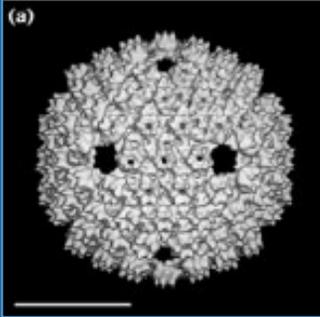
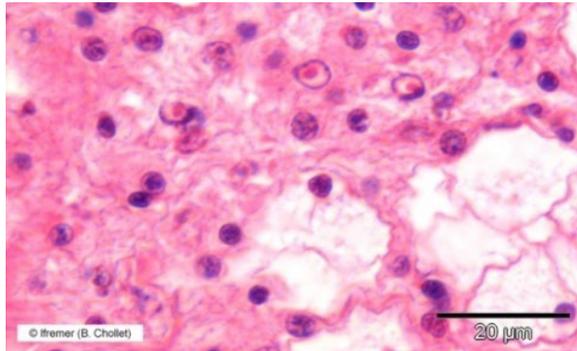


# Stop

# The Invasion



Photographs courtesy of Davison, et al (2005), Ifremer and European Union Reference Library (2012); and Burge (2017).



Laboratory staining reveals oyster cells displaying cellular signs of OsHV-1 infection (Ifremer 2012); and a dead oyster sampled during an OsHV-1 mortality event (Burge 2017).

## Infectious Shellfish Diseases

E.g. OsHV-1 viruses

Report Sightings

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[InvasiveSpecies.wa.gov](http://InvasiveSpecies.wa.gov)

October 2018

### What is it?

Just like humans, shellfish can be infected with bacteria or viruses that cause disease. When these diseases spread, they can cause significant ecological and economic harm. One group of concerning viruses for Washington shellfish are those belonging to the ostreid herpesviruses (OsHV-1), including the California variant and the related OsHV-1 microvariant.

OsHV-1 is present in three California bays, where it annually kills large numbers of juvenile Pacific oysters and is responsible for significant losses to the local shellfish industry. Disease linked to the Californian strain of the virus has been referred to by some as Seed Oyster Mortality Syndrome (SOMS). The disease linked to the Australian and New Zealand strain is referred to as Pacific Oyster Mortality Syndrome (POMS). Variants of this virus also occur in shellfish in Asia, Europe, and Mexico.

The more harmful OsHV-1 microvariant has severely damaged Pacific oyster beds and production in Australia, France, New Zealand, the United Kingdom, and several other European countries.

OsHV-1 microvariant-related deaths can approach 100 percent and can affect both young and adult oysters.

OsHV-1 and its microvariants are a serious threat to Washington's oysters and other bivalves but do not affect vertebrate animals and humans.

### Is it here?

No. The original strain of OsHV-1 has been kept isolated to a narrow area in California for nearly two decades. Regulatory actions in California and other West Coast states, including Washington, along with shellfish industry best practices have limited its spread to date.

The microvariant, first reported in Europe in 2008 and more recently POMS in Australia and New Zealand, has spread rapidly and in some cases appears to have replaced OsHV-1 as the dominant and more virulent strain. Washington regulators, shellfish growers, and others are working to prevent the introduction of either OsHV-1 or OsHV-1 microvariant and you may be able to help.

### Why should I care?

The OsHV-1 microvariant and POMS have badly damaged shellfish industries in other countries and OsHV-1 has had impacts in California. There is obvious potential for spread and damaging consequences in new locations. Washington is home to the nation's largest shellfish aquaculture industry, and recreational shellfishing, which is enjoyed by more than

200,000 Washingtonians, is a significant part of the state's outdoor way of life. Treaty Tribes also depend on shellfish for important economic and sociocultural resources. In addition, shellfish serve important roles in the marine environment from providing habitat and food resources to contributing to water quality.

The introduction or spread of shellfish diseases could have substantial ecological, economic, and cultural impacts.

## What can I do?

Never place shellfish or shellfish products, including those purchased at seafood markets, restaurants, pet stores, and online, or those collected from the wild, into Washington waters without a permit from the Washington Department of Fish and Wildlife (even if the shellfish were originally from Washington). This includes shells that you intend to recycle. The risk of introduction of disease outweighs benefits of recycling shells.

Shellfish diseases spread to new places by movements of infected shellfish, shells, shellfish farming gear, ballast water, and fouling organisms associated with vessel traffic plus by seawater and oyster larvae.

## What should I do if I find it?

Shellfish diseases such as OsHV-1 infection cannot be diagnosed without a professional laboratory; however, suspicious mass shellfish die-offs can and should be reported to the Washington Department of Fish and Wildlife's Shellfish Program by e-mailing [deadshellfish@dfw.wa.gov](mailto:deadshellfish@dfw.wa.gov).

Also, report any unpermitted import or transfer of shellfish to Washington Department of Fish and Wildlife Enforcement (<https://wdfw.wa.gov/enforcement/>) by the following methods:

- Calling 1-877-933-9847
- Texting TIP411 (847411). Begin your text with WDFWTIP (space) Report, then type your message. Reports are anonymous
- Submitting an online form <https://wdfw.wa.gov/enforcement/violation/reportStart.html>. All imports or transfers of live invertebrates, such as shellfish, must be permitted by the department.

## Where can I get more information?

- Washington Department of Fish and Wildlife's Shellfish Disease Control Web site: [https://wdfw.wa.gov/licensing/shellfish\\_import\\_transfer/](https://wdfw.wa.gov/licensing/shellfish_import_transfer/)
- Pacific Coast Shellfish Growers' Association information for shellfish growers: <http://pcsga.org/environmental-policy/>
- Fisheries and Oceans Canada Shellfish Disease Web page: [www.dfo-mpo.gc.ca/science/aah-saa/diseases-maladies/htvdoy-eng.html](http://www.dfo-mpo.gc.ca/science/aah-saa/diseases-maladies/htvdoy-eng.html)
- World Organization for Animal Health: [www.oie.int/fileadmin/Home/eng/Health\\_standards/aahm/current/chapitre\\_ostreid\\_herpesvirus\\_1.pdf](http://www.oie.int/fileadmin/Home/eng/Health_standards/aahm/current/chapitre_ostreid_herpesvirus_1.pdf)
- European Union Reference Library: [www.eurl-mollusc.eu/Main-activities/Tutorials/Herpes-virus-OsHV-1](http://www.eurl-mollusc.eu/Main-activities/Tutorials/Herpes-virus-OsHV-1)

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