Marine Water Pollution: Shellfish Waters

Background

The Bureau of Marine Water Monitoring (BMWM) collects and analyzes more than 10,000 marine water samples for pathogens every year. In addition, BMWM performs field surveys of coastal shorelines to monitor actual or potential pollution sources. This information is reviewed annually, using the National Shellfish Sanitation Program (NSSP) guidelines, in order to update New Jersey’s shellfish growing water classifications.

Shellfish are filter feeders, meaning they pump water through their gills for both respiration and feeding. As they pump this water, their gills filter out particles, removing suspended material from the water. Because shellfish are such effective filters, they tend to accumulate pollutants from the surrounding waters. If the waters are polluted, this can contaminate the shellfish, possibly resulting in shellfish growing area closures. Most frequently, this is due to bacterial contamination from a multitude of sources including wastewater discharges, marinas and boating activity, and nonpoint sources such as stormwater discharges and runoff from agricultural lands.

New Jersey uses four basic classifications for shellfish waters; the classifications are Approved, Seasonally Approved, Special Restricted, and Prohibited. Each classification reflects a different degree of water quality, based on fecal coliform data. Waters of exceptionally high quality are classified as Approved for harvest; stations in these waters have to meet the NSSP Approved criteria. Other waters have this same high quality for a portion of the year; these waters are classified as Seasonally Approved (open for harvest from November through April or from January through April). Stations in Special Restricted waters must meet the NSSP Special Restricted criteria and these waters can only be harvested if the shellfish are depurated prior to being taken to market. Prohibited waters do not fit within the NSSP Special Restricted criteria or are administratively closed due to potential water quality impacts from marinas and boating. In addition, certain waters are classified as Prohibited because they are not sampled due to limited water depth, lack of shellfish habitat, or other environmental factors.

The water quality data generated for shellfish waters classifications is also used for the “Shellfish Consumption Use Assessment” in NJDEP’s Integrated Water Quality Monitoring and Assessment Report. For more information see: http://www.state.nj.us/dep/wms/bwqsa/generalinfo.htm.
**Trend**

The figure below (*New Jersey Shellfish Water Classifications*) shows the trend for both harvestable waters and Approved waters. Approved, Seasonally Approved, and Special Restricted waters constitute harvestable waters and make up about 89% of New Jersey’s coastal waters. The remaining 11% of the waters are not fit for harvest and are classified as Prohibited. These Prohibited areas have often been affected by biological and chemical contamination associated with urban land use (*e.g.* runoff from impervious surfaces, damaged infrastructure, etc.) and/or marina facilities. Special Restricted and Seasonally Approved classifications are often used as buffers to limit the influence from Prohibited areas or potential influence directly from urban land use and marina facilities. Currently, 76% of waters throughout the state are classified as Approved (see figure *2013 New Jersey Shellfish Growing Water Classifications*).

**Outlook and Implications**

The trend of harvestable waters and Approved waters has steadied in the last couple of years. The majority of New Jersey’s coastal waters remain safe for raw consumption. The low variability in the trends and the high percentages of harvestable and Approved waters in recent years are positive indicators that the marine shellfish waters in New Jersey are healthy. The lack of shellfish related illnesses from pathogens suggests that shellfish growing waters are appropriately classified. BMWM will continue to sample for pathogens from all estuarine and State coastal waters under NSSP guidelines. In the future, with additional non-point pollution source tracking and infrastructure repairs, BMWM hopes these trends continue to improve.

**Highlight: Superstorm Sandy**

On October 28, 2012, the New Jersey coast was devastated by the effects of Superstorm Sandy. An administrative order on October 25, 2012 put into effect a precautionary closure of all shellfish waters of the State as of sunrise on October 28, 2012. As a result of the damage to the coastal areas throughout the State, shellfish waters were incrementally reopened for harvest after intense monitoring of water quality and shellfish tissue testing.
by the BMWM. Some waters were able to be reopened as early as November 12, 2012, others reopened throughout December and January, while still other waters were unable to reopen until spring of 2013. All waters of the State of New Jersey were returned to their prior classifications for shellfish harvesting by April 15, 2013.

**Highlight: Barnegat Bay**

The Barnegat Bay Estuary is approximately 30 miles long, stretching from the Point Pleasant Canal (in the north) to Little Egg Harbor (in the south). Bacteriological water quality within Barnegat Bay has been consistent over recent years. Currently, the bacteria levels in Barnegat Bay are low, with 75% of waters classified as Approved (see figure *2013 Barnegat Bay Shellfish Growing Water Classifications*). Prohibited waters in the Barnegat Bay include lagoon systems, marina basins, and portions of the Metedeconk River and Toms River; however, only 6% of the Barnegat Bay is classified as Prohibited compared to the 11% classified as Prohibited statewide. Improved water quality in the Metedeconk River will allow the NJDEP to upgrade 500 acres from Prohibited to Special Restricted. In addition, 319 acres of Seasonally Approved water south of Cedar Bonnet Island will be upgraded to an Approved classification pending regulatory changes.

The Barnegat Bay Estuary was particularly affected by Superstorm Sandy. Due to the failure of the sanitary infrastructure surrounding Barnegat Bay, waters immediately after the storm were significantly degraded by untreated sanitary waste. While water quality rapidly improved to background levels, the rapid cooling of the waters immediately following the storm caused the shellfish to shut down and cease purging, sequestering contaminants. The northern portion of the Barnegat Bay was reopened on December 21, 2012. Additional portions were reopened in both January and March of 2013, as water temperatures began to warm sufficiently for the shellfish to purge the contaminants they were storing since just after the storm. The remaining reopenings occurred in April of 2013, six months after the storm; with these reopenings all waters within the Barnegat Bay were returned to their prior classification (see figure *Barnegat Bay Shellfish Classification*).

**More Information**

Additional information can be obtained by contacting NJDEP’s Bureau of Marine Water Monitoring at (609) 748-2000 or by visiting www.nj.gov/dep/bmw.