

LIVING SHORELINES: A Natural Way to Manage Coastal Erosion

Presented by:
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Groupe de
développement durable du
PAYS DE COCAGNE
Sustainable Development Group



Restoring the Earth... Restoring the Soul...

Started HNH in 2001. In 2019, we had 20 staff including a team who travelled all over the Maritimes from the South Shore to Cape Breton, PEI and New Brunswick.

We use our Ecological Restoration techniques to mitigate coastal erosion as well as build upland forests and meadows.

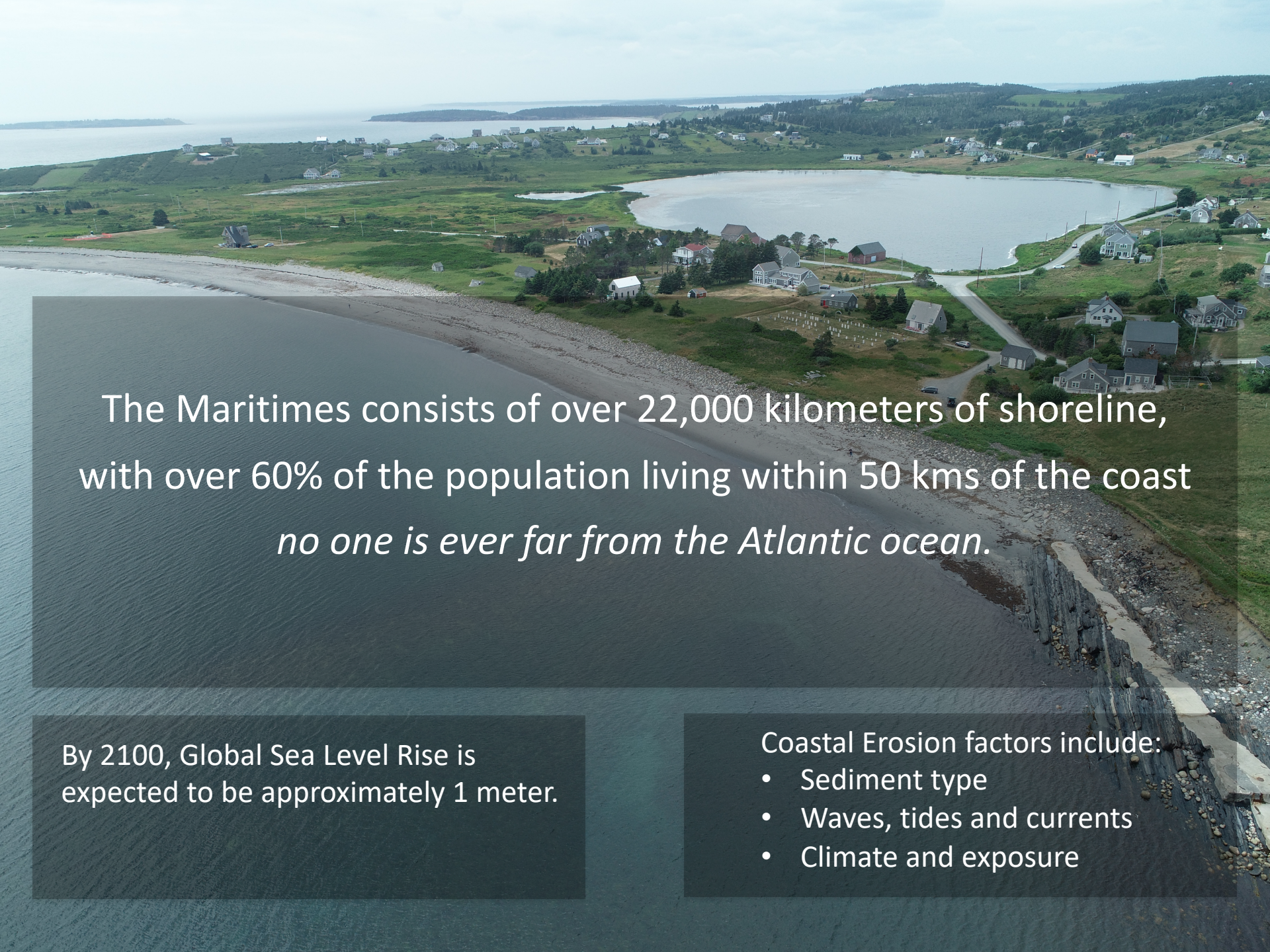


Helping Nature Heal Inc.

HNH Memberships and awards



As seen on AMI.ca/Growing Sense, As heard on 95.7 &

An aerial photograph of a coastal town. In the foreground, a wide, dark grey beach stretches along the water's edge. To the right, a large, calm bay or inlet is visible, surrounded by green grass and scattered houses. The town extends inland on a gentle slope, with more houses and a road visible. The background shows a hazy coastline under a cloudy sky.

The Maritimes consists of over 22,000 kilometers of shoreline,
with over 60% of the population living within 50 kms of the coast
no one is ever far from the Atlantic ocean.

By 2100, Global Sea Level Rise is expected to be approximately 1 meter.

- Coastal Erosion factors include:
- Sediment type
 - Waves, tides and currents
 - Climate and exposure

UNDERSTANDING EROSION

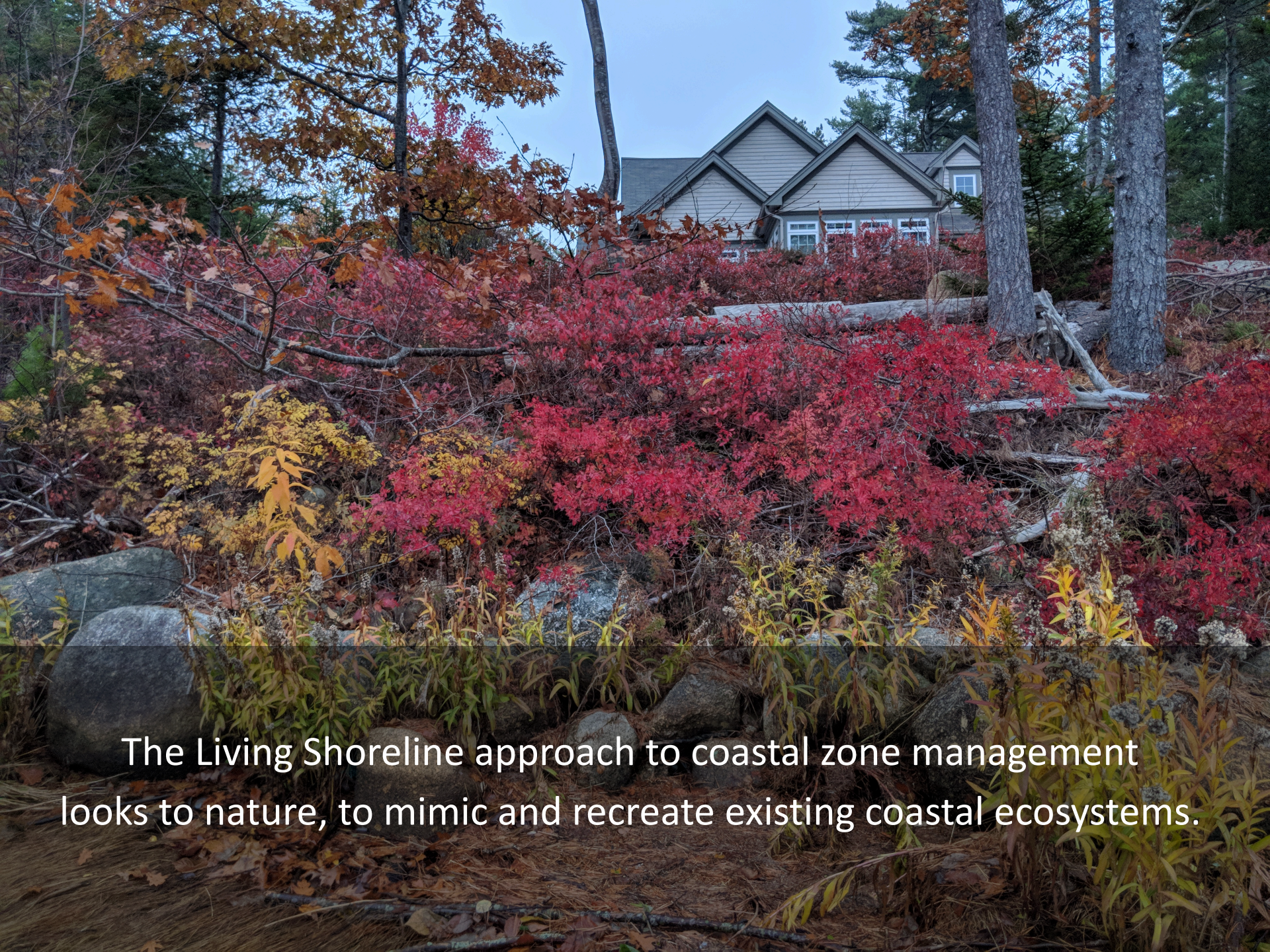





EROSIONAL PROCESSES

- Erosion is a natural process of displacement of sediment.
- We cannot stop erosion as we are no match for Mother Nature! We try to slow it down to protect our homes and infrastructure on shorelines.
- When Humans are not allowed access, the shoreline grows wild and allows for change. Once we put our investment there, we intrinsically want things to stay the same forever, this is not a reality.

WHAT ARE LIVING SHORELINES



The Living Shoreline approach to coastal zone management looks to nature, to mimic and recreate existing coastal ecosystems.



CLIMATE
ADAPTATION: Build a
long-term relationship
with your shoreline.

OUR STRATEGY



RE-NATURALIZE UPLAND MEADOWS AND FORESTS



ADD BIOMASS TO BANK



ESTABLISH PLANT COVER



REDUCE SLOPE GRADE

INDICATORS



Exposed roots

Overhanging sod
blankets

Sediments moving
Freeze and Thaw
cycles acting

Sediment
“washing” ie.
sorting of sizes



Undercut areas









THE RIPARIAN ZONE

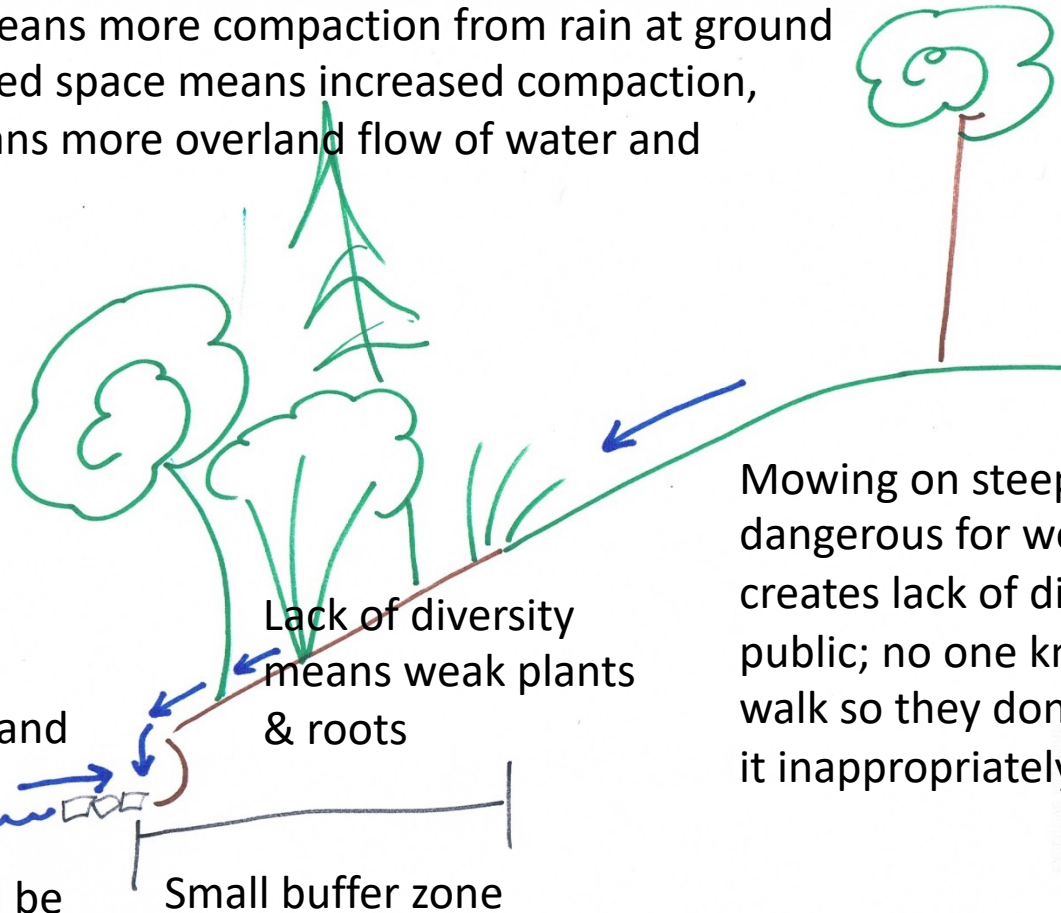


The High Watermark is often indicated by the “wrack line” The area where seaweed and other ocean debris remains after a high tide

Current state of the Riparian Zone

Lacking canopy means more compaction from rain at ground level, lots of mowed space means increased compaction, which in turn means more overland flow of water and nutrients.

Lack of absorbing edge means increased erosion from wave action and small scale rise, as climate changes increase there will be increased sloughing off of the edge



Lack of diversity means weak plants & roots

Mowing on steep slopes is dangerous for workers, and creates lack of direction for the public; no one knows where to walk so they don't use it, or use it inappropriately.

Small buffer zone

Developing a healthy Riparian Zone

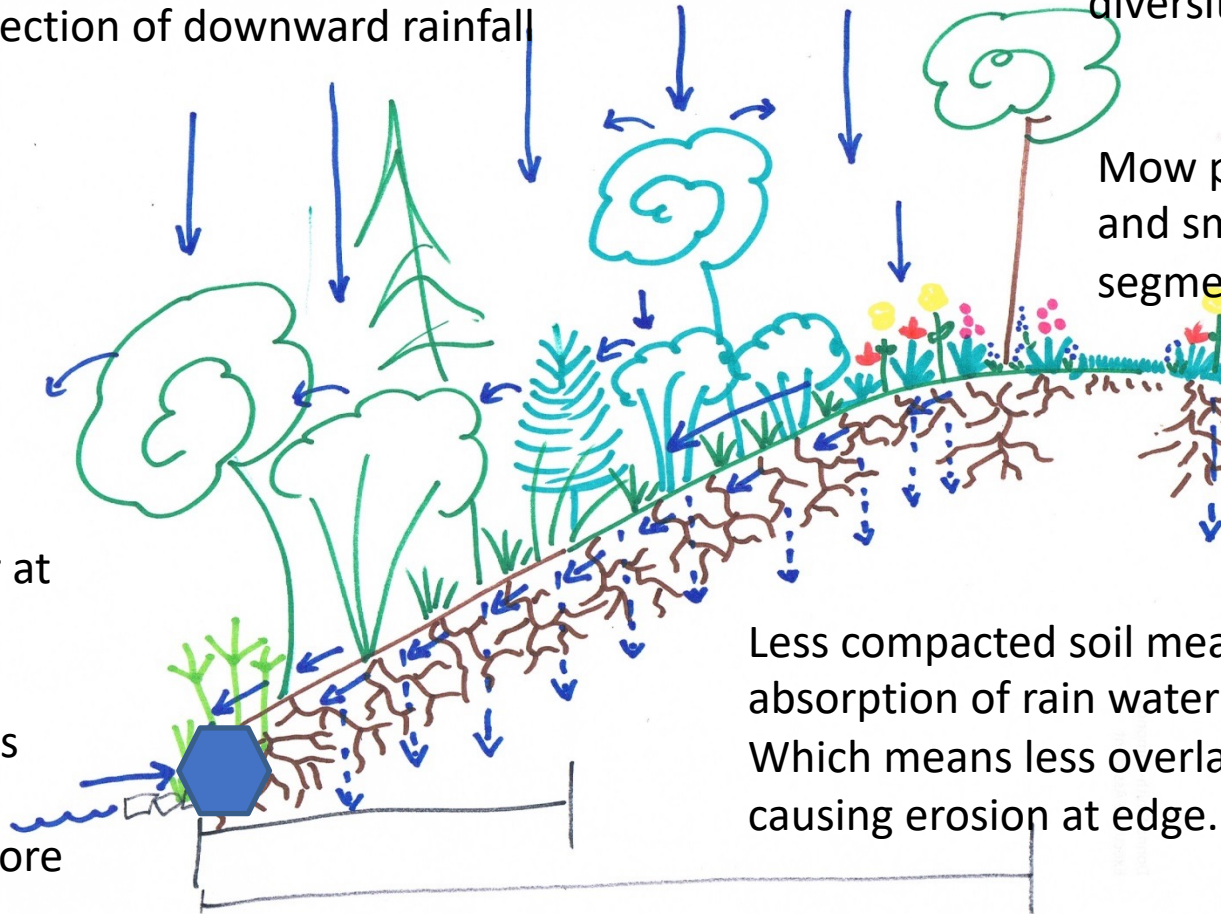
Increase in deflection of downward rainfall

Increase in species diversity

Introduce an absorbing layer at the edge
Increase the amount of roots and capacity to grow, means more resistance to change.

Mow pathways and smaller field segments

Less compacted soil means more absorption of rain water
Which means less overland flow, causing erosion at edge.



Increasing the buffer zone, 5m is the min

HELPING NATURE HEAL STRATEGIES

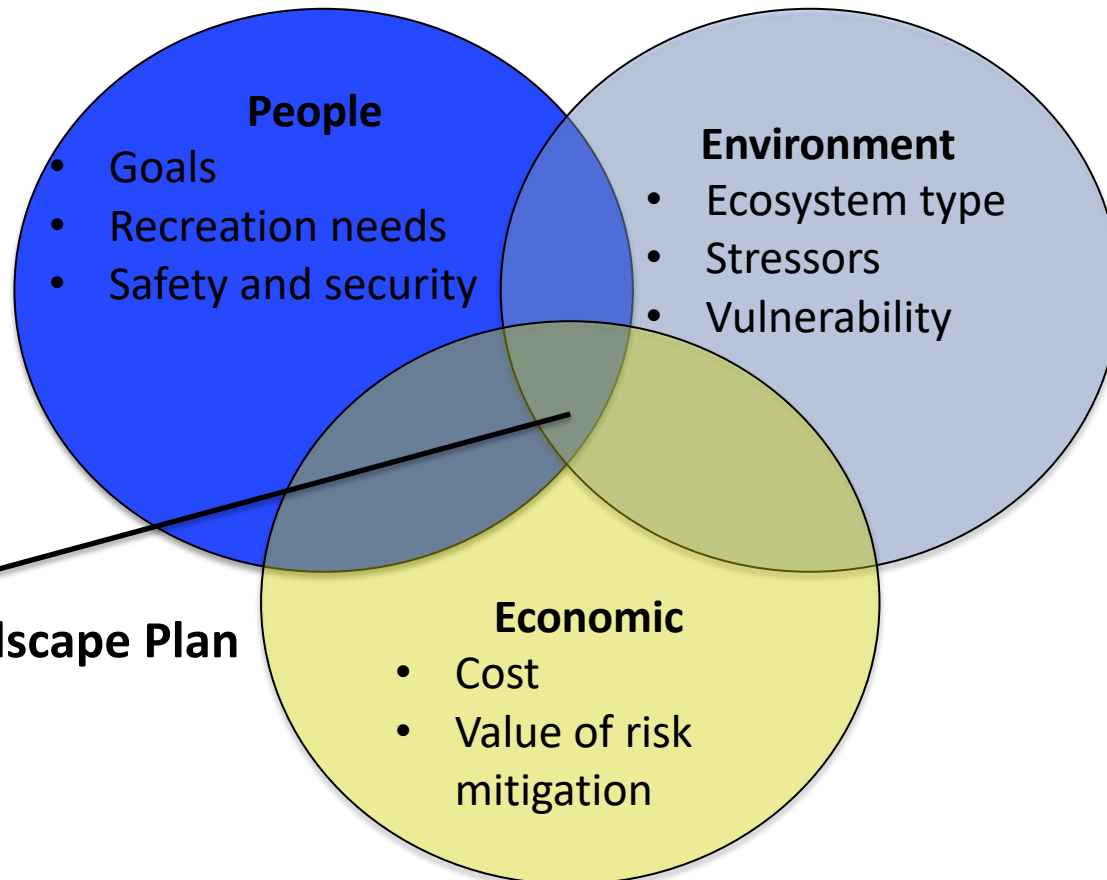
Choosing your techniques:

- What is my shoreline? Cliff/bluff or beach/dune system, marsh, riverbed or something else?
- Is there a rock wall?
- Is the slope steep?
- Which plants live here?
- What type of soil? Is it compacted?
- Where will the new mow edge be located?
- Where will paths go? Where is access to the shoreline located?
- Who will help?
- When to start different techniques?



Planning Model

- Integrating the needs of people with those of the ecosystem they are living in



Integrated Landscape Plan

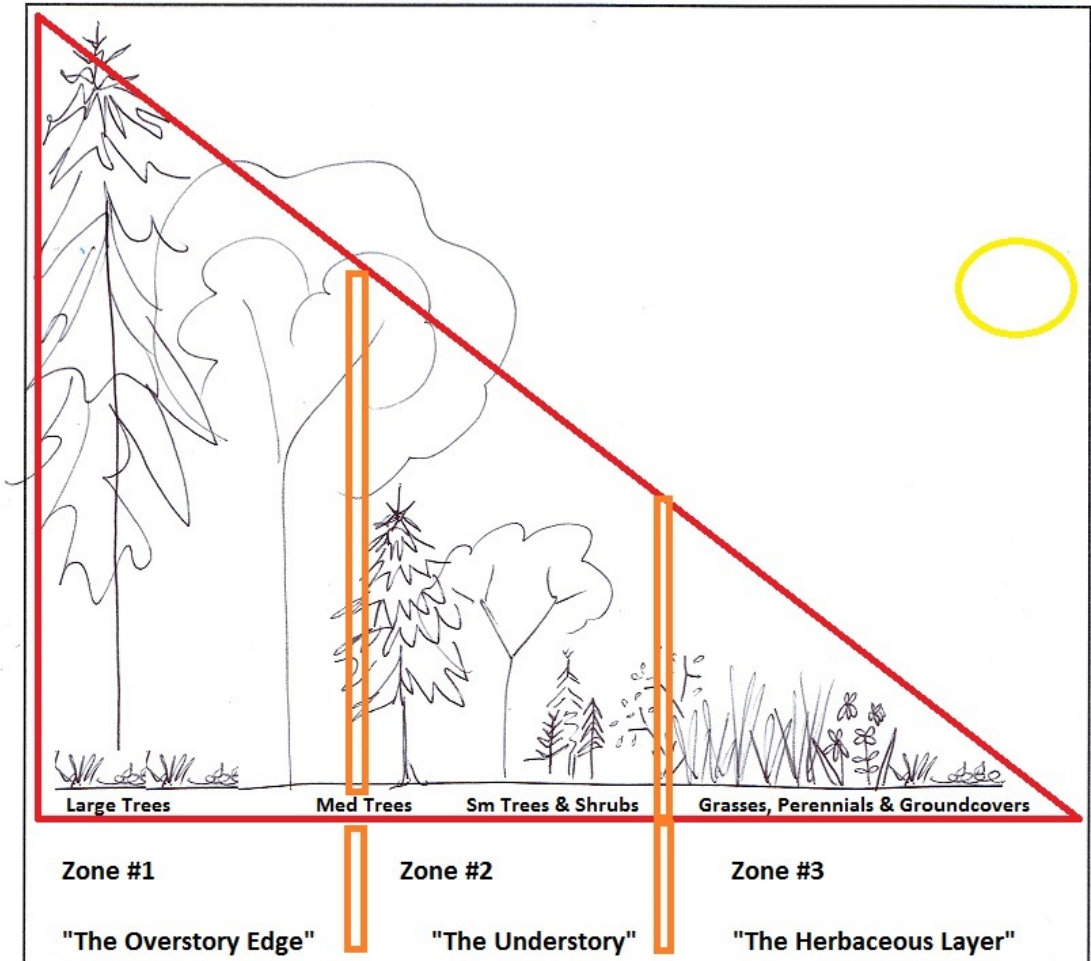
UPLAND:
BUFFER ZONE




Mowing stopped 5 -15m (15-50') from the edge



ECOSYSTEM TRIANGLE



Ecosystem Triangle with Zones

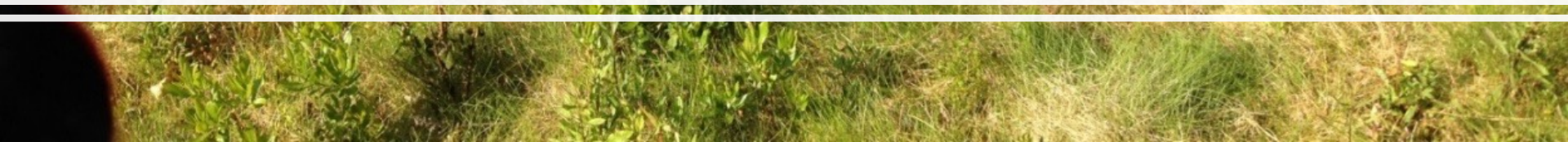


“Land to Water” Approach

- Compaction and overland flow
- Sediment runoff
- Bank stabilization
- Biodiversity
- Structural density



Create a safe, living edge with native species to create habitat and protect the shoreline.



UPLAND:
BERMS

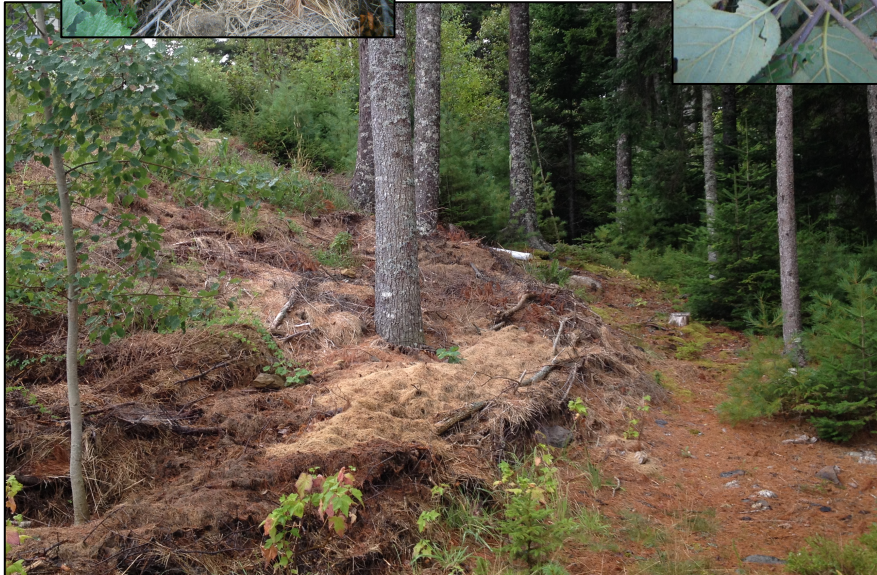


Completed berm.



STAKING AND BIOMASS

Strategic Use of Biomass

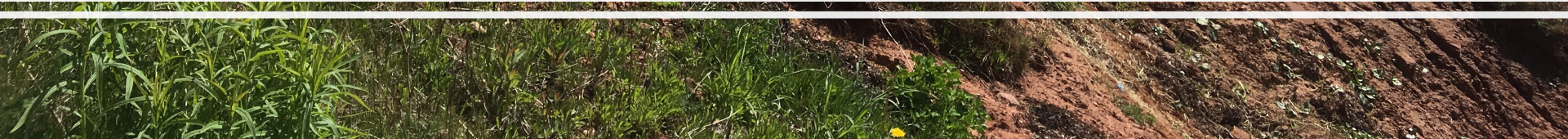








Sod blankets help protect the open soil from erosion and provide areas for seeds and plants to grow; increases “stickiness.”









Live staking with willow



CHEVRONS





Building chevrons on a slope to trap sediment and disperse water with staking methods, biomass and native species.





Building a healthy buffer zone with native species and biomass using the ecosystem triangle.



WATTLING AND BRUSH WALLS

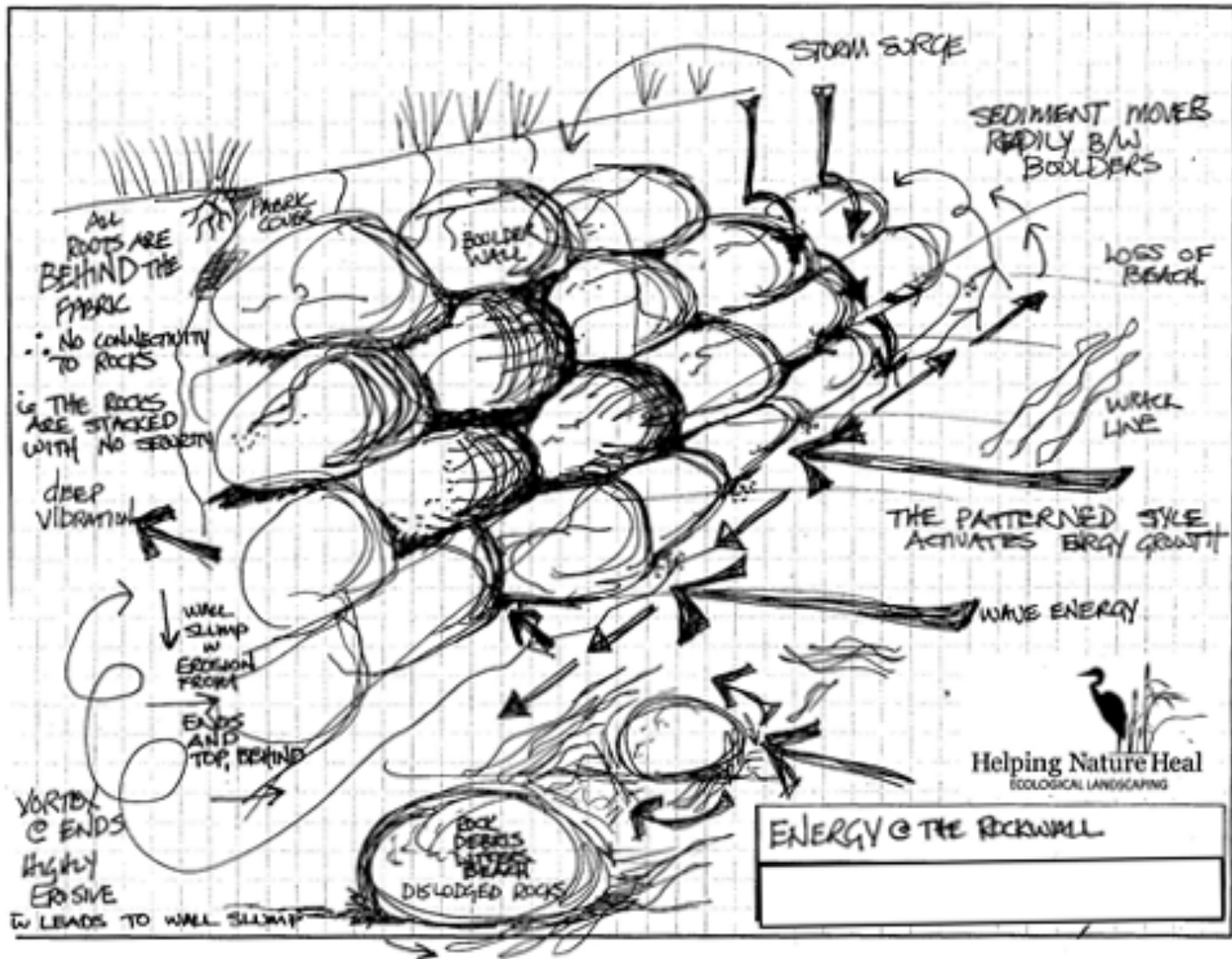


Wattle and brush walls to protect open slopes and trap sediment.





ROCK WALL REVEGETATION



Energy at a rock wall is decreased with vegetation.

Revegetating a rock wall by strategic composting and planting above and between rocks.

Plant roots bind with soil and create a “Nature’s Quilt” effect to extend the life of your investment.





Adding hay and seaweed to “stuff” the rock wall.

Revegetating on top of the rock wall.





OTHER TECHNIQUES



TERRACING



COMPLETED LIVING SHORELINE PROJECTS











Adding stairs relieves the erosion and allows plants to grow in the active zone









So what can we do?

Check out these resources

- www.sealevelrise.ca
- <https://atlanticadaptation.ca>
- check in with UPEI's Climate Research Lab and watch their CLIVE video for your area
- www.ecologyaction.ca

Collaborate as much as possible

- Encourage Community participation, encourage “citizen science”
- Share experiences, knowledge and skills
- Facilitate a workshop style event to engage deeper with the community
- Ensure that participants understand and can carry home the information




How do we do it?

- Community participation like these workshops
- Consider setbacks and think twice about investing along the shore
- Increase the greenbelt of your area, replant the living edge
- Increase the diversity of species, stick with native plants
- Increase the knowledge of this special place, talk to your neighbours about what you have learned
- Observe and document what is happening on the shoreline
- Adjust as needed, remember this is a DYNAMIC space, it will always change

Speak up! Coastal policies and regulations will not be changed or put in place without pressure and support from the public. You *must* voice those concerns to local government officials.





WATCHING YOUR SHORELINE WASH AWAY?

Find out what to watch for and what to do about
it with our Top 5 Tip Sheets:

[DOWNLOAD NOW](#)

Check out our Website for more information:

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TIME TO GET
OUR HANDS
DIRTY!

