

# Marine Water Pollution: Shellfish Waters

## Background

The Division of Water Monitoring and Standards, Bureau of Marine Water Monitoring (DWM&S/BMWM) collects and analyzes more than 10,000 marine water samples for pathogens every year. In addition, DWM&S/BMWM performs field surveys of coastal shorelines to monitor actual or potential pollution sources. This information is reviewed annually using National Shellfish Sanitation Program (NSSP) guidelines to update New Jersey's shellfish growing water classifications.<sup>1</sup>

Shellfish are filter feeders. They pump water through their gills for both respiration and feeding. Shellfish gills filter out particulates in the pumping process, removing suspended material from the water. Because shellfish are such effective filter feeders, they can accumulate pollutants from surrounding waters.

If waters are polluted, contamination of shellfish can take place, therefore, shellfish growing waters must be properly monitored. Closures of shellfish growing waters are frequently due to bacterial contamination from a multitude of sources including wastewater discharges, marinas, boating activity, stormwater discharges, and runoff from agricultural lands.

New Jersey uses five basic classifications for shellfish waters: *Approved*, *Conditionally Approved*, *Restricted*, *Conditionally Restricted*, and *Prohibited*. Each classification reflects a different degree of water quality based on bacteriological results derived from the analysis of fecal coliform data.

The 2018 shellfish classifications derived from water quality results are indicated in Figure 1. These waters are classified according to terms that are defined in the NSSP Guide for the Control of Molluscan Shellfish<sup>1</sup> and state regulation (N.J.A.C. 7:12). 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; sampling station data in these waters must meet the NSSP *Approved* criteria. Other waters that have this same high quality for a portion of the year are classified as *Conditionally Approved* (open for harvest from November through April or from January through April). Waters that do not meet the threshold for *Approved* or *Conditionally Approved* may be classified as *Restricted* if they meet

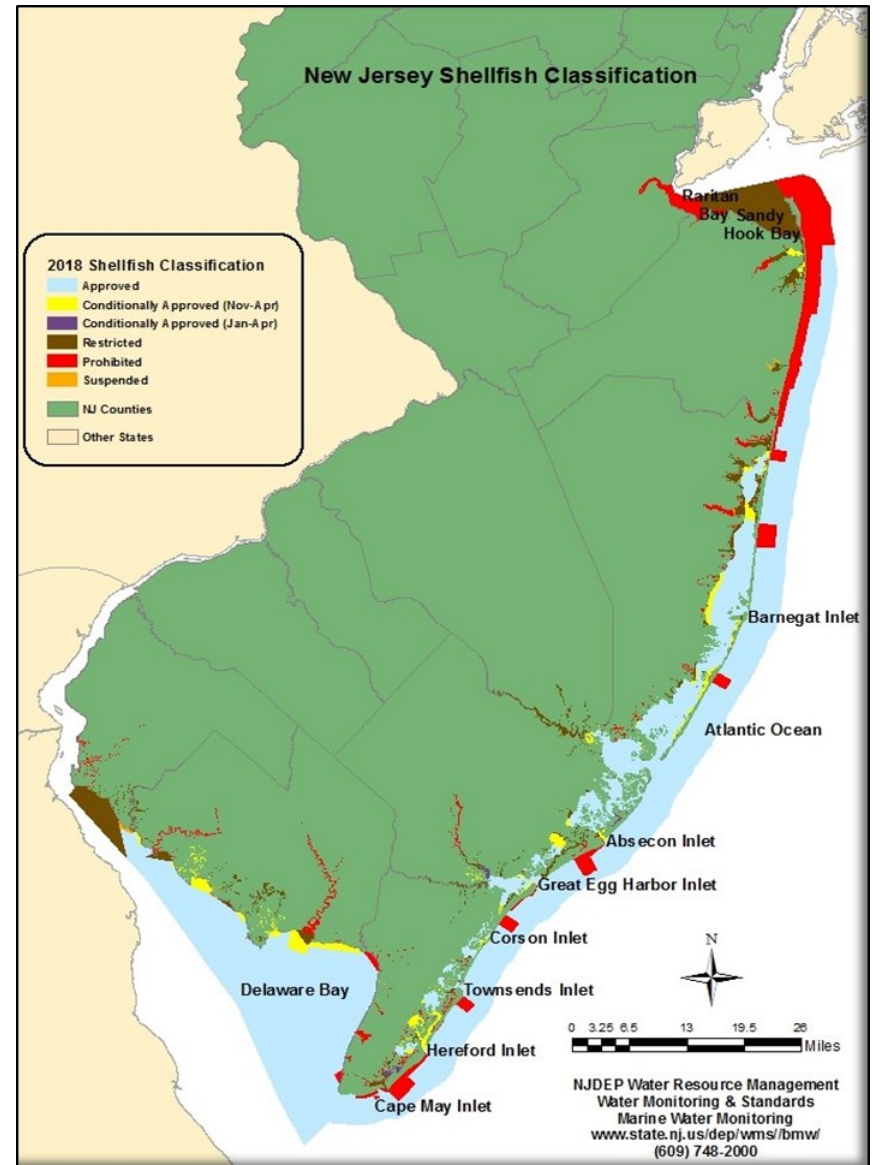


Figure 1. 2018 New Jersey Shellfish Classifications

the NSSP *Restricted* criteria, or *Conditionally Restricted* if they meet for a portion of the year. Shellfish in *Restricted* waters shall not be harvested except for depuration or relay pursuant to a permit issued by DWM&S/BMWM. Depuration is the process of moving shellfish to a controlled aquatic environment for a period of time in order to reduce the pathogenic organisms that may be present. No harvest is allowed in *Prohibited* waters; either these waters do not meet NSSP criteria or they are administratively closed due to the potential for water quality impacts (*i.e.*, marina basins and lagoons). In addition, certain waters are classified as *Prohibited* because they are not sampled due to limited water depth, lack of shellfish habitat/shellfish product, or other environmental factors.

The delineations of the various shellfish growing water classifications are listed in regulation at N.J.A.C. 7:12. Pursuant to N.J.A.C. 7:12-1.4(a), DWM&S/BMWM shall immediately suspend harvest in areas impacted by an intermittent pollution episode or emergency condition when the event has or may have deleterious impact on public health. In addition, pursuant to N.J.A.C. 7:12-1.4(b), DWM&S/BMWM shall immediately suspend harvest in any waters that, at the time of sampling, do not meet the standards for the particular waters' classification, pending the establishment by rulemaking of the appropriate classification and boundaries. Therefore, state shellfish growing waters may also be listed as *Suspended*.

The water quality data generated for shellfish water classifications is also used to determine the "Shellfish Harvest for Consumption Use" assessment in NJDEP's Integrated Water Quality Assessment Report. For more information see: <https://www.nj.gov/dep/wms/bears/assessment.htm>.

## Status and Trends

Figures 2 and 3 show the percentage, by classification, of New Jersey shellfish growing waters and the trend for Harvestable/Approved ocean and back bay waters.

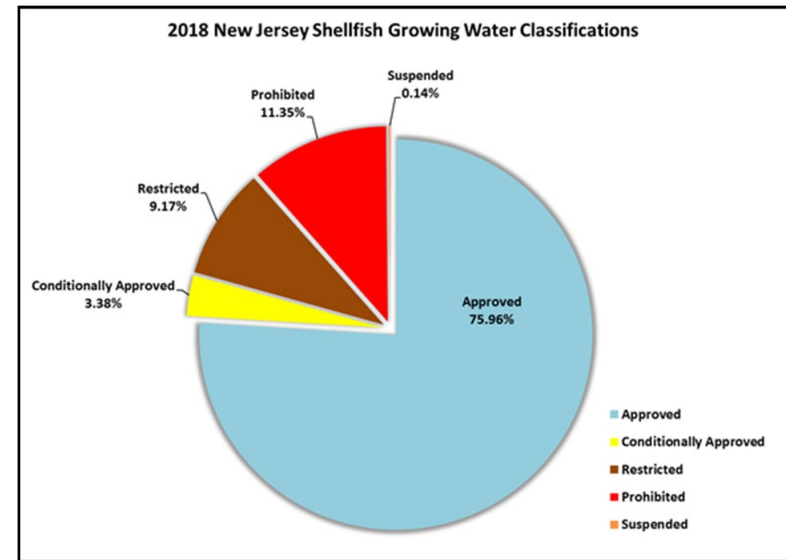


Figure 2. 2018 New Jersey Shellfish Growing Water Classifications

Figure 2 displays the percentage of state shellfish growing waters, by classification, for 2018. *Approved*, *Conditionally Approved*, *Restricted*, and *Conditionally Restricted* waters constitute "Harvestable" waters. Individually, the *Approved*, *Conditionally Approved*, and *Restricted* waters equate to 75.96%, 3.38%, and 9.17%, respectively; together these classifications represent 88.51% of New Jersey's coastal waters. Currently there are no *Conditionally Restricted* waters in New Jersey. Presently, 0.14% of shellfish growing waters are *Suspended*, pending the establishment by rulemaking of the appropriate classification. The remaining 11.35% of the waters are not Harvestable and are classified as *Prohibited*.

*Prohibited* waters have often been affected by biological/chemical contamination associated with urban land/water use (*e.g.* runoff from impervious surfaces, damaged infrastructure, lagoons, and marina basin locations). *Restricted*, *Conditionally Restricted*, and *Conditionally Approved* classifications are often used as buffers to limit shellfish harvest in waters abutting *Prohibited* areas, where inputs may be impacting water quality.

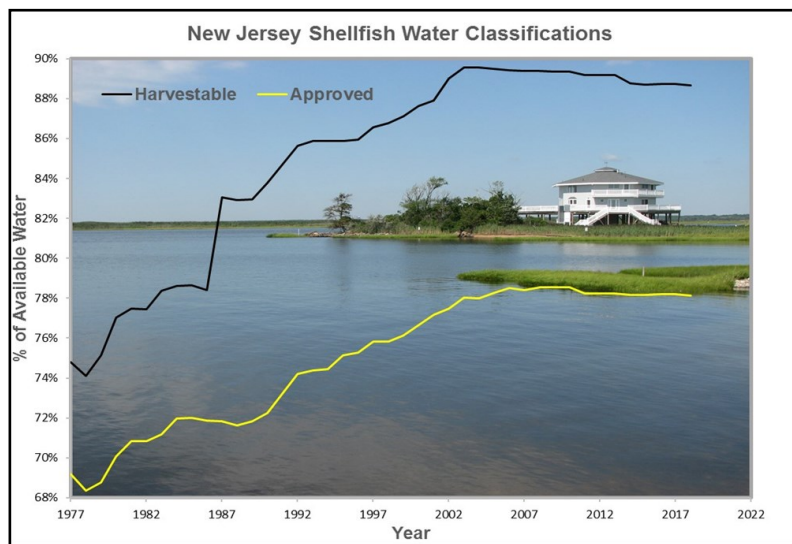


Figure 3: New Jersey Shellfish Water Classifications.

In Figure 3, “Approved” includes only *Approved* and *Conditionally Approved* waters, whereas “Harvestable” also includes *Restricted* waters. As Figure 3 indicates there was a considerable increase in Harvestable/Approved waters from 1978 through 2003. Since then, Harvestable/Approved waters have remained relatively constant.

The considerable increase in Harvestable/Approved waters coming out of the latter part of the 1970’s was largely due to the advent and construction of larger, more efficient regional treatment facilities. Smaller, less efficient wastewater treatment facilities, often referred to as package plants, were replaced by larger regional facilities. Additionally, discharges from regional plants along state coastal waters were redirected to the ocean, where greater dilution prevailed, as opposed to shallow back bay or estuarine waters, where the smaller plants discharged. This in turn brought about improved water quality for the inner coastal waters of New Jersey. In addition, existing wastewater treatment facilities in the state underwent infrastructure upgrades and plant refurbishments that have provided better treatment and enhanced water quality.

## Outlook and Implications

The majority of New Jersey’s coastal waters are classified as *Approved*, leading to the direct harvest and safe consumption of raw shellfish. In recent years, DWM&S/BMWM has concentrated considerable effort on stormwater input studies, associated fieldwork, and continually advanced chemical/microbiological studies. Such advances utilize more current methodologies for fieldwork and enhanced equipment for analysis of shellfish growing waters. DWM&S/BMWM continues to enhance field surveys and conduct non-point pollution source tracking studies; work with local, county, and state officials on maintaining and repairing infrastructure; and utilize advanced laboratory capabilities that will enable continual water quality enhancements for state shellfish growing waters.

## More Information

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

## References

United States Food and Drug Administration. (2015). *National Shellfish Sanitation Program Guide for the Control of Molluscan Shellfish: 2015 Revision*. <https://www.fda.gov/downloads/food/guidanceregulation/federalstatefoodprograms/ucm505093.pdf> Accessed 5/18/2018.