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Canada geese in the Eel River Delta. Photo credit: Dave Erickson.

Coastal FHPS to host session at Restore America's Estuaries Conference in November

The Coastal FHPs are hosting a session, "Advancing estuary restoration, awareness, and science through the coastal fish habitat

The Engaging Lifecycle of GTM NERR Oyster Reef Restoration

Submitted by the Southeast Aquatic Resources Partnership (SARP) and the Atlantic Coastal Fish Habitat Partnership (ACFHP)

The Guana Tolomato Matanzas National Estuarine Research Reserve (GTM NERR) on Florida's First Coast located in St. Johns and Flagler counties, is part of a network of 28 protected coastal areas along the United States coast from Alaska to Puerto Rico, known as the National Estuarine Research

partnerships," on Wednesday, November 5, from 10:30am to noon in Room Maryland 3 at the Restore America's Estuaries Conference in Washington, DC.

The session will consist of two 45-minute blocks. The first block will include three speakers - Debbie Hart (Southeast Alaska FHP), Lisa Havel (Atlantic FHP), and Lindsay Gardner (SARP) - sharing examples of projects from different regions of the country, highlighting protection and restoration, science and data, and outreach and education. All of the coastal FHPs are providing content for Debbie, Lisa, and Lindsay to share.

The second block will consist of a panel comprised of David Wigglesworth (USFWS), Kelly Hepler (NFHP Board Chair), Buck Sutter (NOAA), Rua Mordecai (South Atlantic Fishery Management Council), and George Schuler (The Nature Conservancy). The panel will be discussing opportunities, challenges, messaging, coordination, and collaboration among the coastal FHPs and the governmental and nonprofit organizations represented on the panel.

"The sea, the great unifier, is man's only hope. Now, as never before, the old phrase has a literal meaning: we are all in the same boat."
~ Jacques Cousteau

Western Native Trout Initiative News

Robin Knox, Project Coordinator for the Western Native Trout Initiative since 2006, will be retiring on September 30, 2014. During Robin's tenure, WNTI has directed over $4 million in federal fish habitat funds leveraged to $14 million public and private matching dollars for 110 priority native trout conservation projects, removing 48 barriers to fish passage, and reconnecting or improving 466 miles stream miles of native trout habitat and placing 26 protective fish barriers to conserve 570 miles of important native trout conservation populations. The WNTI Steering Committee thanks Robin for his years of dedication in preserving

Reserve System.

The GTM NERR, which receives an average of 300,000 visitors annually, is managed by the Florida Department of Environmental Protection (DEP) in partnership with the National Oceanic and Atmospheric Administration (NOAA) for estuarine an upland environments, including coastal strand and maritime forest habitats (73,000 acres). There, scientists, educators, and restoration specialists are working with students, businesses and other members of the local community to construct valuable oyster reefs and living shorelines. These projects, which are supported by the Southeast Aquatic Resources Partnership (SARP), the Atlantic Coastal Fish Habitat Partnership (ACFHP), and others are reducing shoreline erosion, increasing sedimentation and providing nursery habitat for marine species.

Florida's native Eastern oyster (*Crassostrea virginica*) is a keystone species because of its critical role in maintaining healthy coastal ecosystems. In addition to the ecological goals of these restoration projects and in order to ensure a regular and bountiful supply of oyster shell for reef construction, a SARP-funded NOAA Community-based Restoration Program (CRP) project established an oyster shell recycling program for St. Johns County. The recycling program has provided shell for the SARP and ACFHP living shoreline projects, as well as material for future reef construction.

Significantly, the recycling and reef building projects are resulting in other outstanding educational, economic and social benefits as well.

"Over time, the area has been impacted by water pollution, increasing wave action as a result of river traffic and channel dredging, other human-induced factors, and sea level rise," stated Andrea Small, aquatic preserve manager and lead on this project at the Reserve. "These restoration projects will not only provide benefit to the ecosystem, but they are also an important way to connect the local community to the natural environment through volunteer and educational opportunities."

and protecting native trout across the western U.S. If you want to contact Robin after October 1, he can be reached at robinknox@centurylink.net.

Robin Knox

Therese Thompson, WNTI's Director of Strategic Partnerships, will take the helm as of October 1st. Therese can be reached at tthompson@westernnativetrout.org.

Southeast Alaska - Home to Thousands of Estuaries

National Estuaries Week is a good reminder for us all to take a moment and reflect on the value and importance these habitats play both for us and for many of the fish species we care about.

Southeast Alaska is truly a mosaic of estuaries, with nearly 12,000 estuaries lying within 19,000 miles of shoreline that includes the island make-up of the Alexander Archipelago. Yep 12,000, that's a lot of estuaries! These biologically rich habitats unite the world's three most dominant natural realms - the terrestrial environment, the freshwater environment, and the marine environment; no wonder they provide such a valuable nursery setting for many fish species. It is also not surprising that many of our cities and communities settle in these important areas as they form important transportation corridors and provide access to vital natural resources.

To get a better understanding of how these estuaries function in Southeast Alaska recent efforts have mapped the shoreline and assessed the unique

View of the GTM NERR.
Photo credit: Lindsay Gardner, SARP.

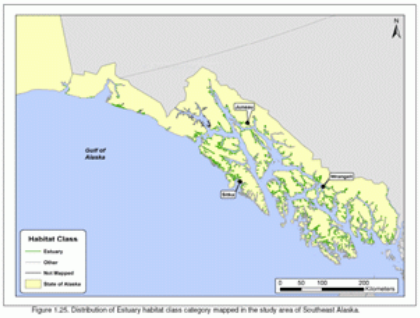
The GTMNERR Community Oyster Shell Recycling and Living Reef Construction Project was successfully initiated through the Friends of the GTM Research Reserve's partnership with the St. Johns Technical High School (SJTHS). Nestled within an easily accessible spot in the Reserve, off to the side of a parking area off of the A1A Hwy., piles of shell that have been collected from area restaurants are processed. Each pile has a small sign above it noting the date the shell was placed (the top date) and the date the shell will be ready for harvesting and reuse. In Florida, the oysters are required to bake in the sun for 90 days and are raked during that time to remove bacteria and pathogens and to prevent any potential cross-contamination, as many oysters sold in area restaurants are not actually local, but brought in from other states. Students from the St. John's Technical High School and many others have helped with the oyster raking and bagging.

Oyster Shell Recycling Staging Area.
Photo credit: Lindsay Gardner, SARP.

characteristics of these estuaries that lie within the fjorial landscape that is characteristic of this region.

Through the ShoreZone Partnership the majority of Southeast Alaska is now mapped and biological data is available for the nearshore environment. You can find more information on the ShoreZone website at: https://alaskafisheries.noaa.gov/shorezone/.

In addition research by two Nature Conservancy scientists, "An Estuarine Classification for a Complex Fjordal Island Archipelago," which appeared in the journal *Estuaries and Coasts*, is a helpful tool for planning how to conserve these biologically rich habitats in a region that currently supports healthy and vibrant fish populations. The classification is a simple model that tests the understanding of the relationships between physical conditions and the species likely to be found in these places. An informative interview with these researchers can be found here.



Distribution of estuary habitat class category mapped in the study area of Southeast Alaska.

Oyster Shells Being Processed.
Photo credit: Lindsay Gardner, SARP.

SJTH has an Academy of Coastal and Water Resources that was established in 2011 and is dedicated to providing students with high quality, industry relevant curriculum to assure success in post-secondary education and coastal and water resources career opportunities. Through collaboration with business partners, students are engaged in applied learning and develop confidence, long lasting relationships and a sense of community. Students participate in a STEM program of study that focuses on coastal, environmental and water resources and a valuable hands-on curriculum designed in partnership with the St. Johns County Utilities, Guana Tolomato Matanzas Research Reserve, Florida Gateway College, and Jacksonville University's Marine Science Research Institute. They explore the environment and ecosystems through environmental and water resource classes and experience water quality testing, wetland management, wildlife, and fisheries management. In discussions with Linda Krepp, SJTHS Career Specialist and Principal Wayne King, the hands-on learning opportunities afforded by the restoration projects and work experience, have actually had a tremendous impact by offering project-based learning opportunities.
At the outset of the project, then SJTHS Principal Wayne King expressed his enthusiasm for the program.

"I'm so excited about the opportunity to partner with the GTM Research Reserve on this project," said King. "Our vision here at SJTHS is to provide opportunities, through Project Based Learning for our students to apply knowledge. The Oyster Reef Restoration Program will help create awareness and provide a legacy for our students."

The oyster shell recycling process is "fed" by several area restaurants that are enrolled in the shell recycling program (current participants include Cap's on the Water, Aunt Kate's, Hurricane Patty's, Matanzas Innlet Restaurant and South Beach Grill). At the restaurants, there is an excellent opportunity to see the "supply chain" of the recycling program full circle, as there are GTM NERR-developed cards for the tables with QR codes directing smartphone users to information about the oyster reef recycling program and collection cans in the back of the restaurants (pick-ups are done three times a week).

Ensuring that there isn't any disruption in the collection process in critical to maintaining the supply of oyster shell for future restoration efforts, but also to the restaurants, as there is a tremendous cost savings/economic benefit in that they no longer have to pay waste disposal costs associated with shell being taken to area landfills. Billy Blanchard, Front of House Manager at Aunt Kate's Restaurant, is glad they can help.

"The project makes us feel more like a part of the neighborhood rather than just being a business in the neighborhood," said Blanchard. "It's our waterway and it affects us. The more we can do the better."

Ultimately, the oyster shells come to their final resting place as they are bagged and then strategically placed along the shoreline to form the reef. Bernard de Raad, owner of Cap's on the Water restaurant, sees repopulating local oyster beds as an

Eel River Delta Event Sept 18 in Fortuna, Ca

A perfect storm is coming together on September 18 in Fortuna, California as landowners, tribal sovereign nations, businesses, nonprofit organizations and local, state, and federal agencies celebrate estuary restoration efforts in the Eel River Delta, the Eel River as a 2104 10 Waters to Watch, and National Estuaries Week. Field trips and presentations will highlight the event that is intended to celebrate the decades-long restoration efforts in the Delta.

The event is hosted by CalTrout, Humboldt RCD, the Pacific Marine and Estuarine Fish Habitat Partnership, the California Fish Passage Forum, and NOAA, and will include many of the organizations and entities that have played a critical role in restoring the Eel River Delta to a working landscape that provides habitat for fish and wildlife and the many landowners that make their living from these productive acres.

Inhabited by humans for thousands of years, the Eel River estuary is one of the most important and sensitive estuaries on the West Coast, with 8,700 acres of tidal flats, both perennial and seasonal wetlands, and about 75 miles of river channel and tidal sloughs. The Eel River Delta provides habitat for many aquatic and terrestrial species, and supports flourishing agricultural communities. Long before the "farm to table" movement, the Eel River Delta, and Ferndale in particular, supplied California with some of the world's finest dairy products. The Eel Delta still provides high quality dairy and beef products, while also hosting one of California's major salmon and steelhead runs. However, flooding, sea level and other issues challenge the viability of some agricultural operations and infrastructure such as roads and waste treatment facilities. Balancing ecosystem restoration with the promotion of high quality agriculture and infrastructure in the coastal zone is challenging, but several key projects illustrate the importance and success of this approach.

Although nearly 60% of the estuary has important long term goal of the program.

"It would be a nice thing if we could get enough local oysters here," said de Raad. "[Their decline] has become a problem in this county."

Combined with the planting of marsh grass (*Spartina alterniflora*), these living shorelines are successfully recruiting oyster larvae called spat, and are providing habitat for fish and other aquatic species. Michael Shirley, Ph.D., Director of the GTM Research Reserve notes, "Over the long term we expect that these projects will protect and restore eroding coastline, subsequently improving aquatic habitat and water quality."

Given time, the continuation of the oyster shell recycling program and the expansion of the reefs at the Reserve, it is hoped that there will be ever increasing numbers of oysters supporting a variety of aquatic life in the area for years to come.

Oyster Shell Bags Awaiting Deployment.
Photo credit: Lindsay Gardner, SARP.

been lost due to the construction of levees and dikes, 10% of salt marsh habitats remain today. Restoring the estuary is a key component towards recovery of salmon, but also other sensitive and listed species.

Ecosystem restoration in the Eel Delta also affords unprecedented opportunities to improve drainage and infrastructure for the agricultural communities around the Delta. The Salt River Ecosystem Restoration Project and the Eel River Estuary Preserve Project, two of many projects within the Eel River Delta, seek to restore ecological integrity to reclaimed areas, while also enhancing agricultural productivity and prosperity in the region by providing land management options for landowners that support enhanced business security, stability and hydrological integrity.

Hydrologically intact and functional channels tend to improve drainage for farmers. It also ensures a complex and diverse estuary with suitable cover of deep channels and sloughs, connected to productive brackish wetlands that will help to increase size and fitness of juvenile salmon prior to entering the ocean, and ultimately improve overall marine survival for adults.

Numerous landowners as well as local, state, and federal agencies, industry representatives, and nonprofit organizations are working together to ensure the Eel River Delta is a working landscape that can support sustainable agriculture and other land management practices while providing healthy fish and wildlife habitats. The Eel Delta provides an historic opportunity to enhance coastal agricultural productivity while ensuring the long-term, recovery of Eel River salmon stocks capable of supporting the regional fishing economy of California's north coast.

The three projects that will be featured during the event:

Eel River Estuary Preserve
Historically a network of extensive tidal marshlands and dunes, today the Wildlands Conservancy's Eel River Estuary Preserve encompasses an assortment of environments including tidal marsh, dunes, agricultural land, estuarine, and freshwater ponds that provide diverse habitat for a complex of species. Preserve will provide

Students transport bagged shell to the river to build the reef. Photo credit: Florida DEP.

SJTHS students planting marsh grass. Photo credit: GTM NERR.

Shoreline at the oyster reef site on the Tolomato River. Photo credit: Lindsay Gardner, SARP.

abundant opportunity for enhancement of estuarine and tidal marsh habitat and the fish, wildlife, waterfowl and rare plant species that are dependent on these habitats.

Salt River Ecosystem Restoration
The Salt River Ecosystem Restoration Project includes four key components; 1) tidal marsh enhancement; 2) Salt River channel restoration; 3) upslope sediment management, and; 4) adaptive management planning - all will assist in the hydrologic and geomorphic function of the Salt River for flood alleviation, and to provide habitat to benefit Pacific salmon, migratory waterfowl, Tidewater goby, Green sturgeon and scores of other species that once flourished in the Delta.

Ocean Ranch
Eel River Wildlife Area's Ocean Ranch Unit, owned and managed by the California Department of Fish and Wildlife, is located on the northwest portion of the Eel River estuary, about 13 miles south of Eureka, California. The Ocean Ranch project will restore tidal processes at the 375-acre Eel River Wildlife Area-Ocean Ranch Unit. The project will breach and/or remove levees to restore tidal prism and increase estuarine habitat for the benefit of north coast fish and wildlife, including coho and Chinook salmon, steelhead, and cutthroat trout.

Coho salmon spawn in the South Fork of the Eel River.
Photo credit: eelriver.org

A section of installed oyster reef. Photo credit: GTM NERR.

Oyster spat settlement at the reef.
Photo credit: Lindsay Gardner, SARP.