

SEAFOOD



Quick Notes

➤ Collaborative Projects

Biodiversity Research Institute (BRI) partnered with Basel Convention Regional Centre-Caribbean (BCRC-Caribbean) on the projects *Fish Mercury Biomonitoring in the Caribbean Region* and the *Development of Minamata Initial Assessments in the Caribbean* (Antigua and Barbuda, Dominica, Grenada, Saint Vincent and the Grenadines). Fish and marine invertebrates were sampled from seven countries including Dominica to help provide important information to fishermen and consumers about the potential risks of mercury exposure associated with human consumption of seafood.

➤ Consumption Guidelines

Meal frequency guidelines by the *Great Lakes Fish Advisory Workgroup* are based on the U.S. EPA reference dose of 1×10^{-4} mg of Hg/kg of body weight/day, a body weight of 132 pounds (60 kg) for an adult female person, and a fish meal size of about 6 ounces (170 grams).



Dominica

Why Use Fish as Bioindicators?

The world's oceans and waterways are key sources of mercury (Hg) found in fish and wildlife. A variety of species are used as bioindicators to provide important information on the impacts of mercury pollution and potential risks related to human health. For example, young fish can reflect rapid changes of environmental mercury loads; long-lived predatory fish may indicate concern for human health.

What are the Risks to Human Health?

Frequent consumption of certain types of seafood* is the primary pathway for methylmercury (MeHg) exposure in humans.

Continuous exposure to MeHg, the organic and more toxic form of mercury, is known to affect neurological development in children and is also linked to cardiovascular disease in adults.

Some larger species of fish and marine mammals may contain mercury concentrations that exceed safe levels for human consumption. This is of particular importance to vulnerable populations including children, pregnant women, and indigenous communities that rely on seafood as a major protein source.

*Seafood includes marine and freshwater fish, shellfish, and marine mammals.

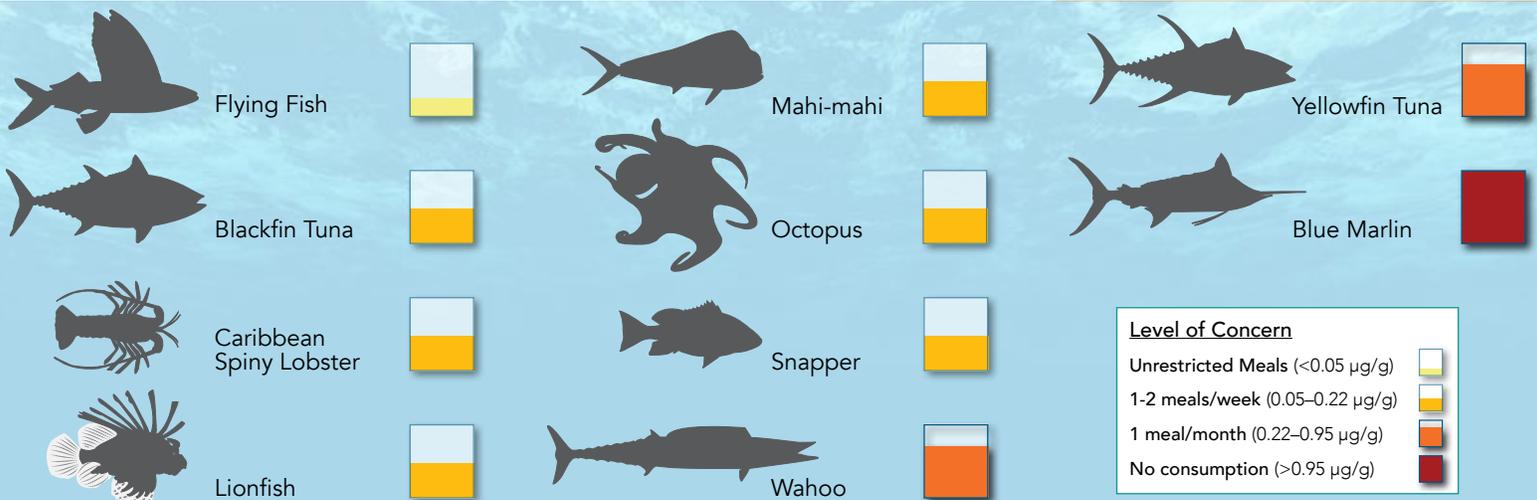


Figure 1. Level of concern for mercury in seafood commonly consumed in Dominica (based on global Hg averages, which may differ from local Hg concentrations). The infographic may not match all focal species samples for Hg. Consumption thresholds are determined by the Great Lakes Fish Advisory Workgroup.

Mercury Biomonitoring in Dominica

Biomonitoring is the process of assessing the health of organisms and ecosystems and tracking changes over time.

1. Dominica sent Biodiversity Research Institute (BRI) 78 muscle samples from 12 different species of fish and marine invertebrates consumed locally.
2. Samples were analyzed for total mercury (Thg) at BRI's Wildlife Toxicology Lab, and results were compiled into a report submitted to government representatives.
3. THg concentrations in seafood from Dominica are considered low. Ninety-two percent of samples analyzed had concentrations below the GLC guidelines¹ for human consumption.
4. THg concentrations varied between species along a trophic-level gradient. Predatory fish (e.g., blue marlin) have higher mean THg concentrations than lower trophic-level species (e.g., Caribbean spiny lobster).
5. **Next steps:**
A more detailed assessment of THg concentrations in commonly consumed species in Dominica would help to provide important information to fisherman and consumers about the risks associated with consuming different species.

¹ Great Lakes Fish Advisory Workgroup. 2007. *A Protocol for Mercury-based Fish Consumption Advice*. 30 pp. (available online at: http://www.in.gov/isdh/files/Mercury_Protocol.pdf).

Benefits of Biomonitoring in Dominica

- Biomonitoring efforts build Dominica's capacity for complying with the Minamata Convention on Mercury, which in Article 19 states that "Parties shall endeavour to cooperate to develop and improve... monitoring of levels of mercury and mercury compounds in... fish, marine mammals, sea turtles and birds..."
- Biomonitoring provides information on spatial patterns of mercury exposure in Dominica, including the ability to identify any areas of high exposure representing a risk to human or ecological health.
- Dominica's country specific data was included in a global database of mercury content in seafood and freshwater fish. These additional data will help with understanding the global scope of mercury contamination in food sources.
- The relevant government entities in Dominica were informed on exposure risks from the frequent consumption of seafood by the general public and regular consumers (including vulnerable populations) of seafood. Fish consumption is the primary pathway for mercury exposure in humans.

BRI Science Communications

BRI's publications help advance environmental awareness and inform decision makers. For example:

Local, Regional, and
Global Biomonitoring:
Updated 2018



Available online: www.briloon.org/hgpubs

Additional Resources



A global network committed to a toxic-free environment:
www.ipen.org



List of Alternatives to Mercury-added Products (available in 2019):
www.unep.org

Related Web Links

Minamata Convention on Mercury:
www.mercuryconvention.org

United Nations Development Programme:
www.undp.org

United Nations Environment:
www.unep.org/chemicalsandwaste

United Nations Industrial Development Organization: www.unido.org

World Health Organization: www.who.int



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