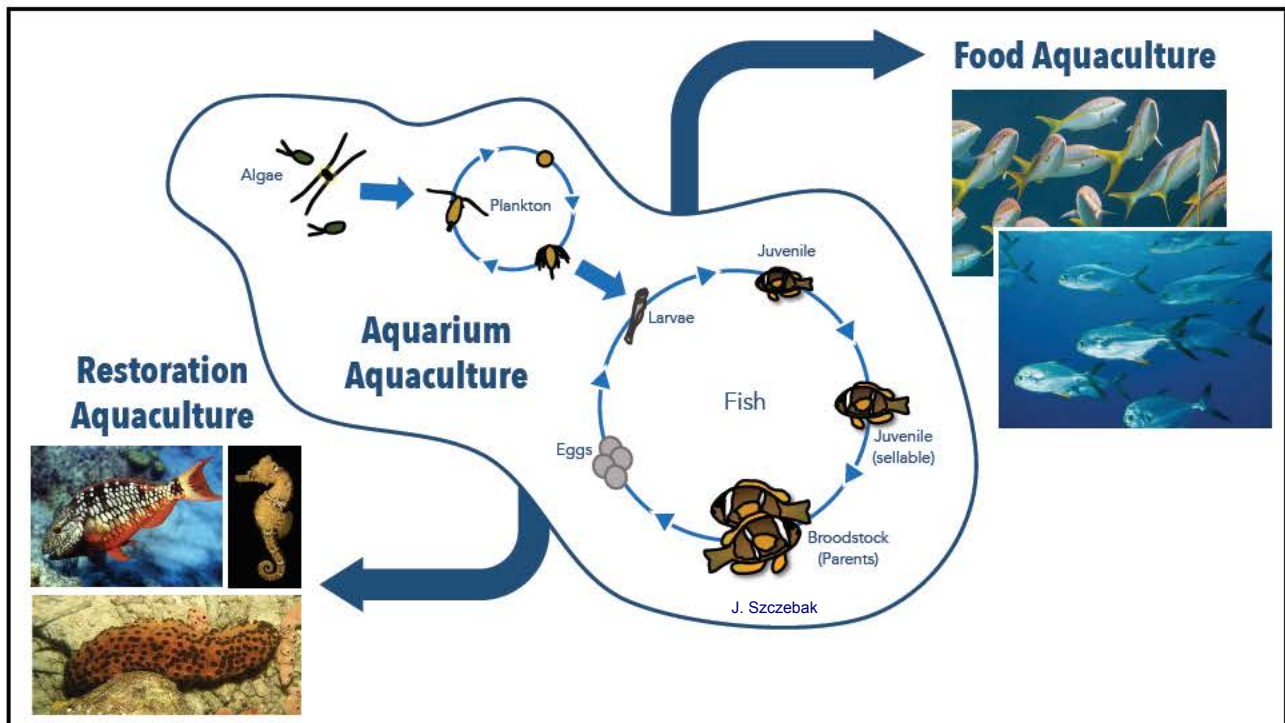


Public Aquariums Key Partners in the Expansion of Aquaculture Innovations CELC 2021

Andrew Rhyne, Ph.D.



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DOI: 10.1002/ece3.3538

ORIGINAL RESEARCH

WILEY Ecology and Evolution

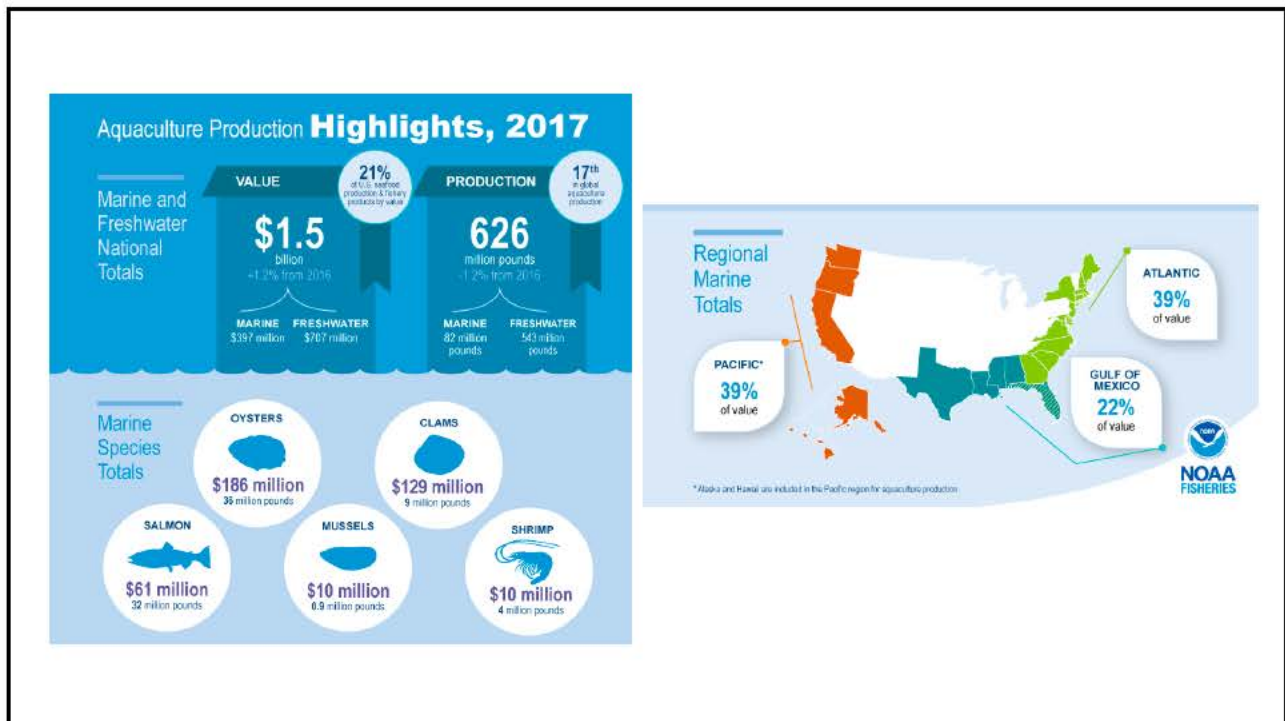
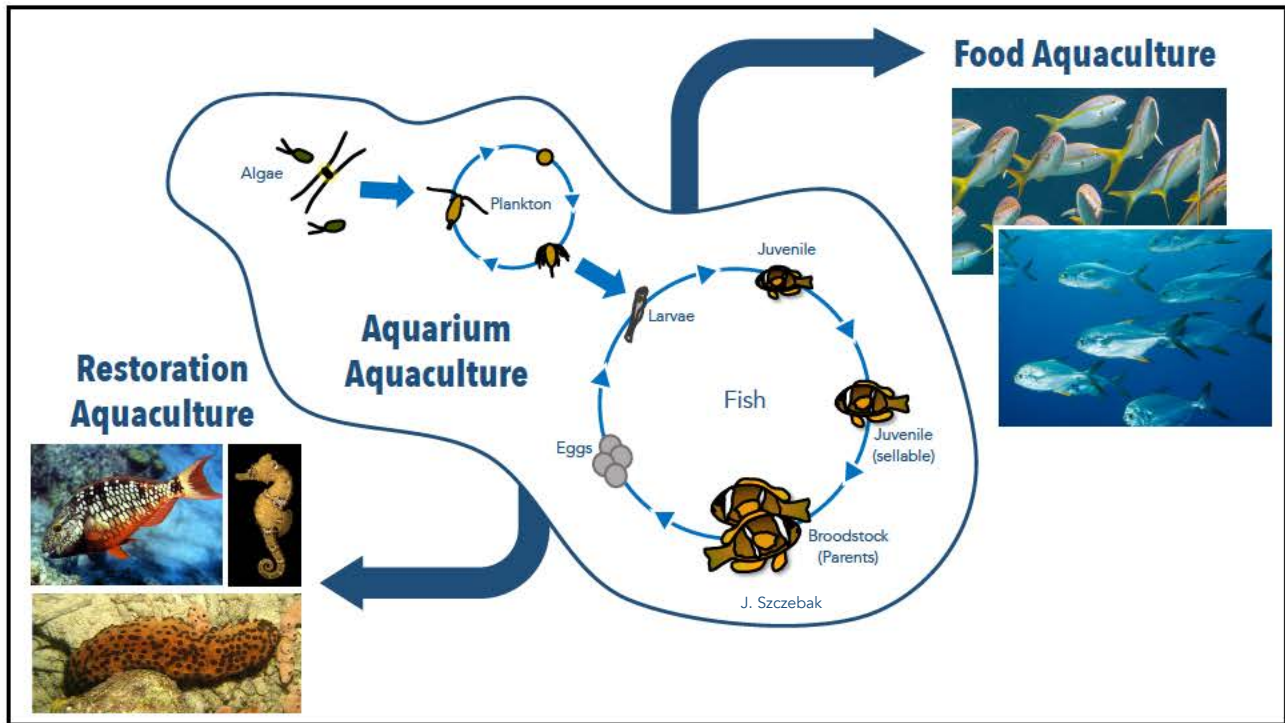
Inducing broadcast coral spawning ex situ: Closed system mesocosm design and husbandry protocol

Jamie Craggs^{1,2} | James R. Guest^{3,4} | Michelle Davis² | Jeremy Simmons² | Ehsan Dashti⁵ | Michael Sweet¹



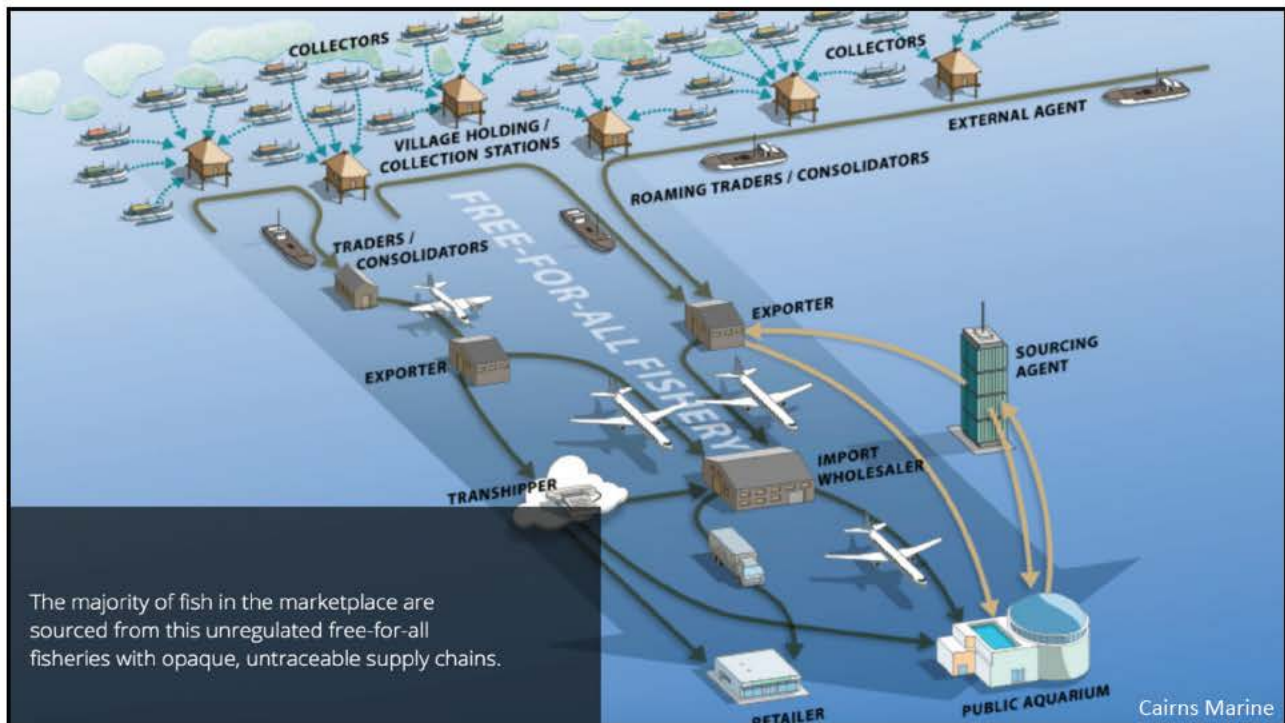
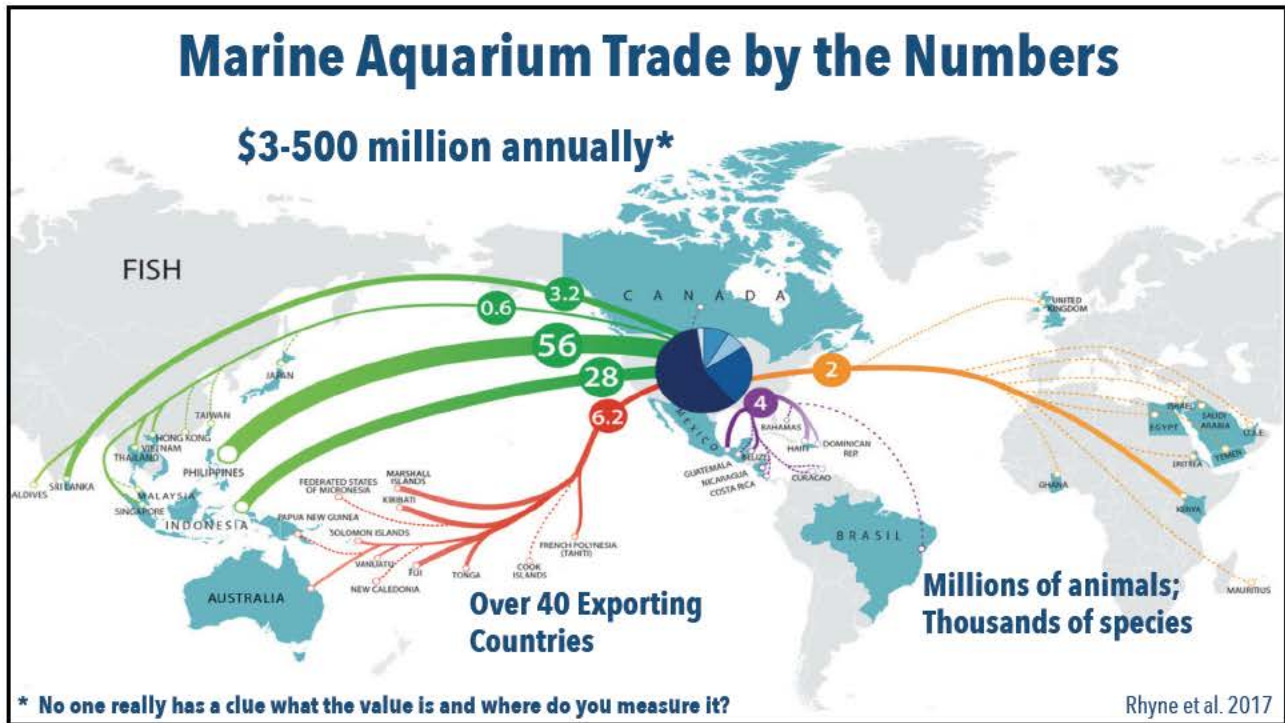
Inducing broadcast coral spawning ex situ: Closed system mesocosm design and husbandry protocol

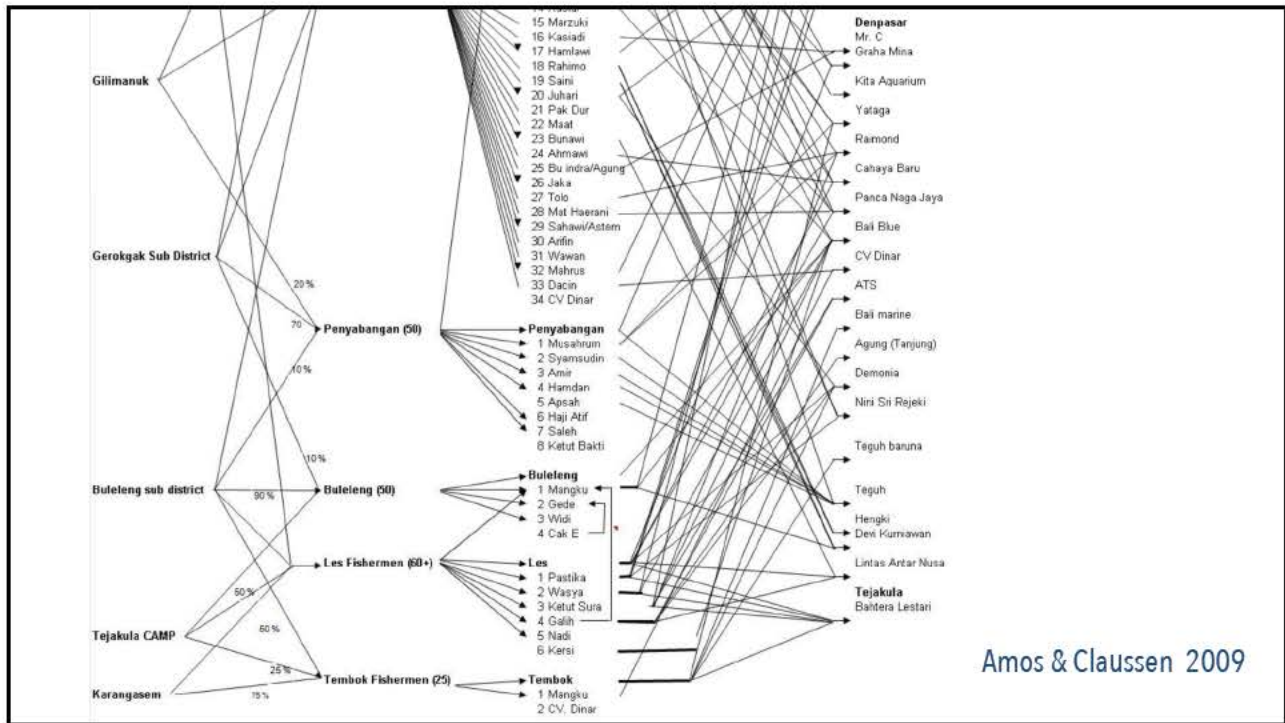




AQUARIUM AQUACULTURE PROGRAM







Fashion and Fish Have a Lot in Common



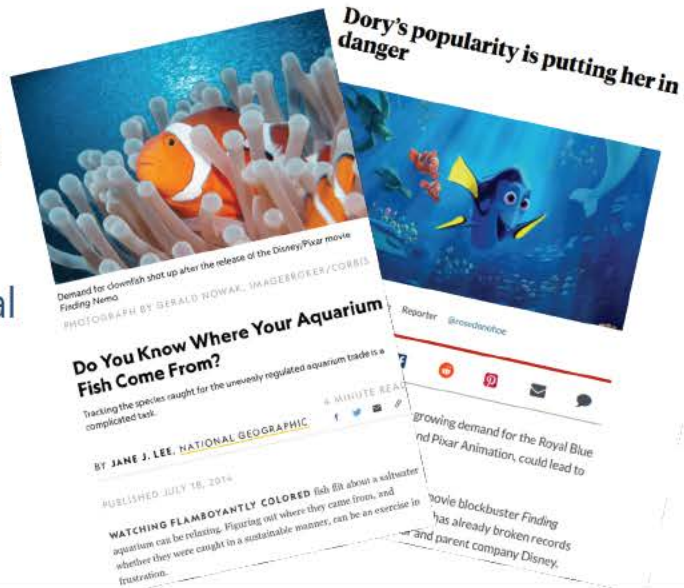
@warestyle

www.fashionrevolution.org

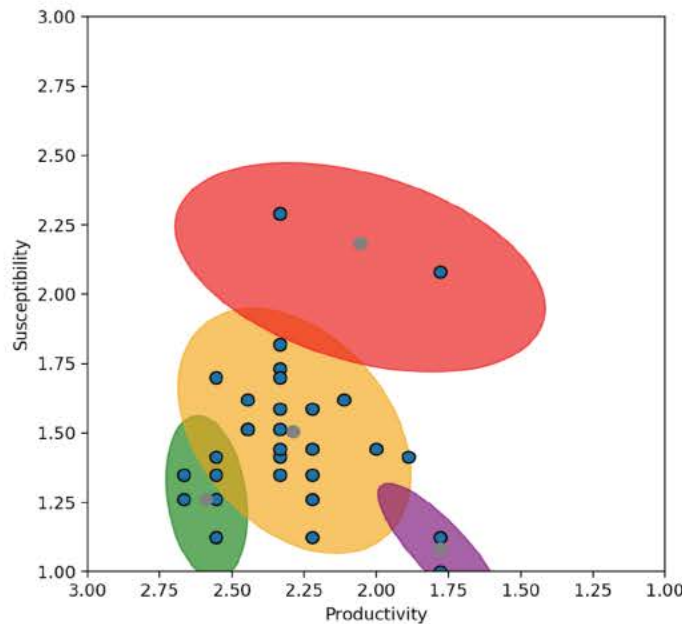
Sustainability in the Marine Aquarium Trade

"A relationship between society and reef that continually sustains and improves the net benefit to the Coral Reef Social-Ecological System"

Rhyne et al. 2014



Most Wild Aquarium Species Are Not Threatened By Fishing Pressure, but...



Baillargeon et al. 2020

... there are still problem spots and science is not always the driver of policy.

The screenshot shows a National Geographic article page. On the left, the article is titled "The Horrific Way Fish Are Caught for Your Aquarium—With Cyanide" with a sub-headline: "Up to 90 percent of saltwater aquarium fish imported to the U.S. are caught using cyanide. A new petition is calling for the government to crack down." Below the text is an image of a diver underwater. On the right, another article is titled "Hawaii's Aquarium Fishery Is Shuttered, Pending Review" dated 16 Jan, 2021. The text states: "After years of relentless attempts to legislate Hawaii's legal marine aquarium fishery out of existence, anti-aquarium trade activists, with the support of big environmental non-profits, have succeeded in officially closing what some consider to be the most well-studied, well-managed, sustainable marine aquarium fishery on the planet." It continues: "As of January 12th, 2021, the fishers who collected marine aquarium fishes under the licensing and monitoring of Hawaii's Department of Land and Natural Resources (DLNR) are out of jobs, at least for the foreseeable future. The last remaining allowances for minimal aquarium fishing to continue have been closed by the state's courts. First, the official news release from the DLNR." Below this text is an image of a coral reef with many colorful fish.

Public Facing Messaging is a Corner Stone of Conservation and Education Programs at Aquariums.



ecowatch.com

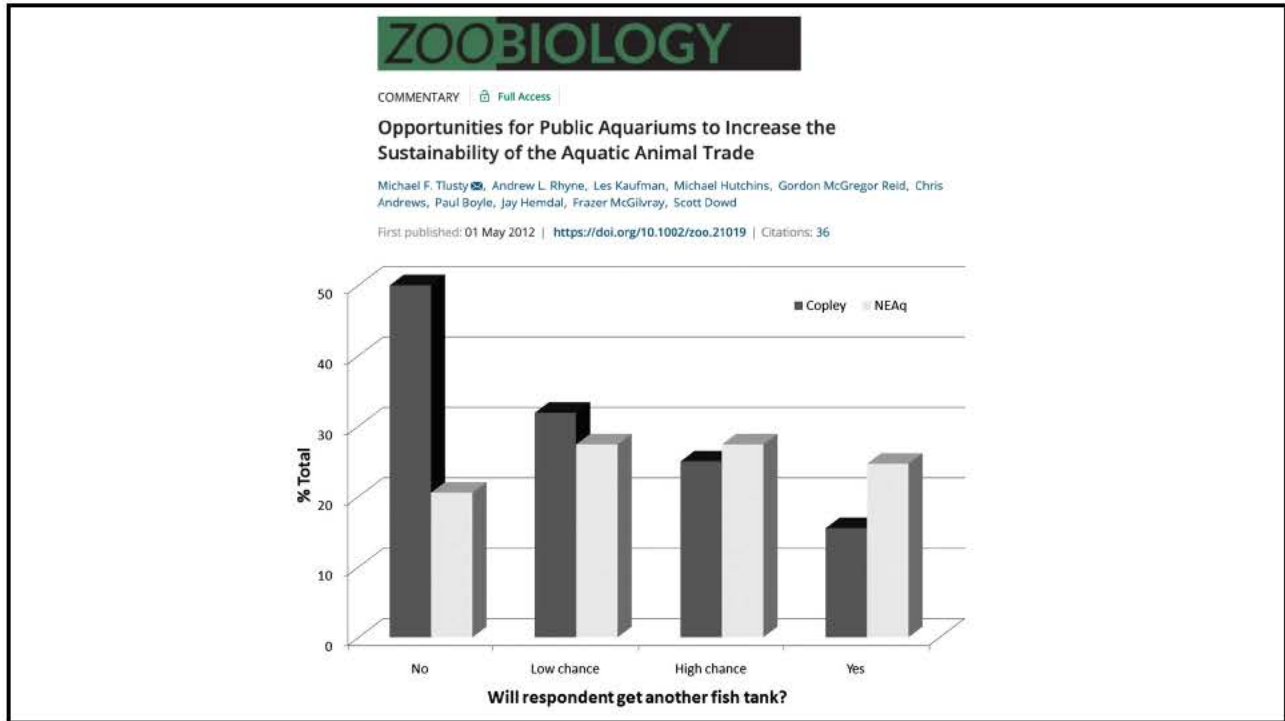
Public Facing Messaging is a Corner Stone of Conservation and Education Programs at Aquariums.

19 Aquariums Pledge to Fight Plastic Pollution, Ban Single-Use Plastic Bags and Straws



Public Facing Messaging is a Corner Stone of Conservation and Education Programs at Aquariums.





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OF ZOOS &
AQUARIUMS

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GLOBAL SPECIES MANAGEMENT PLANS

A Report by the AZA Task Force on the Sustainability of Zoo-based Populations: Phase 1

By Paul Boyle, PhD, Brad Andrews, Candice Dorsey, PhD, Mike Fouraker, Dennis Pate, Mark Reed, and Bob Wiese, PhD

1,218 freshwater and 1,397 marine species

- **Impossible – to have only aquarium reared species**
- Space needed exceeds facility footprints and budgets.
- Many species have never been bred in captivity



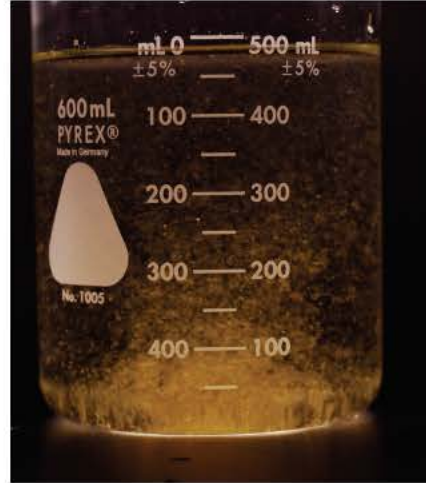




Challenge: Removal of eggs from display systems that are not designed for egg collection



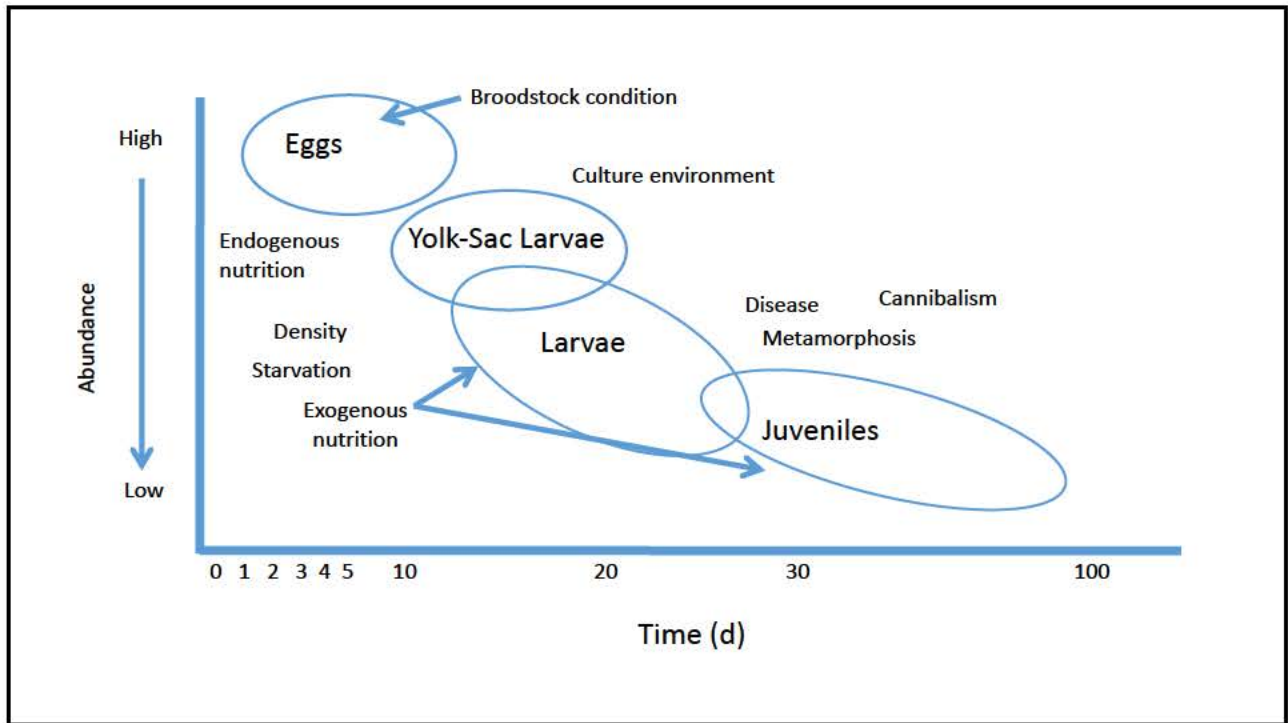
Ramon Villaverde, Columbus Zoo



DNA Barcoding

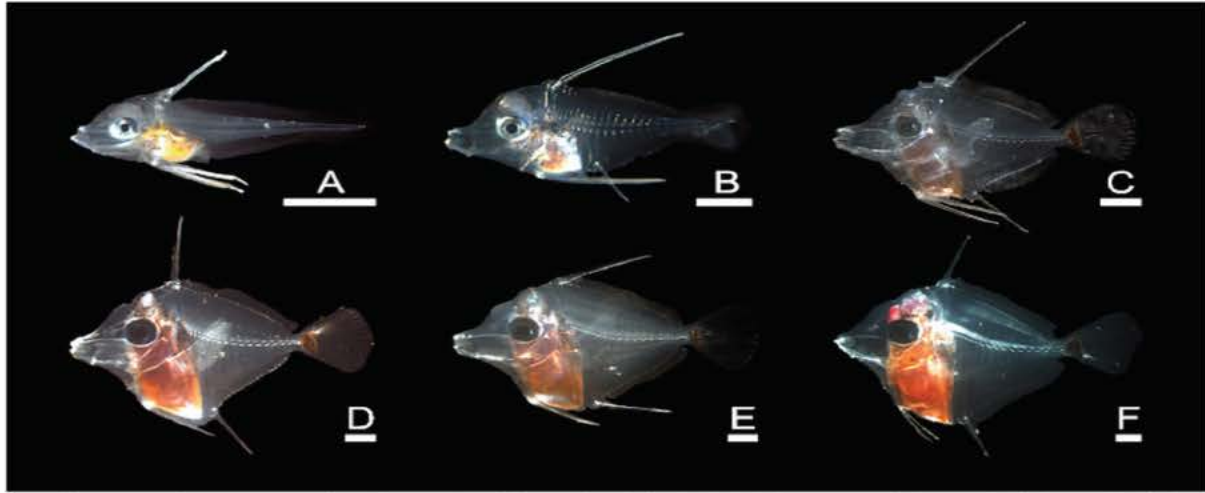
ADULT	EGG	LARVAE

Adult images Fishbase.org



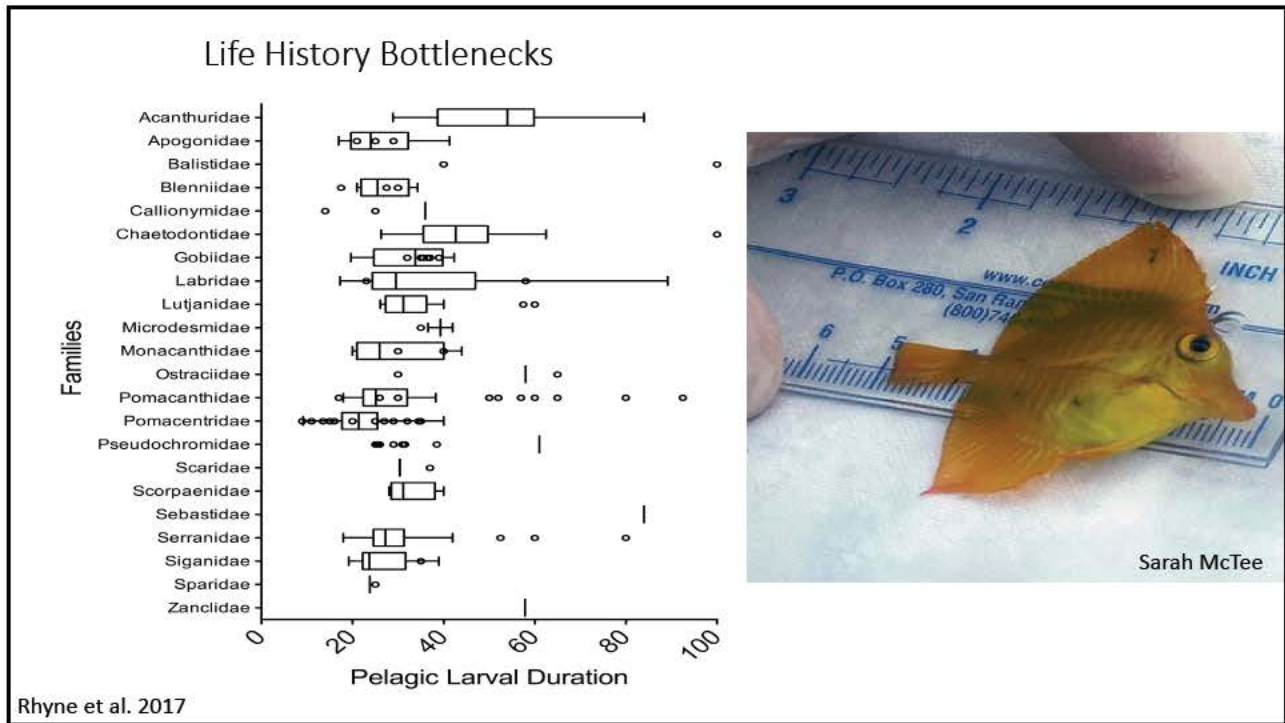
Update on Yellow Tang Research at OI

Posted on [May 20, 2015](#) by [Rising Tide](#)




Yellow Tang larvae reared at OI. A=14 dph, B=24 dph, C=36 dph, D=45 dph, E=50 dph, F=60 dph.






IMLS 21st Century Museum Professionals: Sustainable aquatic collections for the 21st Century - closing the loop on exhibit species



23 public aquariums	Four 5-day workshops	Supplied a MoLaRS to each institution
System design / operation	Live Feeds	Broodstock
Egg collection / handling	Larval Rearing	Weaning
Photography	Online Learning Community	



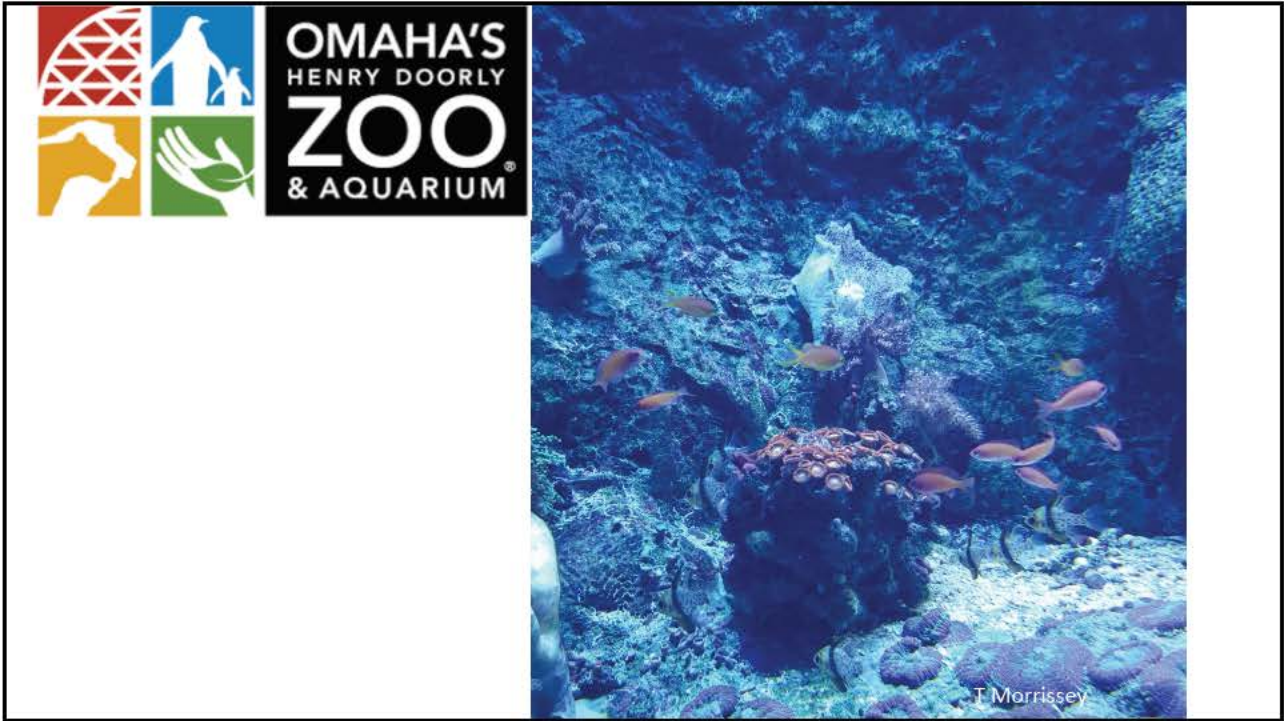





Monica Schmuck



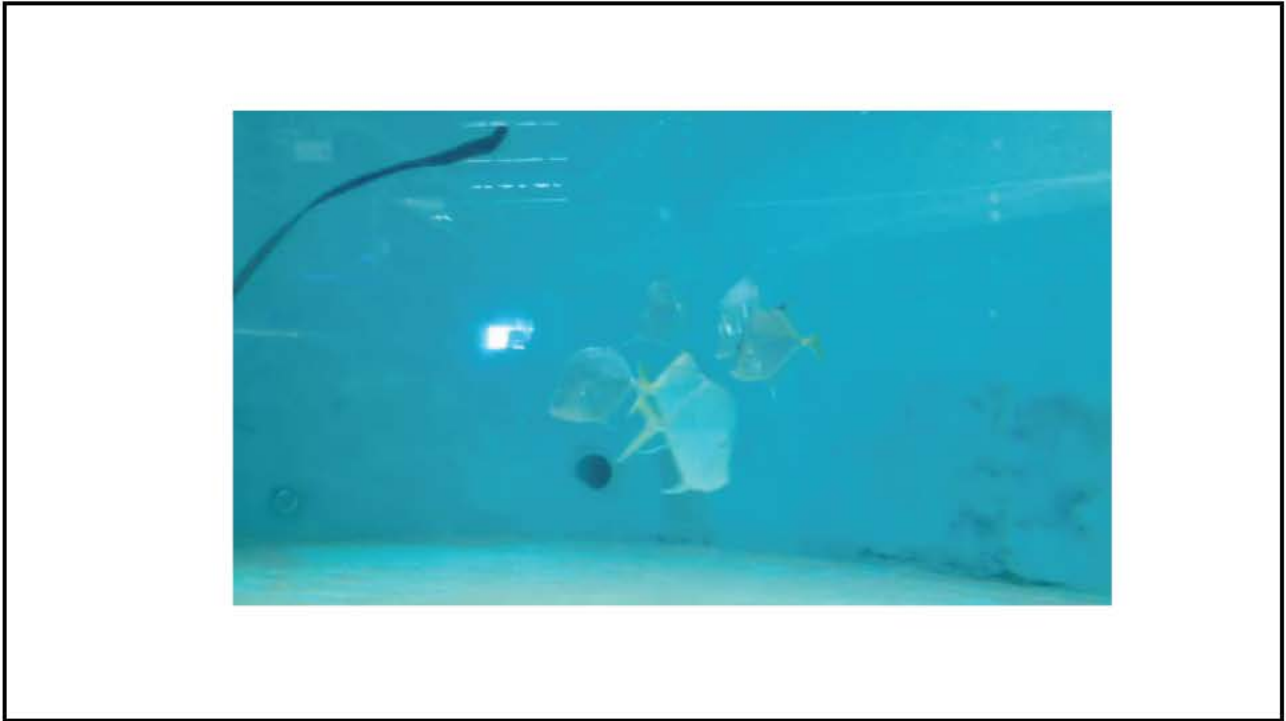


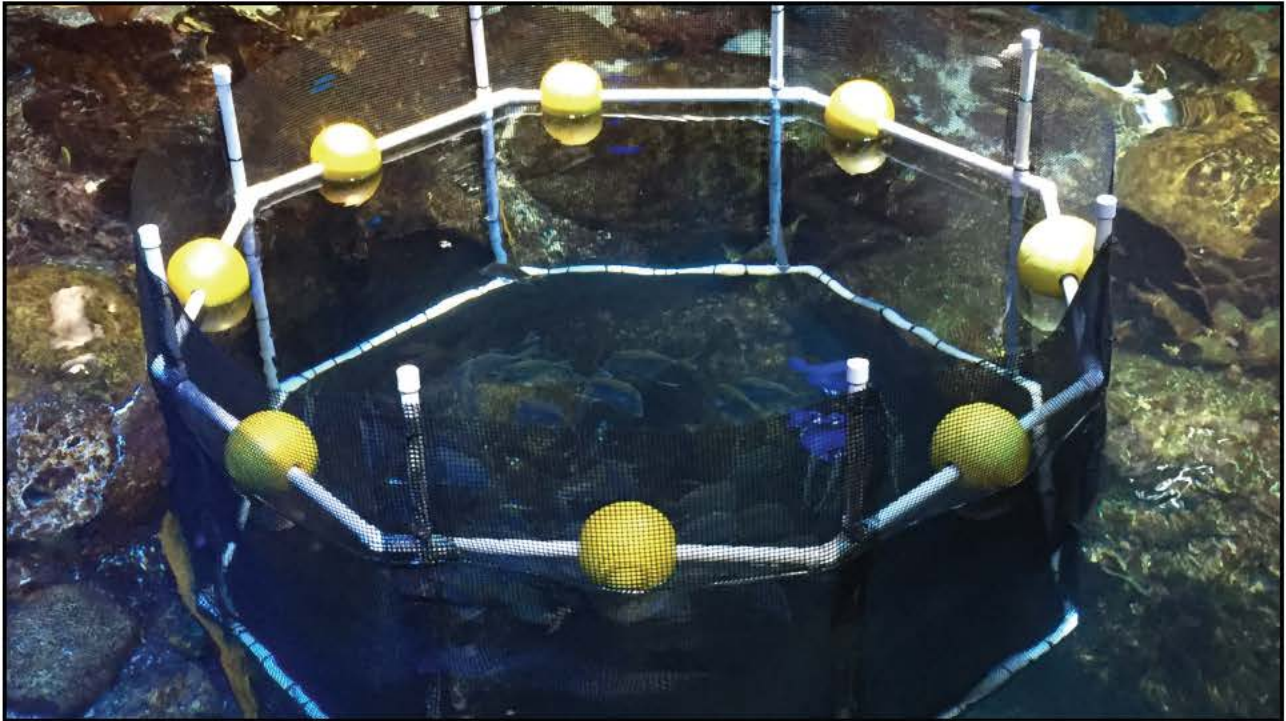


Copper Sweepers *Pempheris schomburgki*



Finegold







THANKS!

Roger Williams University | Center for Economic and Environmental Development



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