



Safe and Nutritious Seafood in Virginia

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Consumers enjoy eating a variety of seafood and can find many choices of fresh as well as frozen seafood in the refrigerated and freezer cases of grocery stores. Seafood tastes good, is low in saturated fat, is an excellent source of protein and omega-3 fatty acids, and helps in the prevention of heart disease. However, consumers want to feel confident that they are buying safe, high-quality seafood products. This publication provides the information you need to help ensure that the seafood you buy and consume is safe and nutritious.



Virginia Seafood

Virginia is the nation’s third-largest producer of marine products and the largest seafood production state on the East Coast, with two main ports located in Reedville and the Hampton Roads area (NMFS 2014). Virginia’s watermen harvest 50 commercially valuable species from 620,000 acres of water that include the Chesapeake Bay and its tributaries. Among these traditional species are sea scallops, clams, blue crabs, flounder, croaker, striped bass, oysters, black sea bass, conch, and catfish (Virginia Marine Products Board 2013).

Virginia Seafood Inspection

To ensure the safety of our seafood, processors are inspected by various federal and state agencies for compliance with all foods regulations, including Hazard Analysis Critical Control Point and sanitation programs. In Virginia, these responsibilities are carried out by the U.S. Food and Drug Administration, the Virginia Department of Agriculture and Consumer Services, the Virginia Department of Health Division

of Shellfish Sanitation, the Virginia Marine Resources Commission, and the Seafood Inspection Program of the U.S. Department of Commerce’s National Oceanic and Atmospheric Administration.

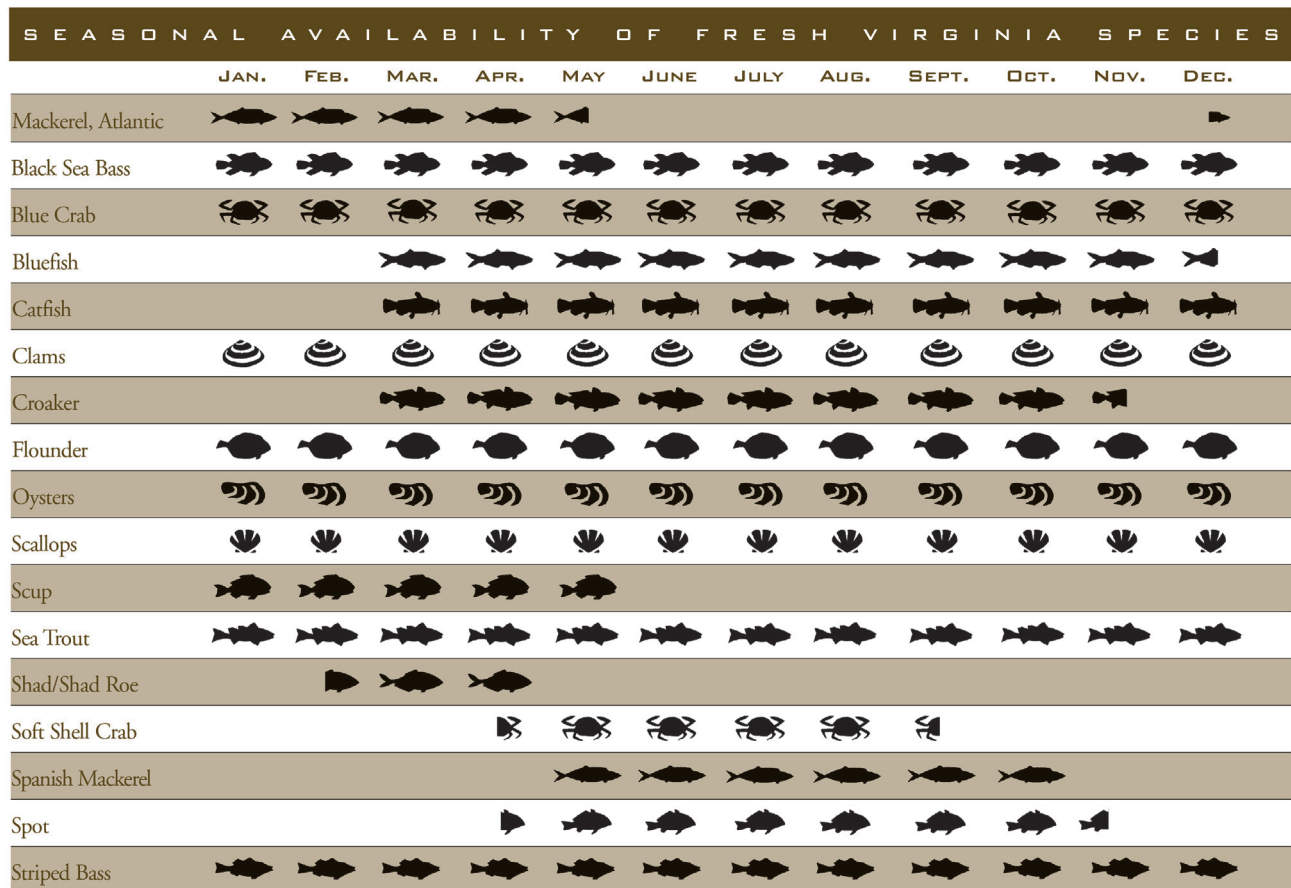
Aquaculture Seafood: Meeting the Demands for Seafood

A significant trend in Virginia, across the US, and around the world is an increase in seafood consumption from aquaculture production. The aquaculture industry in Virginia provides consumers with a variety of seafood, including hard clams and oysters, and adds a value of more than \$55 million to the state’s seafood marketplace (USDA 2014).



Virginia Seafood Seasonal Availability

In Virginia, the availability of fresh seafood fluctuates during the year. Use the following chart to become familiar with the seasonal availability of fish and shellfish and to help identify and purchase fresh seafood that is in season.



Frozen Available Year-Round

Aquaculture seafood products are often grown sustainably under controlled water environmental conditions and monitored regularly for animal health issues during cultivation. Nowadays, in a typical seafood display counter, more than half of the products available — including salmon, catfish, tilapia, clams, oysters, mussels, trout, yellow perch, and shrimp, to name just a few — are sourced from aquaculture. The health benefits of consuming aquacultured fish and shellfish are well-documented, and because production is generally year-round, the product is also available year-round.

On the Label

In addition to nutrition and ingredient information, the labels on packaged seafood, such as what is sold in grocery stores, contain information that helps



consumers make informed selections and guides them on safe food-handling practices.

- “Wild-caught” refers to fish or shellfish harvested from their natural environment.
- “Farm-raised” or “aquaculture” refers to controlled production of fish or shellfish in environments that include ponds, rivers, lakes, oceans, and tanks.



- Country of origin labeling refers to the country in which the wild or farm-raised fish and shellfish were harvested.
- “Product of the USA” refers to wild or farm-raised fish and shellfish that are hatched, raised, harvested, and processed in the United States or by a U.S.-flagged vessel and that have not undergone a substantial transformation.
- “Fresh frozen” indicates that the seafood was frozen while fresh.
- “Previously frozen” or “refreshed” means the fresh seafood was frozen and thawed for retail sale.
- “Individually quick frozen” means that each individual piece of food is frozen separately from all the others.
- Thawing and cooking instructions guide the consumer to ensure that they use proper safe food-handling practices before consumption.
- “Keep refrigerated” appears on products that are not shelf-stable, thus requiring temperature control for their safety and quality.
- Eco-labels are voluntary certifications awarded to fisheries and aquaculture operations that meet certain sustainable and responsible environmental standards. There are various certification programs run by private companies or organizations, each one with a distinct range of standards.



- “Sustainable” refers to catching or farming seafood that meets strict regulations with consideration for the long-term health of the environment, the fish population, and the livelihood of the people that depend on them.
- “Organic” and “natural” are terms that are not yet defined by U.S. regulatory agencies. If either of these terms appears on the label, it is because the seafood was certified as such under another country’s requirements.



Keeping Seafood Safe

Seafood, like other foods of animal origin, can be contaminated with microorganisms such as bacteria, viruses, and/or parasites that can cause foodborne illness. Consumers can help ensure the quality and reduce the risk of foodborne illness by purchasing products from reputable sources; keeping fish frozen, iced, or refrigerated below 40 degrees Fahrenheit (F) until ready to use, and cooking seafood thoroughly to an internal temperature of 145 F. Once seafood is cooked, it is essential to prevent contamination with dirty hands, equipment or utensils, or raw foods (cross-contamination). The safety of seafood is enhanced greatly when it is properly handled, cooked, served, and stored as leftovers.

If fish is going to be consumed raw, such as sashimi or sushi, or lightly preserved, such as ceviche, use fish that was previously frozen. This will ensure that any parasites that may be present are killed. Consuming raw or undercooked shellfish is not recommended for consumers with weakened immune systems; those with other underlying health problems, such as liver disease, diabetes, cancer, or stomach problems; children; and the elderly.

Benefits of Eating Seafood

The American Heart Association (Kris-Etherton, Harris, and Appel 2002) and the Dietary Guidelines for Americans (USDA and HHS 2010) recommend eating a variety of seafood at least twice per week (3.5 ounces per serving) for health benefits. Seafood, as part of a healthy diet, is associated with a lower risk of heart disease, obesity, and some types of cancer. It has also been shown to improve pregnancy and birth outcomes. These health benefits are largely due to the omega-3 fatty acids found in fish (see table 1). Omega-3 fatty acids are a type of polyunsaturated fatty acid that cannot be made by the body and must be obtained from the diet. They are called essential fatty acids. There are two well-known healthy types of omega-3 fatty acids found in fish: eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). EPA and DHA are especially rich in fatty fish like salmon, trout, sturgeon, bass, cod, mackerel, herring, and albacore tuna.

Table 1. Levels of omega-3 fatty acids in some fish and shellfish.

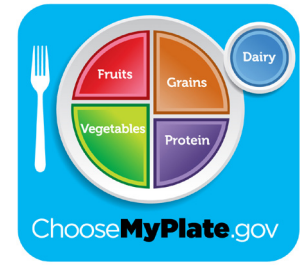
Levels of Omega-3 Fatty Acids in Some Fish and Shellfish	
Product	grams per 3-oz. serving
Canned tuna (light)	0.26–0.73
Pollock	0.46
Salmon (fresh/frozen)	0.68–1.83
Cod	0.13–0.24
Catfish	0.15–0.20
Flounder or sole	0.43
Grouper	0.21
Mahi mahi	0.12
Herring	1.71–1.81
Crabs	0.34–0.40
Scallops	0.17
Oysters	0.37–1.17
Shrimp	0.27
Clams	0.24

Source: AHA Scientific Statement

Choose Seafood for Your Plate

Using MyPlate (USDA 2015) — a general guide to help Americans eat a well-balanced diet — seafood can be incorporated as part of the protein food group. Keep your seafood choices lean and flavorful by

grilling, broiling, roasting, or baking — avoid breading or frying seafood, which adds unhealthy fats. Keep seafood on hand in canned or frozen forms for fish that is quick and easy to use or cook.



What About Cholesterol?

The 2010 Dietary Guidelines (USDA and HHS 2010) recommend consuming fewer than 300 milligrams of cholesterol per day. Most animal foods, including seafood, contain some cholesterol. However, red meats (beef, pork, and lamb) have more cholesterol and saturated (bad) fat than chicken, fish, and vegetable proteins such as beans. Most fish and shellfish contain well under 100 milligrams of cholesterol per 3-ounce cooked serving, and many of the leaner types of fish have fewer than 60 milligrams.

What About Mercury?

For most people, the health benefits of seafood consumption outweigh the risk of mercury. However, some fish and shellfish contain higher levels of mercury that may harm an unborn baby or a young child’s developing nervous system.

For women who might become pregnant, pregnant women, nursing mothers, and young children, the Food and Drug Administration and the Environmental Protection Agency (FDA 2014) provided the following recommendations under a draft advice in 2014:

- Consume 8 to 12 ounces of seafood per week from a variety of fish and shellfish. Choices include some of the most commonly eaten seafood, such as shrimp, pollock, salmon, canned light tuna, tilapia, catfish, and cod.
- Do not eat tilefish from the Gulf of Mexico, shark, swordfish, and king mackerel because they can contain higher levels of mercury.
- Limit albacore (“white”) tuna to 6 ounces per week.
- Check local advisories about the safety of fish caught by family and friends in your local lakes, rivers, and coastal areas. If no local advisories are available, you can eat up to 6 ounces (one average

meal) per week of fish caught from local waters, but don't consume any other fish during that week.

Follow these same recommendations when feeding fish and shellfish to young children but serve smaller portions.

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