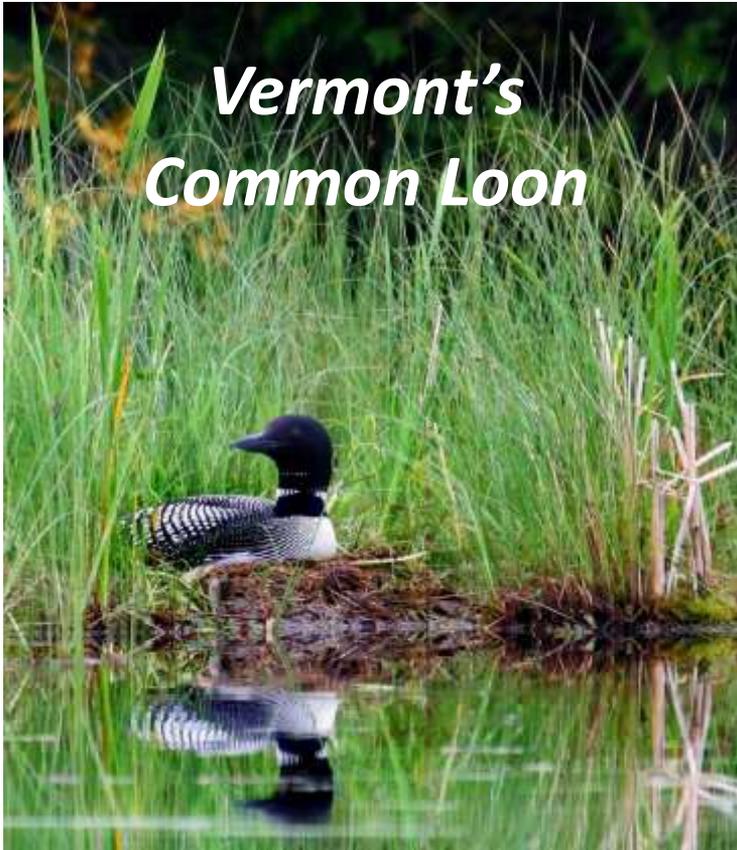


Vermont Center for Ecostudies

Uniting People and Science for Conservation

A guide for lakeshore owners



*Connecting people
to our lakes and ponds*

www.vtecostudies.org/loons

Healthy Shorelines for Wildlife

The **Vermont Loon Recovery Project (VLRP)** staff and volunteers, lake residents, boaters, and the Vermont Fish and Wildlife Department have done a tremendous job in helping loons recover from fewer than 10 nesting pairs in the 1980s to over 60 nesting pairs annually since 2007. However, over 50% of loon nests are located in sites at high risk either to disturbance or potential habitat loss; most loons in Vermont nest on private lands. The VLRP is committed to promoting long-term conservation of Vermont's Common Loons, with a focus on lakeshores. **Please help us.**



Lakes with natural shorelines have buffer zones of trees, shrubs, grasses and rocks; these protect wildlife habitat and provide loon nesting areas. Disrupting the native vegetation may negatively impact loons and other wildlife. Loss of shade from elimination of shoreline trees increases water temperatures, and algae growth. A reduction of woody debris in shallow water and sediments from excessive runoff diminish habitat for fish and other aquatic life. The loss of emergent plants eliminates habitat for flying insects like dragonflies, mayflies and damsel flies, which help control mosquito populations among many other benefits.



Signs Of a Healthy Shoreline

Shallow Water (Littoral) Zone

Extends from the water's edge to where sunlight no longer reaches the lake bottom.



Water Birds



Emergent plants



Amphibians



Mosquito Eating
Aquatic Insects



Reptiles



Underwater woody
debris and leaf litter



Fish

- Underwater and emergent plants provide habitat for insects and fish and prevent erosion of lakeshores.
- Woody debris provides hiding places, structure for egg masses and insects, shade, food, and places for turtles to sun.
- Shade from overhanging trees and bushes keep water temperatures cool and provide fallen branches and leaves that create woody debris.

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Shore and Upland Riparian Zone

The natural area of rocks, plants and trees where water and land come together.



Amphibians and Reptiles



Nesting and Insect-
Eating Birds



Mammals



Trees, Shrubs,
Grasses and Rocks

- Trees, shrubs, and tall grasses provide food, habitat, and nesting places for birds, mammals, and amphibians.
- Wide forested areas provide wildlife corridors along lakeshores and inland areas. Amphibians may move over 1000 feet from lakeshores; lawns and driveways can hinder access to these needed animal highways.

across the Americas through research, monitoring and citizen engagement.

Benefits of Buffers

Healthy vs. Impaired Lakeshores

Healthy shorelines have a buffer zone of rocks and woody plants like trees, shrubs, ground cover, and wildflowers. Developed or impaired shorelines' natural vegetation has been replaced with sandy beaches and lawns.



Healthy Shoreline



Impaired Shoreline

Natural vs. Artificial Runoff

Forest



vs.

Lawn and Home



Water Runoff
1000 ft³ vs. 5000 ft³
(5x increase)

Phosphorus to Lake
0.03 lbs vs. 0.20 lbs
(7x increase)

Sediment to Lake
5 lbs vs. 90 lbs
(18x increase)

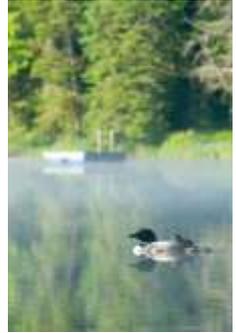
*(Apr.-Oct. Study
Wisconsin DNR)*

The hard compacted ground created by lawns allows runoff to carry sediment and phosphorus into a lake. This results in increased algae growth, reduced water clarity, and the filling in of sand and cobble lake bottoms with silt. This in turn causes fish, frogs, crayfish and aquatic insects to lose habitat and shelter, degrading lake quality for Common Loons.

Stewardship of Lakeshores

Stewardship is Simple

- Allow mowed areas to regrow; transplant native plants from nearby woods
- Leave a “buffer” zone of woody plants. Trees, shrubs, ground cover, and wildflowers all hold the soil better than mowed grass.
- Clear only a narrow path to the shoreline.
- Leave trees where they fall.
- Only cut tree limbs every few years to maintain a “partial” view of the lake.
- Divert runoff from the cottage area away from the lake.
- Pump your septic tank out regularly.
- Swim from docks instead of creating beaches.
- Enjoy more time swimming, reading, relaxing and playing with children and grandchildren instead of maintaining your yard.



Stewardship is Beneficial

Shoreline Stability

A buffer provides your shoreline with long-term protection from wave or ice erosion. Retaining walls are an expensive fix that won't last.



Scenic Value and Privacy

What does your property look like from the lake? Most people agree that shrubs and trees along lakeshores enhance a lake's beauty.

Canada Goose Control

Geese like lawns. A wide shrubby buffer will reduce geese on your property.

Property Value

People buy property on healthy lakes; healthy lakes have buffer zones.

Corridors for Wildlife

Songbirds, deer, moose, mink, otter, and amphibians need “forested highways” to move about, find food and mates, breed successfully, and disperse as they get older.

To adopt lake-friendly shoreland practices, participate in the award-based **Lake Wise Program** and earn a beautiful lake stewardship sign.

For more information contact the VT Lakes and Ponds Division

www.vtwaterquality.org/lakes.htm

Effects on Wildlife

Healthy Shorelines Promote Healthy Wildlife Populations

Frog populations suffer when shoreline trees and shrubs are removed



As numbers of cottages along shorelines increase, frog numbers decline and disappear at a certain threshold. (Woodford and Meyers 2002).

RESULT: Forested shorelines, emergent vegetation, and trees left in the water would reduce this negative impact.

Perch populations plummet when woody debris is reduced



In a controlled experiment, 75% of underwater logs were removed from a lake's shoreline to assess the effect on perch, a favorite food of loons. The catch rate declined by 3 to 4 times in the following years (Helmut and Saas 2008).

RESULT: Woody debris is a critical component of healthy lakes by providing shade and hiding places, and habitat for small organisms, i.e., fish food.

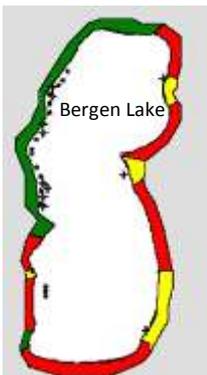
Increased numbers of cottages change the dynamics of songbird populations



As the number of cottages increases, dynamics of songbird communities change from insect-eating and shrub/ground nesters to seed-eating species and those that nest higher up or utilize dwellings (Wisconsin DNR).

RESULT: Natural lakeshore vegetation maintains populations of insect-eating birds, like the Black-and-white Warbler, Hermit Thrush, and Golden-crowned Kinglet.

Fish prefer undeveloped shorelines with natural vegetation



Map Key

- Highly Developed Shoreline
- Developed Shoreline with Dwelling
- Undeveloped Shoreline
- ✦ Fish Nests

As shoreline development increases, the number of bass and crappie nests decreases. (Reed 2001).

RESULT: Bass and crappies prefer to nest along shorelines with trees and shrubs because there is less sedimentation, cooler and more oxygenated water, more woody debris and emergent vegetation for shelter, and more aquatic insects for food.

Long-term Conservation for Loons

Loons Need Healthy Shorelines

Healthy shorelines provide loons with quiet nesting sites free from disturbances and promote high water quality for a healthy food source.



Throughout this pamphlet, we discuss why healthy shallow water zones and lakeshores with shrubs and trees are so important for a lake's food chain. Without healthy fish and insect populations, loons may reduce their use of a lake and/or be unable to raise chicks to fledging. By returning our shorelines to a more "wild" condition, loons and all other wildlife will benefit. Please take the time to learn how you can be a great steward of healthy shorelines.

Keep Your Waterfront Wild for Future Generations

- Talk and plan with your children and grandchildren.
- Avoid building near shore and retain as much undeveloped land as possible.
- Recreate the "buffer" zone by transplanting native trees, bushes and grasses from the nearby woods; it's free.
- Consider creating conservation easements. Easements can be tailored to meet your family's needs, including protecting a specific portion of your land.
- If you sell or subdivide, consider protecting undeveloped shoreline. Contact your local land trust for details.
- Protect loon nest sites and adjacent land within 1/4– 1/2 mile.
- Protect potential loon nest sites, including islands, marshes, coves, and uplands with small peninsulas or hummocks.

Stewardship of shorelines for wildlife requires individuals willing to take a lead and allow native plants to grow back.

across the Americas through research, monitoring and citizen engagement.

Vermont Loon Recovery Project

Uniting People and Science for Conservation

Since 1978, the Vermont Loon Recovery Project (VLRP) has worked closely with citizens, lakeshore owners, hydro dam operators, lake associations, state



agencies, and other conservation groups to secure the future of Vermont loons. Its strategic integration of monitoring, management, and public education has spurred solid gains in the number of breeding pairs and chicks that fledge.

To volunteer or report loon sightings,
email: Eric Hanson, VLRP Biologist
ehanson@vtcostudies.org

Contribute

VLRP is funded in part by Vermont Fish & Wildlife Department, but most of our funding comes from concerned citizens who wish to help the Common Loon in Vermont.

If you would like to contribute, please send a gift to the address below, or make an online donation at
www.vtcostudies.org

Vermont Center for Ecostudies
PO Box 420, Norwich, VT 05055

VCE is a 501(c)(3) nonprofit. All gifts are tax deductible.

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