

Living Shorelines Online Resources/Publications

This list provides a collection of some of the online resources about the Living Shorelines.

Restore America's Estuaries

"Restore America's Estuaries is a national 501(c)(3) nonprofit organization established in 1995 as an alliance of eleven community-based conservation organizations working to protect and restore the vital habitats of our nation's estuaries."

<https://www.estuaries.org/living-shorelines>

<https://www.estuaries.org>

The Center for Coastal Resources Management at the Virginia Institute for Marine Sciences:

"The Center for Coastal Resources Management (CCRM) exists to develop and support integrated and adaptive management of coastal zone resources. To fulfill this mission, the Center undertakes research, provides advisory service, and conducts outreach education."

This site is an excellent resource for property owners in Virginia, with relevance to other regions on the east coast and some information applicable to all living shorelines.

<http://ccrm.vims.edu/livingshorelines/>

Center for coastal resource management: VIMS-CCRM Coastal Management Decision Tools

<http://ccrm.vims.edu/decisiontree/>

Living Shoreline Design Guidelines for Shore Protection in Virginia's Estuarine Environment

Virginia Institute of Marine Science, September 2010

http://web.vims.edu/physical/research/shoreline/docs/LS_Design_final.pdf

Virginia Department of Environmental Quality, Virginia Coastal Zone Management Program

This factsheet was developed by the Virginia Institute of Ocean Sciences to briefly explain the concepts of Living Shorelines and list the benefits of implementing them in place of traditional hardened structures

<http://www.deq.virginia.gov/Portals/0/DEQ/CoastalZoneManagement/lsfactsheet.pdf>

SAGE ...Systems Approach to Geomorphic Engineering

A Community of Practice of Federal, State, and Local Agencies, non- governmental organizations, academic institutions, engineers, and private businesses working together to:

- Use and promote green-gray approaches to ensure coastal community and shoreline resilience;
- Broaden science, engineering, policy and marketing activity both domestically and internationally;
- Engage community partners in regional demonstrations

<http://sagecoast.org/>

<http://sagecoast.org/info/activities.html>

Washington State Department of Ecology: Information on shoreline stabilization in Puget Sound

Each summary briefly describes the shoreline stabilization measure, potential advantages and disadvantages, and alternative terms (if available). A list of technical references is also provided.

Local planners should consider site specifics when choosing the best measure. In some cases, a 'harder' measure may be preferred over a 'softer' measure due to logistical and environmental characteristics of the site. There also may be stabilization measures not listed below that local planners may want to consider

<http://www.ecy.wa.gov/programs/sea/shorelines/stabilization/index.html>

Slope Stabilization and Erosion Control Planting Techniques

Washington State Department of Ecology This website goes into helpful, not overwhelming detail on a variety of plant based approaches to steep slope stabilization techniques and has an insightful ranking system for each technique to help determine which techniques will be most suitable for a given situation.

<http://www.ecy.wa.gov/programs/sea/pubs/93-30/pltech01.html>

Puget Sound Nearshore Ecosystem Restoration Project

The PSNERP is a collaboration between government departments, universities, tribes and environmental organizations to restore the ecological functions and values of the nearshore of Puget Sound, with a particular focus on eliminating hard shorelines. This project is interesting for its focus on ecosystem health, rather than infrastructure protection. It sees coastal erosion as an important coast-forming process rather than as a problem needing a response.

<http://www.pugetsoundnearshore.org/>

Puget Sound Shoreline Stewardship Guidebook (Puget Sound Action Team)

This guidebook is designed to give residents on the Puget Sound protect their property while explaining concepts such as runoff, geology and erosion, native and invasive species, and maintaining septic systems

www.kingcounty.gov/environment/watersheds/central-puget-sound/shoreline-stewardship-guidebook.aspx

Alternative Bank Protection Methods for Puget Sound Shorelines (Department of Ecology)

Property owners continue to have legitimate concerns about the effect of erosion on their land, therefore considerable interest has arisen in engineering measures that protect property from serious erosion, yet have less impact on shoreline ecology and on nearby beaches. This report was prompted largely by a desire to publicize these efforts and to encourage additional work in this area.

www.ecy.wa.gov/biblio/0006012a.html

Gloucester Master Gardeners Living Shorelines Page

Excellent source of information, web sites, guides, books about living shorelines and a tremendous shoreline glossary, etc.

<http://www.gloucesterva.info/ext/mastergardener/LivingshorelinesLinks.htm>

Maryland Shorelines Online: Information about Living Shorelines in the State of Maryland

Includes frequently asked questions, locations of living shorelines, etc. in the state of Maryland
<http://shorelines.dnr.state.md.us/living.asp>

Marine Guide to Preventing Shoreline Erosion (Department of Fisheries and Oceans)

This brochure, which contains considerations for stabilizing your shoreline using vegetation, is geared for British Columbia. The overall descriptions of the effects of hard structures apply in Nova Scotia, but the plant list is meant for the west coast. See our Living Shorelines plant list for Nova Scotian plants.
<http://www.dfo-mpo.gc.ca/Library/281618.pdf>

StormSmart Coasts Massachusetts

(Massachusetts Department of Energy and Environmental Affairs) This is a comprehensive resource for property owners and communities, covering topics from coastal erosion to planning for sea level rise. Very good information in the StormSmart Properties and Coastal Landscaping sections. Includes an extensive list of native, salt tolerant plants including fact sheets and growing tips for each species.
<http://www.mass.gov/eea/agencies/czm/program-areas/stormsmart-coasts/>

Sea level rise and storm events factsheet (Nova Scotia Fisheries and Aquaculture)
http://www.gov.ns.ca/coast/documents/state-of-the-coast/WEB_SLRSE.pdf

Provides an overview of projected sea level rise in Nova Scotia and the financial costs associated with responding to it, as well as adaptation strategies. From larger State of the Coast report available here: <http://www.gov.ns.ca/coast/state-of-the-coast.asp>

National Oceanic and Atmospheric Administration

NOAA is an excellent source of information on living shorelines
NOAA Office of Ocean and Coastal Resource Management
<http://coastalmanagement.noaa.gov/shoreline.html>

NOAA Guidance for Considering the Use of Living Shorelines

This Guidance was developed in an agency wide effort to clarify NOAA's encouragement for the use of living shorelines as a shoreline stabilization technique along sheltered coasts.
http://www.habitat.noaa.gov/pdf/noaa_guidance_for_considering_the_use_of_living_shorelines_2015.pdf

NOAA restoration portal – general
<http://habitat.noaa.gov/restoration/>

NOAA Restoration Portal – Living Shorelines

Information about the description, implementation, projects, publications and resources for living shorelines and federal and state contacts.
https://habitat.noaa.gov/restorationtechniques/public/shoreline_tab1.cfm

Living Shoreline Planning and Implementation (NOAA) Includes planning considerations, steps for assessing sites and specific examples of Living Shorelines techniques for subtidal, intertidal zones and upland zones
<http://www.habitat.noaa.gov/restoration/techniques/lsimplementation.html>

Maine Property Owner's Guide to Managing Flooding, Erosion & Other Coastal Hazards

This extensive web-based interactive guide from Maine is probably the most detailed and most Nova Scotia-relevant guide available. Check out the bluffs and rocky shores section, especially the soft bluff section, for the most relevant information to the Northumberland Strait. The planting section is great too. <http://www.seagrants.umaine.edu/coastal-hazards-guide/bluffs-and-rockyshores/bluff-planting>

Maine Department of Environmental Protection

Regularly scheduled training on all aspects of erosion and erosion control measures.

<http://www.maine.gov/dep/training/event.html?id=656186>

Erosion Control: Non-structural Alternatives A shorefront property owner's guide

This guide from North Carolina does a wonderful job of laying out a range of "soft" approaches and gives detailed criteria for deciding between the options in a question and answer format.

<http://www.nccoast.org/uploads/documents/guides/ErosionBro.pdf>

Ecology Action Centre: Living Shorelines Toolkit

This comprehensive website provides a wealth of resources to learn more about coastal erosion on conceptual and practical levels. We have pulled together the most relevant resources available on the Web to supplement the Living Shorelines resource materials that we have developed here at the Ecology Action Centre. These include presentations from our well-attended Living Shorelines workshop in March 2013, videos explaining the Living Shorelines project and how to apply some of the techniques developed specifically for the eroding banks of the Northumberland Strait, our brochure which introduces Living Shorelines and offers quick tips, and our annotated bibliography of the best of the web's coastal erosion resources.

https://www.ecologyaction.ca/files/images-documents/file/Coastal/LivingShorelines_Brochure_Aug28-REG.pdf

Coastal Erosion: Impacts of People and Habitat (Southern Gulf of St. Lawrence Coalition on Sustainability)

This brief brochure provides a quick and thorough overview of coastal erosion as it pertains to the Gulf of St. Lawrence. Includes a French translation.

http://coalitionsgsl.ca/webcura/files/242078_cemepbrochure.pdf

Shore Erosion Control- The Natural Approach

Audra Luscher, MD CZM/ESRCD, and Carol Hollingsworth, NRCS

The purpose of this guide is to illustrate and discuss four "Natural Approaches": stone groins with marsh plantings, marsh edge stabilization, stone sills with marsh plantings, and coir fiber log reinforcement. It includes excellent info on design, construction, permitting, costs, financial assistance, and maintenance for projects located within the MD/ Chesapeake Bay Region.

http://dnr2.maryland.gov/ccs/Publication/SE_Natural_Approach_2007.pdf

Living Shorelines and the Homeowner: Examples of Design Options

Angler Environmental, for MD DNR

This is a useful guidance document for homeowners, with design section views and photos for various living shoreline options.

http://dnr2.maryland.gov/ccs/Documents/training/lshde_sm.pdf

Coastal Erosion: Impacts of People and Habitat (Southern Gulf of St. Lawrence Coalition on Sustainability)

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http://coalitionsgsl.ca/webcura/files/242078_cemepbrochure.pdf

What is happening on Nova Scotia's coasts?

Healthy Beaches and Dunes for Tomorrow (Nova Scotia)

This brochure focuses on ways for coastal landowners to make ecologically responsible decisions to support healthy beaches and dunes in Nova Scotia. Recommendations are very similar to many Living Shorelines approaches and techniques.

<http://www.birdscanada.org/volunteer/nsplover/NSHealthyBeaches.pdf>

Restoring Gulf Oyster Reefs- Opportunities for Innovation.

Duke Center for Globalization, Governance, and Competitiveness, (on behalf of Environmental Defense Fund), 2012. This comprehensive study presents useful information on every aspect of oyster reef restoration for the Gulf of Mexico region.

http://www.cggc.duke.edu/pdfs/CGGC_Oyster-Reef-Restoration.pdf

Oyster Restoration Work Group: Living Shorelines and Coastal Erosion

A good resource for general information concerning oyster's importance in the ecosystem and their use in living shorelines

<http://www.oyster-restoration.org/living-shorelines/>

Ducks Unlimited Southern Regional Office GIS Services

Through the use of GIS and aerial imagery, Ducks Unlimited has developed a decision support tool for landowners, agencies, private industry and conservation organizations to use for identifying immediate threats to coastal marshes and for prioritizing implementation of breakwaters as funding becomes available.

http://www.oyster-restoration.org/wp-content/uploads/2012/06/Ducks_Unlimited_Breakwater_Model_Report.pdf

Partnership for the Delaware Estuary, Inc: The Delaware Estuary Living Shorelines Initiative

"The Partnership for the Delaware Estuary (PDE) is a regional nonprofit established in 1996. Its mission is to lead science-based and collaborative efforts to improve the tidal Delaware River and Bay, which spans Delaware, New Jersey, and Pennsylvania. Its staff works with many partners to increase awareness, understanding, and scientific knowledge about the Delaware Estuary." Several excellent resource publications by the Partnership for the Delaware Estuary, Inc. and their partners can be found below.

<http://www.delawareestuary.org/living-shorelines>

Constructing Oyster Reef for Shoreline Stabilization and Restoration

Jason Kirkpatrick, MacDill Air Force Base

<http://www.oyster-restoration.org/wp-content/uploads/2013/02/9.-Jason-Kirkpatrick.pdf>

Environmental Concern, Inc.

This module contains a number of good resources and information on living shorelines, oyster restoration, nontidal wetlands, ponds, stormwater management and habitat enhancement

<http://www.wetland.org/>

Florida Department of Environmental Protection

The FDEP is an excellent resource for information concerning waterfront properties and wetland management

Waterfront Property Owners Guide

Florida Department of Environmental Protection

This Waterfront Property Owner's Guide was prepared to educate and broaden awareness on the causes, effects and prevention of water pollution. This publication is directed toward waterfront property owners

<http://www.dep.state.fl.us/water/nonpoint/docs/nonpoint/wpog-book-final.pdf>

Florida Department of Environmental Protection. 2007.

Summary of the wetland and other surface water regulatory and proprietary programs in Florida. Florida wetland regulatory summary .pdf available for download

<http://www.dep.state.fl.us/water/wetlands/docs/erp/overview.pdf>

Florida Department of Environmental Protection, Northwest District, Ecosystem Restoration Section

<http://www.dep.state.fl.us/northwest/Ecosys/section/restoration.htm>

Florida Department of Environmental Protection, environmental permitting

<http://www.dep.state.fl.us/beaches/permitting/permits.htm>

Assessment of Hybrid Type Shore Erosion Control Projects in Maryland's Chesapeake Bay

David G. Burke, Evamaria W. Koch, J. Court Stevenson, for Chesapeake Bay Trust
Maryland's Chesapeake Bay is known for extensive erosion issues, and many different erosion control experiments have taken place as a result. This is an assessment of the various erosion control experiments

<http://www.dnr.state.md.us/irc/docs/00007955.pdf>

Living Shorelines for the Chesapeake Bay Watershed

Chesapeake Bay Foundation

This brochure is created for waterfront property owners in the Chesapeake Bay watershed, and provides useful information, photos, and links to additional resources for people seeking to pursue living shoreline projects.

<http://www.cbf.org/Document.Doc?id=60>

Shore Erosion Control Guidelines for Waterfront Property Owners

MD Department of the Environment, Water Management Administration, 2008. This PDF gives important information on the control of erosion in Maryland and the Chesapeake Bay area

http://ccrm.vims.edu/livingshorelines/documents/Promotional/Shore_erosion_control.pdf

Living Shorelines Forum

The purpose of this online forum is to provide a place for members of the living shorelines community to share ideas, post pictures, compile research and work collaboratively.

<http://livingshorelinesforum.org/>

In Your Backyard:

Resources by the Chesapeake Bay Foundation Contains information about Bay Scapes, living shorelines, native plants, shoreline protection, resources and many other similar topics.

<http://www.cbf.org/Page.aspx?pid=525>

“Living Shorelines” Offer Protection, Habitat along Bay’s Edge:

Information about an alternative option to shoreline hardening that protects properties while also preserving habitat and clean water in the Chesapeake Bay. Mentions that living shorelines have been installed for more than 20 years in the Chesapeake region.

http://www.chesapeakebay.net/news_livingshorelines08.aspx?menuitem=31276Environmental

National Geographic education on Living Shorelines

National Geographic’s website with information on living shorelines and their implementation

http://education.nationalgeographic.com/education/encyclopedia/living-shoreline/?ar_a=1

Restore-Adapt-Mitigate: Responding to Climate Change Through Coastal Habitat Restoration, Restore America’s Estuaries, 2012

The purpose of this report is to educate habitat restoration professionals, policy makers, and the public on the impacts climate change will have on coastal habitats and the possible role habitat restoration could play in mitigating those impacts.

https://www.estuaries.org/images/stories/RAE_Restore-Adapt-Mitigate_Climate-Chg-Report.pdf

Green Shorelines: Bulkhead alternatives for a healthier Lake Washington

This guidebook is about alternatives to the use of bulkheads and other shoreline armoring. Hard engineering is currently the standard approach for erosion control around the lake, but it has several negative impacts on nearshore habitats as well as the fish and wildlife that depend on them. More sustainable practices, referred to in this guidebook as green shorelines, use plants, beaches, and other natural materials to protect private property and the environment.

http://www.seattle.gov/dpd/cs/groups/pan/@pan/documents/web_informational/dpdp025742.pdf

Sea Grant

The **National Sea Grant College Program** is a program of the National Oceanic and Atmospheric Administration (NOAA) within the U.S. Department of Commerce. It is a national network of 33 Sea Grant Colleges and universities involved in scientific research, education, training, and extension projects geared toward the conservation and practical use of the coasts, Great Lakes, and other marine areas.

Mississippi- Alabama Seagrass Consortium: Living Shorelines in the Gulf Region

<http://masgc.org/living-shorelines>

Mississippi-Alabama Sea Grant Consortium focus on living shorelines

<http://www.masgc.org/mini/livingshorelines.htm>

<http://masgc.org/publications/details/living-shorelines-from-barriers-to-opportunities>

Mississippi-Alabama Sea Grant Consortium focus on habitat restoration

<http://www.masgc.org/mini/habitat.htm>

<http://masgc.org/impacts/article/restoration-of-more-than-3000-coastal-acres-along-the-gulf-of-mexico-benefi>

Sea Grant. 2007. Shoreline protection alternatives.

07-026 Shoreline protection alternatives PDF

Available for download at: <http://masgc.org/publications/details/sea-briefs-news-archive-2007> <http://masgc.org/publications>

<http://www.masgc.org/communications/pubs/masgp/07-026.pdf>

Sea Grant. 2007. Shoreline protection products: cost estimates.

07-031 shoreline costs.pdf

Available for download at: <http://masgc.org/publications/details/sea-briefs-news-archive-2007>

Florida Sea Grant

Florida Sea Grant is a university-based program that supports research, education and extension to conserve coastal resources and enhance economic opportunities for the people of Florida.

<http://www.flseagrant.org/>

<https://www.flseagrant.org/publications/healthy-coasts/>

Hudson River Sustainable Shorelines

“The Hudson River Sustainable Shorelines Project aims to develop science-based recommendations for shore zone management to preserve or enhance natural benefits while meeting engineering needs.”

<https://www.hrnerr.org/hudson-river-sustainable-shorelines/>

North Carolina Living Shoreline Restoration and Education

The North Carolina Coastal Federation does a lot of work putting in living shorelines, this site gives information on how those living shorelines effect the NC coast

<http://www.nccoast.org/how-we-work/restore-preserve/living-shorelines/>

Chesapeake Bay Trust

Source of grants to perform construction of Living Shorelines and projects to protect the Bay.

<http://www.cbtrust.org/site/c.enJIKQNoFiG/b.2020005/k.BD51/Home.htm>

Allen Engineering and Science

The Alternative Shoreline Management Guidebook will provide homeowners the opportunity to understand the benefits of shorelines and learn the appropriate techniques to protect their property from erosion while also preserving the habitat.

http://www.allenes.com/news/ms_dmr_living_shoreline_materials.php

Southern Environmental Law Center:

SELC works alongside conservation groups, government agencies, and research institutions to provide legal advice, take action when coastal health is threatened by the construction of seawalls or bulkheads, and simplify the permit process to build a living shoreline.

<https://www.southernenvironment.org/cases-and-projects/living-shorelines>

The Shoreline Stabilization Handbook: Lake Champlain and Other Inland Lakes (Northwest Regional Planning Commission) www.nrpcvt.com/nrpcvt/shoreline.html

Lakescaping for Water Quality and Wildlife (Minnesota Department of Natural Resources), by Carrol Henderson, Carolyn Dindorf, and Fred Rozumalski. May be purchased online

at www.comm.media.state.mn.us/bookstore/bookstore.asp

American Littoral Society

the ALS also has many useful resources on Living Shorelines. You can access information on their website

www.littoralsociety.org.

Lakeside Living (King County)

A tool for lakeshore property owners on Lake Washington and Lake Sammamish to improve shorelines for people and salmon

www.govlink.org/watersheds/8/action/lakeside-living

San Francisco Bay Living Shorelines Project: Helpful information for those on the west coast or in the Bay Area

Living Shorelines projects are new to SF Bay, where pilot restoration work on eelgrass and oyster reefs has recently led to recommendations for additional experimental testing of techniques and gradual scaling up to larger projects.

http://www.sfbaylivingshorelines.org/sf_shorelines_about.html

U.S. Army Corps of Engineers, EPA mitigation rule

General, national-level information from the USACE about shoreline stabilization techniques.

http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/final_mitig_rule.pdf

The Shoreline Stabilization Handbook for Lake Champlain and Other Inland Lakes

A collaborative report providing guidance for those near Lake Champlain or similar areas.

<http://nsgd.gso.uri.edu/lcsg/lcsg04001.pdf>

Publications from LS Resources CD that were not already in this document:**Broome, S.W., S.M. Rogers Jr., and E.D. Seneca.**

Shoreline erosion control using marsh vegetation and low-cost structures. Sea Grant publication UNC-SG-92-12.

Broome Rogers Seneca shoreline erosion control.pdf

Available for download

http://www.ncseagrant.org/index.cfm?fuseaction=product_browse_category&category=Coastal%20Hazards

Brumbaugh, R.D., M.W. Beck, L.D. Coen, L. Craig, and P. Hicks.

A practitioners guide to the design and monitoring of shellfish restoration projects.

Download available

<https://allselc.app.box.com/s/y987jbkbfxakry5kbzzr/1/706784520>

Burke, D.G. and C.S. Hardaway. Lower Machodoc Creek shoreline treatment options.

Burke Hardaway.Lower Machodoc Creek.pdf

Available for download

<http://www.longwood.edu/hullspringsfarm/environment/shorelineproject/docs/keyglossary.pdf>

Coen, L.D. and R.E. Grizzle. 2007. The importance of habitat created by molluscan shellfish to managed species along the Atlantic coast of the United States.

Atlantic States Marine Fisheries Commission, Habitat Management Series #8.
HMS8_Shellfish_Habitat_07.pdf

Available for download at: <http://www.asmfc.org/> (click on Publications then on Habitat Documents)

Luscher, A. and C. Hollingsworth. 2008. Shore erosion control – the natural approach.

BrochureTheNaturalApproach0907.pdf

Available for download at: <http://www.md-esrcd.org/publications/>

Link doesn't work and couldn't find new available link

<http://www.md-esrcd.org/publications/>

Sarasota Bay Estuary Program. Living on the water's edge.

Sarasota living waters edge.pdf

Available for download at:

<http://www.scgov.net/EnvironmentalServices/Water/SurfaceWater/documents/WatersEdge.pdf>

The Nature Conservancy, Marine Conservation

This site lists the initiatives that are being taken on by the Nature Conservancy. Check out all of the resources on this website but for living shorelines and coastal management issues, focus on the "Oceans and Coasts" link

<http://www.nature.org/initiatives/marine/>

South Carolina Oyster Restoration and Enhancement

The South Carolina Oyster Restoration and Enhancement Program (SCORE) is a community-based habitat restoration and monitoring program of the South Carolina Department of Natural Resources.

<http://score.dnr.sc.gov/>

Tampa Bay Watch

Tampa Bay Watch is a 501(c)(3) nonprofit organization dedicated to the protection and restoration of the Tampa Bay estuary through scientific and educational programs.

<http://www.tampabaywatch.org/>

U.S. Fish & Wildlife Service Coastal Program

A list of habitat conservation plans, safe harbor agreements, and candidate conservation through the US Fish and Wildlife Service

http://ecos.fws.gov/conserv_plans/public.jsp

Living Shoreline Powerpoint Presentations

State of MD (Rick Ayella)- History of Erosion and Management Issues- Presentation at NC Living Shoreline meeting

2010 <https://docs.google.com/presentation/d/1Dk2lpIO6gMTayuYTsd7nkxdk1HwOX5xRoMw3rDWIzSQ/edit#slide=id.p3>

Living Shoreline Videos

Delaware Estuary

The Partnership for the Delaware Estuary (PDE) is a regional nonprofit established in 1996. Its mission is to lead science-based and collaborative efforts to improve the tidal Delaware River and Bay, which spans Delaware, New Jersey, and Pennsylvania. Its staff works with many partners to increase awareness, understanding, and scientific knowledge about the Delaware Estuary.

<http://www.delawareestuary.org/living-shorelines>

Delaware Estuary: <https://www.youtube.com/watch?v=Slw5iK-Or4M>

Delaware DNREC: <https://www.youtube.com/watch?v=Gvefd4vAveg>

2013 Mid-Atlantic Living Shorelines Summit Videos

The Maryland Department of Natural Resources, Chesapeake Bay Trust, and Restore America's Estuaries were pleased to co-host the 2013 Mid-Atlantic Living Shorelines Summit, an in-depth discussion of the state of science, policy, and practice of Living Shorelines in the Mid-Atlantic region. <https://www.estuaries.org/mid-atlantic-living-shorelines-summit-presentation-videos>

Secrets of the Great Marsh

Danger in the Reeds is a series of documentary videos developed to educate the public about an aggressive invading plant, *Phragmites australis*, which is pushing out the natural diversity with dense, mono-culture stands of tall reeds with deeply penetrating roots.

<http://hydren.com/common/index.php?pn=home>

Selby Gardens Living Shorelines Project Video

"A tropical, urban oasis featuring unparalleled horticulture displays and a Sarasota bay-front setting, Marie Selby Botanical Gardens is a world-class center for education, research and conservation." Find more information about this garden at <http://selby.org/>

<https://www.youtube.com/watch?v=kNY18GnysE8>

Georgia-Pacific and the Living Shoreline Video

"Georgia-Pacific and The Nature Conservancy have partnered to protect the shorelines of the Georgia coast. These projects will help ensure we have a living shoreline for generations to come."

https://www.youtube.com/watch?v=Q6yRqv_ZYSo

National Aquarium - Creating a living shoreline

“National Aquarium is a nonprofit organization whose mission is to inspire conservation of the world’s aquatic treasures.” Learn more about this organization at <http://www.aqua.org/>
<https://www.youtube.com/watch?v=i49vyLMTTcw>

Coastal Resiliency: Restoring the Living Shoreline

“Matrix New World Engineering, Inc. has expertise in climate change resiliency, disaster response, and restoring coastal wetlands that have been degraded by major weather events, man-made pollution, and resource mismanagement.” Find out more about them at <http://www.matrixnewworld.com/>
<https://www.youtube.com/watch?v=bgvUpRDenSI>

Living Shorelines Workshops and Webinars

EPA Watershed Academy Webcast: Living Shorelines: Types, Tools, and Techniques

“We don’t protect the environment on our own, we work with businesses, non-profit organizations, and state and local governments through dozens of partnerships. A few examples include conserving water and energy, minimizing greenhouse gases, re-using solid waste, and getting a handle on pesticide risks. In return, we share information and publicly recognize our partners.”

<http://water.epa.gov/learn/training/wacademy/upload/living-shorelines-slides.pdf>

Design and Construction of Living Shorelines: A Course for Living Shorelines Professionals

by Virginia Institute of Ocean Sciences

This Mid-Atlantic specific course was developed by the Virginia Institute of Ocean Sciences for Living Shorelines professionals to learn about site assessment, technique decision trees and detailed design. Site assessment worksheet included and explained.

<http://www.deq.virginia.gov/Portals/0/DEQ/CoastalZoneManagement/task94-01-09.pdf>

The Water’s Edge

An article on helping fish and wildlife on your waterfront property (Minnesota Department of Natural Resources)

<http://files.dnr.state.mn.us/assistance/backyard/shorelandmgmt/savewateredge.pdf>

Living Shoreline Training webinars- VIMS-CCRM

http://web.vims.edu/physical/research/shoreline/LivingShorelineDesigns/LS_DesignClass_Part1.pdf

http://www.vims.edu/cbnerr/coastal_training/recent_workshops/ls_summit.php

NOAA Living shorelines webinar series

Archives of five online presentations about living shorelines are available below. The series was produced and presented by the National Estuarine Research Reserve System and the Office of Ocean & Coastal Resource Management of NOAA (National Oceanic and Atmospheric Administration).

<https://www.hrnerr.org/estuary-training/trainingtopic/noaanerrslivingshorelineswebinarseries/>

Living shoreline Workshop

The Coastal Training Program is a national initiative being implemented through NOAA's National Estuarine Research Reserve System. The program's purpose is to help coastal managers gain a better understanding of environmental issues, science, and environmental regulations and managing our natural resources. The program is funded by NOAA but locally implemented in Maryland by the Chesapeake Bay National Estuarine Research Reserve within the Chesapeake and Coastal Service of the Department of Natural Resources.

<http://www.coastaltraining-md.org/Scheduled-Classes/5.aspx>

<http://www.coastaltraining-md.org/Course-Catalog/Living-Shorelines--Managing-Effects-Of-Shoreline-/Navigating-Living-Shorelines/73.aspx>

Living Shorelines Non-structural Erosion Control Practices Rhode Island Land & Water Summit, 2014

This on-line resource provides an introduction into living shorelines with case studies, set within the context of the Rhode Island ecosystem and management areas.

http://www.landandwaterpartnership.org/documents/Summit2014/2G_Erosion_Control.pdf

NCDENR Division of coastal management: Training Summary

This is a summary of the training that North Carolina's coastal regulators and resource agency staff went through. There is also a lot of useful information in PDF form at the bottom of the page

<http://portal.ncdenr.org/web/cm/living-shorelines-training>

Creating Living Shorelines: a course for contractors

Module 1:

ecosystem services in the Chesapeake Bay and impacts of shoreline stabilization

http://ccrm.vims.edu/education/ls_design_class/module_1/module_1.htm

Module 2:

Understanding and Predicting Site Suitability

http://ccrm.vims.edu/education/ls_design_class/module_2/Module_2/Module_2.htm

University of Connecticut Living Shoreline Workshop Recordings:

"The Climate Adaptation Academy provides information on current adaptation research, policy and practice, and serves to promote an exchange of information between municipal officials, researchers, and other professionals."

<http://clear.uconn.edu/climate/>

Photos

For an image gallery of options, please

see http://ccrm.vims.edu/livingshorelines/photo_gallery/index.html

<http://clear.uconn.edu/climate/>