

Managing Oyster Health

Below is a summary of information discussed during the webinar on “The Potential Role of Triploid Oyster Technology to Mitigate Disease & Increase Yield” provided by Dr. Bassem Allam and Dr. Chris Brianik from Stony Brook University’s Marine Animal Disease Lab

Oyster Diseases in New York

Non-Specific Indicators of Possible Disease Problems

- Unusual aspects of the meat: watery, thin, and emaciation when they should be more fleshy
- Pale appearance of digestive gland, unusual change in gill color
- Gaping, shrinkage of mantle away from edge of shell
- Unusually slow growth
- Mortality

Vibriosis

- Occurs during hatchery stage (sometimes nursery) for larvae and young juveniles. The risk decreases with age and lower densities may also reduce risk.
- Change in feeding behavior and typically rapid mortality
- Good husbandry and water quality management typically eliminates the problem

Juvenile Oyster Disease (JOD)

- Affects small oyster (< 25mm), typically between July through September.
- Extreme cupping of lower valve (shell) and recession of upper. Anomalous brown deposit inside shell.
- Can be minimized by reducing densities and increasing water flow.
- New York strains are fairly resistant already.

Dermo (*Perkinsus marinus*)

- Non-specific signs: emaciation of tissues, pale color of digestive gland, mantle retraction.
- Promoting conditions: Warmer water temperatures and salinity >15ppt. Mild water temp during the winter also increases its survival and promotes heavier infections the following summer.
- Peaks between September and October and typically affects 2nd year oysters the most.
- Limited success so far with developing a resistant strain but is actively being researched.

MSX (*Haplosporidium nelsoni*)

- Non-specific signs: poor, “watery” adults, pale color of digestive gland, brown-red discoloration of gills
- Develops at salinities >15ppt, mortalities at >18-20ppt. Strongly linked to drought periods.
- Mortality can start in spring but peaks from July through September
- No oyster-to-oyster infection, it requires an intermediate host but that has not been identified
- Use of resistant strains help reduce disease outbreaks and many strains are resistant.

Sea Side Organism or SSO (*Haplosporidium costale*)

- Non-specific signs: poor, “watery” condition of adult oyster
- Promoting conditions: High salinity areas
- Mortality is typically lower than MSX and usually occurs between May and June
- Can be mitigated by transplanting infecting oyster into lower salinity (<25ppt) water

Selective Breeding to Establish Resistant Strains

- Naturally occurring resistance exists but these genetic strains must be identified and then selected for breeding by hatcheries to create genetically resistant animals that are less susceptible to diseases.
- These strains should also be naturally adapted to local environmental stressors. A genetically resistant strain from Maine may not do as well in New York as one from a local New York strain.
- Selection for fast growth also reduces disease risk/impact since their exposure will be reduced.

Gear Fouling Organisms and Oyster Pests

Fouling Organisms: Sea squirts (Tunicates), barnacles, sea fans, tube worms, and other mollusks.

Problems Caused: Reduced water circulation, some animals compete for food, and they make gear heavy.

Potential Mitigation: Scrubbing, power washing, air-drying gear, sun/air exposure, brine dip.

Shell Boring Pests: Boring sponges and mud worms

Problems Caused: Fragile and brittle shells. Reduced market appeal making them harder to sell.

Potential Mitigation: Routine air drying, freshwater and brine dips, cold temperature treatment.

Floating gear tends to be less impacted by the boring sponge.

General Guidelines for Shellfish Health Management

- Prevention prevails since there are not many curative options; however low salinity sometimes helps.
- Use local stocks when available since they will typically be better adapted to New York stressors
- Proactive Measures:
 - » Management of stocking density to reduce transmission
 - » Maintenance of grow-out gear
 - » Surveillance and monitoring. Routinely check your crop to catch issues early on.
 - » Production cycle management. Diseases are more prevalent at certain seasons.

Tips for Pathology Testing

1. Ask lab personnel about the number of specimens needed before collecting and sending samples.
2. Provide as much background information as possible such as:
 - » Source of animals, environmental parameters, general observations
 - » Approximate levels and patterns of mortality
 - » How animals were handled (i.e., anti-fouling methods, gradings, site changes, etc.)
3. Collect samples right before shipping to reduce changes in tissue and mortality during transportation.
4. Ship samples wrapped in paper (or fabric) soaked with seawater and in leakproof/insulated containers.
5. Use gel packs or plastic frozen water bottles. Do not use loose ice.
6. Ship early in the week to avoid delays on weekends.
7. Live specimens are best. If not, samples should be fixed using formalin or ethanol (check with lab first).
8. Keep good records for effective disease management.

Additional Resources on Fouling Organisms & Shellfish Diseases

- [Mud Blister Worm Fact Sheet](#)
- [Biofouling Control Strategies from Maryland](#)
- [Diseases and Pathogens of Shellfish](#)
- [Stony Brook University Marine Animal Disease Lab](#)

Click links on the left to view resources or scan QR code on the right to access links or view the webinar.



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This information was obtained during the recorded webinar in December of 2024 and could change as new research is conducted over time.

Find additional resources at: www.nyseagrant.org/aquaculture

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