

Review of Potential Conflicts between Shellfish Aquaculture and Recreational Fishing

Prepared by: MD DNR Fisheries Service
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Issue: The Sport Fisheries Advisory Commission raised concern at their January 12, 2010 meeting about the potential conflicts between shellfish aquaculture and recreational fishing.

DNR Response: In response to the above concern, Fisheries Service is providing the following review of this issue to facilitate further discussion among the sport fishing community.

Review of Issue

Conversations with shellfish growers, state agency representatives and recreational fishermen reveal that shellfish aquaculture and recreational fishing are compatible uses. Rod and reel fishing is welcomed in almost all leases, and fishing can be directly improved by aquaculture as the oysters and the in-water gear are an attractant to large fish. Given the ecosystem services provided by aquaculture and the small footprint of the off-bottom operations in existence in North America today, it is extremely unlikely that any significant conflict will arise. In fact, shellfish aquaculture has been found to enhance fishing opportunities in some areas. Since fishermen and leaseholders each have a stake in improving local water quality, it is possible that a productive partnership may emerge.

On-bottom aquaculture has been practiced in Chesapeake Bay for hundreds of years without any conflict between growers and the tremendous number of recreational fishermen who fish the Bay. It is of so little concern that no mention of recreational fishing is made in any of the laws governing on-bottom aquaculture. However, conflicts with floating culture are possible due to obstruction-related inconveniences. Currently, there are 30 acres permitted for off-bottom oyster production in Maryland. While recreational fishing might be enhanced in the areas immediately around such a lease, it is unlikely that fishing would be possible in the footprint of an off-bottom lease. It is theoretically possible, at some level, for conflicts over physical space to arise. Confusion can exist as to what kinds of fishing are allowed in which areas, so angler education is important. Given the size of the industry in the U.S. and the size of Chesapeake Bay, conflicts of this sort in Maryland are extremely unlikely.

The potential impact that oyster aquaculture could have on recreational fishing is discussed in the Final Programmatic Environmental Impact Statement (PEIS) in Sections 4.7.5 (p. 4-146) and 4.7.6 (p. 4-147). An electronic copy of the PEIS can be found at:
http://www.nao.usace.army.mil/OysterEIS/FINAL_PEIS/homepage.asp.

According to the PEIS, recreational fishing could potentially benefit from both off bottom and on bottom aquaculture. Fish habitat could be enhanced by activities associated with on bottom culture, and off bottom culture could provide temporary habitat, food, or both for many species of fish. A discussion of reef oriented fish that use oyster reefs and other hard bottom is included in the risk assessment on page 2-23.

On the other hand, off bottom culture would require deployment of buoys and/or floats, which could interfere with recreational boating and fishing. The regulations that apply to aquaculture are described in Appendix C, Section 5.0.

Estimates of hypothetical area requirements for maximum aquaculture production of native oysters are provided in Appendix C, Section 2.0 (p. C-7). These estimates are based upon a Market Demand Model which was used to determine the maximum level of oyster harvest that would be economically viable in Chesapeake Bay based upon current market demands. Based upon this model, it is estimated that the Chesapeake Bay could support a 2.6 million bushel harvest. This harvest was then allocated amongst MD and VA, and between a wild fishery and aquaculture industry. Of the total 2.6 million bushels, it is estimated that about 500,000 bushels would come from MD's aquaculture industry. With this level of harvest, researchers used oyster production rates to determine how many acres of bottom would be needed in MD to support this level of aquaculture harvest. If all of this harvest came from on-bottom using 'diploid' native oysters, a total of 14,760 acres would be needed. If faster growing 'triploid' native oysters are used on-bottom or in floats, it is estimated that a total of 520 acres would be needed.

The only real possibility for conflict between float aquaculture and fishing that can be foreseen would be local-use issues: if an aquaculture operation was to be constructed in a very popular fishing destination. This problem is unlikely to arise in Maryland since each lease is vetted through the Aquaculture Review Board and Aquaculture Coordinating Council and the process by which MDE and DNR grant permits also includes adjacent shoreline owner notification and published public notice.

A key to minimizing conflicts as well as navigation issues is to ensure leases are properly marked for day and night visibility and not placed in marked channels. For on-bottom leases, there shouldn't be a significant issue if people were allowed to transit through the lease (depending depth and draft of the vessel) or fish on it as long as the oysters and gear are not damaged or removed.

Many fisherman (along with other outdoor enthusiasts, including boaters) appreciate the services shellfish provide to the ecosystem, including filtering the water, improving water clarity and quality, reducing turbidity and algae and removing excess nutrients from the water column, particularly nitrogen and phosphorus. While not a likely contributor to water quality improvements in the main stem of the Bay, these services may be observable in the smaller tidal creeks and tributaries where leases are more likely to be located. This has been documented in Virginia and elsewhere in the United States. These aquacultured oysters can also help re-seed nearby oyster beds when they reach reproductive age, and can potentially reduce pressure by commercial fishing on wild beds.

Oysters in particular are excellent filterers and also provide habitat for many small fishes and invertebrates, which are then food for larger predatory fish, many of which are important recreational fishery species including striped bass, black sea bass, summer flounder, weakfish and seatrout, bluefish, tautog, sheepshead, and blue crab, among others. This is well documented in Chesapeake Bay and elsewhere. More shellfish in the Bay should provide more of these services and more opportunities to catch fish recreationally.

Below is a synopsis of e-mail comments provided by the respondents of the East Coast Shellfish Growers Association:

- “Great Bay has only one active leaseholder raising oysters. At least one other site is licensed but not yet active. To the best of my knowledge, there is no prohibition to fishing over these sites or any conflict. At this juncture, due to the small acreage of aquaculture, there are no conflicts regarding use that I am aware of... From a process stand point, I would say that any potential leaseholder application should go through a public process so that all users of the resource could weigh in. An increase of scale may indeed lead to conflict, but in the case of Great Bay and the way oysters are cultivated, I rather doubt it.” Jeff Barnum, Pres. CCA NH
- “There has been extremely little problem with conflict between recreational fishing and shellfish growers on the Atlantic Coastal Bays [of NJ]. In a very crowded coastal state with more recreational fishermen that one could shake a Hopkins at, there has been extremely little problem with conflict between recreational fishing and shellfish growers on the Atlantic Coastal Bays. There are probably several reasons for this: One, recreational fishermen are not excluded from fishing on shellfish leases. Having said that, the leases are typically well marked and after they lose one or two lures on the gear, they tend to stay away from those areas. Two, most of the shellfish leases are pretty much out of the way and not in channels or areas where fishing would be very good. Thus conflict is reduced again. And third, a good portion of the recreational fishermen want clean water and many of them understand that shellfish culture is beneficial to the environment and so the conflict level is not an issue.” – Gef Flimlin, Marine Extension Agent, Commercial Fisheries and Aquaculture, Rutgers Cooperative Extension.
- “For the most part, it was mentioned as an issue but not an overwhelming problem in almost all areas. Where there is room for farms to be away from other users, most recreational fishermen don't bother the farms. They may travel over them and some gear may be torn up but it doesn't seem to be a huge issue. Where there are multiple users of the same water, it gets more complex and there is more of an issue. Almost everybody mentioned education, signs, visibility of the farmer working his lease and good farm marking as ways to avoid damage to gear.” – Sandy MacFarlane
- “There are also many examples of fishermen (especially rod and reel fishermen) who acknowledge the fact that shellfish aquaculture provides superior habitat - in some ways superior or equal to areas that have been designated as critical habitat such as eelgrass. Shellfish and the gear used to grow them support huge populations of juvenile fish and invertebrates (by providing shelter and enhancing their food supply). These in turn attract large populations of predatory fish - and fishermen. There have been numerous articles in Rec. fishing magazines documenting this phenomenon and there is also a growing body of scientific literature to back it up. There is anecdotal evidence showing a strong positive correlation between winter flounder and oyster culture in Long Island Sound. It makes sense since shell hash is a preferred habitat for young of the year and amphipods

and worms which thrive on oyster feces are the preferred food for flounders. Lobster fishermen are beginning to recognize that shellfish gear and shell hash provide habitat and protection for juvenile lobsters and should enhance survival through this delicate life stage - although we only have anecdotal evidence to back this up. Certainly blue crab juveniles do well in oyster habitat and juveniles and adults readily feast on juvenile shellfish. Fisherman's groups that support improved water quality tend to recognize and support the beneficial impacts of shellfish aquaculture. – Bob Reault, Moon Stone Oysters

- “Oyster beds and commercial oyster bags are fish magnets in Puget Sound, as they host ‘bajillions’ of little fish, worms and crustaceans. When the tide drops, most of those critters spill into the flow and create a fast-moving buffet line for sea-run cutthroat trout, coho salmon and other fish. If you find a beach with shellfish, you've found a beach that attracts and feeds trout and salmon.” – Chester Allen, September 12, 2008 in the *Olympian*.
- “In Washington State, our private hatcheries bid on annual public beach enhancement bids. There is also an obligation under a treaty rights settlement for Puget Sound growers to pay for \$500,000 worth of enhancement on state beaches over the next 10 years. These are benefits the shellfish aquaculture industry is providing to recreational shellfishers although I don’t believe the program is known about by the public. I serve on NOAA’s Marine Fish Advisory Committee and find that the rec fish reps are very supportive of aquaculture in general for the reasons Bob and I have stated. They also see finfish aquaculture technology applying to wild stock restoration which enhances their opportunities.” – Bill Dewey, Taylor Shellfish
- “Connecticut has a system where . . . lease applications [are reviewed] for potential conflicts between the recreational fishing and boating [community]. Conflicts are so rare that no real policies existed until 2001. Since that time, new projects that present a potential conflict go through a public permit process that has successfully resolved conflicts. On bottom aquaculture and fishing have never been in conflict in Connecticut.” - Mark Johnson, Connecticut Department of Environmental Protection.

Other info (Potential Impacts of Small Scale Commercial Mariculture in Southhampton Public Waters Feasibility Study by TerraAqua Environmental Sciences and policy, LLC..:

- Shellfish culture operations can have environmental benefits. Filter-feeding shellfish act as biological filters, and their culture can:
 - Improve the quality of local waters by removing harmful excess nutrients.
 - Improve biological diversity (a result of the structure provided by the shellfish and cages).

- Help re-seed and build up wild shellfish populations in surrounding waters
- Protect existing wild shellfish stocks by reducing fishing pressure
- Improve the value of waterfront property due to a cleaner environment

Some international perspectives:

- British Columbia, Canada – Considering “the development of ‘mariculture zones or parks’ where aquaculture in the major accepted use.” (Dickson, 1992, *World Aquaculture*, 23(2):28-29).
- Australia – “Lease boundaries must be clearly marked for day & night navigation for the safety of others & for protecting lease-holders by reducing the possibility of damage to floats, lines, markers, etc. It may be necessary to provide navigational passages through an aquaculture lease, or provide moorings for recreational fishing within the lease area. Applicants are encouraged to consider the wider boating & recreational public’s needs.” (Fisheries Dept. of Western Australia, 1998, *Guidelines for granting aquaculture leases*, Fisheries Management Paper 115).

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