



DELAWARE DEPARTMENT OF
NATURAL RESOURCES AND
ENVIRONMENTAL CONTROL



2020 Delaware Inland Bays Shellfish Aquaculture Report

Planting, harvest, and survey of participants

Report released: June 2021

Delaware Department of Natural Resources and Environmental Control, Division of Fish & Wildlife

Dover, Delaware

Delaware's Inland Bays

Delaware's Inland Bays are comprised of three shallow connected coastal bays - Rehoboth Bay, Indian River Bay, and Little Assawoman Bay (Figure 1). The bays and their tributaries cover about 32 square miles. The surrounding areas are densely populated. Rehoboth Bay and Indian River Bay share a tidal connection with the Atlantic Ocean via the Indian River Inlet. Little Assawoman Bay, further south, receives tidal exchange from its connection to Ocean City Inlet.

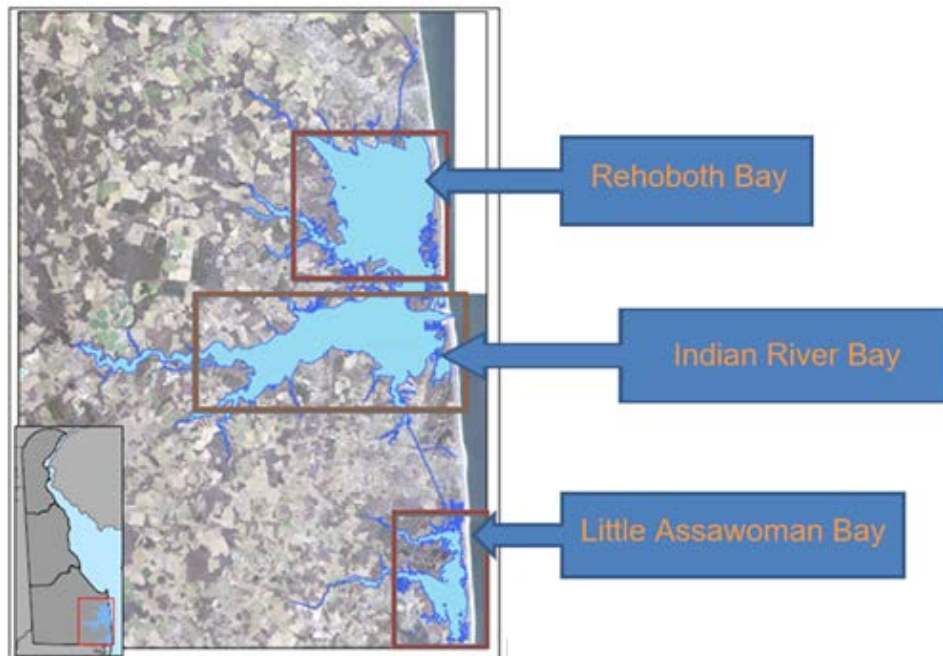


Figure 1. The location of Delaware's Inland Bays. The three bays are located in Sussex County, Delaware. Little Assawoman Bay is connected to Assawoman Bay in Maryland.

History of the Inland Bays' Shellfish Aquaculture Program

Delaware's Inland Bays Shellfish Aquaculture Program (Program), administered by Delaware's Department of Natural Resources and Environmental Control (DNREC), Division of Fish & Wildlife (FW), issued its first subaqueous lands aquaculture lease in December of 2017. Additional leases were issued in 2018, 2019, and 2020. The first harvest of shellfish in the Inland Bays under the Program consisted of oysters in the fall of 2018. Lessees submit monthly planting and harvest reports (or null reports) to DNREC FW. DNREC FW abides by the "rule of three" when relaying commercial statistics, meaning that if there are fewer than three lessees reporting harvest or planting their information will not be distributed in order to protect the confidentiality and private business information of individual Program participants. From August through December of 2019, sufficient numbers of lessees reported harvest and planting to allow information to be shared. The "rule of three" threshold was met for each month's harvest reports in 2020, and cumulatively for the year's planting.

2020-COVID-19 State of Emergency

In 2020, the COVID-19 pandemic affected many seafood and shellfish industries in the United States, although the impacts varied widely by species and location. Inland Bays shellfish aquaculture growers dealt with challenges to the nascent Program that included limitations to established markets, supply chain interruptions, and other uncertainties wrought by the global pandemic. Numerous and changing local and statewide restrictions enacted within Delaware as a result of the pandemic directly impacted shellfish harvesters. A State of Emergency was declared in Delaware in March of 2020, and many modifications to this State of Emergency quickly followed that enacted shelter in place, capacity restrictions, closure of beaches and rentals/hotels, and mandatory closure hours to restaurants, bars, and retail establishments. These restrictions impacted potential shellfish sales and newly-established shellfish markets. Shellfish growers dealt not only with these changes and restrictions, but the rapidity of these changes added to the uncertainties of doing business in 2020. While some of the modifications, like educational directives, did not directly impact shellfish sales, they did contribute to the uncertainties of conducting business during the spring and summer of 2020. The landscape of seafood and shellfish sales changed swiftly. Moreover, some Inland Bays shellfish growers had the added challenge of keeping up with travel, quarantine, and business restrictions of other states as they tried to purchase seed or sell product outside of Delaware.

DNREC Response to COVID-19

Recognizing the challenges that COVID-19 posed to the ability of Inland Bays shellfish growers to sell and market product due to the pandemic, DNREC Secretary Garvin issued an Emergency Secretary's Order (Appendix A) in September of 2020 that temporarily suspended the regulation requiring a planting minimum for the Inland Bays shellfish leases in 2020.

Delaware Sea Grant response to COVID-19

Information provided by Dr. Edward Hale, Marine Advisory Specialist & Assistant Professor Delaware Sea Grant, University of Delaware

Delaware Sea Grant, through NOAA Sea Grant funding, spearheaded new projects to help shellfish growers and commercial fishermen in response to the COVID-19 virus pandemic. The following projects were among those executed by Dr. Edward Hale and Dr. Dennis McIntosh, through the Delaware Sea Grant, in conjunction with the University of Delaware and Delaware State University. They included:

- An online seafood producer and/or harvester resource page was created, maintained, and advertised in response to requests to help promote locate seafood options to the general public. This contact page allows the public to see different types of seafood and shellfish grown and harvested in the state, and to connect directly with the grower/harvester.
- A community seafood purchaser network akin to a community supported fishery was implemented. Rather than the traditional subscription-based model, the network provided the chance to place individual orders based on product availability. Consumer

orders were aggregated and transferred directly to aquaculturists and commercial fishers. There were at least ten events that networked 102 consumers.

- 75,000 Inland Bays aquaculture oysters were transferred from Inland Bays leases. Four individual Inland Bays shellfish farmers participated in this project, where 50,000 farmed oysters were purchased and 25,000 were provided as an in-kind donation. The oysters were distributed as follows:
 - 1,215 of these oysters were donated to the Center for the Inland Bays for an oyster project in Rehoboth Bay.
 - The remaining 73,785 oysters were offered to commercial lease holders in Delaware Bay. Seven commercial Delaware Bay holders opted to participate in this grant work.
 - This approach created \$30,000 in direct economic benefit to the shellfish producers through the purchase of 50,000 oysters at \$0.60/oyster. Additional benefits were anticipated for Delaware Bay harvesters through the later sale of these oysters; however, the shucking market demand was unstable through this past year, so the value of the oysters to Delaware Bay harvesters is less understood.

2020 Inland Bays Shellfish Statistics

In 2020, 43 acres were leased in Delaware's Inland Bays for shellfish aquaculture. All the leased acreage was within the Shellfish Aquaculture Development Areas (SADA). DNREC FW does not limit leasing to the SADAs, but the permitting process is expedited for applications in those areas. Lessees may, by law, lease up to five acres, in whole acre increments, in Rehoboth Bay and Indian River Bay combined and/or up to five acres in Little Assawoman Bay. Shellfish aquaculture is limited to Eastern oyster (*Crassostrea virginica*) in Rehoboth Bay and Indian River Bay and hard clam (*Mercenaria mercenaria*) in Little Assawoman Bay. At the end of 2020, there were 38 acres leased in Rehoboth Bay, zero acres leased in Indian River Bay, and five acres leased in Little Assawoman Bay.

Number of lessees:

There were 14 total lessees in the Inland Bays by December of 2020. Thirteen of the lessees were commercial leases and one lessee was a scientific lease.

Oyster aquaculture:

There were 13 lessees in Rehoboth Bay for commercial Eastern oyster aquaculture in 2020.

Hard clam aquaculture:

Hard clam culture is permitted on leases in Little Assawoman Bay. In 2020, five acres were leased in Little Assawoman Bay to a single lessee. Because DNREC FW abides by the 'rule of three,' planting and harvest data are confidential.

Planting:

In calendar year 2020, there were 727,000 oysters reported planted on commercial shellfish aquaculture leases. All oysters were placed in gear, as is required in the Inland Bays. Lessees

reported using a variety of gear types for oyster culture, including floating bags/baskets, floating cages, and bottom cages. All cultchless oyster seed planted was imported from out of state, as Delaware did not have a commercial oyster hatchery operating. There is a commercial oyster nursery permitted in-state.

Harvest:

The total number of oysters reported harvested in 2020 was 184,033 (Table 1). The dockside price varied throughout the calendar year. The weighted average price for the year was \$0.61/oyster. The total oyster sales for the year amounted to \$112,765.50. Comparing the 2020 harvest and price data to 2019 is of limited utility, given that half of 2019's data must remain confidential due to the small number of participants. It is worth noting that the number of growers harvesting oysters increased between 2019 and 2020. While a comparison for each month is not possible, the total number of oysters harvested from August-December increased in 2020, and the average price increased as well.

Table 1. Inland Bays shellfish aquaculture oysters harvested, and average dockside price paid by month in 2019 and 2020. Because there were fewer than three growers reporting harvest January-July of 2019, the total harvest and average price for those months are confidential. 2020 harvest totals do not include the 75,000 oysters purchased by or donated to Delaware Sea Grant.

Month	Total # Oysters Harvested 2019	Total # Oysters Harvested 2020	Average Dockside Price/Oyster 2019	Average Dockside Price/Oyster 2020	# Growers Harvesting 2019	# Growers Harvesting 2020
January	Confidential	14,900	Confidential	\$0.45	1	4
February	Confidential	9,755	Confidential	\$0.46	1	4
March	Confidential	3,470	Confidential	\$0.55	1	4
April	Confidential	4,165	Confidential	\$0.50	1	6
May	Confidential	5,251	Confidential	\$0.63	1	4
June	Confidential	8,329	Confidential	\$0.64	1	5
July	Confidential	11,145	Confidential	\$0.64	2	6
August	11,652	17,985	\$0.56	\$0.61	4	6
September	18,510	21,193	\$0.55	\$0.64	4	6
October	17,095	20,806	\$0.45	\$0.64	4	6
November	27,669	25,578	\$0.52	\$0.67	4	7
December	36,723	41,456	\$0.40	\$0.65	4	7
2020		Total 184,033		Weighted Average \$0.61		

SURVEY OF PARTICIPANTS

At the end of each calendar year, DNREC FW sends commercial lessees a survey, asking them to answer questions. The survey includes queries about hours the lessee worked on the lease, hours someone else was employed, if work was bartered, estimation of sales markets, acres

used for growing shellfish, equipment used on the lease, and any reports of poaching, boating incidents, or vandalism on the lease. The information is compiled in a manner so as not to identify any single respondent.

- **Work on the lease:** The range of hours spent on the leases was quite variable. Lessees reported that 12 people, in addition to the lessees, were employed to work the Inland Bays leases in 2020. There were also reports of 16 volunteers logging hours on the leases, as well as reports of barter work performed.
- **Acres with shellfish:** Irrespective of the number of acres leased, growers with shellfish in the water reported physically using an average of 1-2 acres of each lease to grow shellfish.
- **Grower shellfish sales:** Most growers reported that the majority of their sales leaned strongly toward one of two routes: either dealer/retailer or direct to consumer. There were individual reports of 0-100% of sales in each category.
- **New markets/response to COVID-19:** Growers were asked if they explored any new markets for their shellfish in 2020, and if doing so was in response to the COVID-19 pandemic. Nearly 70% of respondents said that they explored new markets for their shellfish sales in 2020 and over half of those indicated that the change was prompted by the pandemic.
- **Poaching:** Poaching did not seem to be an issue on the Inland Bays leases in 2020. None of the respondents indicated that theft had been noted.
- **Boat/equipment accidents:** Half of the surveyed lessees reported that boundary markers, cages, or lines had been damaged by boaters in the past year.
- **Shellfish mortality:** Lessees noted increased mortality of shellfish in 2020. Individual grower estimates ranged from 3-40% of the crop. While the cause of some of the mortality was unknown, and some attributed to environmental factors, almost half of the surveyed growers attributed the mortality they observed to a slow shellfish market that resulted in crowding or aged oysters.





STATE OF DELAWARE
**DEPARTMENT OF NATURAL RESOURCES AND
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EMERGENCY SECRETARY'S ORDER

**Pursuant to Paragraph F of the Governor's Sixth Modification of the Declaration of a State of
Emergency for the State of Delaware Due to a Public Health Threat, and pursuant to**

7 Del.C. §903(h) and 29 Del.C. §10119

Order No: 2020-F-0026

***7 DE Admin. Code §§ 3801-16.2; 16.3.1; and 16.4: Shellfish Aquaculture; Active Use of Shellfish
Aquaculture Subaqueous Land Lease Sites***

AUTHORITY

Pursuant to Paragraph F of the Governor's Sixth Modification of the Declaration of a State of Emergency for the State of Delaware Due to a Public Health Threat ("Governor's Emergency Declaration"), the Department of Natural Resources and Environmental Control ("Department") is adopting an emergency rule modifying Inland Bays Shellfish Aquaculture Regulation 7 DE Admin. Code §§ 3801-16.2; 16.3.1; and 16.4 concerning Shellfish Aquaculture; Active Use of Shellfish Aquaculture Subaqueous Land Lease Sites. Paragraph F of the Governor's Emergency Declaration authorizes the Secretary of the Department to adopt emergency rules in order "to respond to COVID-19 concerns that implicate the natural resources of the State of Delaware."

REASON FOR THE EMERGENCY RULE

The mandatory business closures and reduced business operations resulting from national and state efforts to contain the COVID-19 pandemic have led to a catastrophic decline in commercial demand for seafood and shellfish, including oysters propagated by shellfish aquaculture in the Inland Bays. Delaware's Inland Bays shellfish aquaculture regulations specify timeframes for when aquaculture activity must occur and minimum shellfish planting quantities on shellfish aquaculture leases. Inland Bays shellfish aquaculture lessees subject to these requirements in the year 2020 communicated to the Department that the substantial reduction in the restaurant market for shellfish does not warrant the risk, investment of time, and financial resources to plant and actively cultivate oyster stock for which there is a limited and uncertain market. Additionally, the mandatory COVID-19 quarantines on interstate travel during the spring of 2020 in Delaware and other states, as well as staffing limits placed on shellfish seed hatching, propagation, and testing facilities in several states, have resulted in challenges for the shellfish aquaculture industry in obtaining, transferring, testing, and importing shellfish seed for planting on aquaculture leases. The COVID-19 pandemic is therefore responsible for a catastrophic loss in the shellfish sales market and a disruption of the shellfish seed supply chain. Adoption of this emergency rule is necessary to ensure the financial and operational viability of the shellfish aquaculture industry and individual lessees and associated shellfish resources.

EMERGENCY RULE

It is hereby ordered, this 1st day of September 2020 that 7 DE Admin. Code §§ 380116.2; 16.3.1; and 16.4 concerning the conditions for active use of and minimum shellfish planting quantities for Inland Bays shellfish leases are temporarily modified and rescinded as shown by strikethrough as follows:

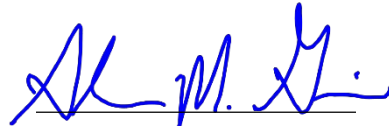
~~3801-16.2 In the event that an aquaculture lease is determined by the Department not to be active for a period of one (1) year (12 months), the lease shall be terminated and the lease site may revert to the inventory of available lease sites.~~

Appendix A

~~3801-16.3.1 After two (2) years (24 months) from the date of lease issuance or transfer, leaseholders must provide evidence to the Department's satisfaction that they annually plant at least 100,000 shellfish per acre leased.~~

~~3801-16.4 Notwithstanding subsection 16.3, the minimum planting requirement shall not apply to the initial two (2) years (24 months) of a lease, but lessees must plant sufficient shellfish to ensure that the production requirement can be met by the end of the third year (36 months), and annually thereafter.~~

This emergency rule shall take immediate effect and shall remain in effect until 12:00 a.m. on January 1, 2021.

A handwritten signature in blue ink, appearing to read "A. M. G.", is written over a horizontal line.