

Can Shellfish & Kelp Aquaculture Take Advantage of Water Quality and Carbon Trading to Reduce Coastal Pollution? A Case Study from California

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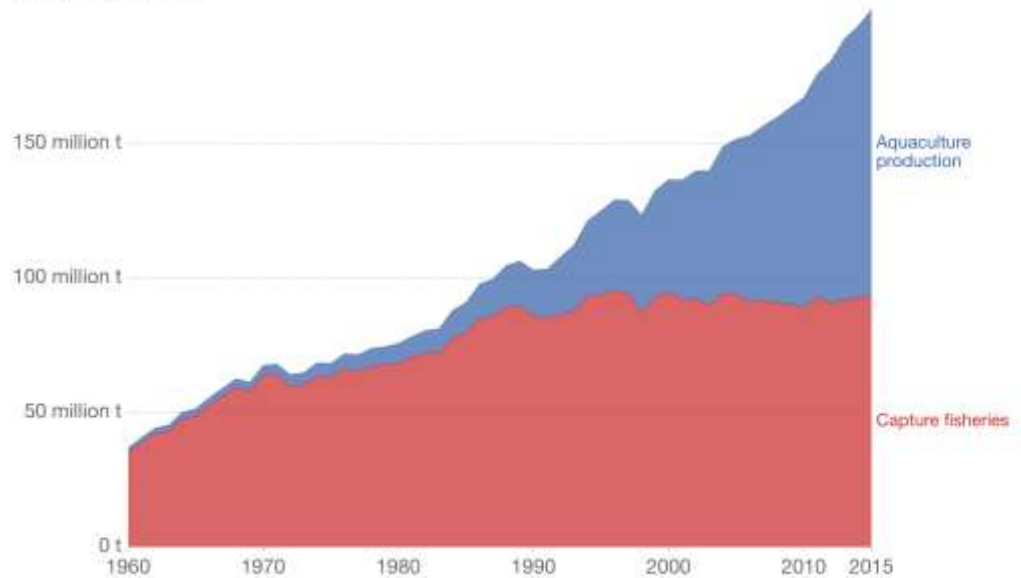
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Seafood production: wild fish catch vs aquaculture, World

Aquaculture is the farming of aquatic organisms including fish, molluscs, crustaceans and aquatic plants. Capture fisheries production is the volume of wild fish catches landed for all commercial, industrial, recreational and subsistence purposes.

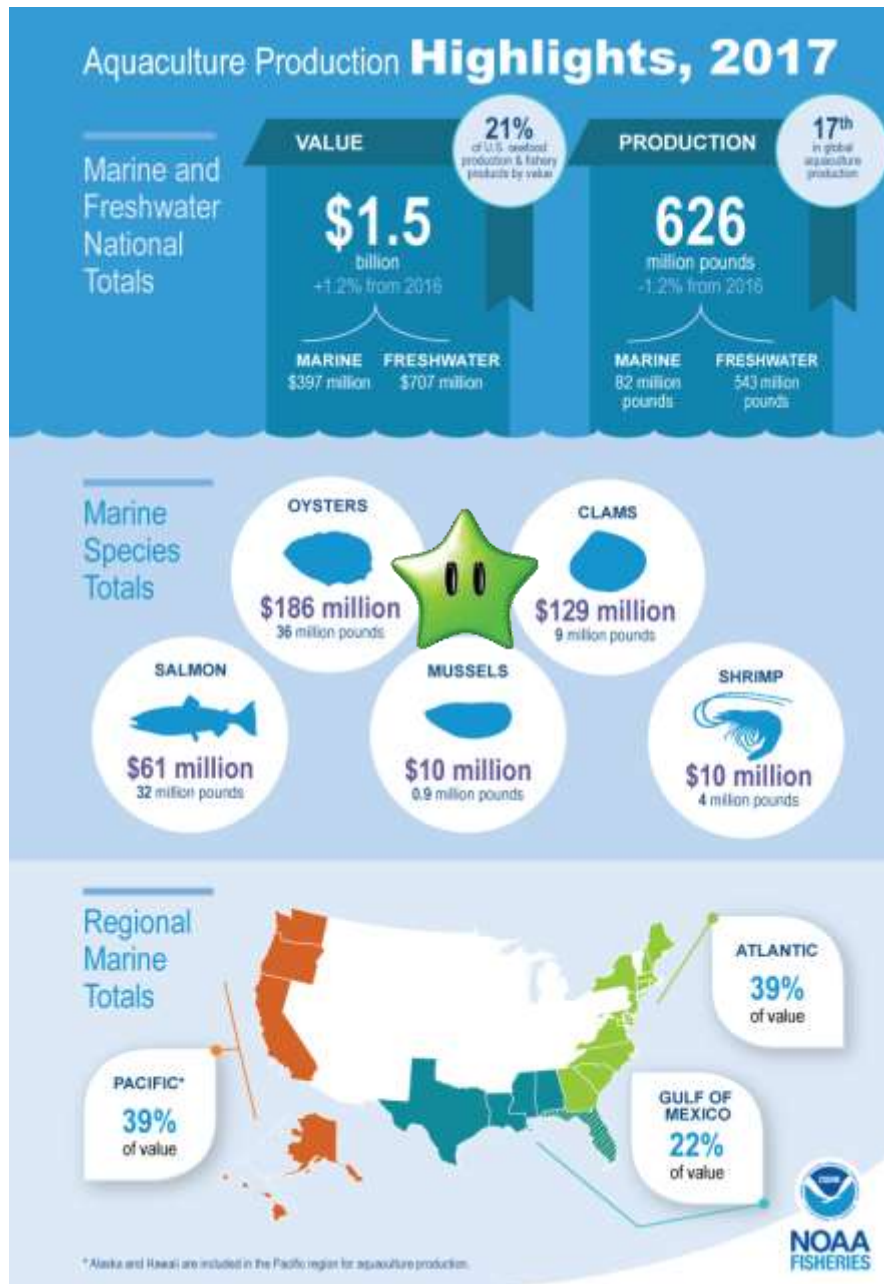


Source: UN Food and Agriculture Organization (FAO)

OurWorldInData.org/seafood-production • CC BY

Why
Aquaculture?

Existing U.S.
Aquaculture
Trends

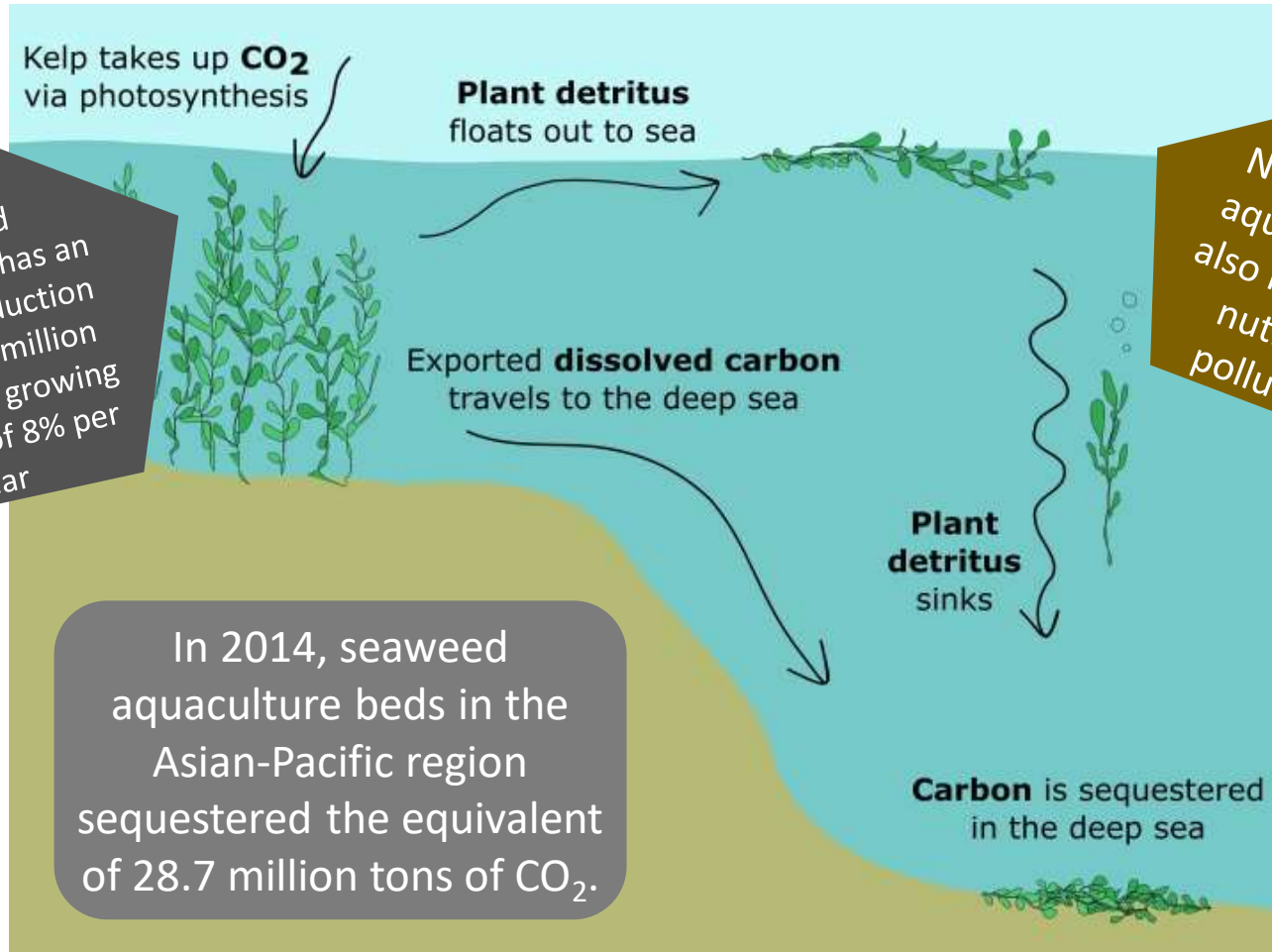


Research published in 2020 indicates that oyster aquaculture removes 38.1 kg of nitrogen pollution per acre per year.
Clam aquaculture removes 3.3 kg per acre per year.

NOAA: Restoring oysters to 40% of the riverbed would eliminate nutrient pollution in the Potomac River. Chesapeake Bay states are promoting oyster aquaculture to help clean up the Bay.

Bonus Benefit #1:

Water Quality Improvements from Shellfish Aquaculture



Seaweed aquaculture has an annual production of over 27 million tons and is growing at a rate of 8% per year

In 2014, seaweed aquaculture beds in the Asian-Pacific region sequestered the equivalent of 28.7 million tons of CO₂.

NOTE: Kelp aquaculture also removes nutrient pollution

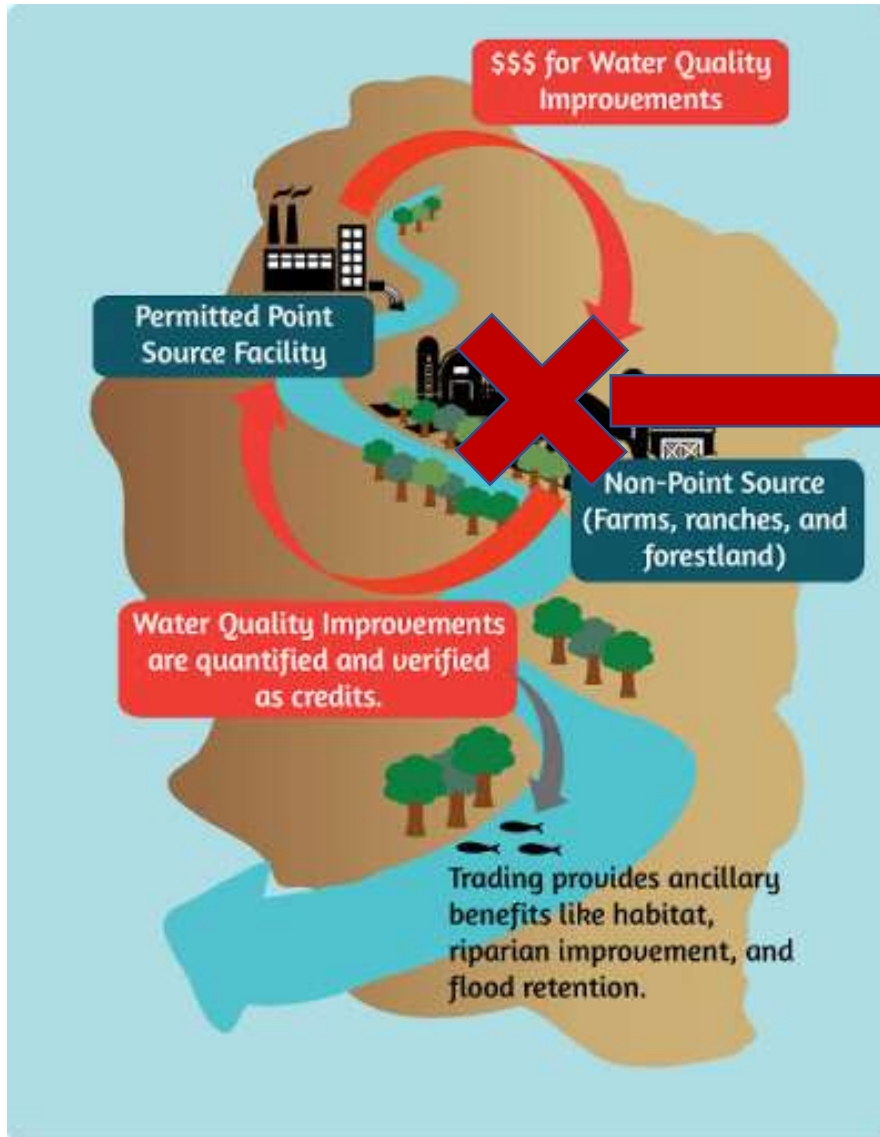
Bonus Benefit #2:

Carbon Sequestration

Research Question:

Can new kelp and shellfish aquaculture facilities harness pollutant trading programs, promoting their expansion in California?

Nutrient Trading and the Clean Water Act

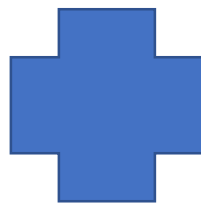


Graphic courtesy of the National Network on Water Quality Trading

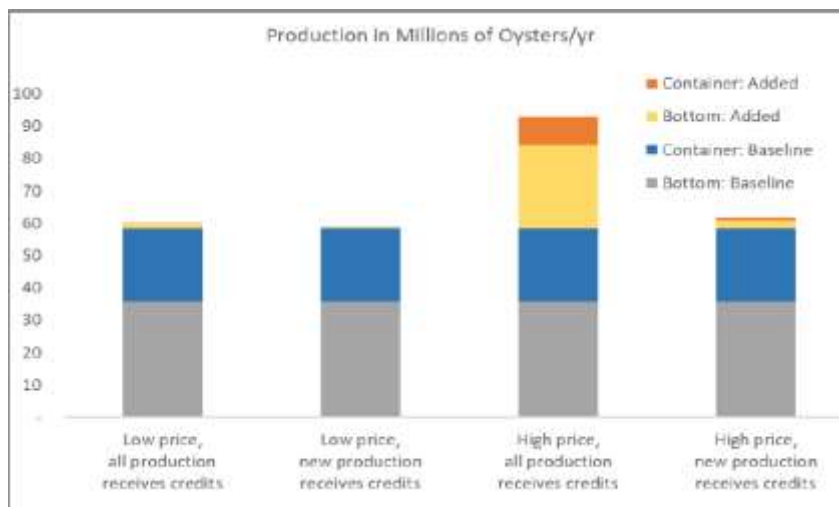
Putting the Pieces Together on Nutrient Trading for California Aquaculture:



Coastal Stormwater Plumes,
Southern California Bight



Laguna de Santa Rosa Watershed



University of Maryland Extension Program

So What About Carbon Credits?

- Under California's cap-and-trade program, an offset credit is a reduction of GHG emissions achieved through an activity not covered by the cap to "offset" emissions by a facility under the cap.
- In California, offset credits must be real, additional, permanent, verifiable, quantifiable, enforceable and produced based on a CARB-approved protocol.
- California currently allows entities to meet 8% of their compliance obligation from offsets but that number will decline in 2021.
- Over 1300 projects have been approved for GHG offsets, mostly forestry, dairy, and digesters.
- Aquaculture is not (yet) an approved protocol – but rice cultivation is.
- Running Tide in Maine and Primary Ocean in Los Angeles are already working on kelp carbon credits!



Thank You