April 15, 2020

The Honorable S. Reed Morian, Chairman
Texas Parks & Wildlife Commission
4200 Smith School Road
Austin, Texas 78744

Re: Oyster Mariculture Program Development

Dear Chairman Morian and Commissioners:

Please accept these comments on behalf of The Pew Charitable Trusts (Pew) regarding the development of the Texas oyster mariculture program and regulations, as directed by H.B. 1300 in the 86th Texas Legislature.

We are encouraged that the Texas Parks and Wildlife Department is crafting rules and regulations that focus on developing this new industry in the state while protecting important coastal habitat such as seagrass meadows and natural oyster reefs critical to productive fisheries. And we appreciate that the Texas Legislature created a framework that allows for proactive management.

Healthy coastal habitat is of high importance to Texas and its economy, with commercial oyster landings totaling $24 million in 2018.[1] Oysters provide ecosystem services such as maintaining water quality and providing complex habitat for coastal estuary species such as red drum. Farmed oysters have the potential to provide additional economic benefits to Texas' coastal communities. Oyster aquaculture is a growing industry that provides a significant source of income for many and produces the highest value and volume of products among all marine shellfish (NOAA, FEUS 2018).

Although scientists do not yet have a full understanding of the ecological impacts of oyster aquaculture on wild oyster populations, there is evidence it can complement and support natural habitats and healthy ecosystems. When oyster aquaculture operations implement science-based best management practices, they have the potential to enhance coastal habitats by augmenting

[1] National Marine Fisheries Service (2020) Fisheries of the United States, 2018. U.S. Department of Commerce, NOAA Current Fishery Statistics No. 2018. Available at https://www.fisheries.noaa.gov/feature-story/fisheries-united-states-2018

ecosystem services such as nutrient filtering that improves water quality and increases fish habitat, like that of wild oyster reefs.

Below are suggestions aimed at ensuring that Texas' oyster mariculture program and regulations safeguard coastal and ocean ecosystems and their services. They reflect a review of current scientific literature and published reports from state and federal agencies and non-governmental institutions (Appendix A), as well as interviews with over a dozen oyster aquaculture managers, practitioners and academics. However, the science of oyster aquaculture is evolving, and these may need to be updated over time as a result. The issues we address relate to environmental health and include ecosystem protections, site selection, oyster disease prevention and control, predator control, and gear debris and removal.

General Considerations for Ecosystem Health

- Only native species (eastern oyster, *Crassostrea virginica*) should be cultivated, purchased or obtained from certified hatcheries.
- Within reason, broodstock and seed should originate from as close to local waters as possible, but not come from other coasts (*e.g.*, Atlantic) or countries to prevent the spread or proliferation of disease that could affect wild oyster populations. Documentation of origin should be retained for at least two years.
- Managing agencies should work closely with potential growers to screen for environmental issues and to establish baseline data on water quality, habitat condition, and potential user conflicts.
- Managing agencies should consider mechanisms to help return oyster shell produced by growers and hatcheries to the water for re-use in oyster reef restoration, living shoreline projects, or commercially leased or recreational harvest areas as a source of cultch material.

Site Selection

- Spatial analyses tools, such as the Texas Department of State Health's Shellfish Harvest Area Viewer online mapping tool[2] and field surveys, are recommended to assess habitat and water quality before operations are permitted. Site selection should consider proximity to other natural resources such as wild oyster reefs to supplement larvae production and settlement if diploid seed is used, and to avoid siting over seagrass beds, which require sunlight and are habitat for many fish species targeted by anglers.
- Operations should be sited to avoid adverse impacts to natural resources such as emergent and submerged aquatic vegetation (SAV), mangroves, sponge and hard-bottom habitats, salt marsh, threatened and endangered species and their habitats, and shore- or seabird nesting sites. This includes activities that generate excessive siltation and damaging boat wakes.
- Buffer distances from existing natural resources should be based on recent information determined via surveys and in consultation with appropriate authorities (*e.g.*, town conservation boards or state natural resource agencies).
- Site monitoring should be performed regularly to document habitat changes. If harmful effects are found, managers should work with operators to make any possible adjustments, such as shifting location of gear within lease sites, to avoid damage to habitats.

[2] https://dshscpd.maps.arcgis.com/apps/webappviewer/index.html?id=f5b3f90a79ca410aa4817e86eb5c39da

Disease Prevention and Control

- Managing agencies should implement routine water monitoring and disease inspection and have established protocols for when water conditions substantially decline, or disease is detected. Agencies should develop clear communication plans for when disease or harmful algal bloom outbreaks occur that affect cultured and wild oyster populations to inform other relevant agencies, oyster farmers, and supply chain participants.
- Any broodstock or seed imported from out-of-state waters should be accompanied by an official certification of clean health, *i.e*., no evidence of pathogens such as *Perkinsus marinus* (Dermo) or *Haplosporidium nelson* (MSX).
- State managing agencies should develop a certification program for all hatcheries that sell seed and include certification information that is identifiable on all product containers and sales documentation, and which attests to origin and disease-free status.

Predator Controls

- Growers should use non-lethal methods (*e.g.*, type and placement of gear, technology) to control predators (birds and mammals) on oyster farms, and work with authorities on a control strategy if predators become a problem.
- Chemical substances to control predators and pests (*i.e.,* biofouling), including bleach and anti-fouling paints toxic to marine life, should be prohibited.

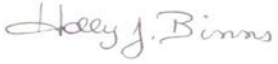
Gear Debris and Removal

- Gear should be labeled with identification and any lost, abandoned or derelict gear be required to be removed by owners. Measures should be established for offenses.
- If gear is not removed by owners, state and municipal authorities should be permitted to retrieve lost and abandoned gear to facilitate clean-up.
- Operators should be encouraged to partner with recycling companies and municipalities to recycle defunct, abandoned and recovered gear.
- Growers should have a written "storm plan" that outlines how gear will be secured before major storms and prevent damage to surrounding natural habitats or impede navigable waterways and public infrastructure.

By incorporating these recommendations, Texas' prospective oyster mariculture operators can be good neighbors to their surrounding environments while providing income, jobs and another source of seafood to coastal restaurants and communities.

We appreciate the opportunity to offer these recommendations and thank you for ensuring that Texas continues to be a place for investment and growth while prioritizing its vitally important natural resources.

Sincerely,



Holly Binns

Project Director, Conserving Marine Life in the Gulf of Mexico and Caribbean

cc: The Honorable Arch H. “Beaver” Aplin, III, Vice-Chairman
The Honorable James E. Abell, Commissioner
The Honorable Oliver J. Bell, Commissioner
The Honorable Anna B. Galo, Commissioner
The Honorable Jeffery D. Hildebrand, Commissioner
The Honorable Jeanne W. Latimer, Commissioner
The Honorable Robert L. “Bobby” Patton, Jr., Commissioner
The Honorable Dick Scott, Commissioner
The Honorable Lee Marshall Bass, *Chairman-Emeritus*
The Honorable T. Dan Friedkin, *Chairman-Emeritus*
Carter Smith, Executive Director, Texas Parks & Wildlife Department
Robin Riechers, Director, Coastal Fisheries Division
Lance Robinson, Deputy Director, Coastal Fisheries Division

Appendix A – Sources

1. J. Bone et al., “Best Practices for Aquaculture Management: Guidance for Implementing the Ecosystem Approach in Indonesia and Beyond” (Sustainable Fisheries Partnership, Conservation International, Sustainable Fisheries Group, 2018).
2. C.E. Boyd et al., Best Management Practices for Responsible Aquaculture, (2008).
3. B.T. Charron et al., “Prevention of Marine Debris from Shellfish Mariculture: Best Management Practices for North Carolina Producers” (North Carolina Coastal Federation, NOAA, SeaGrant North Carolina, 2019).
4. B.A. Costa-Pierce, “Sustainable Ecological Aquaculture Systems: The Need for a New Social Contract for Aquaculture Development,” *Marine Technology Society Journal* 44, no. 3 (2010): 88-112.
5. G. Flimlin et al., “Best Management Practices for the East Coast Shellfish Aquaculture Industry” (United States Department of Agriculture, National Institute of Food and Agriculture, Northeastern Regional Aquaculture Center, NOAA, 2010).
6. Florida Department of Agriculture and Consumer Services, Aquaculture Best Management Practices Manual, (2016).
7. European Commission, “On the Application of the Water Framework Directive (WFD) and the Marine Strategy Framework Directive (MSFD\SFD) in Relation to Aquaculture” (2016).
8. R. Evrard, “Washington Shellfish Aquaculture: Assessment of the Current Regulatory Framework” (University of Washington, 2017).
9. R. Howerton, “Best Management Practices for Hawaiian Aquaculture” (University of Hawaii Sea Grant Extension Services, Center for Tropical and Subtropical Aquaculture, 2001).
10. D.F. Leavitt, “Best Management Practices for the Shellfish Culture Industry and Southeastern Massachusetts” (Southeastern Massachusetts Aquaculture Center, Massachusetts Department of Agricultural Resources, USDA Risk Management Agency, 2009).
11. Maryland Aquaculture Coordinating Council, Best Management Practices: A Manual for Maryland Aquaculture, (2007).
12. National Oceanic and Atmospheric Administration, “Marine Aquaculture Policy” (2011). Silva, C., et al. (2011). "Site selection for shellfish aquaculture by means of GIS and farm-scale models, with an emphasis on data-poor environments." Aquaculture 318(3-4): 444-457.
13. F.X. O'Beirn et al., “Shellfish Aquaculture, Methods of Sustainable,” in *Sustainable Food Production*, (New York, NY: Springer, 2013).
14. M. Oesterling and M. Luckenbach, “Best Management Practices for the Virginia Shellfish Culture Industry” (Virginia Institute of Marine Science, College of William and Mary, 2008).

15. C.S. Price et al. Protected Species & Longline Mussel Aquaculture Interactions. NOAA Technical Memorandum NOS NCCOS 211 (2016).
16. Rutgers Cooperative Extension, New Jersey Agricultural Experiment Station, Rutgers, Recommended Management Practices for Aquatic Farms, (State University of New Jersey, 2004).
17. C.S. Tucker and J.A. Hargreaves, *Environmental Best Management Practices for Aquaculture* (Blackwell Publishing, 2008). [international]
18. P. White and M.L. San Diego-McGlone, "Ecosystem-Based Approach for Aquaculture Management," *Science Diliman* 20, no. 2 (2008).