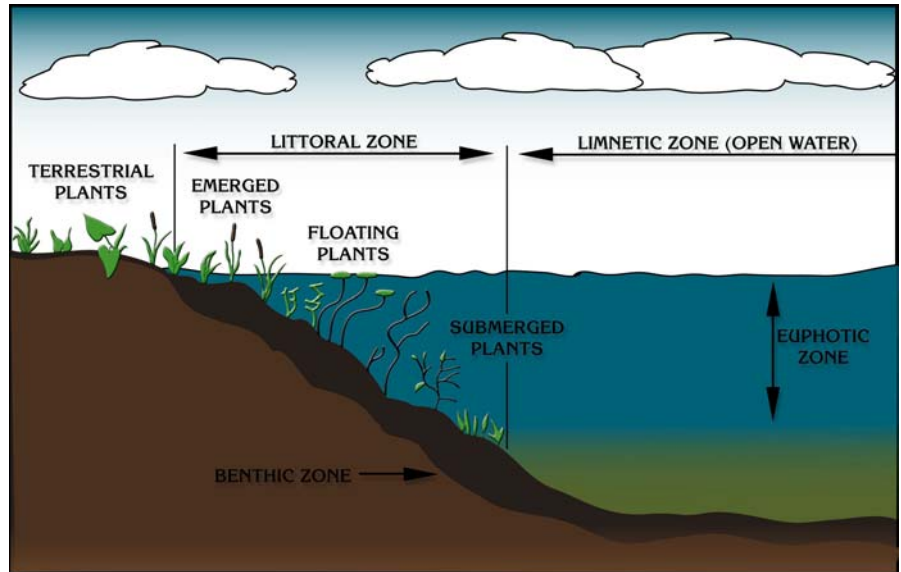


Your 'Littoral' Front Yard

All waterfront lots in Wisconsin have one thing in common. There is a shared boundary with water owned by all the State's residents. In Wisconsin, the "public trust doctrine" ensures that public waters are available to everyone, and the state is ultimately responsible for protecting these resources. In an attempt to do just that, the state regulates activities on and near lakes and navigable streams. However, the responsibility to protect the state's water resources cannot begin and end with the state. Private landowners must also make choices on how to manage their land that shares a boundary with the public's water knowing that their decisions and actions will affect others. Think of the wet side of that boundary you share with the public as your 'littoral' front yard, the aspect of your property that you share with everyone.

What does 'littoral' mean?

The littoral zone is the area of a lake or river that has light penetration all the way to the bottom. This is the area where rooted aquatic plants are able to grow. Lakes with steep slopes have very small littoral areas, while shallow lakes may be almost entirely littoral zone. Most rivers are entirely littoral zone, unless they are very large and/or deep. The littoral zone supports a variety of plant and animal species. According to the Wisconsin Department of Natural Resources, nearly 80% of Wisconsin's threatened and endangered plant and animal species spend all or part of their life in the littoral and shoreland zones (WDNR, 1996). It is clear that when we talk about the health of fish and other wildlife in our lakes and rivers, the littoral zone is critical habitat.



It is the rich diversity found in the littoral zone that makes it so important to aquatic life. Most lakes and rivers have a rich community of aquatic plants. Small fish and invertebrates use the plants for shelter and eat algae and insects growing on the plants. In the spring, water along the shoreline is the first to warm up. Fish such as walleye and northern pike take advantage of this warming water to spawn. In fact, almost all fish species spawn in the littoral zone or adjacent wetlands.

Let's not forget all those trees that fall into our lakes and rivers along the shorelines. Coarse woody cover is a critical habitat component in Wisconsin waterbodies. Not only have we altered the amount of coarse woody cover by removing trees from our shorelines before they fall - often we remove those trees that do end up in the water. Coarse woody cover in lakes and streams is far from being trash (WDNR, 2000); it is home to small insects and algae that are used for food by small fish and larger insects. Small fish use the branches for cover, while larger fish find the small fish and eat them.

Research has shown a direct link between the densities of emergent and floating-leaf plants and the abundance and size of fish such as Northern Pike and Bluegill (Radomski and Goeman, 2001). As you can see, the amount of life in the littoral zone is vast. Take a closer look at your shoreline. What is going on below the water in your littoral front yard?

One choice or action may not cause significant problems for a lake or river, however repeating that choice many times can be devastating. For example, many waterfront property owners remove some aquatic plants from in front of their property. This change on one lot may have little impact on the whole river or lake. Now imagine a stretch of shoreline with small lots, of which nearly all are developed and each property owner has removed most of the aquatic plants around their pier and in front of their property. This will likely change that shoreline in a very significant way. These are called cumulative impacts. Unfortunately, it is often difficult to see changes happening until it is too late. In this session we will take a closer look at the choices we are all faced with as waterfront property owners and identify ways that each of us can contribute to the improvement of our lake or river by making choices that will, along with similar choices by our neighbors, lead to positive cumulative impacts.

Your 'Littoral' Front Yard - Assessing your property

Conduct a self-assessment of the major components of the littoral zone in front of your property – physical / biological features, aquatic plants, structures, and your recreational use of the shoreline. As you think about all of these, be sure to think about your property in all four seasons, and don't forget the critters that use it!

Physical/Biological Features – Mark your property's physical features on your site map.

Shoreline dimensions: Length _____ ft

Water level at time of assessment (circle): low normal high
Water depth (at about 10 feet from shore): shallow (1-2 feet) moderate (3-5 feet) deep (over 6 feet)

Adjacent streams / flowing water? yes no
Any evidence of fluctuating water levels? yes no
Typical wave action: low medium high

Substrate type / lake sediment (approximate percentage): _____ boulders _____ rubble _____ gravel
_____ sand _____ muck _____ silt _____ organic matter

Coarse woody cover / downed trees / large branches (over 6-inch diameter): absent rare common abundant
Overhanging vegetation: absent rare common abundant

Beach (circle all that apply): natural artificial stable eroding none

Do fish use your shoreline to spawn? yes no

If yes, what types of fish and at what time of year? _____

Aquatic Plants – Assess the existing aquatic vegetation in the littoral zone and draw on your site map.

Presence of plant types (check all that apply and answer more-specific questions for each):

_____ emergent (plants rooted in bottom sediments, emerging from surface): none discrete beds continuous beds
density: low moderate high
diversity (number of species): low (#: _____) moderate(#: _____) high(#: _____)
_____ floating-leaved (rooted plants with floating leaves): none discrete beds continuous beds
density: low moderate high
diversity: low (#: _____) moderate(#: _____) high(#: _____)
_____ submergent (rooted plants that remain below the water surface): none discrete beds continuous beds
density: low moderate high
diversity: low (#: _____) moderate(#: _____) high(#: _____)

Frequency of algae blooms: _____ times per summer for _____ days.

Type of algae (circle): planktonic (free-floating) filamentous (attached to plants/rocks or floating in stringy masses)

Presence/absence of invasive species (name/s): _____

Management of aquatic plants:

Do you remove aquatic plants? yes no

If yes, how? manual removal rake chemicals mechanical harvester other: _____

How often do you remove plants? yearly monthly weekly daily

Do you remove plant material washing into your shoreline? never rarely sometimes often

Other plant management activities below the water? _____

Your 'Littoral' Front Yard - Assessing your property, continued

Structures – Assess the changes and additions that have been made to the littoral zone and draw items on the map as appropriate.

Pier: length: _____ ft width: _____ ft depth of water at end of pier: _____ ft
Type of pier (circle): solid cantilevered permanent removable wharf (horizontal to shoreline)
Number of slips available: _____

Other structures present (check all that are present and draw each on site map):

_____ swim raft:	color: _____	condition: poor fair good	major use: _____
_____ boathouse:	color: _____	condition: poor fair good	major use: _____
_____ boat hoist:	color: _____	condition: poor fair good	major use: _____
_____ PWC lift:	color: _____	condition: poor fair good	major use: _____
_____ seawall:	color: _____	condition: poor fair good	major use: _____
_____ riprap:	color: _____	condition: poor fair good	major use: _____
_____ bio-engineering		condition: poor fair good	major use: _____

Winter storage – For any structures that you take out of the water in winter, where do you store them?

Recreation – Assess how you use and enjoy your water frontage. Draw as appropriate on your site map.

What activities do you and your family do along your frontage (circle all that apply)? swim fish relax access boats
hunt other: _____

What areas do you use regularly? Draw on your site map and indicate what activities each area is used for.

Can you navigate to your pier throughout the entire summer? yes (draw navigation areas on site map) no

Are there any limitations to your use of your shoreline (if yes list limitations)? no yes _____

To what extent do neighbors influence how you manage your activities in the water? not much somewhat a lot

To what extent do you influence neighbors on how they manage their littoral front yard? not much somewhat a lot

Adjacent properties – Take a look at the properties next to yours. What features stand out on these properties? Remember fish, ducks and otters do not recognize property lines, and changes along an entire shoreline (cumulative changes) can often have more devastating impacts than smaller scale changes. _____

Your 'Littoral' Front Yard – Finding Solutions

The following are suggestions for ways you can enhance or improve the way you use and enjoy your littoral front yard.

Physical/Biological Features

- Protect fish by minimizing activity in spawning beds during spawning.
- Enhance fish reproduction by protecting spawning beds from disturbance from structures and recreational use.
- Increase habitat by leaving dead and dying trees unless they pose a risk to structures or spread disease.
- Provide structure in the littoral zone by adding tree drops or by leaving trees that fall into the water.
- Move back artificial beaches so that sand will not wash into the lake and cover valuable habitat.
- Plant shrubs and trees along the shore (or save the ones that are there) that overhang the water to provide shade.
- Monitor spawning activity along the shoreline.
- Monitor erosion along the shoreline and address it in the appropriate way.
- Identify areas that you can learn more about. Check out the resources at your local DNR and Extension office.

Aquatic Plants

- Remove only the minimum amount of plants to allow you to enjoy the water (state law requires a permit for an area wider than 30 feet in lakes).
- Learn to identify and monitor aquatic plants for exotic species and report any that you find to DNR.
- Monitor changes in plant communities in front of your property and in the lake or stream.
- Develop a plan for controlling aquatic plants on your lot that is based on the health of the plant community. Work with neighbors and your lake or watershed organization to be sure your management fits with whole system management.
- Determine the most effective method to meet your aquatic plant control needs, work with DNR Aquatic Plant Specialists.
- Learn and practice control methods to stop the spread of exotic species before you launch your boat.

Structures

- Maintain structures you need and consider removing those that you rarely or never use.
- Maintain a pier that is the minimum size that you need to access your boat.
- Locate your pier where it will not impact neighbors, fish spawning beds and aquatic plants, if possible.
- Use natural, earth-toned colors on piers, boathouses and other structures – these can have a dramatic impact on natural scenic beauty (as can bright, unnatural colors!).
- If you have a boathouse and/or a boat hoist, use it regularly. Removing boats from the water is good for the boat and the lake/river!
- Consider using the most appropriate shoreline protection if you are placing or replacing shore protection.
- Plant trees, shrubs and other vegetation in and around riprap, seawalls and boat houses to screen them from view.
- Store piers and swim rafts where they will not damage shoreline vegetation.
- Work with neighbors to find creative solutions to problems. If your shoreline is shallow and has dense, diverse aquatic plants, maybe there is another location with better access to store your boat.

Recreation

- Determine the areas that are most appropriate for activities such as swimming, structures, boat storage, etc.
- Choose appropriate activities for your shoreline.
- Learn how to reduce impacts from boating.
- Reduce impacts on others by reducing to slow-no-wake near shore.
- Find creative solutions to difficult problems by working with your neighbors and local government officials.
- If buying new waterfront property, first consider whether your needs are compatible with the property's characteristics.
- Work with other waterfront property owners to develop long-term management plans to protect your lake/river.
- Protect your investment. Monitor your lake or stream for changes, become a Self-Help Volunteer Lake Monitor.
- Find lake/river friendly solutions to any problems that you have addressed. Contact your local UW extension agent or DNR representative for more information.

Your 'Littoral' Front Yard - Action Plan Checklist

Using your property assessment and lists of possible alternative solutions, select action strategies for managing the interface between your property and the public's water in a way that considers what's best for all involved. Consider where you may have the most impact for the least effort and cost. Enter the selected actions in the chart below and set a target date for when you hope to accomplish each of those actions.

Protecting Littoral Zone Habitat		Action Strategy	Target Date
Physical / Biological Features	1.		
	2.		
	3.		
	Notes:		
Aquatic Plants	1.		
	2.		
	3.		
	Notes:		
Structures	1.		
	2.		
	3.		
	Notes:		
Recreation	1.		
	2.		
	3.		
	Notes:		

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