

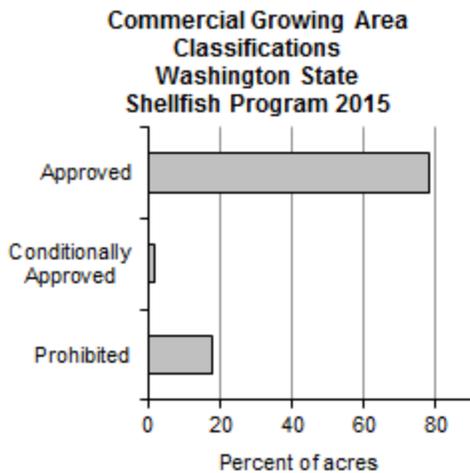
Shellfish Safety

Definition: Shellfish safety includes a wide range of activities from preventing contamination of shellfish harvesting areas, to closing contaminated harvesting areas, to tracking illnesses caused by eating shellfish. Monitoring the percentage of acreage open or closed to shellfish harvest is one method of tracking shellfish safety in Washington. Shellfish areas are assigned classifications related to water quality. Commercial and recreational classification systems are similar but they use different terms. The following definitions list the commercial classification first and the corresponding recreational classification in parentheses. **Approved (Open)** areas are those where pollution source evaluations and water quality data show that fecal contamination and other harmful substances are not present in unsafe amounts. **Conditionally Approved (Conditional)** areas are those that meet the Approved criteria except when known pollution conditions exist, for example, following a heavy rainfall. An area is classified as **Prohibited (Closed)** when contamination is or may be present in dangerous concentrations.

This is a data update of the *Health of Washington State* chapter on [Shellfish Safety](#) published in 2012.

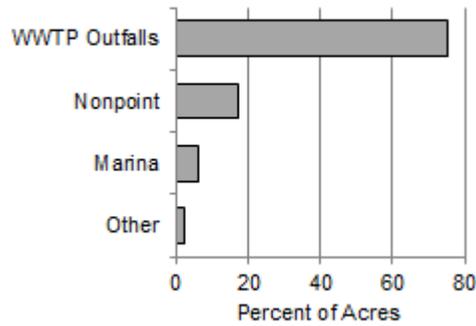
Classification of Growing Areas

Commercial areas. In 2015, about 250,000 acres were classified as Approved or Conditionally Approved for commercial shellfish harvesting. About 55,000 acres were classified as Prohibited. (See [definition box.](#))



Prohibited areas can be attributed to wastewater treatment plant outfalls (where treated wastewater is discharged into Puget Sound), nonpoint pollution sources such as failing septic systems and farm animal waste, marinas and other sources (wildlife waste and unknown sources).

Prohibited Acres Pollution Source Washington State Shellfish Program 2015



WWTP: Wastewater Treatment Plant

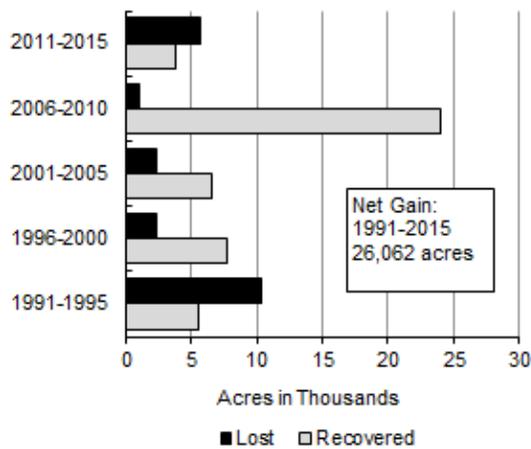
Recreational growing areas. In 2015, 277 beaches had sufficient numbers of shellfish and harvesters to merit conducting a sanitary survey and classifying the beaches. In 2015, 66% of recreational beaches were open, 25% were closed and 9% were conditional. (See [definition box.](#))

Time Trends

Classification of commercial areas. Since 1991, the Department of Health has used a consistent approach to classify commercial growing areas.

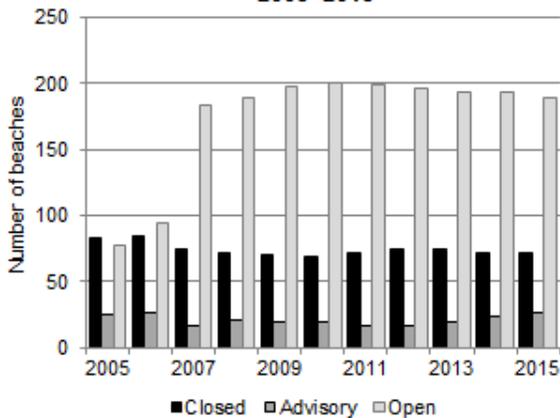
From 2001 through 2015, about 21,700 acres of shellfish growing areas were downgraded and subject to harvest restrictions. During the same period, the classifications of nearly 47,900 acres were upgraded because environmental conditions improved.

Commercial Shellfish Acreage Recovered and Lost Since 2001
Washington State Shellfish Program



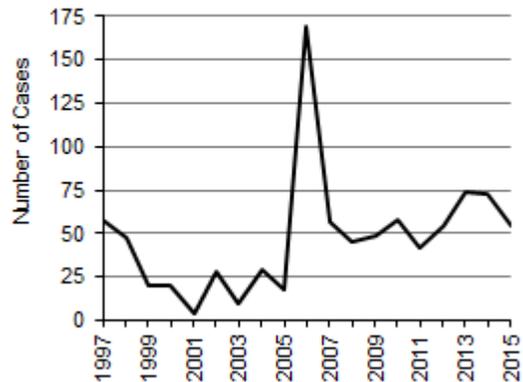
Classification of recreational beaches. The number of classified beaches grew from 186 in 2005 to 277 in 2015. During this time the number and percent of beaches open to recreational harvesting grew from 78 (42%) to 184 (66%).

Recreational Shellfish Beaches
Washington State Shellfish Program
2005-2015



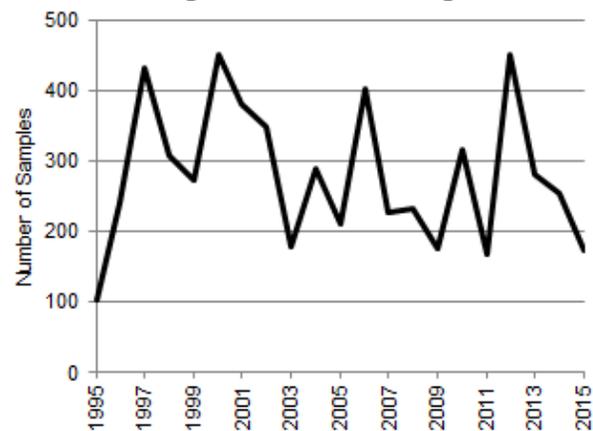
Vibrio parahaemolyticus. Over the past 10 years, the annual number of laboratory-confirmed cases of *Vp* has varied from a low of 18 in 2005 to a high of 80 in 2006, when Washington experienced an unusually dry and warm summer. These numbers do not include everyone who might have had *Vp*. Many people who may have *Vp* illness have mild symptoms and do not seek medical attention. Symptoms of *Vp* illness can be similar to symptoms of other gastrointestinal illnesses and so healthcare providers sometimes fail to properly diagnose *Vp*.

Laboratory-Confirmed *Vp* Cases
2001-2015
Washington State Shellfish Program

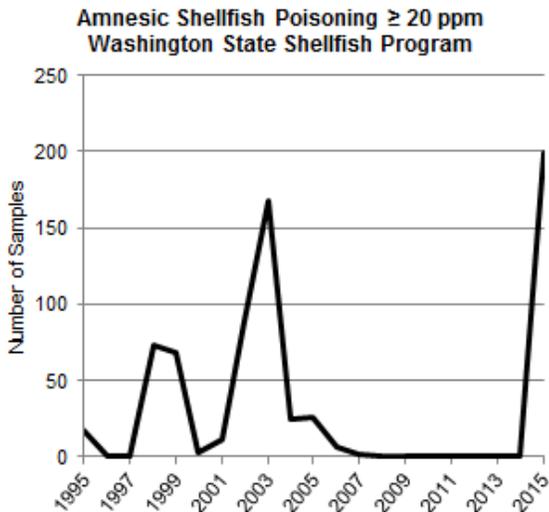


Marine biotoxins. Since 1995, an average of 3,300 shellfish samples have been analyzed by the Public Health Laboratories each year for paralytic shellfish poison (PSP) levels. The Department of Health closes shellfish harvest when more than 80 micrograms of PSP are found per 100 grams of tissue. Since 1995 the highest PSP level recorded was 20,751 micrograms, which occurred in 2002.

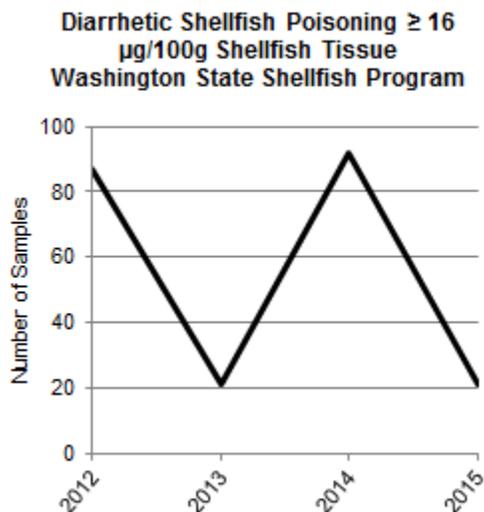
Paralytic Shellfish Poisoning Samples ≥ 80 $\mu\text{g}/100\text{g}$ Shellfish Tissue
Washington State Shellfish Program



Since 1995, an average of 1,500 shellfish samples have been analyzed each year for amnesic shellfish poison (ASP) levels. Shellfish harvests are closed when more than 20 ppm of ASP is found in shellfish tissue. The highest ASP level recorded was 295 ppm, which occurred in 1998.



Since 2012, an average of 2,000 samples have been analyzed yearly for diarrhetic shellfish poison (DSP) levels. Closures result when a sample is more than 16 micrograms of DSP per 100 grams of tissue. The highest DSP level recorded was 184 micrograms, which occurred in 2012.



Geographic Variation

Shellfish harvest area classifications are determined in part by proximity to potential sources of pollution. Urban areas typically have many more sources of pollution, so most approved commercial harvest areas and recreational shellfish beaches are located away from urban areas.

Geographic variation may also account for the relatively large numbers of *Vp* illnesses in Washington. Studies in the late 1990s and early 2000s showed that the strains of *Vp* bacteria found

in the Pacific Northwest appeared to cause more severe disease than those found in other parts of the United States.^{1,2} It is not known whether this is still the case.

Data Sources

Department of Health 2015 Annual Inventory of Commercial and Recreational Shellfish Areas

Department of Health Shellfish Sample System

Department of Health Shellfish PhD

For More Information

PSP toll-free hotline (800) 562-5632 Department of Health Marine Biotoxin Bulletin

Department of Health website for shellfish safety information: <http://www.doh.wa.gov/CommunityandEnvironment/Shellfish> h.aspx

Puget Sound Partnership, a state agency devoted to protecting and restoring Puget Sound: www.psp.wa.gov

U.S. Centers for Disease Control and Prevention website for shellfish safety information:

www.cdc.gov/nczved/divisions/dfbmd/diseases/marine_toxins/

Acknowledgments

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Washington State Department of Health

Endnotes

¹ DePaola D, Kaysner C, Bowers J, Cook D. Environmental investigations of *Vibrio parahaemolyticus* in oysters after outbreaks in Washington, Texas, and New York (1997 and 1998). *Appl Environ Microbiol.* 2000;66:4649-4654.

² DePaola A, Ulaszek J, Kaysner C, et al. Molecular, serological, and virulence characteristics of *Vibrio parahaemolyticus* isolated from environmental food, and clinical sources in North America and Asia. *Appl Environ Microbiol.* 2003;69:3999-4005.