Foods, Chapel Hill, NC

" A good solution applied with vigor now is better than a perfect solution applied ten minutes later."

– George S. Patton, Jr.

- Option of conserving marine resource
- Provide economic value
- Transfer technology and implementation

Thanks!

Atlantic Marine Aquaculture Center

NOAA

SCORE

SCIENCE CONSORTIUM FOR OCEAN REPLENISHMENT