

Summary Report of 2007 Shark Survey in Biscayne National Park

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Between January and October of 2007, 78 sharks in total were sampled from Biscayne National Park. During the dry season (January through May), 59 sharks were sampled: 50 bonnethead sharks, *Sphyrna tiburo*, and nine lemon sharks, *Negaprion brevirostris*. Of the bonnetheads, 39 were female, 3 were males and eight, the sex was undetermined. Of the lemon sharks, five were females and four were male. The Dry Season bonnethead sex ratio was 13:1 female to male and the lemon shark sex ratio was 1.25:1 female to male. During the wet season (July through October), 19 sharks were sampled: 16 bonnetheads and three lemon sharks. Of the bonnethead sharks, 14 were female and 4 were male. Of the lemon sharks, one was female and two were male. The wet season bonnethead sex ratio was 7:1 female to male and the lemon shark sex ratio was 1:2 female to male.

During the dry season, bonnetheads ranged in size from 30 to 92 cm total length, with an average size of 78.77 cm total length. Bonnethead sharks ranged in weight from 2.5 to 8.5 lbs, with an average weight of 5.7 lbs. During the dry season, lemon shark ranged in size from 75 to 99 cm total length, with an average length of 88.75 cm total length. Lemon sharks ranged in weight from 5 to 14 lbs, with an average weight of 8.83 lbs.

During the wet season bonnetheads ranged in size from 67.5 to 84.5 cm total length, with an average length of 75.93 cm total length. Bonnethead sharks ranged in weight from 3.25 to 7.25 lbs, with an average weight of 4.75 lbs. During the wet season, lemon sharks ranged in size from 93.5 to 137.5 cm total length, with an average length of 108.17 cm total length. Lemon sharks ranged in weight from 8.75 to 11.25 lbs, with an average weight of 10 lbs.

Another year of sampling will help reveal seasonal patterns in shark distribution and abundance in Biscayne Bay.

Mercury toxicity analysis was conducted from non-invasive 4 mm tissue samples taken from 42 sharks in Biscayne National Park. Average mercury toxicity in bonnethead sharks was 1.0406 ug/g, ww (n = 35 sharks); however ranged from 0.020 to 3.53 ug/g, ww. For bonnetheads, mercury toxicity per given shark size ranged from 0.083 to 10.08 ug/g/cm. Average mercury toxicity in lemon sharks was 0.5992 ug/g, ww (n = 7 sharks); however ranged from 0.2500 to 1.2390 ug/g, ww. For lemon sharks, mercury toxicity per given shark size ranged from 0.027 to 0.28 ug/g/cm.

Shark muscle tissue mercury levels in our dataset were generally greater than levels safe for consumption by sensitive groups of people, such as young children and pregnant women. In addition to the human health concern, the potential impacts of mercury poisoning to sharks needs to be better understood for purposes of shark conservation. We recommend further sampling efforts to better understand (1) potential habitats and

geographic locations where biological mercury hotspots exist and (2) shark species and populations that are at greatest risk to elevated mercury.

One hundred and fifty students have been exposed to Biscayne National Park through the South Florida Student Shark Program. In the program's first year, information from the program was disseminated to both the scientific community through scientific conferences as well as to the public via presentations to schools, civic organizations, the media and websites. Program results were presented at two conferences. Two workshops on ocean engineering have already been held for participating students. Additionally, two websites have been published on the internet to disseminate the program (<http://sfssp.rsmas.miami.edu>, www.floridasharktales.net). On January 13, 2007, high school students from the SFSSP lead and presented at Biscayne National Park's Annual Family Fun Fest, an event which nearly 300 people to learn about marine science in the Park. The program was also featured on the front page of the *Miami Herald* in February 2007 (http://www.neil4sharks.org/pdf/0407_MiamiHerald.pdf).