What is Aquaculture?
Aquaculture is the cultivation of fish, shellfish, and aquatic plants - it is essentially farming in water. When done properly, aquaculture is an environmentally responsible and sustainable way to source seafood. It also contributes to the rebuilding of wild stocks and creates healthier ecosystems.

Aquaculture Facts:
• Aquaculture provides more than 50% of the seafood for human consumption globally.

• The United States currently imports over 90% of its seafood, much of which is from aquaculture from other countries, resulting in a $16.8 million seafood trade deficit.

• As of 2017, the U.S. is ranked 17th in aquaculture production.

• Nationwide aquaculture is estimated to be worth ~$1.5 billion.¹

New York Aquaculture Facts:
• New York’s aquaculture industry generated $8.8 million in sales in 2018.

• Of the $8.8 million, $7 million came from the shellfish industry.²

• Shellfish aquaculture began in New York Harbor as early as the 1820s.

• The first state fish hatchery was established in Caledonia, New York in 1864 by Seth Green (the “father of fish culture”) to grow trout.³

New York is unique in that its coasts include the Great Lakes, the Atlantic Ocean, as well as multiple large rivers and estuaries. Aquaculture has long been a part of the history of New York, and to this day aquaculture businesses are farming both marine and freshwater species throughout the state.


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What does New York use aquaculture for?

- **Food** - New York has both small-scale and commercial-scale aquaculture operations that grow safe and sustainable seafood, including shellfish and various fish species, such as steelhead trout and salmon.

- **Stocking** - New York has an extensive fish stocking program both with state-owned and privately-owned hatcheries. Stocking is used to enhance recreational fishing and restore native species to their natural habitats. Landowners may also stock their private ponds to fish or to maintain a healthy pond ecosystem.

- **Restoration** - New York uses aquaculture to grow shellfish and fish to be stocked into the natural environment to help clean water ways, re-establish populations, and keep New York’s marine and freshwater environments clean and healthy. Multiple state-owned and municipality-owned hatcheries focus on restoring New York’s aquatic species for future generations to enjoy.

- **Fee-fishing** - Farms stock ponds with cultured fish to be caught by visitors for a fee. Fee-fishing is a great way to get outdoors, enjoy fishing, and keep the fish that is caught!

Additionally, most Long Island towns have shellfish hatcheries that stock shellfish back into the bays for residents to harvest.

**Fun Fact:**

Does the term seafood include both freshwater and marine species? YES! The term seafood refers to edible aquatic animals - both freshwater and marine.
How does New York grow its aquaculture products?

Land-based Aquaculture
At present, New York uses land-based aquaculture systems to grow finfish, but land-based systems can be used to grow a variety of seaweed and crustaceans too. Finfish aquaculture refers to the culture of bony fish, like trout for example. New York currently cultivates many species of freshwater finfish, including multiple species of trout, salmon, smallmouth and largemouth bass for seafood production.

Ponds for aquaculture are man-made and are typically shallow and drainable, allowing easy harvest of crops. These types of grow-out systems are seasonal in New York, usually stocking the pond for grow-out in early April and harvesting the last of the crop in late October/early November.

Recirculating Aquaculture Systems (RAS) are tanks with a water supply that is filtered and reused. This system can be used to grow fish, shrimp, and many other aquatic animals in freshwater or saltwater. RAS systems are recognized for their low impact on the environment and resources. New York has both small-scale and commercial-scale RAS facilities.

Aquaponics combines aquaculture with hydroponics (growing plants in water). This system has nutrient rich water from tanks stocked with aquatic animals (fish or shrimp) to hydrate the plants in a closed recirculating system. These types of systems can be set up essentially anywhere. There are even a few aquaponic farms in New York City providing fresh vegetables, fish, and other products to their local communities!

Raceways or flow through systems are rectangular channels that have a steady flow of water being pushed through from springs, wells, or streams. The first hatcheries in New York used flow through systems and still use this method today.

All illustrations on pages 2-4 are by Georg Pederson/NYSW
Shellfish Aquaculture

Shellfish Aquaculture is the farming of aquatic invertebrates, such as oysters, clams, or mussels. Shellfish farmers in New York are able to lease designated areas in bays to grow their crop. Farmers will choose a grow-out method that is best suited for shellfish (e.g., oyster, clam, mussel, bay scallop) and their farm’s location, taking into consideration tides, wind and wave action, and other factors.

Off-bottom shellfish culture refers to the type of grow-out method where shellfish are kept off the bottom by various techniques, either in cages resting on the bottom, suspended in the water column, or floating. There are a variety of off-bottom culture systems, including cage, tray, or rack and bag. The type of grow-out method used depends on the farm’s location. This technique usually has faster growth rates and easier control of fouling on the shellfish and gear. This is the most common type of grow-out for oysters in New York.

On-bottom shellfish culture refers to the type of grow-out method where oysters and hard clams are planted directly on the bottom of the seafloor for growth. Only a small percentage of growers in New York currently use this method, but on-bottom culture was occurring in NY Harbor as early as 1820!

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