

Should we reconsider introduction of the Asian Oyster in the Chesapeake Bay?

In 2004, a proposal was made to study the feasibility of introducing the Asian Oyster, *Crassostrea ariakensis*, to the Chesapeake Bay to help replenish the depleted population of the native oyster, *Crassostrea virginica*. In 2009 the proposal was denied. Several scientists at the Virginia Institute of Marine Science, who had been doing research on the Asian Oyster, wrote a position paper in support of introducing the Asian Oyster hoping to overturn the decision. In 2015 we continue to see a depleted population of the native and a degraded Chesapeake Bay, partly due to the loss of oyster reefs as bay filterers, keystone habitat for a variety of species not to mention a decrease in revenue of the oyster fishery. The introduction of a new species can offer a renewed hope and possible resurrection of the Bay or result in greater damage to the ecosystem as evidenced by the Cane Toad, *Phragmites australis* and the Blue Catfish. So, do the concerns really outweigh the possible benefits?

Assignment: Read the Position Paper below as well as research information on the Asian Oyster (positive and negative aspects). Read at least 3 other scientific articles.

Write your own Position Paper (For OR Against introduction of the Asian Oyster in the Chesapeake Bay. Be sure to support your response with at least citations (in the paper).

Include a list of those resources you cited.

Position Paper for Introducing Asian Oysters into the Chesapeake Bay

Over the past few decades the native oyster population of *Crassostrea virginica* has declined by 99% of its peak numbers due to over fishing, pollution and disease. After 15 years of work and almost 60 million dollars the native oyster is refusing to make a comeback. The oyster is vital to the Chesapeake Bay because of the ecological and economical benefits it provides for the area. The native population is not going to be able to reach the necessary numbers in order to revive these industries and we believe the introduction of *Crassostrea ariakensis*, the Asian Oyster is the only method to repopulate the sound.

A vital economy was set up around *C. virginica*, throughout Maryland and Virginia oysters became a multimillion dollar per year industry and provided jobs for tens of thousands of people living near the bay (Fahrenthold). The result of its popularity lead to overfishing and an oyster population that could not keep up with the demand. A native oyster reaches maturity in 3 to 5 years depending on the conditions and requires a solid

reef to affix itself to (Luckenbach, VIMS). Left alone the oysters often attach to each other creating great reefs that serve as habitat for many other species besides themselves. With over fishing and the industrial economy that uses the bay for boat travel these reefs have been all but decimated which leaves very little area for the sensitive *C. virginica* to settle. The Asian Oyster has proven to have a faster growth rate when tested by the Virginia Seafood Council. They introduced sterilized Asian Oysters into the bay in cages to monitor their ability to grow and survive (Fahrenthold). This increased growth rate is an extremely important trait when trying to repopulate the Bay since it means shorter time between generations and therefore a larger population quicker. The oyster is a filter feeder that at the height of its peak population in the 1950's could filter the Bay in a day, now it takes the oyster population a year to filter (NOAA). An increase in population will be a positive step since more oysters means more filtration of pollutants and the creation of more habitat as they rebuild the reefs.

The Asian oyster is the only option to repopulate the sound also because of its immunity against diseases prevalent in the sound. MSX and Dermo are parasites that appeared in the mid 1900's, they have a 90% death rate on the native oyster (Luckenbach, VIMS). MSX was accidentally introduced from Asia in the 1950's and does not affect the Asian Oyster. The non native oysters can contract Dermo, but it is rare and generally not deadly in those individuals. Both of these diseases become more potent in higher salt concentrations, so as the water level varies and the salinity increases the native oyster is presented with an epidemic. The Bay cannot afford a 90% mortality rate when trying to resume an economy based on oyster populations.

The only negative argument against the introduction of the Asian Oyster into the Chesapeake Bay is the worry that it will outcompete the native oyster and become invasive (Fahrenthold). The main reason the oyster population is in trouble is due to over exploitation of the resource. Oyster harvests would likely keep the Asian Oyster population under control. Over fishing has lead the population to be 1% of what it was in the peak of the oyster population (Luckenbach, VIMS). The Asian Oyster has the same benefit as the native oyster to the economy since it has the same value as a food export. The fishing industry will most likely continue to keep the oyster population under the ideal level even if the Asian Oyster became a prolific breeder.

The idea is not just for the Asian Oyster to outcompete the native and take over as the new dominant species, and one particular feature of the Asian Oyster will make it impossible to for it to do so. A recent study of the growth rates of the young Asian Oyster showed that it grows more slowly when crowded with its own species and, when grown with *C. virginica*, it suffers a higher mortality rate (Luckenbach, VIMS). The Asian Oyster does not flourish when grown in the crowded conditions favored by the native species (Luckenbach, VIMS). This feature is ideal since it will protect habitats already populated by the native oyster.

The only solution to rebuild the Chesapeake Bay's ecological and economical health is to release the Asian Oyster into the bay. Thousands of people used to depend on the oyster as a source of income. Then with the collapse of this fishery, they lost their livelihood. Even though the Chesapeake Bay was once the most productive source of oysters in the

United States most of our supply now comes out of the Gulf of Mexico. The Asian oyster is the solution to replenishing the oyster supply in the Bay. After nearly two decades of focused work to try and bring the native oyster population back, there has been no progress because of habitat loss and disease. The introduction of the Asian Oyster would repopulate the Bay in less time than repeated attempts to aid the growth of *C. virginica*; which means less time before there is a viable fishing industry back in the Bay. A strong oyster population would also mean cleaner water in the Chesapeake Bay due to the filtration of the oysters, resulting in improving the health and amounts of other Bay fisheries. Also, with the help of research, we are fairly certain that the Asian Oyster is unlikely to become an uncontrollable invasive species. There are no drawbacks to the introduction of the Asian Oyster into the Bay, only gains to be made for the Bay area's economy and ecology.

Sources

- Luckenbach, Dr. Mark. "Crassostrea Ariakensis: Panacea or Pandora?" Virginia Institute of Marine Science. <http://ian.umces.edu/pdfs/iannewsletter09.pdf>
- National Oceanic and Atmospheric Administration Chesapeake Bay Office. Non Native Oysters. <http://chesapeakebay.noaa.gov/nonnativeoysters.aspx>
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- Fahrenthold, David A.; "The Plug is Pulled on the Asian Oyster" Washington Post. April 2009.