



## **Cabrillo Marine Aquarium**

Virginia Reid Moore Marine Research Library

Library Pathfinder: Aquaculture

Marine aquaculture is the breeding, rearing and harvesting of marine plants and animals. Clams, oysters, shellfish, salmon and other fish are examples of marine life produced by U.S. marine aquaculture. Aquaculture can take place in the ocean or on land in tanks and ponds.

Four major aquaculture activities are hatchery, grow-out, harvesting, and marketing. **Hatcheries** produce the seed or young fish by capturing wild fish seed or by raising adult fish for reproduction. **Grow-out** facilities produce fish from the hatcheries. These facilities can be ponds, tanks, pens, cages and ranching. **Harvesting** involves gathering the fish from the grow-out facilities in a sustainable fashion for marketing and processing.

**Marketing** provides consumers with fish products. Marketing also provides fish producers with a price to cover production and to make a profit. Fish products include fish for human consumption, bait for sport fishing, pets, sport fish for release into lakes & streams, and fish for feed ingredients.

Presently, the Food and Agriculture Organization of the U.S. (FAO) estimates that 50% of the total world supply of fish for food is derived from aquaculture. Forty-three world countries that maintain aquaculture industries produce more than 110 million tons of fish and fish products. This production includes more than 152 species of finfish, shrimp and prawns, diverse marine plants, oysters, clams and other mollusks.

In 2011, the National Oceanic and Atmospheric Association announced its aquaculture policies to establish a framework to allow sustainable domestic aquaculture in the U.S. to contribute to its seafood supply. A "National Seafood Initiative" emphasizes sustainable marine aquaculture to increase shellfish farming and restoration. A major aquaculture project taking place in the Southern California Bight area is the Catalina Sea Ranch (CSR). The CSR is in the process of developing the "First Offshore Shellfish Ranch in United States Federal waters." The ranch is located 6 miles from the Terminal Island shore in water 150 feet deep.

CSR will be monitored by independent scientists and research institutions including Scripps Institution for Oceanography, California State University Long Beach, National Ocean Tracking Network and NOAA's Integrated Ocean Observing System. This project plans to increase job opportunities and to reduce the U.S.'s multi-billion dollar seafood deficit. Presently, the U.S. imports 90% of its fish for human consumption.

## **BOOKS**

### **Books for Adults**

Advances in Aquaculture Hatchery Technology (Woodhead Publishing Series in Food Science, Technology and Nutrition) / Geoff Allen, 2013.

Aquaculture: Farming Aquatic Animals & Plants / John Lucas, 2012.

Aquaculture Nutrition: Gut Health, Probiotics and Prebiotics / Daniel L. Merrifield, 2014.

Aquaculture Production Systems / James Tidwell. 2012.

Aquaculture Science / Dr. Rick Parker, 2011.

Encyclopedia of Aquaculture / John Wiley & Co., 2000.

### **Books for Children**

A Good Catch: Managing fisheries to meet the nation's demand for seafood / Taylor Morrison, NOAA Fisheries Service, 2011.

### **News Articles**

These articles are available on the Catalina Sea Ranch website under "News"

<http://www.catalinasearanch.com>

"Underwater ranching on the San Pedro Shelf". / Lee Reader, Orange County Coastkeeper, May 2015, p. 33-37.

Sea Ranch dedicated to farming mussels off the City's Shore. / Ashleigh Ruhl. Gazettes, August 14, 2014.

Sea Ranch off Terminal Island poised to grow millions of pounds of shellfish. / Sandy Mazza. Daily Breeze, August 1, 2014.

Shellfish farm teams with Verizon on research. / Seafood Source.com, July 29, 2014.

### **Featured Websites**

Catalina Sea Ranch

<http://www.catalinasearanch.com>

NOAA – Office of Aquaculture

<http://www.nmfs.noaa.gov/aquaculture/>