

EP. 5: A GLIMPSE INSIDE THE RESERVE TOOLBELT

TRANSCRIPT

Kaitlyn Dirr 0:18

Hey there, my name is Kaitlyn Dirr and welcome to the NERR or Far podcast. On today's episode, we are learning more about living shorelines and the various management techniques used by the National Estuarine Research Reserve System.

Before we get started, what are living shorelines? NOAA, the National Oceanic and Atmospheric Administration, says that living shorelines "connect the land and water to stabilize shorelines, reduce erosion, and provide valuable habitat that enhances coastal resilience". Living shorelines utilize natural elements like plants, rocks and sand to stabilize estuarine coasts, sometimes in combination with existing harder shoreline structures, like bulkheads or sea walls. Living shorelines are a creative and cost-effective way to add resilience to communities on the water as well as provide valuable habitat for wildlife. They are also beautiful green space! Living shorelines can replace aging structures like old boat launches or docks. Another benefit is that they will grow over time, unlike hard structures, which may end up hindering the growth of aquatic life. Living shoreline treatments lie on the spectrum from green to gray. Green shorelines are designed using more natural, softer techniques, whereas gray shorelines are less natural, using what's considered harder techniques. An example of a more green living shoreline is a vegetation-only shoreline. This type of living shoreline would be useful in low wave energy environments to provide a buffer to upland areas. This type is considered a non-structural method. An example of a gray shoreline technique would be installing a bulkhead: a vertical wall parallel to the shoreline. Areas highly vulnerable to storm surge and powerful waves use bulkheads to hold soil in place. This is considered a coastal structure, not a living shoreline. A technique in the middle of the spectrum is sills. Sills are a hybrid type of living shoreline where a structure made of rock, concrete or oyster shell lies parallel against an existing vegetated shoreline. This technique reduces wave energy and prevents erosion in areas that don't commonly receive high wave energy. NOAA encourages using the softest, or greenest, approaches to shoreline stabilization that are feasible based on site conditions. Studies have found that during major storms, living natural shorelines perform better than a hardened shoreline and are less costly. The National Estuarine Research Reserves, or the NERRs, are doing a lot of neat work with living shorelines. Here to tell us how this management strategy has expanded from a habitat enhancement tool to use by coastal property owners in the southeast is Julie Binz, Manager of the ACE Basin Reserve in South Carolina.

Julie Binz 3:25

Yeah, I love this story. So we have been working on living shorelines for years and this has been a great opportunity in the ACE Basin region but really all along the South Carolina coast. Our researchers have investigated different materials and methods that are the most effective to build living shorelines. Combinations of oyster reefs and marsh grass planting, other natural materials based on what that site

looks like. So what would be the most effective for that particular area? So our researchers have done extensive testing and monitoring of living shorelines. Then some of our other staff have worked with the community in how community members, say you live on... your house is on the marsh, how you would go about installing a living shoreline instead of a seawall to help prevent erosion, and how that mechanism would work, along with other partners, permitting agencies and all those kinds of things that need to happen to build more living shorelines on our coast. Our education section has gotten into it where we have a school-based program, "From Seeds to Shoreline", where kids grow marsh grass at school and then plant it in those areas as living shorelines. Our stewardship sector does that as well with adult groups and with different community organizations. So it really has gotten all of us in the reserve involved in furthering living shorelines in our state and now people of other places and other organizations kind of look to us for that kind of expertise.

Kaitlyn Dirr 5:03

Another living shoreline project is in the works at the Apalachicola Reserve in Florida. Here to tell us more about a neat new NERR partnership is Anita Grove, Coastal Training Program Coordinator at the reserve.

Anita Grove 5:15

There's a large living shoreline project that's going to take place starting in the fall and it is with several partners in the region and it is to protect the highway between Apalachicola and Carabelle, which is the the two towns in the county that are right against the water. And what happens during a hurricane or even winter storms, just normal shoreline erosion, the water is now right at the edge of the highway. So every time you have a hurricane, it takes out these little chunks of the road and you have to detour around it and it's kind of our only road. So what they're going to try and do is plant Spartina and other plants into the water and recreate a marsh in front of it, hoping to create a barrier that absorbs those waves. We- we call them living shorelines and we've had quite a few here in our area that the reserves started many, many years ago. So they've been very successful. And now the Federal Highway Administration and the Florida Highway Department of Transportation have given a grant to let this happen. And we're really excited to see how it how it works. Hopefully, our route out of town will be preserved by that. So we're excited to see and- they've done a lot of they've done about five years of studies. They really think it's going to work well.

Kaitlyn Dirr 6:51

Some of the NERR staff that take care of estuarine lands are referred to as reserve land managers. What are reserve land managers, and what are some ways in which land managers foster sustainable natural ecosystems in the southeast?

Anita Grove 7:06

Reserves have four main sections that we divide ourselves into: one is research, which is the foundation of the reserve system, and then stewardship, education and coastal training and that's what- what area I oversee. And the stewardship section is the section that over- does land management and they actually manage that area between the land and the water because you know what you do on land impacts the water, and they also manage our public access so they all develop kiosks and maps that people can use to hike on these places that we manage and maintain a place where you can get out, leave your car safely and they also do burning. We do prescribed burning in Florida which is we believe helps manage the land so that when if you have a lightning strike or something like that the fire doesn't burn uncontrollably. So they burn periodically to reduce the vegetation and things that wash up from the water that are highly combustible. So they burn that so it's less fuel for a fire if it was to start. They also manage for invasive species, which can overtake a natural habitat, so they try to get out, cut them down, maintain trails so that people can actually access the lands we have.

Kaitlyn Dirr 8:35

One term that Anita mentioned was invasive species. An invasive species is any type of organism that is not native to a particular environment, and can cause harm to this area. Some invasive species are brought to a new area on purpose to serve as a method of pest control or as pets, but in many cases, their introduction is actually accidental. Maybe they traveled in the ballast water of ships, or they were transported cross country with a crop harvest, or they were even just a bug that hitched a ride in a car. Since these species are not native to their new environment, there are often no predators to hunt them, and they can even outcompete many native species for food. Unchecked, these organisms can cause a lot of harm to the environment, as well as the economy, damaging property and hurting yields from a variety of industries. Anita also mentioned prescribed or controlled burning. What is controlled burning and how is it used by biologists for land conservation at the reserves? Here to answer that question is Julie Binz from the ACE Basin Reserve in South Carolina

Julie Binz 9:42

We have a long history of controlled burning in this part of the country, in the southeast. Our pine forests grew adapted to fire, that's a very natural occurrence to them. It's usually by lightning. We've even seen evidence of some of our Native American tribes using burning to flush game or to clear the landscape or other types of habitat management a lot in the way we do now. Our biologists use controlled burning to mimic that natural process. So if we can burn areas of our pine forests, we can clear the brush and the understory and leave that open expanse of pine, ideally longleaf pine that was common in this area before there were large settlements of people. And our biologists also use it to manage invasive species, invasive plants so that helps keep those down as well and kind of reverts the habitat back to the way it would have been maybe a few 100 years ago.

Kaitlyn Dirr 10:48

Controlled burns, as ironic as it sounds, help prevent destructive wildfires by ridding the forest floor of flammable debris like dead leaves in a more controlled, monitored setting. As Julie said, these burns can also destroy invasive plant species. Additional benefits include returning nutrients to the soil through the ashes of vegetation, clearing space to give young trees more sunlight for growth and reducing insect populations. Some species of pine even have cones that need fire to germinate, or to begin growing the seeds within them. Another management technique is beach renourishment. In beach renourishment, sand is moved from areas offshore to resupply eroded beach areas. But where does the sand move over time? Where does it go after a storm? These are questions that the North Carolina NERR and partners at the University of North Carolina at Wilmington are investigating. Andrea Hawks and Joe Long have been investigating long-term effects from Hurricane Florence on Masonboro Island, as well as the impacts of beach renourishment in this area. Sand was deposited along portions of the southern end of the island, and since then, they have been tracking changes to the beach profile and sediment composition. The goal is to develop long-term predictive models to help folks understand how the sand will move and what the island might look like in the future. The NERRs do an incredible job of managing reserve lands through a variety of management techniques, from living shorelines to controlled burns. Through careful stewardship of our estuaries and coasts, reserves of the southeast are helping to improve coastal resiliency and preserve biodiversity. On the next episode, we'll have a chance to learn more about all the great things going on related to stewardship at the reserves, as well as how you can be a good environmental steward. Until next time, I'm Kaitlyn and this is NERR or Far: The Reserves Are Where You Are.