

## Is U.S. aquaculture environmentally friendly?

Federal agencies including the Department of Agriculture (USDA), the Environmental Protection Agency (EPA), the National Oceanic and Atmospheric Administration (NOAA), the Fish and Wildlife Service (USFWS), and the Food and Drug Administration (FDA) oversee the production of aquatic organisms.

Many environmental organizations place U.S. farm-raised finfish on their Best Seafood Choices list. Those lists consider environmental impact and sustainability.

States often establish additional management practices that deal with water quality, wetlands protection, wastewater treatment, water supply, non-native species, and fish health programs. Integrated systems combine aquaculture with traditional farming to increase food production.

Aquaculture also provides fish for bait and stocking recreational fishing areas. This allows more people to fish while ensuring that our wild fish populations remain sustainable. To protect the environment and wild fish populations, cultured fish are tested prior to stocking to ensure they are healthy and safe.



## What about fish feeds?

Aquaculture feeds are regulated under the FDA as well as respective State Departments of Agriculture and the American Association of Feed Control Officials (AAFCO). The approval and use of any drug or medication is regulated by the federal government. The FDA conducts inspections, and collects and analyzes samples of feeds and fish to help ensure that unsafe levels of any compounds used in animal production do not appear in the marketplace.

America's fish farmers have a strong commitment to sustainability. Fishmeal is used in a variety of animal feeds including those for poultry, swine, cattle, and fish. Fishmeal is produced from fish that people do not readily consume or from the by-products of seafood processing. Sharing the concerns raised by environmental groups, the aquaculture industry is actively looking at ways to substitute other proteins for fishmeal. That means less fishmeal is needed to produce wholesome, high quality fish.

Scientists are investigating new feed formulations and other strategies to improve feed conversion rates and reduce the amount of wastes generated. Scientists and industry across the country are actively working to develop a variety of sustainable feeds to ensure that the fish consume a nutritionally balanced diet to promote optimum health and growth, maintain great flavor and texture, and contain all of the important nutrients that consumers demand. Soybean farmers in America's heartland play an important role in this effort. Soybeans provide a consistent, healthy, and sustainable source of protein for fish feeds.

## U.S. Farm-Raised Fish and Shellfish: The Healthy, Sustainable Choice

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# NATIONAL Aquaculture ASSOCIATION

U.S. Farm-Raised  
Fish and Shellfish

# Q&A

## What is aquaculture?

Aquaculture is the production of marine and freshwater organisms under controlled conditions. This includes fish and shellfish for human consumption, for sport fishing ponds, and for stocking to enhance wild populations. Aquaculture also includes baitfish, cultured pearls, and ornamental fish. Other farms produce aquatic plants for food, garden ponds, aquariums, and even for fuel and medicine. Aquaculture production practices include hatchery operations, feeding, and the protection of cultured plants and animals from diseases and predators. Because the process is strictly controlled, U.S. farmers can help ensure the quality, safety, and predictability of the harvest.



Some types of aquaculture are practiced in the open ocean and in bays where products such as mussels, clams, oysters, salmon, flounder, and cobia are grown. Other aquaculture occurs in artificial earthen ponds, which are the primary source of farm-raised catfish, tilapia, bass, shrimp, crawfish, baitfish and ornamental fish and plants.



Trout, because they have high oxygen requirements, are often raised in raceways where water continuously flows through the system. In some areas, production takes place in high-tech recirculating systems that recirculate or reuse the water after it has been cleaned. Aquaculture systems that reuse water can even be housed in major cities.

## Is U.S. aquaculture sustainable?

Fish and shellfish can be farmed using methods that do not harm the environment and that help meet the growing demand for seafood by supplementing wild harvests.

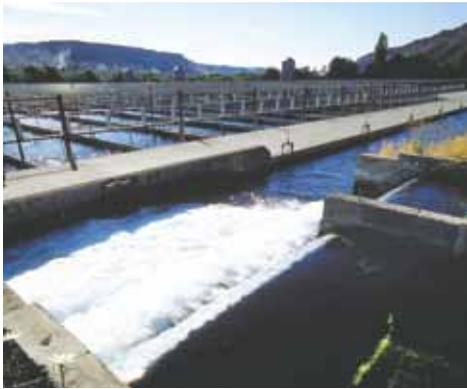
In the United States, harvesters carefully manage the resource. However, over 88% of the seafood consumed in the United States is imported, often from countries that do not have strict environmental and product safety standards.



## What about the quality of water in aquaculture systems?

Discharges from U.S. aquaculture facilities must meet the standards of the Environmental Protection Agency as well as stringent state and local regulations.

Water released is often re-used for irrigation or treated and recycled for fish culture and other purposes. For an aquatic farm to be profitable, it is essential that excellent water quality be maintained in the system. The waters leaving fish farms are of the same or higher quality than the waters receiving them.



## Why is aquaculture important to the future of our oceans?

Aquaculture provides reasonably priced, good quality, highly nutritious food while helping to maintain the long-term sustainability of wild caught fisheries and the environment.

It is estimated that wild harvest fisheries have reached maximum sustainable yield while the world's appetite for seafood is growing. Our U.S. aquaculture can satisfy that demand in an environmentally friendly and sustainable manner. There are even examples of aquaculture directly benefiting the environment.



The production of bivalve molluscan shellfish (clams, oysters, and mussels) provides positive environmental impacts. Because of their three dimensional structure, they form habitats for other bottom dwelling organisms, adding to the biodiversity of the marine environment.

Molluscan shellfish remove nutrients

from the water by filtering algae and particulate matter from the water. This helps to maintain good water quality and minimizes the loss of oxygen, which is critical to the survival of other organisms. While farmed shellfish are growing, they spawn and help to reseed wild beds. These impacts are so important, that in some areas, community volunteers are restoring oyster and clam populations.

## Do U.S. farm-raised fish and shellfish contain hormones, antibiotics and other drugs?

In the U.S., very few drugs have been approved for use with aquatic animals. Strict withdrawal times are followed so that drug residues do not remain when fish and shellfish reach the market. The FDA's Center for Veterinary Medicine (CVM) works with government agencies and aquaculture associations to maintain the safety and effectiveness of all approved drugs. Before a drug is approved for use in U.S. aquaculture, it must be shown that it will not harm the environment or public health.

## What about color-added salmon?



In the wild, salmon and shrimp feed on organisms that contain natural red pigments from algae. Because color plays such an important role in our enjoyment of foods, FDA has approved certain color additives for use in foods. Some of those color additives, specifically astaxanthins in fish feeds, are natural pigments from algae.

## Are U.S. farm-raised fish and shellfish safe?

Fish and shellfish farm-raised in the United States must meet rigorous standards for both product wholesomeness and environmental impact.

Seafood processors and packers comply with the requirements of the Hazard Analysis Critical Control Point (HACCP) Program administered by FDA. The program identifies potential hazards and develops strategies to help ensure that they do not occur. Product traceability is a critical component of the program.

Farm-raised oysters, clams, and mussels are monitored by the Interstate Shellfish Sanitation Conference (ISSC) in cooperation with the FDA. State agencies administer a certification program requiring all wholesale shellfish dealers to handle, process, and ship shellfish under sanitary conditions, and maintain records verifying that the shellfish were harvested from approved waters.



## Why should I buy farmed fish and shellfish grown in the United States?

The U.S. has some of the strictest environmental and product safety rules and regulations found anywhere, but more than 88% of all the seafood consumed in the U.S. is imported. Almost half of that total is farm-raised, often in countries that do not have stringent environmental and food safety regulations. Consumers are concerned about "buying local," product safety, and food quality. U.S. fish and shellfish producers can help meet those consumer needs.

## How can U.S. farm-raised fish contribute to a healthy diet?

The USDA Dietary Guidelines recommend two fish and seafood meals per week. Similar recommendations have been made by the American Heart Association, the American Cancer Society, and the American Diabetes Association. Fish

and shellfish provide high quality, easily digestible protein, a good source of important vitamins and minerals and are low in calories, sodium, cholesterol, and saturated fats. Fatty fish contain potent Omega-3 fatty acids that have been shown to reduce some of the risk factors for coronary heart disease, the leading cause of death in the U.S.

Other research indicates that Omega-3 fatty acids may play a role in reducing the risk of diabetes, enhancing bone density, supporting neonatal development, improving the



appearance of the skin, combating depression, aiding nerve function, delaying the onset and reducing the severity of Alzheimer's disease, and reducing inflammation that is found in rheumatoid arthritis, ulcerative colitis, and Crohn's disease.