

# **New Jersey Shell Recycling Guidelines for Restaurant-Based Shell Collection and Management**

Authored collaboratively by a committee formed by the Barnegat Bay Partnership on shell recycling

## **Introduction**

Oysters are a keystone species throughout the Atlantic Coast of New Jersey and the Delaware Bay. Well-functioning oyster reefs provide a host of ecosystem services including filtering significant volumes of water and providing essential habitat for a wide variety of aquatic species, many of which are of commercial and recreational significance.

Shell planting is a proven management strategy that provides the substrate necessary for oyster populations to grow and succeed. While various agencies (State, Federal, local, academia, and non-government) aim to develop and implement oyster enhancement efforts, it is often limited by the availability of shell, which has become increasingly scarce and costly. Recycled shell helps to bridge this gap. Shell is diverted from the waste stream to be used in oyster reef enhancement efforts and shoreline stabilization projects, while simultaneously achieving waste reduction goals by keeping it out of a landfill. Shell recycling programs have been growing in popularity nationwide and several groups in New Jersey have developed programs to achieve these goals. The groups currently recycling shell in New Jersey are as follows:

- NJDEP - Marine Resources Administration (Shell Recycling Program)
- Long Beach Township/ Jetty Rock Foundation (Follow the Shell- Oyster Recycling Program)
- American Littoral Society (Shuck it, Don't Chuck it Shell Recycling Program)

The intent and purpose of this document is to outline the best management practices for recycling shell in New Jersey, focusing strictly on recycled shell obtained from restaurants. The document will serve as a resource to existing and prospective programs, to standardize practices that will have an impact on marine resources. The following are standards accepted and agreed upon by all of New Jersey's current shell recycling practitioners. Any new programs developed in the State would be strongly encouraged to adhere to the following standards set by existing practitioners. Communication with existing practitioners prior to implementation is recommended.

## **Shell Storage**

- Appropriate shell storage location is critical to a successful program. Listed below are factors to consider when choosing a storage site:
  - Odor - A natural and inevitable temporary odor from curing shell can present complications in populated areas. Innovative methods to manage odor are being evaluated and developed. New Jersey practitioners agree to mitigate/prevent odor to the best of their ability. Below are some methods for managing odor as discussed by existing programs, but not all options may be included in this list.
    - Developing agreements with partner restaurants on proper shell storage/handling techniques
    - Finding a remote location to store shell is ideal and should be the first choice where possible. However, depending on scale, populated areas have been successful in some instances.
    - Common courtesy to neighbors is recommended. In some cases that may include providing notice that shell will be present, providing a timeframe of when odor may be an issue/working with neighbors to coordinate best timing, expressing temporary nature, etc.
    - If necessary, covering new shell with already-cured shell during the early stages of curing to minimize the impact when odor will be most prevalent.
    - Regular turning of shell to minimize the duration of odor.

- Potential Attractant/Nuisance - A curing shell pile has the potential to act as an attractant to a variety of different insects/animals. Practitioners must be mindful that wildlife can be present and could become a nuisance to you and/or your neighbors if precautions are not taken.
  - Similar precautions that were identified for odor can be taken here to reduce impact.
  - Bird deterrents or similar may be an option to reduce wildlife impacts.
- Distance from water- Curing fresh shell in tidal or consistently flood prone areas immediately adjacent to coastal marine waters is not recommended.
  - This recommendation is based upon shell that is collected from restaurants. Shell that is steamed may pose less of a concern for disease than freshly shucked shell obtained from restaurants.

## **Shell Curing**

- Duration
  - A six-month minimum curing period for collected shell is recommended for all shell recycling programs. This ensures the shell is clean and does not put local oyster populations at risk for disease/pathogens. The six-month minimum is adopted out of an abundance of caution and is largely based upon the research done by Bushek et al. (2004).
- Turnover time
  - Turning of shell piles is recommended halfway through the 6-month curing period (3 months in) to ensure even curing throughout the entire the pile.
- Trash
  - Trash shall be removed to the best of the ability by the practitioner prior to shell being placed back in the marine environment. Adding trash to New Jersey's coastal waterways directly violates New Jersey's coastal permitting regulations and undercuts the goals and purposes of recycling shell. Programs are expected to have an established understanding with restaurants that shell must be separate from trash. Inevitably, some trash will be in the shell pile and that responsibility falls to the shell recycling entity. Trash should be picked throughout the curing process and should be done, at a minimum, during the regular monthly turning of the shell pile-turning.

## **Consistent Messaging**

- Programs in the State of New Jersey need to message information regarding shell recycling, and oyster biology/habitat in a consistent and accurate manner following the latest information and science available.
- Filtration
  - An accurate portrayal of the filtration capabilities of oysters is critical to proper outreach and education. Over the last several years, oyster filtration rates have been historically represented by the "50 gallons per day" mark. This number has been proven to be inflated by the latest research and does not account for times when oysters are not actively filtering or if the oysters are located in less-than-ideal growing conditions. This does not lessen the beneficial impact of oysters in the marine environment as they still filter significant volumes of water and provide vital three-dimensional habitat for a host of species. The latest available science to accurately describe oyster filtration/clearance rates and the ecosystem services they provide should be used by New Jersey recycling programs when providing information to the public.

- Carbon sequestration
  - Over the last several years, bivalve shellfish have been attributed with providing significant carbon sequestration services as a means to fight climate change impacts. According to emerging research, bivalve shellfish do not sequester atmospheric CO<sub>2</sub> but store oceanic CO<sub>2</sub> and the rates are inconsequential with regard to greenhouse gas emissions (Zavell et al., 2023). While the science in this area is still emerging, the latest best available research to accurately describe oysters impacts on climate change and carbon sequestration should be used by New Jersey recycling programs.
- Reason for curing/duration of curing
  - Curing is a critical step to prevent the introduction of disease/parasites/pathogens that may be harmful to native shellfish populations. However, messaging needs to be made clear that the concern is for shellfish health, not human consumers.
  - New Jersey programs are expected to abide by a six-month minimum curing period and will promote that duration appropriately.

## End Use

- Understanding and having a plan for the end usage of the collected shell is critical to a successful program. Establishing clear and concise end goals for a program is critical. Ultimately, the end use of recycled shell can vary greatly but typically, the focus is oyster restoration/enhancement work, habitat creation, shoreline protection, etc. Having an end goal in mind at the program's onset is critical for appropriate siting and permitting.
- Permits
  - New Jersey programs are expected to obtain all necessary permits (Federal, State, Local) for their program.
  - Early consultation with the Bureau of Marine Habitat & Shellfisheries on the potential end-use/project plans is strongly encouraged. The Bureau can assist in siting projects, consulting and advising, and in providing guidance in navigating the permit process efficiently.

## Links to current Programs:

- [NJDEP - Marine Resources Administration \(Shell Recycling Program\)](#)
- [Long Beach Township/ Jetty Rock Foundation \(Follow the Shell- Oyster Recycling Program\)](#)
- [American Littoral Society \(Shuck it, Don't Chuck it Shell Recycling Program\)](#)

## References

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