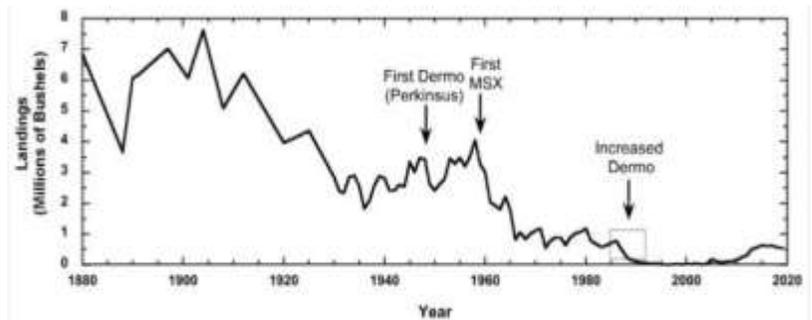


Recent Virginia Oyster Fishery History- The Collapse and Gradual Recovery

Thanks to recently released publications from scientists at VIMS and elsewhere, we have learned much more about what has been happening to both wild and hatchery-spawned oysters in Virginia. The following charts are from the History section of the Virginia Oyster Productivity Information Tool (Mann et. al.).

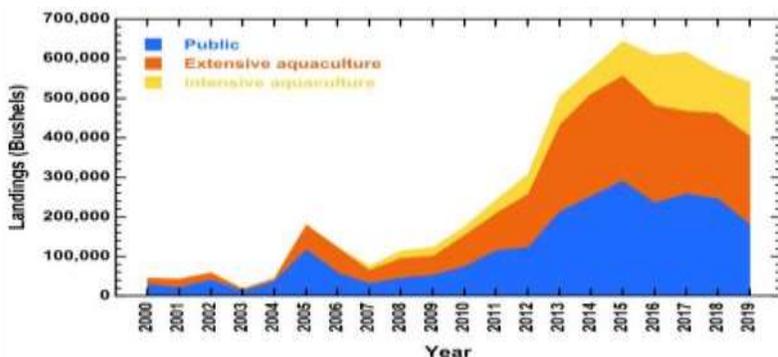
In the middle 1950s, oyster production was expanding despite decades of over harvesting, pollution and poor management. Then we see the huge drop off when MSX ravaged the Bay's oyster population. To add insult to injury, dermo worsened in the middle 1980s.

According to research by Carnegie et. al., the *Perkinsus marinus* parasite (cause of dermo), which had been in the Bay a long time, suddenly evolved into a more aggressive variant, influenced by the presence of MSX. I can remember the oysters dying off along my shoreline in the late 1980s, and that was a sad time.



During the 1990s, VIMS and many agencies began trying to clean up the Bay and restore the oyster population. In 1997, the Virginia General Assembly authorized the Aquaculture Genetics and Breeding Technology Center (ABC) at VIMS "to use a combination of selective breeding and genetic research to domesticate the native eastern oyster *Crassostrea virginica* for aquaculture and to improve on its traits." This effort, led by Dr. Stan Allen, ultimately resulted in the hatchery-based aquaculture industry we enjoy today. (accessed 8-4-2021 at <https://www.vims.edu/research/units/centerspartners/abc/about/index.php>)

This chart shows how both hatchery-based aquaculture and wild oyster production have grown since about 2004. The blue (dark gray in B&W) is the public (Baylor) grounds which are maintained by VMRC. The red (medium grey, extensive aquaculture) is a mix of wild oysters and hatchery-spawned spat-on-shell grown on leased (private) grounds. Yellow (light grey, intensive aquaculture) is commercial caged aquaculture, also grown on leased grounds.



The growth in hatchery-spawned oyster production is because the strains are selectively bred to be disease resistant, and the development of the sterile triploid oyster allows them to grow fast, and they can be harvested year-round. The Virginia aquaculture industry grew quickly in the early 2000s.

Carnegie et. al. found that wild oysters are in fact evolving to have more natural disease resistance for MSX and DERMO. Production of wild oysters also benefitted from more efficient dredges and restoration projects. However, too many adolescent oysters still die before growing large enough to produce sufficient cultch for future generations of oysters. VMRC annually provides tons of shells (some mined) as cultch to public grounds, but shell is difficult to find and expensive, so this repletion process may not be sustainable.

The decline in production since 2015 may have been due to excessive rain affecting salinity (especially in 2018) and usage conflicts near shorelines where leased oyster grounds are usually

located. Lack of space within leased oyster grounds is restricting further expansion of aquaculture, and only 22% of public grounds is considered productive for wild oysters. With new state legislation, it's possible that unproductive public grounds or other waters away from shorelines could be used for intensive aquaculture.

For further reading, please access the links and references below. They include quite a few reports on current status as well as detailed discussions on possibilities and limitations for future expansion.

-Vic Spain, MOG

REFERENCES

<https://cmap2.vims.edu/OysterInfoToolVa/> - **Virginia Oyster Productivity Information Tool**

History, Status and Challenges for Oyster Industry Expansion in Virginia in Partial Fulfillment of the Project Entitled: Expanding Virginia's Oyster Industry While Minimizing User Conflict

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https://www.vims.edu/research/units/labgroups/molluscan_ecology/_docs/deq_report_20181116_final.pdf

Expanding Virginia's oyster industry while minimizing user conflict Interim report (Year 2 of 3) submitted to Virginia Coastal Zone Management Program Roger Mann, Marcia Berman, James Wesson, Melissa Southworth, Tamia Rudnicky Virginia Institute of Marine Science The College of William and Mary Gloucester Point, VA 23062 Submitted December 16, 2019

https://www.vims.edu/newsandevents/topstories/2021/dermo_intensification.php

VIMS study uncovers new cause for intensification of oyster disease

by David Malmquist | **June 18, 2021**

Video with Dr. Ryan Carnegie also at this link.

<https://www.nature.com/articles/s41598-021-92379-6>

*A rapid phenotype change in the pathogen *Perkinsus marinus* was associated with a historically significant marine disease emergence in the eastern oyster*

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