

INTRODUCTION

Scope of Analysis

The Environmental Finance Center (EFC) was asked to review some of the financial aspects of House Bill 1521/ Senate 1157 involving the cost of establishing recycling programs and the degree to which the financial incentives envisioned in the bill are likely to promote recycling.

A detailed economic study is necessary to determine the feasibility of implementing a mandatory oyster shell recycling program throughout North Carolina. This study focuses on businesses in the inland, “Triangle” region (involving, Wake, Orange, and Durham counties), that generates a significant volume of oyster shells and would be most impacted by the bill.

Description of the Oyster Shell Recycling Bill

The Oyster Shell Recycling Bill (House 1521/ Senate 1157) aims at prohibiting disposal of oyster shells in landfills. It also involves an income tax credit for donations of oyster shells to the Department of Environment and Natural Resources (DENR). The goal is to place the shells in oyster sanctuaries to restore oyster populations off the coast of North Carolina (See Attachment 1 for the actual bill).

BACKGROUND

Existing Oyster Shell Recycling Program in North Carolina

In 2003, the Division of Marine Fisheries (DMF) initiated a voluntary oyster shell recycling program in North Carolina with the intent to increase declining oyster populations. Recycling oyster shells entails returning the shells to aquatic oyster beds which provide suitable habitat for oyster production. The program planning has focused on three logistical components: collection, storage, and transport. County coordinators have organized the logistics of collection and storage for each county. The DMF has largely been responsible for the transport organization and costs.

Presently, the majority of oyster shells generated and recycled have come from businesses along North Carolina (NC) coastal counties. The primary contributors have included three shucking houses located in Washington, Brunswick, and Hyde Counties. The shucking houses have been given financial incentives of \$0.50/ bushel to collect and store oyster shells onsite with the DMF handling pick up and transportation. The restaurants generating oyster shells along coastal regions have been given storage containers (i.e. 30 gallon Rubbermaid containers) for collection and storage. The collection and transport of these shells to the DMF has largely been handled on a volunteer basis.

The voluntary program has been deemed successful thus far. In 2001 approximately 3,000 bushels were recycled. This year an increase of up to 7-8,000 bushels is expected. Even with this increase, however, it is the opinion of the DMF that more oyster shells could be recycled with the imposition of a mandatory program. DMF believes a program requiring oyster shell recycling would increase participation in other areas of the state including the Piedmont region.

In an attempt to increase participation throughout the state the Oyster Shell Recycling Bill (House 1521/ Senate 1157) was introduced into the 2005-2006 General Assembly session (See Attachment 1).

Existing programs in other states

In the Southeast region, both South Carolina and Georgia have established oyster shell recycling programs.

South Carolina

The South Carolina Department of Natural Resources (SCDNR) has organized a statewide oyster shell recycling. Initiated in 2000 by the SCDNR's Office of Fisheries Management, the program appears to be the most well-established recycling program in the country, serving as a model for other states. Very little money has gone into promoting the program, though the SCDNR has produced one episode of a television series that highlights shell recycling and planting. According to administrators, the media has been very interested in the program and has therefore provided a lot of free publicity. In addition to the shell recycling initiative, The SCDNR's Marine Resources Research Institute has implemented a volunteer-based oyster reef building initiative known as SCORE (South Carolina Oyster Restoration and Enhancement Program). This voluntary program is very popular with the public, currently attracting more than 900 participants. These volunteers utilize recycled oyster shells to fill mesh bags to construct reefs. Presently, two employees at SCDNR work almost exclusively on the shell recycling and planting program.

There are sixteen shell recycling centers located along the South Carolina coast where private citizens can drop off their oyster shells. A pickup service is also available for events that are expected to generate large quantities (that is, over thirty bushels) of shells. Four "storage areas" exist where shells are stockpiled and quarantined for up to a year. Two of these storage areas are located in Charleston; one is located in Georgetown and the other in Beaufort, South Carolina. After storage, oyster shells are loaded by machine and transported to landings where they are loaded onto barges, and then "planted" between May and August every year. South Carolina generally plants at least 30,000 bushels of shells per year. The shells are planted into the waters from barges owned by private companies and by state-owned equipment. Planting usually involves about 30 to 40 days of planting some 1000 bushels per day.

Georgia

The University of Georgia's Marine Extension Service has implemented an oyster restoration project called GEORGIA (Generating Enhanced Oyster Reefs in Georgia's Inshore Areas). The community based oyster shell recycling and reef restoration program is run by the Marine Extension Shellfish Laboratory in collaboration with the Marine Education Center and Aquarium (MECA), the Tybee 4-H Center, and Chatham County Metropolitan Planning Commission. The program is essentially limited to the Savannah area, but shells have been collected from as far as 60 miles away, on occasion.

The program owns two twelve-foot long hydraulic trailers that are used to collect the oyster shells, but unlike South Carolina's program there are no public drop-off locations. Citizens are encouraged to call to arrange to have a pick-up scheduled. The program provides collection baskets and can even deliver one trailer for large "roast" events (Recycle Oyster Shells After Shucking Them - ROAST). The second trailer is usually located outside of a specific restaurant that generates a large volume of shells: sometimes filling the trailer in as little as a week. Several restaurants currently donate shells on a weekly basis and there is an effort to get more restaurants and caterers involved. These restaurants use plastic totes with lids for storing the shells and usually keep the shells in their walk-in freezers.

Education is an essential component of Georgia's shell recycling effort. The program aims, not only to promote the recycling of oyster shell to create new oyster reefs, but also to educate the general public of the importance of restoring, preserving, and enhancing oyster reefs along the Georgia coast. Citizens, school groups, youth groups, catering companies, seafood restaurants, seafood distributors, city planners, environmental organizations, and education centers have all played a vital role in the program's success. The University of Georgia Marine Extension Service offers hands-on, inquiry-based education programs for students in grades five through twelve focusing on oyster reef communities and restoration efforts.

Volunteers collect shell (including whelk and clam shell) from private oyster roasts, restaurants or catering groups and take it to established recycling centers to be quarantined. Periodically throughout the year volunteers shovel the shells into mesh bags. Oyster reef building and enhancement takes place during the spring months as volunteers move the mesh bags of cured oyster shell from the recycling centers to selected oyster reef sites. Some volunteers are also trained by the Marine Extension Service to conduct monitoring (water quality, biological community, oyster recruitment, growth and mortality) on a monthly basis at each of the restored sites.

Homeowners living near tidal creeks are also encouraged to restore oyster reefs near their homes. The program offers visits to these sites in order to provide an evaluation of the restoration potential and assist with the permitting and reef construction process.

One hurdle that the recycling program in Georgia faces is permitting requirements for constructing the oyster shell reefs. Each reef is regarded as a dock structure by the Department of Natural Resources. Hence, significant paperwork is involved with each project. Georgia estimates that it has collected roughly 270 bushels of shells in 2004.

Funding

Both South Carolina and Georgia receive funding from the National Oceanic and Atmospheric Administration (NOAA). In 2003, NOAA awarded a total of \$867,853 for ten local organizations in the southeastern United States to facilitate restoration of coastal and marine habitat critical to fishery resources. The University of Georgia Marine Extension Service received \$29,375 to restore several oyster reefs in the greater Savannah area. The University of Georgia has committed matching funds in support of this project. Funding for the project is also provided through grants from the National Fisheries Institute, and Ocean Trust. The education programs are hosted at the Shellfish Research Facility and through the Marine Education Center & Aquarium. South Carolina has received NOAA funds for several years. In 2003, the state received \$50,123 to evaluate the success of intertidal oyster restoration in that state. South Carolina's program is also funded in part by the revenue generated by Saltwater Recreational Fishing License sales. North Carolina recently introduced a similar salt water license.

FINANCIAL IMPACTS TO RESTAURANTS

Methods

This report contains both quantitative and qualitative data. Quantitative results included financial calculations such as: collection, storage, and transport costs. Qualitative results included information obtained from phone interviews. Interviewees included: Craig Hardy (Chief, Resource Enhancement, NC Division of Marine Fisheries), Andy Jennings (South Carolina Oyster Shell Recycling Coordinator) and Alan Power (University of Georgia - Marine Extension Service Shellfish Research Laboratory). Oyster generating restaurants that participated in interviews included: Fishmonger's, Squid's, 42nd St Oyster Bar, Shucker's Oyster Bar, and Tony's Bourbon St. Oyster Bar. Two waste management businesses were interviewed including: Waste Management and BFI.

In addition to looking at oyster recycling programs in other states, this study focused on determining the cost of transporting oyster shells from restaurants in the Triangle to the coast of North Carolina where they may be planted. Most of the restaurants interviewed for this analysis are interested in participating in a recycling program. Restaurant owners recognize that a program such as this one helps to secure the oyster population that their businesses rely on. Of course, a recycling program usually involves costs not only to the restaurants, but also to haulers, landfills and administrators of the program. There is some evidence from the existing voluntary program that landfills are willing to reserve space for oyster shell containment within the landfill, incurring minimal costs to the administration of the oyster shell recycling program. Front-end costs to restaurants and haulers therefore represent the most important factors in whether or not this program can succeed in North Carolina's Triangle region. Therefore, this study focused mainly on the costs to the restaurants.

Possible Program Model

Perhaps the most logical method of oyster shell collection is to place dumpsters onsite at restaurants to hold the shells, then later transport the shells to a landfill or transfer station. A “milk run” scenario, where a large container travels to various restaurants to collect shells on a regular basis, would ensure that the shells are collected exclusively in this container, without any other contaminating materials. However, this is feasible only if pickups are at least weekly, due to the odor and flies associated with oyster shells. Assuming that this weekly pick-up can be done, our study examined onsite shell storage with regular collection and consolidation of generated shells at a local landfill. After a sufficient quantity has been collected at the local landfill, the shells would be transported to the coast for planting of oyster reefs.

Hauling Costs

The cost of the pickup from restaurants and transport to a collection site - such as a landfill is difficult to assess, especially since such costs can vary from hauler to hauler. To create a very rough estimate, a rate of \$75/hour, with a four hour minimum was used in the calculations. If it took the truck four hours to do the “milk-run” and the run was made twice a week, this would add \$15,600 to the total cost of the recycling program. Assuming that approximately 600 bushels of shells were generated in the Triangle per month, or 7200 per year, this would add about another \$2 per bushel to the disposal costs.

According to the waste haulers interviewed, detailed discussions with their special representatives would need to occur so that they could design a program in order to determine the costs. Since this is a preliminary assessment, these discussions did not take place as yet, making hauling costs very difficult to assess. This study therefore focused more on the costs to collect the oyster shells onsite at restaurants.

Onsite Storage at Restaurants

Through phone interviews, restaurants were asked about the possibility of them storing shells onsite. Most seemed amenable to the idea of separating shell in order to encourage recycling, and did not view this task as one that represented an extra cost for them. Restaurant employees are accustomed to separating cardboard from the trash, and could treat oyster shell in the same manner. As a result, the total cost to the restaurant is equal to the cost of the dumpster rental and service.

One bushel of oyster shell weighs approximately 55 pounds, and occupies .046 cubic yards. Therefore, a standard 8-yard dumpster can hold about 174 bushels of oyster shell. From conversations with various restaurants in the Triangle that serve oysters, we learned that a high-volume restaurant will generate about 240 bushels per month of shell and a medium-volume restaurant will generate about 100 bushels. Assuming a standard waste hauling contract, the cost to the restaurant of maintaining a dumpster onsite that will be dumped once per week is \$137 per month.

If 240 bushels of shell are generated monthly, and the cost of maintaining a dumpster onsite with weekly pickup is an average of \$137 per month, then the disposal of each bushel will cost each restaurant \$0.57. If the generated volume is smaller, 100 bushels per month, as was found in the medium-volume restaurants, the cost per bushel increases to \$1.37 per bushel. In order for the recycling cost per bushel to decrease to \$.50, the volume generated at a restaurant would have to increase to 275 bushels per month.

Most waste hauler contracts do not charge by the weight of waste placed in 8-yard containers (i.e. no tipping fees), so there is little incentive to recycle or to reduce the amount of waste placed into the onsite dumpsters. Since the cost will be the same regardless of how much waste is placed into these dumpsters, volume of shell generated, as long as it is less than the volume of an 8-yard dumpster each week, is not significant for the purposes of this investigation. The average total annual cost of placing a container on a restaurant's site that is dedicated to the recycling of oyster shell will be \$1648¹, regardless of volume generated. Our study has found that if another party were to subsidize this cost, most restaurants would be willing to participate in the program. Since a per-bushel tax incentive of \$.50 would not cover the cost of waste disposal unless the restaurant generated at least 275 bushels per month, there are very few, if any, restaurants in the Triangle region that would benefit financially from this program, discouraging most from participating. A tax incentive that is not volume-based would therefore be more likely to succeed.

Current Limitations

- **Waste Reduction does not save the restaurants money** - Since restaurants do not pay for waste disposal based upon weight, an increase in the amount of waste material recycled will not financially benefit restaurants. In fact, some restaurants even have their waste disposal services covered through their rent. This means that the restaurant itself does not incur any direct costs for waste disposal, including disposal of shells, and therefore has little financial incentive to recycle the shells.
- **Need for Weighing of Shells** - Restaurants do not have mechanisms in place to weigh the waste or recycling they generate, creating difficulty with a system through which the restaurants get credits based upon the bushels of shells generated.
- **Significant Cost** - The average annual cost of maintaining an onsite 8-yard dumpster dedicated to oyster shells is \$1648, not including the cost of picking up and transporting the shells to a centralized collection site.
- **Odor and Flies** - Due to the nature of oyster shells, there are significant problems related to odor and flies associated with shell storage. Maintaining a container onsite at a restaurant that is not emptied very often is unlikely to be popular with participants in an oyster shell recycling program.

¹ Based on conversations with Waste Management and BFI, June 2005.

- **Need for a Special Pickup Route for Oysters Only** - It is essential that when oyster shells are picked up for recycling that they are maintained separately from other waste or recycled materials, making it important to establish a pickup route that is dedicated to oyster shells.
- **Space for Additional Dumpster** – The need for separate storage of oyster shells would require restaurants to allocate space for this new dumpster.

Recommendations

Restaurants are unlikely to participate in a program that results in \$1648 in operating costs per year, an increase in odors outside their buildings and additional strain on available space for dumpsters.

- A tax incentive program that is a one-time break of \$2000 may alleviate the financial concerns restaurants may have and will reduce the administrative costs of the program by eliminating the need to weigh every bushel generated by the restaurant.
- The NCDENR should work with a local hauler to become the official hauler of the oyster recycling program. This could create bring public relations benefits for the hauler and could be seen as a community service project that would enhance the image of the hauler as a protector of our natural resources.
- The hauler could then set up a regular weekly recycling route, with collected shells to be placed in a dedicated location at a local landfill. When a sufficient quantity is collected, a large delivery can be made to the coast for seeding of oyster habitat.
- Most importantly, since oyster consumption is greatest in the Fall and oyster shells are only used to seed oyster habitats in the summer, it is feasible that a program could be established to collect shells over a four-month period, from October to January, further reducing both the financial burden on restaurants and the need for large tax incentives.
- A four-month program, instead of a year-round program, could be publicized more widely because the reduced time-frame would decrease the number of public service announcements and the amount of advertising needed to ensure the success of the program.

Attachment 1

Short Title: Oyster Shells/Ban Landfilling/Tax Credit.

(Public)

Sponsors:

Referred to:

March 24, 2005

A BILL TO BE ENTITLED

AN ACT to prohibit the disposal of oyster shells in landfills and to provide an income tax credit for donations of oyster shells to the Department of Environment and Natural Resources for placement in oyster sanctuaries to restore oyster populations.

The General Assembly of North Carolina enacts:

SECTION 1. G.S. 130A-309.10(f) reads as rewritten:

"(f) No person shall knowingly dispose of the following solid wastes in landfills:

... (9) Oyster shells."

SECTION 2. Part 1 of Article 4 of Chapter 105 of the General Statutes is amended by adding a new section to read:

"§ 105-130.47. Credit for recycling oyster shells.

(a) Credit. – A taxpayer who donates oyster shells to the Division of Marine Fisheries of the Department of Environment and Natural Resources is eligible for a credit against the tax imposed by this Part. The amount of the credit is equal to the fair market value of the oyster shells donated.

(b) Limitation. – The credit allowed under this section may not exceed the amount of tax imposed by this Part for the taxable year reduced by the sum of all credits allowable, except tax payment made by or on behalf of the taxpayer. Any unused portion of the credit may be carried forward for the succeeding five years.

(c) No Double Benefit. – No deduction is allowed under G.S. 105-130.5(b)(5) for the oyster shells for which a credit is claimed under this section."

SECTION 3. Part 2 of Article 4 of Chapter 105 of the General Statutes is amended by adding a new section to read:

"§ 105-151.29. Credit for recycling oyster shells.

(a) Credit. – A taxpayer who donates oyster shells to the Division of Marine Fisheries of the Department of Environment and Natural Resources is eligible for a credit against the tax imposed by this Part. The amount of the credit is equal to the fair market value of the oyster shells donated.

(b) Limitation. – The credit allowed under this section may not exceed the amount of tax imposed by this Part for the taxable year reduced by the sum of all credits allowable, except tax payment made by or on behalf of the taxpayer. Any unused portion of the credit may be carried forward for the succeeding five years.

(c) No Double Benefit. – A taxpayer who claims a credit under this section must add back to taxable income any amount deducted under the Code for the donation of the oyster shells."

SECTION 4. G.S. 105-160.3(b) reads as rewritten:

"(b) The following credits are not allowed to an estate or trust:

(8) G.S. 105-151.29. Credit for recycling oyster shells."

SECTION 5. Section 1 of this act becomes effective 1 December 2005. Sections 2 through 5 of this act become effective when it becomes law. Sections 2 through 4 of this act apply to taxable years beginning on or after 1 January 2005 and expire for taxable years beginning on or after 1 January 2010.