

Cooperative Science Services, LLC Dolphinfish Research Program

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Methylmercury in Dolphin: The Good and the Bad

Mercury is a toxic mineral that naturally occurs in the environment. Thousands of tons of this element are released into the atmosphere each year by pollution and waste. Naturally occurring bacteria process this mercury into methylmercury (MeHg). This highly poisonous form can accumulate in both freshwater and marine environments. It is picked up by the lower plant forms and passed up the food chain from the filter-feeding fish to the apex predators and ultimately man.

During the 1990s, concern grew among fishery scientists over the high levels of MeHg being found in popular species of fish sold commercially. This concern culminated in numerous conferences being held in 2001 to discuss the health risks faced by the public from eating fish containing MeHg. This resulted in the Food and Drug Administration, the Environmental Protection Agency and even the National Research Center issuing guidelines for the consumption of fish.

These guidelines are directed primarily at women who are pregnant, nursing or of child-bearing age and young children. This toxin is easily passed from the mother to fetuses and nursing infants where it attacks the developing brain and nervous tissue. It can also have serious effects on older adults. The National Research Center reported that eating fish containing MeHg is the major known source of exposure to mercury for humans in the United States.

The advisory recommends that women who might become pregnant, who are pregnant or nursing, and young children avoid eating shark, swordfish, king

mackerel, and tilefish, which were found to have mean levels of MeHg above 0.7mg/kg. It also recommends limiting the consumption of certain other species of fish.

Research conducted in various areas have shown some of the most popular species of marine food fish, fresh and canned, can have elevated levels of mercury, such as cobia, grouper, snapper, wahoo and the tunas. Studies have shown that these fish exhibited higher concentrations of MeHg as their body size increased. A common thread among these species is a relatively long life span.

If longevity is a factor in elevated levels of mercury in fish, then how does the dolphin fare. Dolphinfish are known for their rapid growth and a rather abbreviated life, normally less than two years. Past tests done on small samples of dolphin have met with somewhat mixed results. While the overall levels were found to be relatively low compared to other favorite food species, a few individuals did exhibit higher readings.

Doug Adams, a biologist with the Florida Fish and Wildlife Research Institute's Melbourne lab of the Florida Fish and Wildlife Conservation Commission, has just released his findings from a comprehensive study on the total mercury occurring in dolphinfish, which includes methylmercury. This study involved 385 specimens collected over an 11-year period from the recreational fisheries on Florida's Atlantic and Gulf coasts.

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Adams' test results showed that the mean value for all mercury in the tested dolphin was 0.1mg/kg of fish. The study found individual levels of mercury ranging from 0.012mg/kg to 0.55mg/kg. Only one fish, a male 41 inches in fork length, had a level above 0.5mg/kg. Overall 38 percent of the specimens in the study were found to have levels above 0.1mg/kg. According to Adams, at this mercury level, dolphin are consistent with the FDA's "Fish and Shellfish with Lower Levels of Mercury" category. Adams goes on to say, "This means that under the EPA's guidelines, dolphinfish would qualify for the category of 'eat up to eight meals per month.' " This would make mahi a good healthy seafood choice.

The Dolphin Tagging Study has shown the rapid and widespread dispersal pattern of dolphinfish along and from the U.S. East Coast to distant areas of the North Atlantic. Based on this behavior and the fish's life history, Adams was able to say that the study's results should be comparable for dolphinfish wherever they are found off the U.S. and possibly even globally.

The good news for offshore fishermen: You can continue to regularly share those meals of mahi with the whole family, regardless of age or gender. The bad news is, if public concern over mercury in fish leads to a shift in the public's seafood preference to low-mercury species, it could stimulate a rapid growth in the world's commercial harvest of dolphinfish. Such an expansion in the commercial harvest of the world's dolphin stocks could threaten their existence if unregulated.

For more information on the methylmercury in fish visit the EPA's Web site at www.epa.gov/fishadvisories/advice/ or the FDA's Web page at <http://www.fda.gov/default.htm> and type in methylmercury.



Dolphinfish are an important part of the artisan fisheries in the Caribbean Islands and Central America. Development of a large commercial foreign fishery could threaten these local fisheries as well as those in the U.S.

Dolphin Tagging Progress by Zones, August 1, 2009.

Zone	Area	Southern Limit	Northern Limit	Number Tagged
1	Bahamas	22N	28N	255
2	FL Straits	23N	25N	401
3	South Florida	25N	27N	195
4	Central Florida	27N	30N	12
5	North FL & GA	30N	32N	14
6	Southern SC	32N	33N	46
7	N. SC - S. NC	33N	35N	25
8	Northern NC	35N	36.5N	1
9	Virginia	36.5N	38N	1
10	N. Mid-Atlantic	38N		0
11	Gulf of Mexico			5
12	W Central Atlantic			15
13	Caribbean Sea			5
	Total			975

Following Facts in Science

After seven-and-a-half years of studying the movements of dolphin in the Western North Atlantic, I was beginning to feel comfortable about the movements of fish off the east coast of Florida. For seven years no fish tagged off Florida was recaptured off South Carolina. The many Florida tags recovered from North Carolina into the Mid-Atlantic clearly showed that the fish were moving past South Carolina. Their absence in the creels of Palmetto State anglers suggested that they were passing too far to the east for the recreational fleet to intercept them.

The first recovery off South Carolina of a dolphin tagged off south Florida came earlier this year, more than seven years into the study. Made by a commercial fishing vessel, *Shady Lady*, which was fishing more than 80 miles from the South Carolina coast, the recovery did support the theory of their passing the Palmetto State on the eastern side of the Gulf Stream.

Now a second recovery of a Florida dolphin has been reported. On July 28, Steve Kinard, of Ridgeville, South Carolina, was fishing 40 miles east southeast of Charleston, when he recaptured a tagged dolphin. The fish had been tagged by Capt. Zehntner Gay off Islamorada in the Florida Keys. While we know the fish traveled 571 miles northward, it is not known how long it took to make the trip since no release date was noted.

This latest recapture by itself does not dispel the eastern Gulf Stream passage theory. It could be nothing more than an anomalous movement by an individual fish. However, if more Florida tags begin to be recovered on the western side of the Gulf Stream off South Carolina, then this theory would have to be questioned.

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HH Reef Foundation/Dolphin Study

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More than 1.45 million dolphin were harvested from the Gulf, Atlantic and Caribbean by U.S. sports fishermen in 2008. (MRFSS Data)

Financial Support Needed

Donations to the Dolphinfish Research Program are suffering under the current economy. The sluggish economy is affecting the contributions to the research program. Financial donations in the first half of the year typically result in collection of the entire budget. Currently, this year's donations are \$5,000 short of the program's anticipated expenditures for 2009.

The outstanding accomplishments of the research program have been possible only because of the generosity of conservation-minded foundations, recreational fishermen, their organizations, and members of the sportfishing industry. The future of this research program rests with the recreational fishing industry and the fishermen who enjoy the excitement and thrill of offshore big game fishing. Consider investing in the future of your fishing enjoyment.

Please consider making a fully tax-deductible donation. Checks should be made out to Reef Foundation/ Dolphinfish Research Program and mailed to the program's headquarters at the address shown below.

Do Not Use Yellow Tags on Dolphin

Yellow tags distributed during the first four years of the study belonging to the South Carolina Department of Natural Resources should no longer be used on dolphinfish. The public tagging program operated by the state can no longer keep up with processing the tagging and recovery information. This makes it extremely difficult to recover records on dolphin tagged or recaptured using DNR tags.

Please contact the Dolphin Tagging Study should you need to replace the yellow tags.

For More Information, Contact

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