

An underwater photograph showing a large, dark net structure, likely part of a marine finfish aquaculture system. The net is suspended and appears to be made of a heavy material. In the background, two divers are visible, working on the net. The water is clear and blue, with some light rays visible. The overall scene suggests a deep-sea or offshore aquaculture operation.

# **Marine Finfish Aquaculture: Is Sustainable Regulation Attainable?**

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The Ocean Conservancy

# Aquaculture

- 40% of all fish products worldwide
- Fastest growing sector of food economy
  - 4-fold increase in past 20 years in US
  - 5-fold increase proposed (\$5B yr.)
- Promoted as solution:
  - to \$8B seafood trade deficit (78% of US seafood imported)
  - to overfishing (75% of fisheries are fully/over-exploited)



# Farmed Species

- **Caribbean:** cobia, snapper
- **Gulf:** red drum, pompano, amberjack, cobia
- **Pacific:** salmon, halibut, tuna
- **New England:** salmon, halibut, haddock, cod
- **Hawaii:** moi



# Farmed Species: Tuna



# Impacts

- Escapes:
  - spread disease/parasites
  - compete with wild stocks
  - biological pollution
- Water quality:
  - Wastes: (200,000 fish = 20,00 - 65,000 people)
  - Chemicals: hormones, antibiotics, pesticides, herbicides, pigments, parasiticides, anesthetics



# Impacts

- Use conflicts/public trust
- Marine wildlife
- Ecosystem effects:
  - 4:1 conversion ratio for some wild:farmed marine finfish
  - Aquaculture uses 12% of the world's catch; 40% of world's fishmeal



# International Aquaculture Policies

- Article 9 UN FAO Code of Conduct for Responsible Fisheries (1995). States “*should*”:
  - ensure “ecological sustainability,”
  - “prevent” negative affects on fishing communities
  - “minimize”
    - adverse ecological changes through appropriate environmental assessment/monitoring
    - harmful effects of non-native/GM species
    - risks of disease to wild stocks
    - use of therapeutants, hormones, drugs, antibiotics
  - “promote” appropriate feeds, additives, and fertilizers
  - “regulate” use of harmful chemicals
  - “require” wastes not harm human health/environment

# Major Federal Permits/Reviews

- Army Corps:
  - RHA
  - NEPA
- EPA:
  - CWA
  - FIFRA
- FDA: FDCA
- USDA: APHIS
- NOAA:
  - CZMA
  - MPRSA
- FWS:
  - ESA
  - Lacey Act
  - MBTA
- NMFS:
  - ESA
  - MSA
  - MMPA
- MMS: OCSLA
- DHS: Coast Guard



# Federal Policies

- National Aquaculture Act of 1980/NAIA 1985:
  - “National interest to encourage development” of aquaculture industry
  - Established JSA in NSTC (Commerce, Agriculture, Interior) to develop National Aqua Development Plan
- JSA Aqua Research and Development Strategic Plan:
  - Improve competitiveness/efficiency;
  - increase production/exports;
  - create jobs;
  - world leadership in science and development;
  - develop alternative species; improve regulatory framework;
  - promote responsible stewardship

# Federal Policies

- Draft Code of Conduct for Responsible Aquaculture Development in the EEZ (2002)
  - Voluntary “soft” guidance calls for:
    - consolidated federal permit/leasing system;
    - voluntary BMPs
    - “precautionary” siting and management principles
    - zoning
    - conserving biodiversity
    - preventing escapes
    - minimizing genetic divergence and disease transmission

# Federal Policies

- EPA Effluent Limitation Guidelines (2004)
  - Applicable to CWA permits for >100,000 pounds/year
  - Does not:
    - Establish numeric standards for pollutants (TSS, FC, nitrates, phosphates, BOD, metals, drugs, pesticides or other chemicals)
    - Limit use of non-native/GM species
    - Require WET testing or water quality monitoring
  - BMPs: minimize feed inputs, properly store and dispose chemicals, inspect and maintain production systems, remove carcasses, and train personnel

# Federal Legislation

- S 1195 (Stevens, Inouye)
  - “Encourages” responsible development, and protection of wild stocks and marine ecosystems
  - Authorizes DOC site/operating permits, and regs to monitor and gather data
  - Exempts OOA permits from MSA
  - Contains no environmental standards/requirements
    - OOA permits subject to existing laws/regs
    - Authorizes additional environmental requirements “if necessary”
    - Preserves state role under CZMA consistency

# Federal Legislation

- Proposed Amendments to S 1195
  - States may “opt-out”
  - Permittees must be citizens, residents or U.S. corporations
  - Environmental standards must address risks and impacts on natural fish stocks, marine ecosystems, water quality, marine mammals and other features
  - Strike Jones Act exemption

# State Legislation

- Alaska: Bans marine finfish aquaculture
- California: Banned salmon, and all GM, non-native species in 2003 (SB 245)
- Maine/Washington/Florida/Texas/Hawaii:
  - Provide various siting, operating and monitoring requirements for marine fish farms

# California Bill

## SB 768/201 (Simitian)

- Requires PEIR
  - Consider appropriate sites/designs to avoid conflicts with other uses
  - Evaluate industry effects:
    - on fish, wildlife, and sensitive habitats
    - of escapes, wastes, chemical and biological pollutants, and food/fishmeal on marine ecosystems

# California Bill

## SB 768/201 (Simitian)

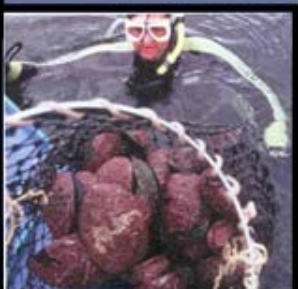
- Requires specific leasing standards:
  - Sites must be appropriate in PEIR; not “unreasonably interfere” with fishing and other public trust uses
  - “Prevent” escapes; discharge of pollutants; adverse affects on wildlife, marine habitats, fishing and other uses
  - “Minimize” densities; use of fish meal/oils; drugs and chemicals
  - “Restore” damage to human health and environment
  - Conduct baseline assessments; regular monitoring
  - Mark/tag farmed fish
  - Fees to administer/monitor/inspect/enforce leases
  - Transparency



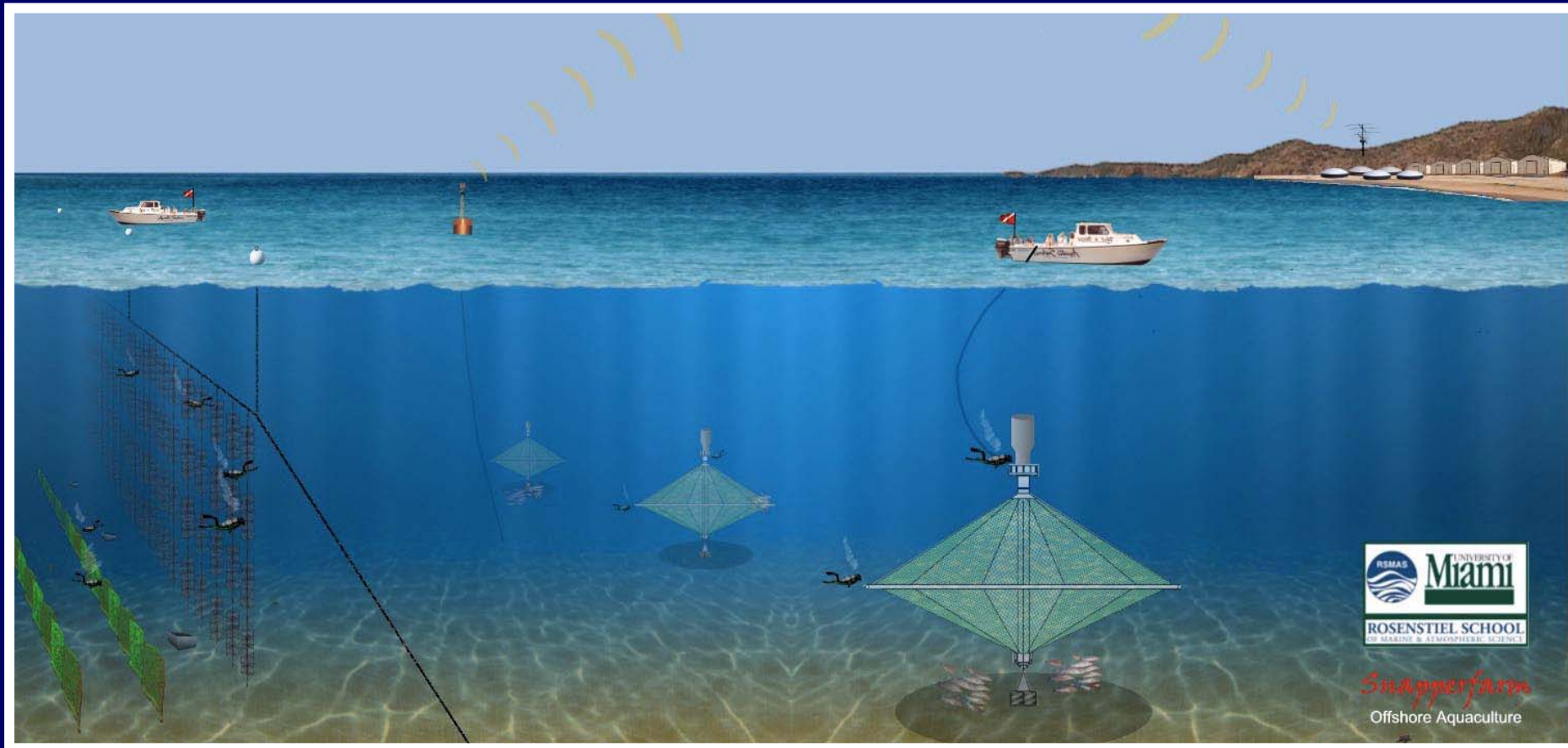
# Support for Simitian Bill

1. The Ocean Conservancy  
(sponsor)
2. Bluewater Network
3. CA Coastkeeper Alliance
4. CA Coastal Protection Network
5. CA League of Conservation  
Voters
6. Coastside Fishing Club
7. Center for Food Safety
8. Defenders of Wildlife
9. Environment California
10. Environmental Center of SLO
11. Environmental Defense
12. Environmental Defense Center
13. NRDC
14. Oceana
15. Orange County Coastkeeper
16. Pacific Coast Federation of  
Fishermen's Associations
17. Planning & Conservation League
18. Santa Barbara Channelkeeper
19. San Diego Baykeeper
20. San Luis Obispo Coastkeeper
21. Santa Monica Baykeeper
22. Save Our Shores
23. Seaflow
24. Sierra Club California

# *The Grace Mariculture Project*



# OFFSHORE AQUACULTURE



CONCEPTUAL OFFSHORE SUSTAINABLE AQUAFARM