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MA Division of Marine Fisheries
Environmental Recommendations for Small Docks and Floats

The Division of Marine Fisheries (MA DMF) reviews coastal alteration projects and provides comment letters to Conservation Commissions recommending avoidance, minimization, and/or mitigate strategies for project impacts to marine fisheries resources and habitats. One of the most common project application types we see is for docks and floats. To assist conservation commissions in their review of small docks and floats, MA DMF has developed programmatic and comprehensive comments and recommendations. The recommendations below apply to all dock and float projects.

MA DMF is primarily concerned with dock impacts to the following resources:

- **Shellfish habitat.** The common species in coastal Massachusetts waters are bay scallop (*Argopecten irradians*), blue mussel (*Mytilus edulis*), ocean quahog (*Artica islandica*), American oyster (*Crassostrea virginica*), quahog (*Mercenaria mercenaria*), razor clam (*Ensis directus*), surf clam (*Spisula solidissima*), sea scallop (*Placopecten magellanicus*), European oyster (*Ostrea edulis*), and soft shell clam (*Mya arenaria*). The suitability maps for these species can be found here: https://docs.digital.mass.gov/dataset/massgis-data-shellfish-suitability-areas. Land containing shellfish is deemed significant to the interest of the Wetlands Protection Act and the protection of marine fisheries (310 CMR 10.34). Shellfish are vulnerable to dock impacts through smothering, compaction, and habitat alteration.
- **Salt marsh.** Salt marsh provides a variety of ecosystem services, including habitat and energy sources for many fish and invertebrate species [1,2,3]. Maps of salt marsh can be found here: https://docs.digital.mass.gov/dataset/massgis-data-massdep-wetlands-2005. Since these maps are approximate, a site-specific survey is recommended. Salt Marshes are deemed significant to the interest of the Wetlands Protection Act and the protection of marine fisheries (310 CMR 10.34). Docks can reduce stem density and biomass of underlying salt marsh vegetation through increased shading and displacement by support pilings [4,5,6].
- **Eelgrass.** Eelgrass (*Zostera marina*) are flowering plants found in Massachusetts coastal waters. They are critical marine fisheries habitats [7,8] and are in decline statewide due to anthropogenic impacts [9]. The map for eelgrass can be found here: https://docs.digital.mass.gov/dataset/massgis-data-massdep-eelgrass-2015-2017. Since these maps are approximate, a site-specific survey is recommended. Eelgrass is protected for projects affecting Land Under the Ocean and Land Under Salt Ponds which are deemed significant to the interest of the Wetlands Protection Act and the protection of marine fisheries (301 CMR 10.25 and 10.33). Docks and floats can damage eelgrass

through habitat alteration and shading which can cause eelgrass beds to fragment and decline [10].

- **Impediments to access.** In Massachusetts, the right of the public to access the shoreline is protected by the Colonial Ordinance of 1641. Improperly constructed docks and floats can impede a person's ability to fish, fowl, or navigate along the shoreline.

MA DMF offers the following comments for your consideration:

Dock placement and design recommendations:

- Avoid constructing a dock over salt marsh, eelgrass beds, and high densities of shellfish. A buffer of ≥25 feet around these resources is recommended. The further the construction is from these resources, the less risk of impact.
- If salt marsh or eelgrass beds cannot be avoided, there are several minimization recommendations below.
    - Consider value of site for public access including for shellfishing; ensure access is maintained during and post-construction. Docks that are removed seasonally improve access.
    - Shared neighborhood docks should be considered.
      o Small touch-and-go docks for dinghies used to access larger boats on moorings are an option to reduce the size of the dock while maintaining the applicant's riparian rights.
    - Boat impacts can result in additional impacts beyond the dock. Project review should consider potential indirect impacts (shading, grounding, propeller scour).
- Shading impact should be minimized by maximizing dock height, minimizing dock width, and maintaining a north-south orientation.
    - Placing docks in a north-south orientation reduces shading effects. Orientation should be within 10o of north-south to promote light penetration.
    - Dock height should be at least 1.5:1 (height:width ratio) if constructed over salt marsh.
    - An average 3' wide dock should have a minimum height of 9 feet off the seafloor if constructed over eelgrass beds with a N/S orientation or 18 feet high if constructed over eelgrass beds with an E/W orientation.
- Avoid constructing shade-inducing structures over salt marsh and eelgrass (such as gazebo's/storage benches/lock boxes on docks).
- Dock should be no longer than necessary to reach navigable waters.
- Cumulative impact. Even with proper siting and design, impacts from docks and floats may still occur. The proliferation of docks in a variety of waterways has resulted in cumulative impacts to resources and public access. Instead of a private dock and float, the accessibility to dinghy access, public boat launches, or shared community docks should be considered.
- Mitigation should be considered if there are unavoidable impacts.
    - Salt marsh impacts can be mitigated through replanting and monitoring is recommended.
    - Eelgrass impacts are particularly challenging to mitigate so avoidance of impacts is paramount.

Decking recommendations:

- Grated decking has not been shown to reduce impacts to salt marsh or eelgrass beds so grated decking material should not be used in lieu of height and orientation-based approaches.
- Pressure-treated wood decking also causes indirect impact from leaching through weathering and rainfall events especially in poorly flushed waterbodies.
    - Use non-leaching material such as North American hardwoods (black locust, cedar, white oak), composite, concrete, steel, or fiberglass if constructing in a low flushed area.

Piling recommendations:

- Increases in the number and size of pilings result in direct habitat loss, shading, scour, and lower fish abundance.
    - Maximize pile spacing and minimize the number and size (diameter) of pilings as much as engineering designs will allow.
    - Use monopile design as an alternative.
    - Avoid sensitive resource areas (salt marsh/eelgrass, high densities of shellfish).
    - Site piling in the least impactful location on the property (outside of salt marsh habitat).
- Pilings also cause indirect impact from leaching
    - Avoid creosote pilings as they leach PAH's into the environment.
    - To minimize impacts from leaching, limit the use of treated pilings to well-flushed areas and non-treated pilings at poorly flushed sites.
    - Alternatives to pressure treated wood can be used including North American hardwoods, composite, concrete, steel, or fiberglass.
    - Chromated Copper Arsenate (CCA) timber is recommended over Alkaline Copper Quaternary (ACQ) due to lower copper content.
    - Remove old piles or cut them ≥2 feet below the mudline to enable use of the overlying sediment as habitat.
- Piling installation can result in sound and turbidity impacts, including scour.
    - Drive pilings from the upland or during high tide to reduce barge grounding.
    - Use a silt curtain around installation of piles in fine-grained sediment.
    - Use a slow-start to reduce turbidity and to startle fish away from the site.
    - Avoid sensitive life history stages (e.g. follow time-of-year (TOY) restrictions) in narrow rivers with diadromous fish runs. For more information about TOYs, please see: https://www.mass.gov/files/documents/2016/08/ry/tr-47.pdf (TOY date ranges by species) and https://www.mass.gov/doc/tr-47-appendices-a-and-b-revised- 2015/download (waterbodies and species).
    - Vibratory driving is recommended as it has less risk of causing disturbance to fisheries resource than impact driving or jetting. Impact driving has resulted in noise exceedances above the behavioral impact level for fish and jetting has resulted in increased impacts through turbidity, noise, and vibrations.

Float recommendations:

- Grounded floats can lead to crushing, smothering, burial, and shading to vegetation and disturbance to bottom sediments resulting in reduced benthic vegetative production and macrofaunal biomass. Grounding also causes turbidity.

    - Floats should not ground at any tidal stage.
        - If subtidal waters are not available, float stops should be used to prevent grounding.
        - Floats should be elevated at least 18" at MLW in non-mapped shellfish habitat and 30" in mapped shellfish habitat.
        - Floats should be elevated at least 4' at MLW if placed over eelgrass habitat.
        - The distance should be measured from the bottom of the float to the substrate.
    - In areas that do not allow pilings, float leg or skids should be used to minimize the area of the float in contact with the substrate. However, increased impact may occur in areas that have direct contact with the substrate at MLW.
    - Terminal floats should be located at least one float-width beyond the deep edge of the existing or historically mapped eelgrass or the salt marsh edge.
    - Float size should be the minimum length and width necessary to berth the vessel and dinghy docks should be considered where mooring space is available for larger boats.
- Piles, anchors or float footings (legs or skids) can lead to direct habitat displacement.
    - Float anchors should never be placed within existing eelgrass.
    - Minimize use of float anchors and minimize seafloor impact, consider using helical anchors with flexible rodes.
- Remove floats and ramps seasonally and store upland of resource areas (do not store on salt marsh).

Construction recommendations:

- Work and equipment storage should occur from the upland as much as practicable to avoid equipment grounding in shellfish areas and disturbance to other sensitive marine resources.
- Do not anchor in eelgrass beds.
- Do not allow barges to shade eelgrass beds.
- Avoid barge groundings at all times.
- Restrict operations to u high tides if necessary to avoid barge groundings and propeller scour.
- Refuel equipment outside of resource areas; have spill kits handy.

Dredging:

Dock projects that involve dredging will receive further review since dredging increases the risk of impact to marine life. We typically recommend TOYs, buffers around sensitive resource areas, and the use of silt curtains.

Questions regarding these recommendations for projects from the NH border to and including the Town of Hull may be directed to Tay Evans (978-282-0308 x168) and for projects from the RI border to and including the Town of Cohasset to Eileen Feeney (508-742-9721).

References

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