

Turning Back the Clock

Enhancing Fish Habitat
by
Restoring Developed Shorelines to Their Natural State

A Final Report
Submitted to
The FishAmerica Foundation
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by the

Natural Resources/Habitat Sub-Committee
St. Andrew Bay Environmental Study Team
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INTRODUCTION

The St. Andrew Bay estuary has experienced shoreline alterations and losses of shoreline habitat, as has every estuary in America. These alterations and habitat losses have resulted in significant losses of available nursery area, and feeding and resting areas, for myriad marine invertebrates, fishes and migratory birds, particularly wading birds. As a result, estuarine productivity has been reduced and in some instances species diversity has also diminished. The St. Andrew Bay Environmental Study Team, or “BEST,” recognizes the need to take corrective, on-the-ground actions to mitigate these impacts when opportunities arise. The grant received from the FishAmerica Foundation (FAF) is one of those opportunities.

The mission of BEST is to evaluate the status of the St. Andrew Bay ecosystem, identify problems, and initiate corrective actions where necessary. The goal of BEST is to maintain and restore a healthy ecosystem for the benefit of all people. The blueprint followed by BEST is contained within our ecosystem management plan entitled: *The St. Andrew Bay Ecosystem, Our Environment*. The work addressed by the FAF grant is consistent with several action plans found within that document, including: W2, Identification of Areas for Wetland Restoration or Preservation; W3, Vegetative Buffers for Wetlands and Water Bodies; and W4, Shoreline Protection and Vegetative Buffers.

PROJECT ACCOMPLISHMENTS

This project has two components:

Site A (West Bay) is an unvegetated eroding shoreline consisting of unconsolidated fine sands. Saltmarsh cordgrass was planted at this site to stabilize the shoreline and establish marine intertidal wetlands. The new wetlands will provide nursery habitat for invertebrates and fishes, feeding, resting and nesting habitat for shorebirds (including piping plover) and wading birds, and improved water quality within West Bay which will benefit marine fishes, sea turtles, and Gulf sturgeon. The work at Site A will also help guide potential, large-scale, marsh creation along a mile of this shoreline.

Site B (Pretty Bayou) involved the removal of an old concrete bulkhead and the planting of saltmarsh cordgrass to restore the natural intertidal shoreline. Much of the Pretty Bayou shoreline has been altered by vertical bulkheading which has resulted in a loss of marine fish nursery and wading bird habitat. Restoring such sites is a viable alternative to replacing old bulkheads with expensive new ones. Specific fish benefiting from this restoration include: spotted sea trout; redfish, flounder, and a number of forage species.

Restoration of both project sites has been completed. The short-term goal of both projects was to plant these areas with plugs of marsh grass on an even-grid basis. The long-term goal is to monitor and document the growth of the marsh until the grid of plugs becomes a solid stand of vegetation.

Site A, along the southern shoreline of West Bay, was inspected by a marine geologist with the University of South Alabama to determine the nature and probable

cause of erosion. His inspection revealed low-energy, chronic wave action as the problem. Establishment of the saltmarsh will significantly reduce upland erosion and provide the biological benefits mentioned above. Over four hundred 6-inch diameter plugs of saltmarsh cordgrass (*Spartina alterniflora*) were planted on 3-foot centers at this site. Planting was completed in October, 2004.

At Site B, within Pretty Bayou, the concrete bulkhead was removed by a contractor (see plan modifications, next section) and the restored shoreline was planted with nearly two hundred 6-inch diameter plugs of saltmarsh cordgrass (*Spartina alterniflora*) set on 2-foot centers. Work at Site B was completed on July 31, 2004.

VOLUNTEER ACTIVITIES

Sixteen volunteers contributed a total of 286 hours to this project. Most of the effort was expended harvesting, transporting, and planting approximately 600 plugs of saltmarsh vegetation. Other contributions included boat management, equipment preparation and management, administrative management, grant submission, photography, geological evaluation, and project safety.

<i>BEST/FishAmerica Volunteer Activity for Project "Turning Back the Clock"</i>						
Vol. ID	Sites	Hours	Activity	Activity	Activity	Activity
1	A&B	20	grant prep	admin		
2	A&B	4	grant prep			
3	A&B	52	harvest/plant	admin	equip prep	safety
4	A	30	harvest/plant		equip prep	
5	A&B	16	harvest/plant			
6	A&B	16	harvest/plant			
7	A&B	20	harvest/plant	admin	photos	
8	A&B	16	harvest/plant			
9	B	16	harvest/plant			
10	B	16	harvest/plant			
11	A	12	harvest/plant			
12	B	4	photography			
13	A&B	24	harvest/plant	photos	reports	safety
14	A	8	geology eval			
15	B	16	harvest/plant			
16	A	16	geology eval	equip prep		
Total Hours		286	Volunteer \$\$ Value: \$16.00/hr x 286 = \$4,576.00			

PARTNER CONTRIBUTIONS

Other partners essential to the completion of this project included the St. Andrew Bay Resource Management Association (RMA) which provided their 30-foot field work

pontoon boat, the R/B Barkuloo, at basic operational cost, and the U.S. Fish and Wildlife Service which provided use of their 20-foot Boston Whaler field boat. The in-kind value of these contributions is estimated at approximately \$1,000.00

ORIGINAL PROJECT DESIGN AND MODIFICATIONS

There were two significant modifications to the original project designs. At Site A it was found that: 1) foam and fabric for temporary wave attenuation and, 2) sand, concrete, and landscape fabric for stabilization were not required for project completion. However, at Site B it was determined that the materials originally listed in the proposal budget could not be used, and were not needed, for the concrete bulkhead removal. This determination was based on the fact that removal of the bulkhead was beyond the normal capabilities of volunteers. The concrete structure was far too large and heavy, and its removal was too dangerous for volunteers. Thus it was necessary to use a significant portion of the grant funding to hire a contractor to come in with industrial-quality equipment and remove the concrete structure. BEST entered into a partnership with, and transferred funds to, the St. Andrew Bay Resource Management Association (RMA; a 501 C 3 corporation) to obtain, supervise, and pay the contractor for this special component of the project. The RMA has provided a receipt to us which documents that they paid the contractor in full (See Appendix One).

The savings experienced by some modifications were almost exactly offset by the cost of the contractor for bulkhead removal. The end result was the satisfactory completion of restoration at both sites in spite of the modifications required.

Another unexpected event was the grounding of the Florida Fish and Wildlife Conservation Commission law enforcement vessel, *J.J. Brown*, to the east of Burnt Mill Creek, in West Bay of St. Andrew Bay. This occurred during Hurricane Ivan. The recovery of this vessel necessitated some saltmarsh removal and most of the vegetation was used to restore Site A. All materials for Site B within Pretty Bayou were harvested from West Bay Point of St. Andrew Bay, as originally planned.

BENEFITS TO SPORT FISH, RECREATIONAL ANGLING, AND OUR COMMUNITY

The benefits of restoring tidal marsh habitat and stabilizing upland erosion are significant to marine invertebrates and fishes that use these areas for nursery sites. While the size of our project is small in comparison to the amount of shoreline alteration which has occurred within St. Andrew Bay, the restored areas will provide additional valuable habitat. Almost two tenths of an acre has been restored, and will now provide habitat for blue crab, spotted seatrout, redfish, Atlantic croaker, flounder, and myriad species of fish and invertebrates which serve as a food web for the listed species.

In addition, the restored shorelines will provide productive feeding habitat for wading birds including great blue heron, little blue heron, great egret, snowy egret, and several species of shorebirds.

Recreational anglers will indirectly benefit by the increased productivity and enhanced water quality of these areas.

Finally, and potentially of greatest importance, these projects represent successes and define the potential for much more extensive shoreline restoration throughout impacted areas of the St. Andrew Bay system.

MATERIALS & SERVICES FUNDED BY THE FISH-AMERICA FOUNDATION

The FishAmerica Foundation provided the following which allowed project completion:

- 1) Funds for the contractor for concrete bulkhead removal: \$2,130.00
- 2) RMA pontoon boat basic operating cost: \$45/day x 6 days = \$270.00

BUDGET MODIFICATIONS

Because of the need to contract for bulkhead removal, all items within the original proposal budget were deleted (with the exception of the category: *boat gas/oil*). These funds were reallocated to the bulkhead contract. The balance of the funds were used, as indicated in the section above, to cover six days of basic operating costs for the RMA pontoon work boat.

PROJECT ACCOUNTS MANAGEMENT AND FUND LEVERAGING

Attached as Appendix One are copies of receipts and categories of expenditures. The FishAmerica Funds were combined with volunteer contributions and other partner in-kind contributions to achieve the follow FAF fund leveraging ratio for this grant:

Volunteer value, \$4,576.00 + Partner In-kind value, \$1,000.00 = \$5,576.00

FAF to BEST Fund Leverage Ratio = \$5,576/\$2,400 or 2.32

ORIGINAL PUBLICATIONS

This report will ultimately appear as a .pdf publication on the forthcoming new BEST website now under construction. The new web domain name will be: baybest.org. A summary article of this project and grant agreement will appear in the BEST Newsletter.

PROJECT PHOTOGRAPHY

A compact disk of all digital project photography is enclosed with this report. In addition, some representative photographs are presented following the Conclusions and Recommendations section of this report.

PROJECT PERMITS

Copies of the project permits are included as Appendix Two of this report.

CONCLUSIONS AND RECOMMENDATIONS

Qualitative surveys of the shoreline of St. Andrew Bay reveal that a significant and increasing amount of shoreline alteration is taking place. Two observations deserve in-depth consideration.

The first observation is that continued, and even accelerated, education regarding the ecological value of estuarine shorelines is critical to conservation of our coastal resources. Vertical bulkheading, even under issuance of federal and State permits, continues to eliminate marine nursery and wading bird habitat, and to increase degradation of water quality. This is particularly true if the complete design of a shoreline project, including placement of sloping riprap in front of a vertical seawall, is not implemented.

The second observation is that an alternative to seawall replacement exists when original structures have become old and dilapidated. The alternative is to remove the old structure and restore the original estuarine shoreline. Such an alternative is not only ecologically desirable, but often more economical than the cost of rebuilding a new seawall or bulkhead.

A copy of this report will be submitted to State and Federal permitting agencies and will be made available to any interested parties.