

Poisonous toxins in Caribbean fish may be due to climate change

December 13 2010, By J. Glenn Morris

Global climate change may contribute to an increase in toxins that poison Caribbean fish and the people who eat the seafood, according to experts meeting this week in the Virgin Islands.

Preliminary findings from other parts of the world suggest that increases in [water temperatures](#) trigger an increase in growth of a specific marine alga, known as *Gambierdiscus toxicus*, which produces a group of closely related toxins known as “ciguatoxins.” Ciguatera fish poisoning, known as CFP, occurs when people eat fish that have accumulated these toxins.

“While ciguatera fish poisoning has been recognized as an important public health problem in the [Virgin Islands](#) for many years, we still have very little understanding of the factors that increase the risk of toxicity,” said Dr. Glenn Morris, principal investigator of the project and director of the University of Florida Emerging Pathogens Institute.

“The increases in temperatures that are witnessed in the Caribbean Sea may have an effect,” said Morris about reported CFP cases. “It is important that we understand the potential impact of [climate change](#), and rising sea surface temperatures, on the occurrence of this disease.”

The Ciguatera “Fish Poisoning” Monitoring project, or CaribCATCH, is a three-year cooperative agreement supported by the National Center for Environmental Health at the Centers for Disease Control and Prevention to determine the relationship between the incidence of ciguatera fish

poisoning and changing environmental conditions.

When herbivorous reef fish eat seaweed or algae, they consume the Gambierdiscus organisms, and the ciguatoxins build up in the fish's flesh. Higher levels of toxins are seen in predatory reef fish that feed higher up the food chain. The [toxin](#) cannot be removed from fish through either cooking or freezing.

To learn more information about local cases of human illness in the Virgin Islands, investigators have conducted telephone surveys of citizens of St. Thomas and its neighboring island of St. John to determine a more accurate estimate of poisoning incidences. Patients on the island suspected of having signs of fish poisoning who are admitted to Schneider Regional Medical Center are also interviewed.

Many cases of ciguatera poisoning often go unreported and locals do not always seek medical treatment. Symptoms of CFP include initial gastrointestinal symptoms such as nausea, vomiting and diarrhea followed several hours to days later by the onset of neurological symptoms such as tingling in the hands, feet and face, in addition to pain and weakness in the lower extremities. More unusual symptoms such as temperature reversal (cold water may be perceived as hot) may also occur.

Consuming fish with even low levels of ciguatoxins can result in illness. For this reason, ciguatoxins are difficult to detect in patients and analysis of a leftover meal is the only way to confirm ciguatera [poisoning](#). Because there are no diagnostic tests or treatments for ciguatera, project research investigators hope to identify “biomarker” molecules that are characteristic of ciguatoxin in people and in fish in order to better detect exposure.

More information: For more information, visit

www.CaribCATCH.org

Provided by University of Florida

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