

Morgan State University

Patuxent Environmental & Aquatic
Research Laboratory

PEARL



About MSU PEARL

- Founded in 1967 by the Academy of Natural Sciences in Benedict, MD
- Moved downriver (and to Calvert County) in 1994 - Jeff Patterson Park
- Laboratory deeded to Morgan State University in 2004
- 22,000 square foot lab and office building
- Multiple research vessels with a private research dock
- 14 staff; 4 Ph.D. Researchers

Key areas of expertise include: Shellfish Aquaculture & Genetics, Chesapeake Bay Ecology, Natural Resource Economics, & Environmental Education



Natural Resource and Environmental Economics – Dr. Scott Knoche

- **PEARL Interim Director & Research Economist**
- **Background:**
 - Post-Doctoral Research Associate – Fisheries Economist with the Maryland DNR Fisheries Service

Recent Research Projects Include:

- **National Fish and Wildlife Association**
 - Examining Ecosystem Services & Economic Impacts of Oyster Reef Restoration in Chesapeake
- **Maryland DNR – Funded Research Projects:**
 - Maryland Non-Tidal Recreational Fisheries Management Survey
 - An Access Site Angler Survey to Estimate Effort, Catch, and Harvest in the Upper Gunpowder Brook Trout Fishery
- **U.S. Fish & Wildlife Service Collaboration**
 - Examining the Effect of Public Access Provision and Wetland Restoration on Waterfowl – Related Recreation



Shellfish Aquaculture – Rebekah Borgert

- Shellfish Aquaculture Program began in 2008
- Grant from Maryland Department of Commerce in 2016 to support production at hatchery and create commercial hatcheries in the state in the long-term
 - Hired Rebekah Borgert, M.S., Hatchery Manager
 - Hired Amber DeMarr, Hatchery Technician
- Partnerships with numerous local aquaculture businesses & entrepreneurs



How Can We Help?

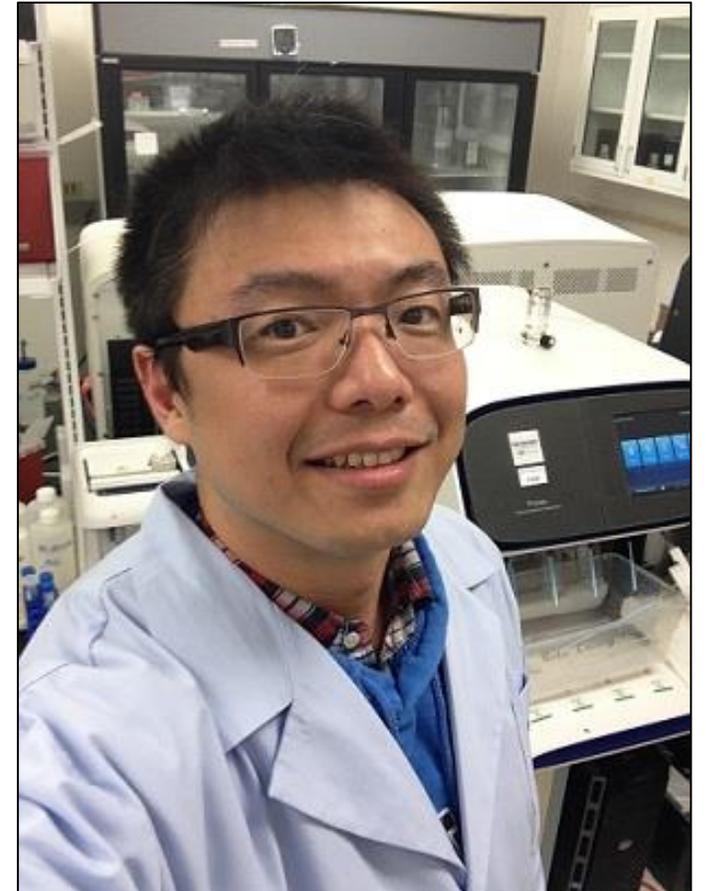


Shellfish Genetics - Dr. Ming Liu

- **Research Assistant Professor**
 - Recent hire, brought on in August 2017
- Previously, Dr. Liu was a Post-Doctoral Researcher at the Haskin Shellfish Research Laboratory, Rutgers University

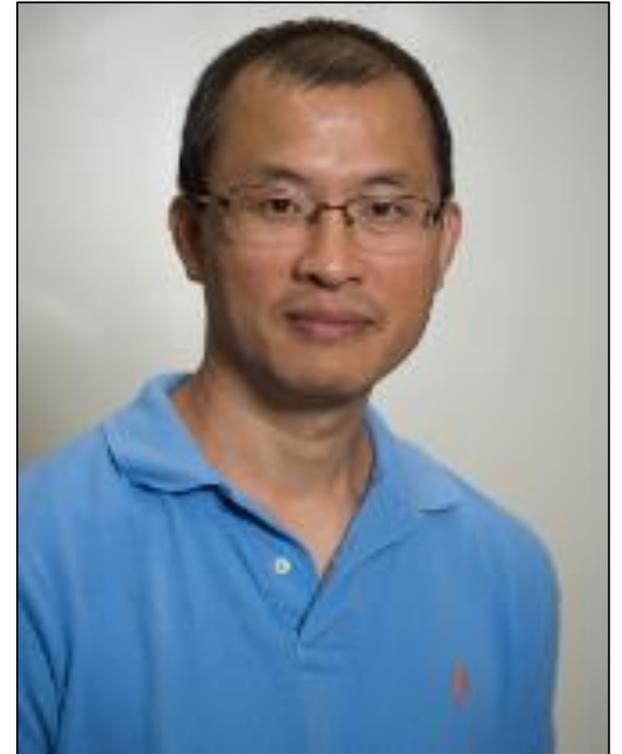
Research interests & projects include:

- Oyster Genetics and Breeding
- Currently working on developing oyster broodstock with favorable characteristics through genomics approach
 - Seeking to identify genetic markers for disease resistance, faster growth, low salinity tolerant oysters



Biological Oceanography – Dr. Chunlei Fan

- **Associate Professor - MSU Biology Department**
- Dr. Fan's research focuses on the quantitative study of coastal ecological processes and dynamics
- **Research projects include:**
 - Characterizing spatial and temporal distribution of Atlantic Sea Nettle in Chesapeake Bay using Acoustic Technology
 - Using Hyperspectral Remote Sensing to Examine the Relationship between Land Use and Water Quality

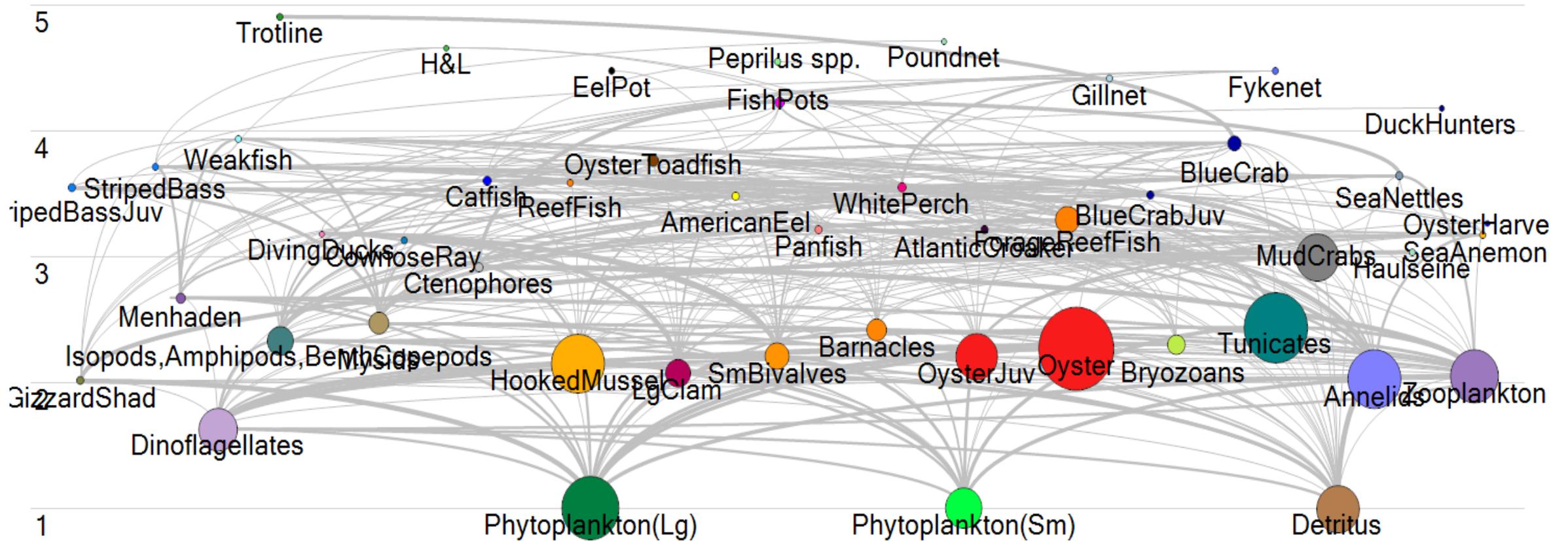


Fisheries Ecology – Dr. Tom Idhe

- **Research Assistant Professor**
- **Lead Ecological Modeler on NFWF Project:** Examining Ecosystem Services & Economic Impacts of Oyster Reef Restoration
- **Previously with NOAA National Marine Fisheries Service**
 - Develop ecosystem models to predict the effects of system stressors (e.g., climate change, TMDL's) on fishery populations



Tom Ihde "Reef Horrendogram"



Amber DeMarr – George Abbe Blue Crab Survey

- Longest continuous survey of Blue Crab population in Chesapeake Bay
- Began in 1968 at Benedict Lab; managed by George Abbe for 41 years; 2017 is 50th year!!!
- Survey currently funded by  Dominion Energy™

Recent Research Projects Include:

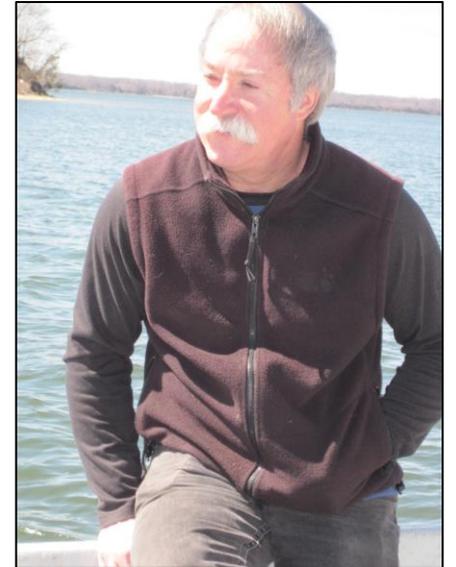
- Evaluating the Catch Success of Blue Crab Bait – Synthetic Bait *vs* Atlantic Menhaden
- Behavior of Blue Crab (*Callinectes sapidus*) in Response to Bait Type



Richard Lacouture – Environmental Education & Phytoplankton

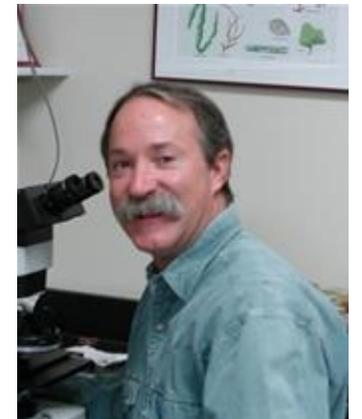
- **Education Coordinator**

- Objective of education program is to support conservation and restoration of Chesapeake Bay, tributaries and surrounding watershed through education and public awareness
- Leads K-12 field trips with tour on R/V Leidy, sampling for biota, scientific tests



- **Phytoplankton Expert**

- PLANS & PLANS II Grants (**PL**ankton & **N**utrient **S**tudies for Bay)
 - Program designed to provide hands-on experiences for students by investigating nutrient and phytoplankton dynamics in Bay
- Phytoplankton Component of Chesapeake Bay Water Quality Program – 1984-2009
 - Funded by MD DNR and EPA – Chesapeake Bay Program

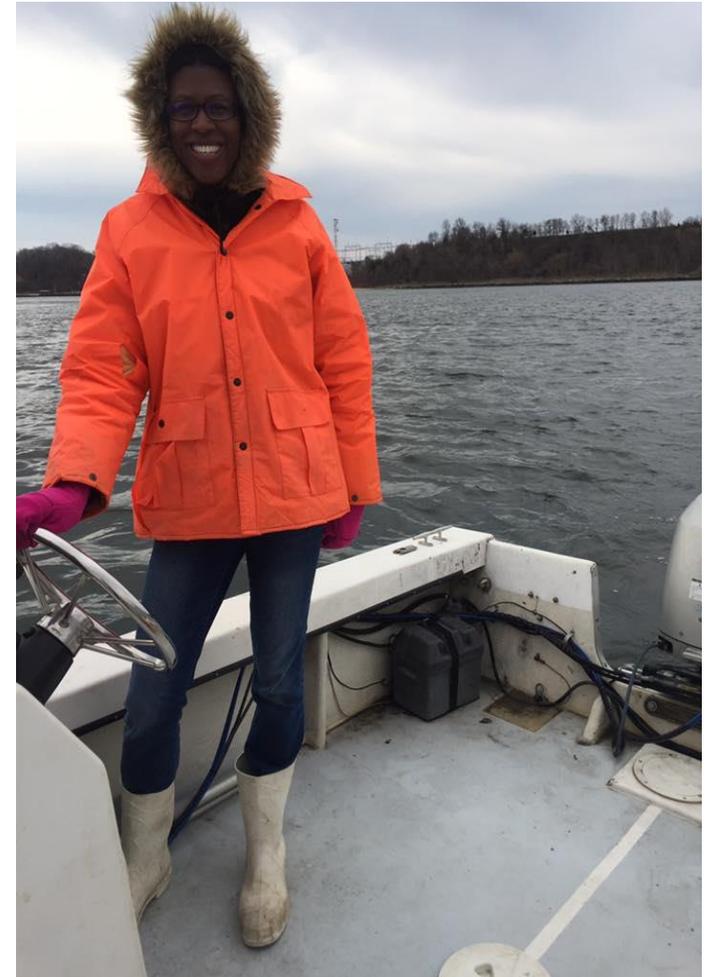


Nicole Williams – Environmental Education

- **Environmental Education Specialist**
 - Focuses on environmental curriculum development and implementation

PROJECT HIGHLIGHT:

- Currently setting up pilot program in 2 middle schools and 2 high schools in Baltimore area
- Objective is to provide students with skills to understand important environmental issues and improve environment in their communities
- Long term goal is to expand program to additional Baltimore Schools



Tim Klares – Power Generation & the Environment

- **Director, Power Plant Environmental Training Center**
- Program targeted to prospective power plant employees (engineering and STEM college students)
- Through workshops and guest lectures, program provides unique learning experience on interrelationship between nuclear power plant operations and body of water



Dr. Elka Porter

- **Visiting Researcher, University of Baltimore**
- Research Interests include:
 - Benthic-Pelagic Coupling Processes
 - Mesocosm Experimentation
 - Oyster Biodeposit and Bottom Sediment Interactions

Recent Research Projects Include:

- Building the **STURM** facility at Morgan State
 - **Shear Turbulence Resuspension Mesocosm Facility**
- Recently received funding From Maryland Sea Grant to continue STURM experiments through 2018 and 2019
 - Project will support 2-3 interns each summer

