

Hybrid Striped Bass Farming Sea Grant Fosters a National Aquaculture Industry

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North Carolina Sea Grant Research Symposium
Investments & Opportunities

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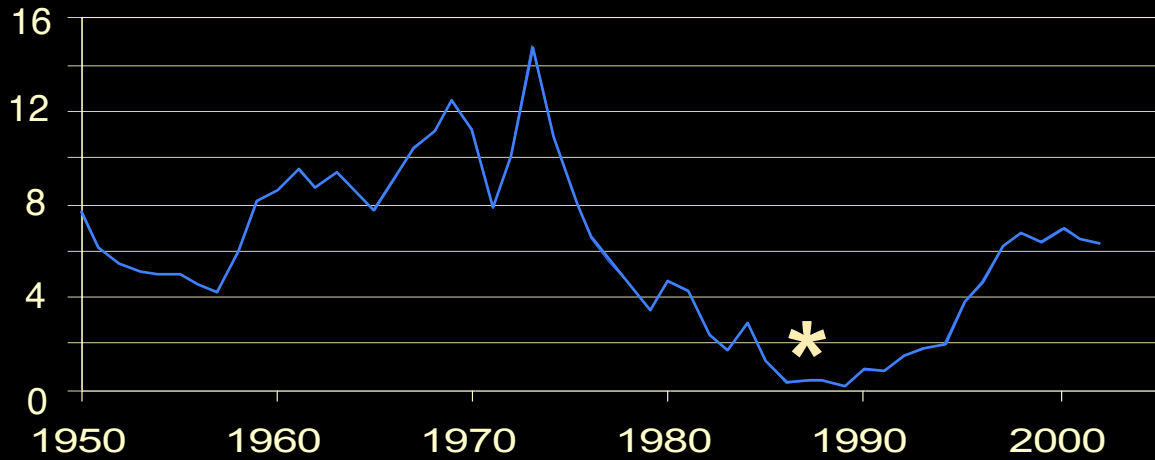


Presenting*

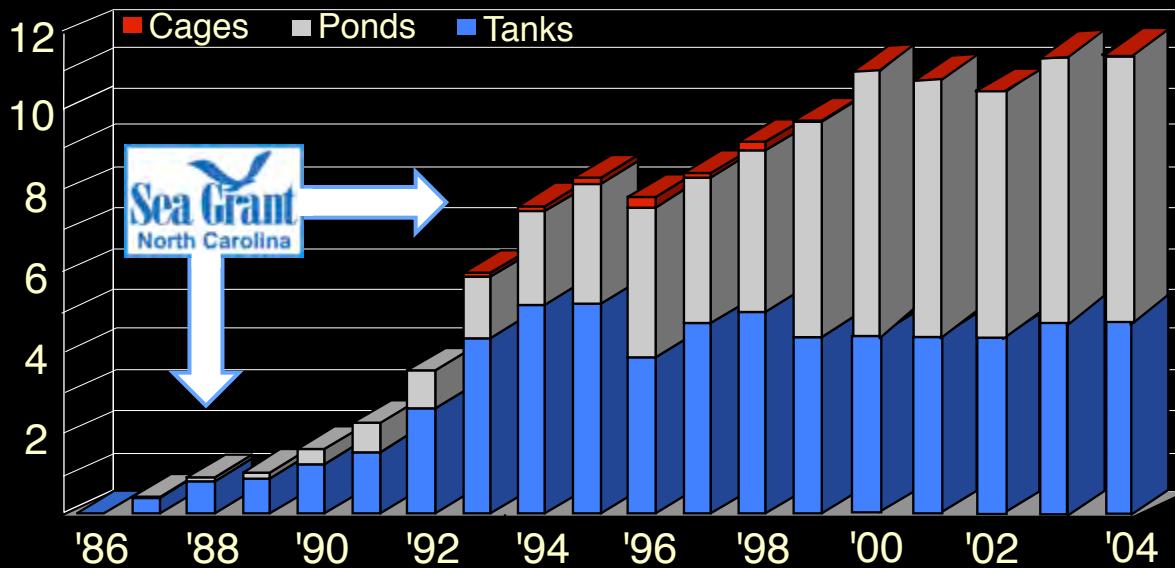


Striped Bass Fisheries and Farming

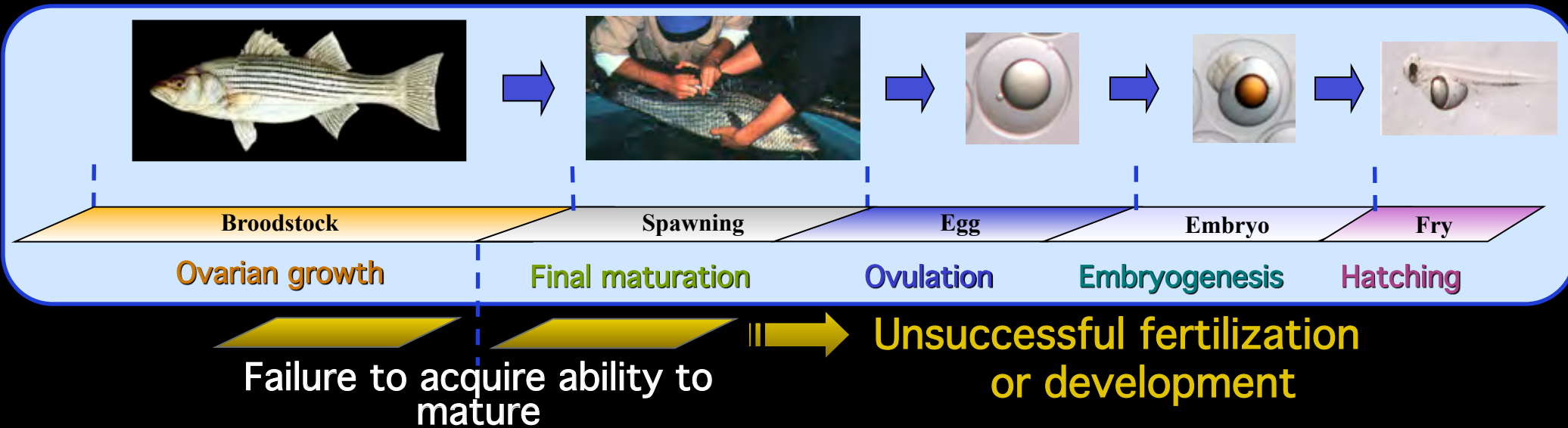
Fishery Landings of Striped Bass (million lbs)



* Farming of Hybrid Striped Bass (million lbs)

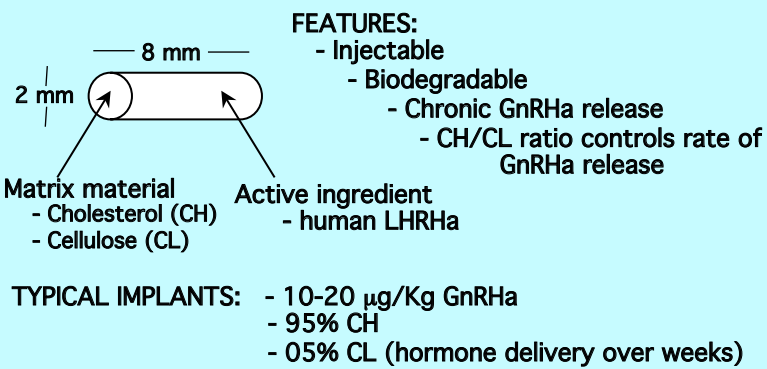


Maturational Incompetency in Striped Bass

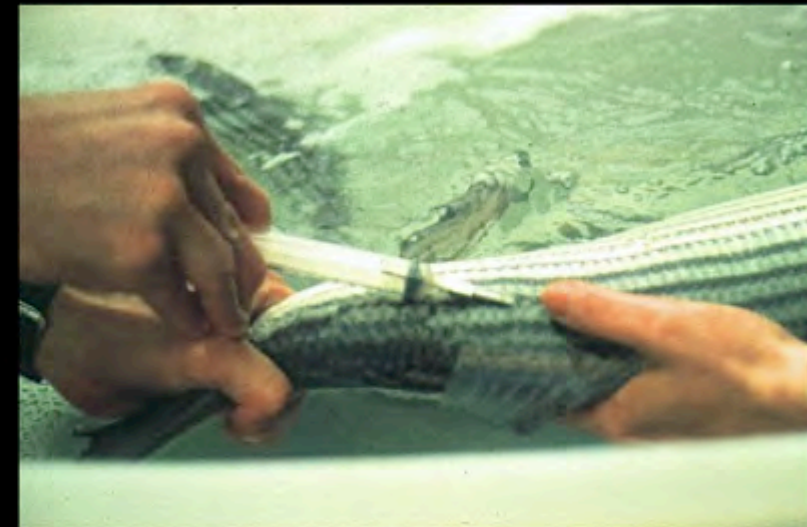


LHRHa Implants

Chronic-release LHRHa Implants

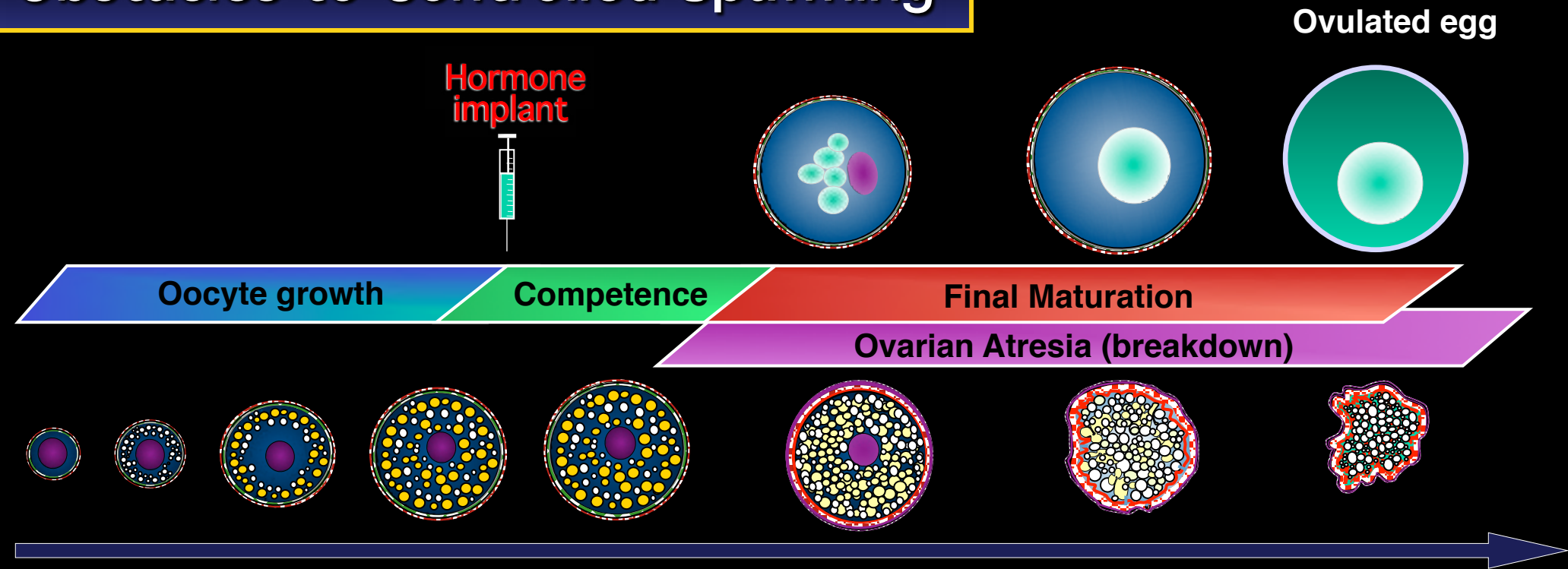


Synthetic analogue



pGlu-His-Trp-Ser-Tyr-D-Ala-Lue-Arg-Pro-ethylamide

Obstacles to Controlled Spawning



Accomplishments:

- Improved methods for hormonal induction of spawning
- Developed methods to detect stages of oocyte growth
- Learned how to verify maturational competence
- Developed means to detect/delay onset of ovarian atresia

Domestication of Striped and White Bass



NCSU Pamlico Aquaculture Field Laboratory



- Established methods:**
- Broodstock husbandry
 - Monitoring maturation
 - Induced spawning
 - Out-of-season spawning
 - Domestication
 - Mass production of fingerlings
 - Industry transfer

National Breeding Program

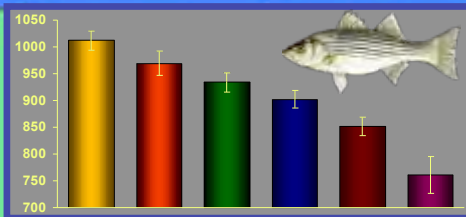


White Bass: 9 Generations



Striped Bass: 6 Generations

National Collaboration



Top-performing SB returned to NCSU for genotyping and breeding



SB fingerlings intensively reared in commercial production facility



Four-day-old SB larvae shipped from PAFL to Keo



SB fry cultured in Phase I fingerling production pond



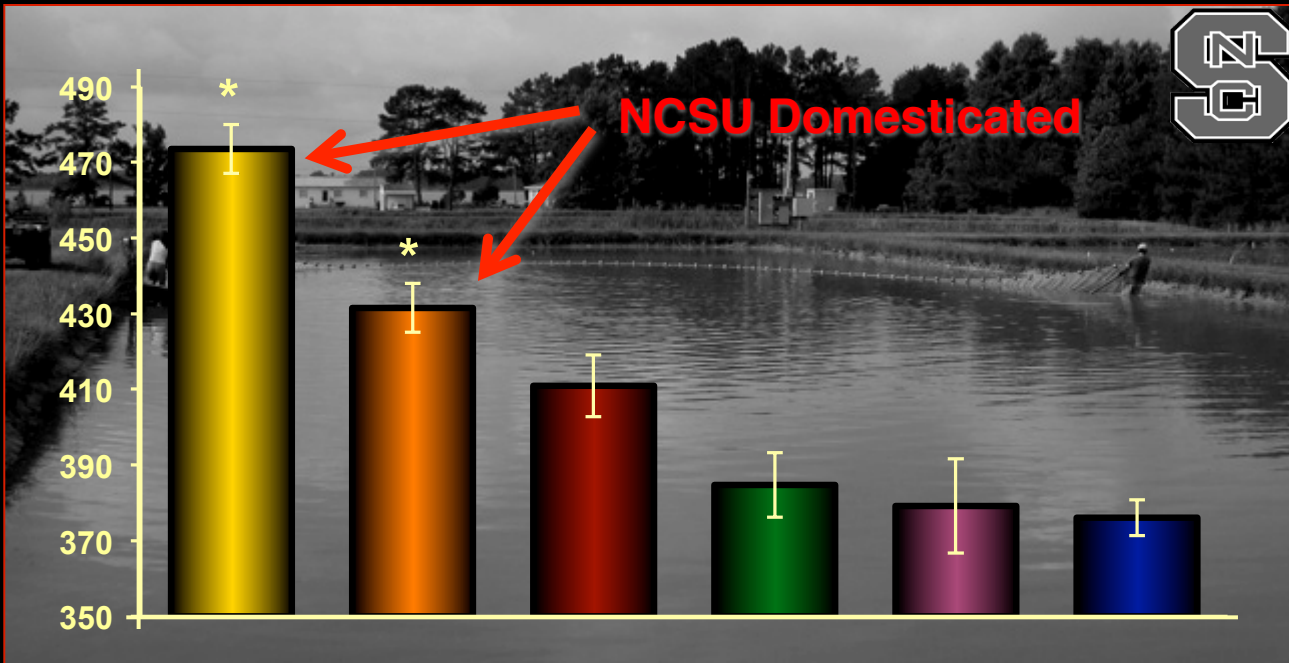
Top-performing SB males shipped to Keo

HSB fry produced from top-performing SB males

HSB being reared in commercial trials

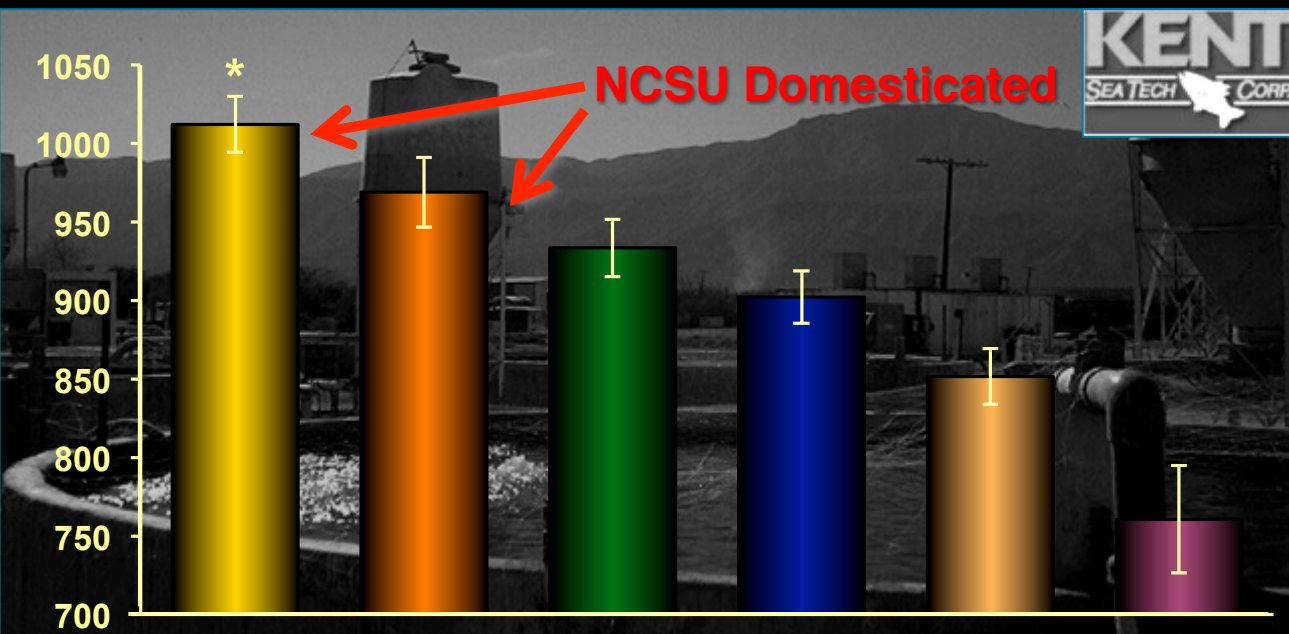


Body weight (g) by sire family



✓ Progeny from  sires outperformed other families

✓ Top-performing family in ponds also best family in commercial tank



NCSU Fish 2X size of Roanoke River Fish of the same age !

The Striped Bass Genome Project



Craig Sullivan
Carolina AquaGyn



Bob Chapman
S.C. DNR



Ben Reading
N.C. State Univ.

Genome Mapping

- Medium density linkage map
- 289 microsatellite DNA markers
- 26 linkage groups



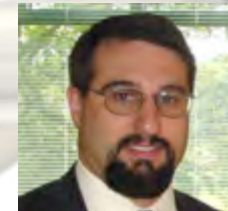
Jenn Schaff
N.C. State Univ.



Charlie Opperman
N.C. State Univ.

Genome Sequencing & Assembly

- 40 billion bp sequenced
- 569 million assembled (~3/4 of genome)
- Assembly and annotation ongoing



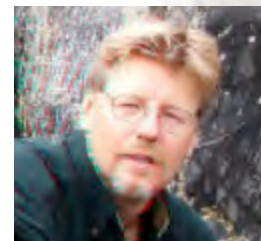
Caird Rexroad III
USDA-NCCCWA



Sixin Liu
USDA-NCCCWA



Kim Reese
VIMS



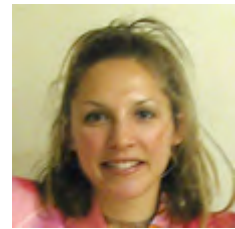
Jan Cordes
VIMS

Impacts and Uses of the Genome

- Accelerated selective breeding
- Understanding hybrid vigor
- Catalogue all expressed genes
- Molecular medicine



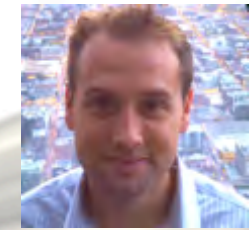
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*National Aquaculture
Genome Project*