

**THE INSTITUTE OF MARINE AND ENVIRONMENTAL
TECHNOLOGY (IMET) – UNIQUE MARINE AQUACULTURE
PROGRAMS AND OPPORTUNITIES FOR COLLABORATIONS**

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**16,200 m²; 42 research labs; 2,000 m² Aquaculture Research Center
23 faculty members, ~160 people altogether**



Addressing Challenges of the 21st Century

Food

Water

Deteriorating Environment

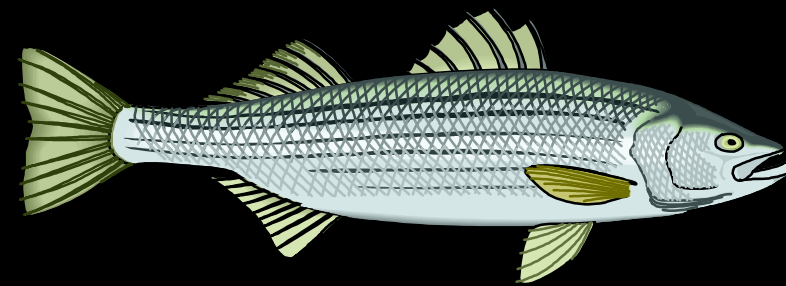
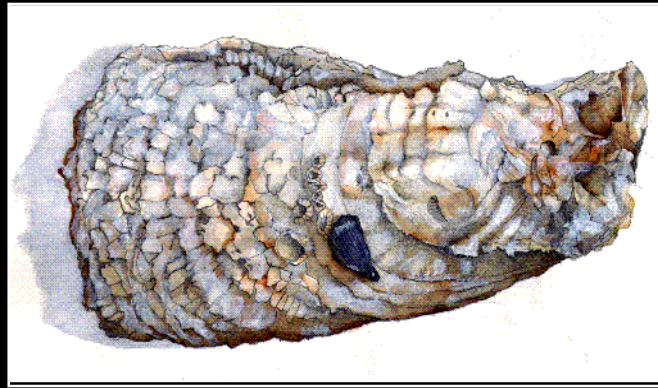
Energy

**Human
Health**



Aquaculture and Fishery Biotechnology

- Studying shellfish and finfish of commercial importance



**Basic and applied studies on life cycle and physiology to mass production:
From the bench to the industry**

Reproduction (fertility and sterility), larval rearing, growth, nutrition, vaccine development, sustainable production systems



2,000 m² Aquaculture Research Center (ARC)

- **All recirculating aquaculture systems**
- **Full computer control of all environmental conditions:**
 - **Salinity- fresh to seawater, all artificial seawater**
 - **Temperature- 10-30^o C (50-85^o F)**
 - **Photoperiod- simulating sun rise/set**
- **Continuous monitoring/controlling all tank parameters:**
 - **Temp, salinity, oxygen, ammonia, nitrites, nitrates, phosphorous, H₂S,....**

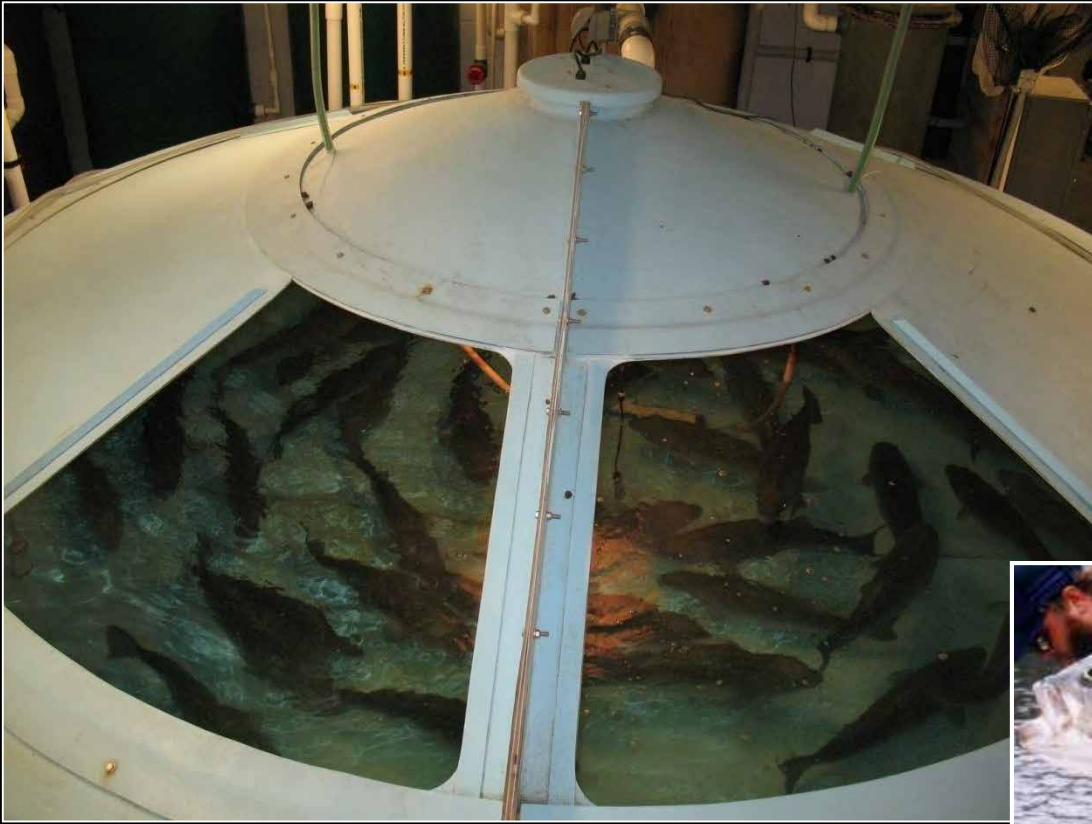
2,000 m² Aquaculture Research Center (ARC)



Broodstock management- reproductive biology, induction of spawning



Striped bass (*Morone saxatilis*)



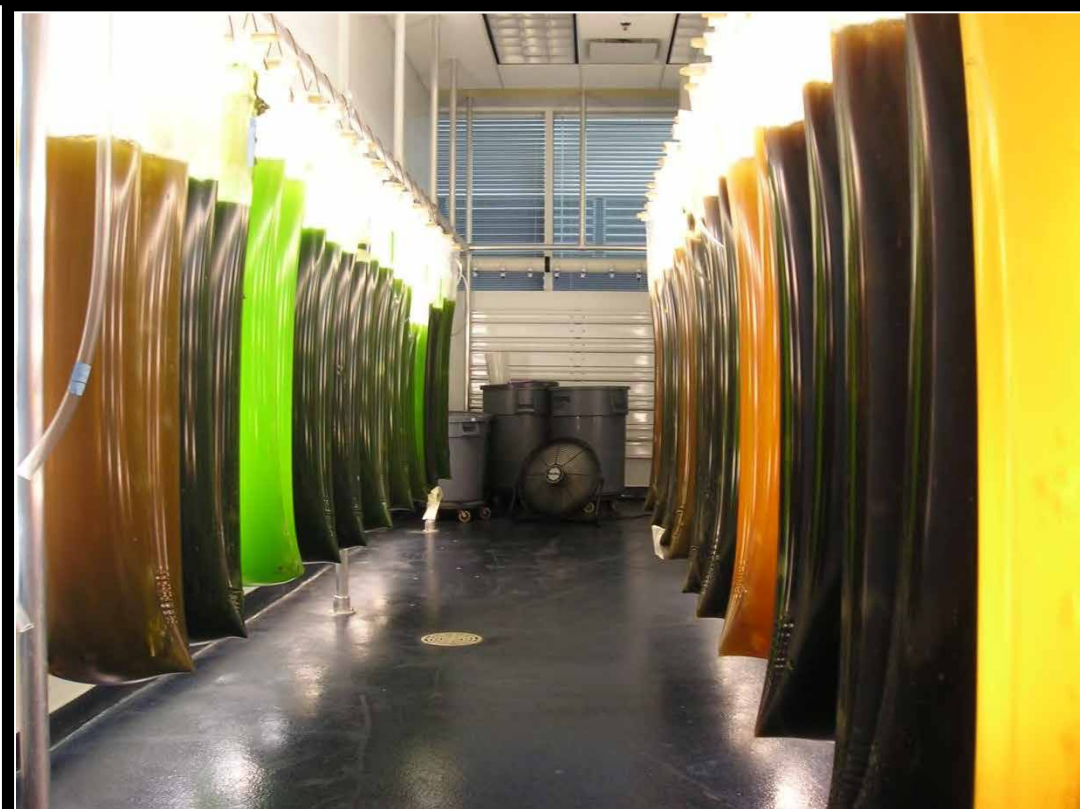
Gilthead Seabream; European Seabass



Greater amberjack- Collaboration with Kevan Main



IMET's micro-algae programs: Live feeds, alternative diets, bio-energy



Rotifer culture



Hatchery- Juvenile Production



Larval rearing tanks



Bluefin Tuna Juvenile Production



Multiple experimental tanks alternative feed- algae, insects; sterility

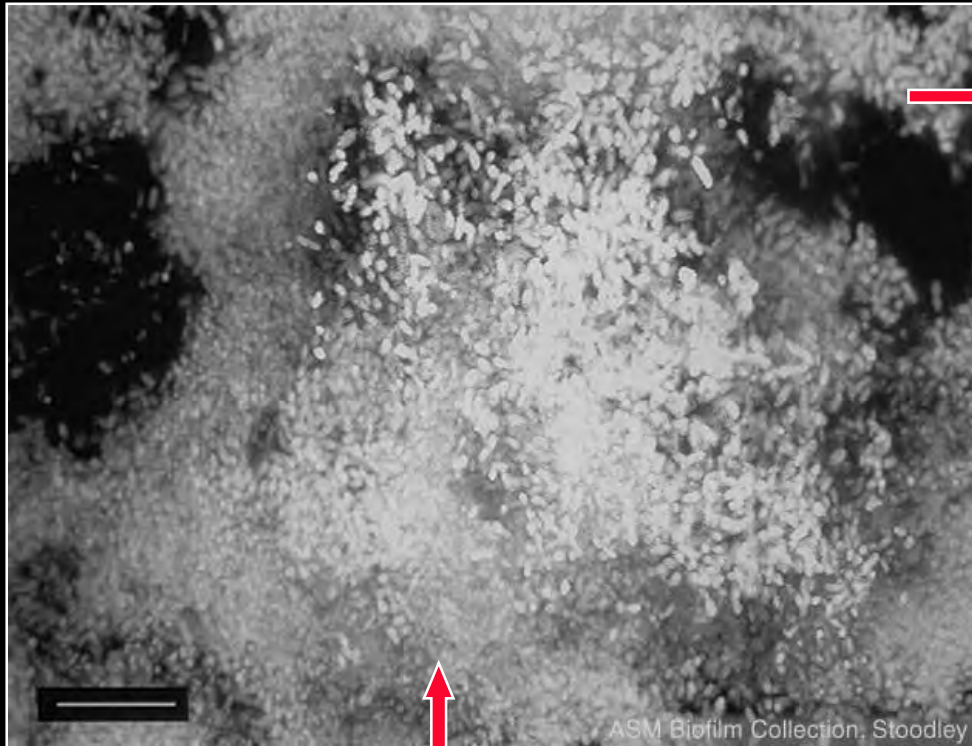


Fully Contained, Recirculating, Land-based Marine Aquaculture

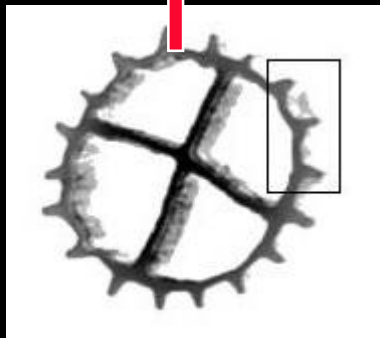
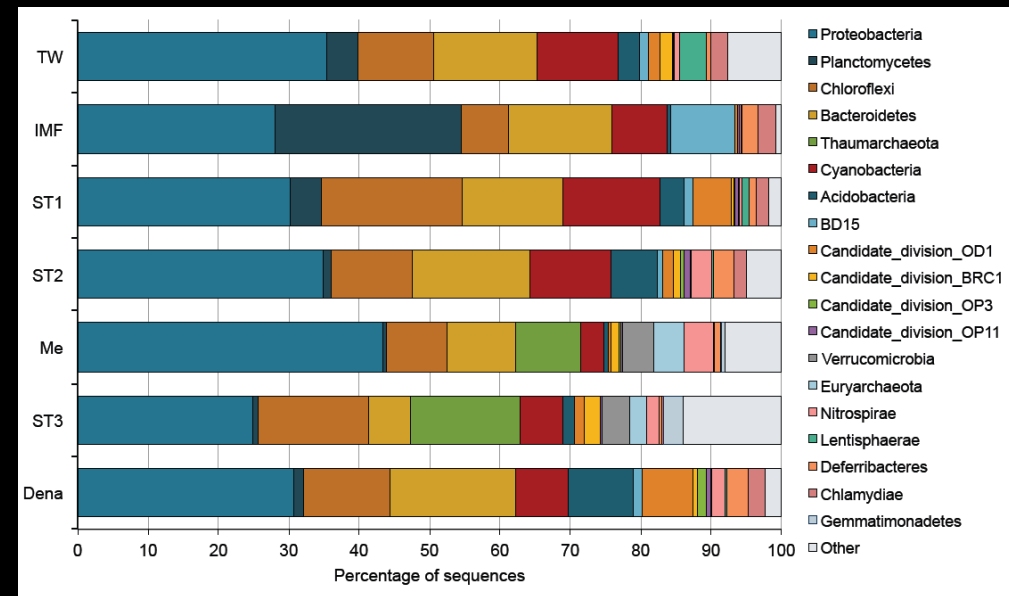
- No waste, disease-free, clean, flexible, generic, biosecure
- Applicable for rural and urban locations; reduce carbon footprint



Characterize and Improve Microbial Communities in Biofilters



Metagenomic Analysis of Microbial Communities



- **Nitrification, denitrification, anaerobic digestion**
- **Zero environmental discharge**
- **Maximum yields**









Diversification of Species

Salmon →



Bronzini →









Salmonid species- Atlantic salmon



Anaerobic digestion- organic waste to fuel grade methane



Cermaq Forsan, Norway, 100 m³ bioreactor: Sludge to Methane



Cermaq's biogas is used to heat water;



Methane driven boilers



Biogas flare

Building Capacity for Land-Based Atlantic Salmon Aquaculture in the US


The ultimate public-private partnership



RECIRCULATING
AQUACULTURE
SALMON NETWORK

Sustainable • Innovative

The screenshot shows a news article on the UCN website. The header includes the UCN logo and navigation links: HOME, PRICES, SPECIES, COMPANIES, DOWNSTREAM, and UPSTREAM. Below the header is a newsletter sign-up banner with the text 'Stay informed with our Prices & Supply newsletter' and a 'Subscribe now' button. The article title is 'New US salmon RAS network gets \$1.2m headstart from NOAA Sea Grant'. The byline reads 'By Jason Huffman Sep. 19, 2019 16:37 GMT'. The main image shows a man in a dark shirt and glasses standing next to a large circular tank filled with water and salmon in a facility.

A large indoor fish farm tank filled with many fish. A central aeration column is visible in the water. The background shows the industrial structure of the facility with pipes and equipment.

**Lets collaborate
Thank you!**