

No Shell Left Behind: Bringing Shell Recycling Back to Franklin County

Oyster Shell Recycling in Franklin County: A Brief History



1 John Ruge, 1889 (*Florida Memory*)

Shell recycling, or "cultch planting", is not a new idea. In fact, humans worldwide have used shell for cultch in oyster cultivation successfully for centuries, and those in Apalachicola for over one hundred years. As early as 1881, Florida statutes allowed lease holders to plant shell to grow oysters in the Bay, and by the late 1880s, John Ruge (of *Ruge Brothers Canning Co.* in Apalachicola and secretary-treasurer of the newly-formed *Florida Fish Commission* in 1889) joined in as he considered the practice vital to sustainable oyster harvest.

Local oyster recycling and cultch distribution by private and public entities in Apalachicola persisted for decades, with comprehensive management starting in 1913 with the creation of the *Florida Shellfish Commission* in the Department of Agriculture, continuing under different names and funded by different entities over the course of the 20th century. So much effort was put into restoration that by 1949, when the *Florida State Board of Conservation's* Oyster Division started a comprehensive oyster reef restoration program in Apalachicola Bay, little oyster shell could be found locally. As an alternative, people planted metal scrap to try to attract settling larvae. This practice failed abysmally and by 1950, metal was replaced with oyster cultch delivered by barge from Alabama.

Oyster shell recycling waxed and waned in the following decades. There was little activity between 1949 and 1967 due to limited funding, but a tremendous resurgence between 1967 and 1971, due to increased interest in the economic value of oysters and the development of federal-state partnerships for subtidal reef rehabilitation. Shell deposition at that time varied from two feet thick over hardbottom to ten feet thick on soft bottom, with some success in sustaining harvests.

From the late 1960s through the 1990s, intensive harvesting and damage from storms (e.g., 1980s hurricane Elena & Kate;) led to declines in oyster habitat, oyster landings, and the number of harvesters operating in the Bay. To help reverse this trend, the *Florida Department of Agriculture and Consumer Services* (FDACS) started an oyster resource monitoring and habitat restoration project in Apalachicola Bay in 1999, annually depositing oyster shells and other cultch materials on public commercially viable oyster reefs. Many residents considered then and still do that placing cultch in areas where oysters reproduce is one of the more effective measures for creating three-dimensional reef structure, stimulating spat set, and accelerating recovery, among other things.

The FDACS program ended in 2013, shifting oyster monitoring to the *Florida Fish and Wildlife Conservation Commission* while shelling ceased completely. This caused considerable dismay among residents who felt that cessation of the FDACS routine shelling program following severe budget cuts may have facilitated the oyster decline starting in the fall of 2012. These sorts of problems suggest that there needs to be an alternative approach to accumulating and distributing shell on a continual, routine basis.



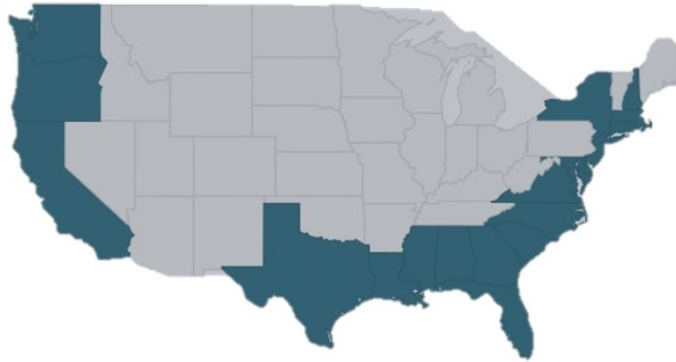
2 Planting cultch in Apalachicola Bay, 1957 (Florida Memory)

Oysters will and do settle on many different substrates: pilings, granite, and boat hulls, etc. They prefer to settle on oyster shell, which is one of the better materials on which to rebuild oyster reefs. Regionally, shell is in short supply due in part to changes in local management that no longer require returning shell to the environment, and in part due to competition from oyster restoration programs in other parts of the country, from landscape businesses, and from industries seeking calcium carbonate for industrial purposes.

A local shell recycling business can help ensure that shell produced locally stays local for restoration purposes. Such a business can obtain shell from restaurants (charging a pick-up fee), from approved drop-off sites (at no charge to the public), or from seafood dealers and aquaculture operations (from whom they would purchase the shell). All the shell is then transported to storage sites where it is cured for at least six months to eliminate any harmful bacteria from the shell. The cured clean shells, or "cultch", then can be used for oyster reef restoration projects.

Guide to a Building a Successful Shell Recycling Program

Shell recycling is now relatively commonplace along all coastal areas of the Atlantic and Pacific seaboard of the United States, sprouting up in regions where oysters are ingrained in both the culture and the community from Maine to Texas and from California to Washington (see darker areas on the map). There are at least 16 major oyster shell recycling operations stretching from North Carolina to Texas, bolstering the idea that Apalachicola would be a perfect location to reboot such a program.



3 Nationwide shell recycling programs (Oyster Recovery Partnership)

In addition to promoting positive environmental initiatives, these programs offer great opportunities for connecting with people in the local community, creating a feeling of ownership and promoting greater understanding of the significance and importance of ecosystems within the community.

Although shell recycling programs do not necessarily offer an avenue to a large commercial enterprise, they can provide economic opportunities to owners and staff members who run the organization, employ regional institutions, such as storage facilities and waste management companies (for shell pick-up and drop-off), and support local restaurants.

We reviewed a number of programs across the country to determine what attributes led to a successful recycling effort. The primary things we found to be important are:

- Statutes that support and or require recycling and restoration of oyster shell (e.g., Texas House Bill 51 (2017); [North Carolina General Statute §130A-309.10](#) (2010); Maryland House Bill 184; Florida statute Chapter 157 (McClellan 1881), which require a legislative sponsor to shepherd the proposed statute forward.
- Management plans created by governmental agencies to implement the relevant statutes.
- Dedicated public shell drop-off locations (including landfills)
- Dedicated storage sites for holding recycled shell (in Florida, these must be certified by the Florida Department of Agriculture & Community Services)
- Active participation by bars, restaurants, seafood workers, seafood dealers and other seafood businesses, private citizens, and waste collection businesses
- Financial (e.g., grants, donations) and workforce (e.g., staff, volunteers) support
- Cooperative research programs that include state and federal natural resource agencies (e.g., FWC, FDACS, DEP, NOAA) and academic institutions (e. , FSU, FAMU, and UF)
- Private property owners using shell bags, reef balls, and vertical oyster gardens for restoration.

- Targeted community engagement, including events to inform the public, attract volunteers, develop team-building exercises



4 Shell Recycling bins (U.S. Harbors)



5 Public shell drop-off site (Delaware Estuary)



6 Everyone bags oyster shells (Tampa Bay Watch)

One Size Does Not Fit All

There are many types and sizes of oyster shell recycling programs. Some are run by non-governmental organizations, some by academic institutions, some by government, and others even by high school organizations.

One thing they all have in common is a sense that restoration of shellfish habitat is critical to restoring ecosystem health. Just ask anyone that is part of the [Oyster Recovery Partnership](#) (ORP) in Maryland, which has created and implemented a scientifically sustainable shellfish restoration program geared towards improving the environment and expanding economic opportunities locally and beyond. ORP is undeniably the largest oyster restoration program with the most successful shell recycling network in the United States, recycling roughly 36,000 bushels of shell from over 400 restaurants and public shell drop-off spots throughout the Mid-Atlantic region. To learn about ORP's shell recycling and oyster restoration lifecycle,

click [here](#). Why are they successful? Because they have tackled and succeeded in following every point listed here.

They have strong academic partners, one of their primary ones being the University of Maryland Center for Environmental Science Horn Point Hatchery, directed by Don “Mutt” Merritt. They also have been quite successful garnering the financial support they need through grants and a strong donor base to help build a large network of staff members and a dedicated volunteer force. Having steady financial stability and community support goes a long way in keeping the momentum and productivity of the recycling program going strong. This kind of success takes years to build. However, smaller organizations can flourish as well with significant community support.



7 Deploying cages of oyster shell for restoration in Louisiana (CRCL)

The **Coalition to Restore Coastal Louisiana** (CRCL), with headquarters in Baton Rouge, LA, conducts their oyster shell recycling program in the New Orleans area. The program began in 2014 with a \$1 million grant from *Shell*, a global oil and gas company. The initial influx of funds helped them cover start-up costs and served to attract a loyal volunteer base and many restaurant owners who pay a fee to have their oyster shells recycled. These fees help cover the costs of a local waste management company, Phoenix Recycling, that provides restaurants with

oyster bins, collects the gathered shell, and takes it to a storage site in Buras, LA, about an hour from New Orleans.

While having numerous restaurant partners is important, CRCL found that they could not operate sustainably without two additional critical components: grant funding and volunteers. In their case, roughly one third of their funding comes from fees paid by restaurants to have shell removed and the rest is obtained through grants and the work of volunteers. CRCL has about 7,000 volunteers who respond to monthly emails detailing volunteer opportunities, like bagging oyster shells cured at the Buras storage site and using those bagged shells in local restoration projects. CRCL provides volunteers with snacks and drinks during their volunteer time-slots and celebrates their contributions by hosting volunteer appreciation events.

Tampa Bay Watch (famous for their part in perhaps Florida’s biggest environmental success story – restoring Tampa Bay seagrasses from near local extinction to levels not seen since the 1950s) supports a strong volunteer force engaged in the Tampa area with very localized oyster

restoration rather than recycling. The impetus for developing this program is that Tampa Bay has lost nearly 85% of the oyster reef acreage that it had before the 1940s.

Tampa Bay Watch volunteers help build structures designed to attract larval oysters. These structures vary from oyster shell bags (weighing ~35 lbs each) stacked on coastal sites to help build reefs, oyster reef balls (~ 200 lbs each) that help stabilize shorelines throughout Tampa Bay, and vertical oyster reef gardens that local homeowners can hang from their docks to attract oyster larvae that eventually can filter the water of pollutants, storm drain runoff, and red tide algae. These small projects provide great examples of feasible, low cost, restoration efforts.



8 Members of the Town of Hempstead storing oyster shells (CORE)

The **Community Oyster Restoration Effort (CORE)** on Long Island, NY, started by a professor at Adelphi University, takes a different tack in focusing solely on recycling at a local level. CORE, partially supported by a grant from the state of New York, depends on the support of volunteers primarily from the University and the Town of Hempstead. The volunteers collect oyster shell from local restaurants and transport them to the Hempstead curing facility. After a six-month cure, the shell is placed on oyster restoration sites that volunteers monitor for oyster settlement and growth. By staying local, CORE manages to keep transportation and management costs down. CORE now collaborates with a similar program, **Half Shells for Habitat** in Islip, NY, just a few miles down the road.

Where to Now?



9 Volunteers bagging oysters for restoration in Apalachicola Bay (Franklin Promise Coalition)

Staff at the Apalachicola National Estuarine Research Reserve (ANERR) and at the Conservation Corps of the Forgotten and Emerald Coasts are already developing an OysterCorps Pilot Program for oyster recycling in Franklin, Gulf and Bay counties with the Northwest Florida Water Management District and The Nature Conservancy's GulfCorps Program. They recently invited the Florida State University Coastal & Marine Laboratory (FSUCML) to join them as a partner, given our common interests in developing a viable shell recycling program and in restoring the

Apalachicola Bay System. By combining the resources and knowledge available in this group to the pilot program, the needle will certainly move forward on shell recycling and restoration in northwest Florida. If it does, the founding team envisions expanding the effort across the Panhandle counties.