Buffer strips can help protect lakeshores

Many people are drawn to lands that adjoin lakes and streams -- finding comfort and relaxation being near the water. We often unwind on the water or along shorelines--maybe daggling our feet in the lake or watching as a kingfisher dives for its evening meal.

But our lakes and streams are important for other reasons too. Ninety percent of all the living things found in our lakes and streams can be found along the shallow lake margins and shoreland areas "buffer strips."
In addition, many plants and animals on the endangered, threatened or special concern species list need to live all or part of their life cycles in this littoral or near-shore zone habitat. Often there are five times more critters living along the water's edge then compared to the adjoining uplands.

Woody and grassy vegetation along the shore provides an important source of energy for the aquatic ecosystem. Fallen twigs and leaves are broken down and digested by insects and microorganisms which in turn are consumed by fish and other predators at the top of the food chain.
"The near-shore zone in a lake is critical in the support of fish and aquatic life by providing a source of food, cover and diverse habitat structure," said Patrick Goggin, lake conservationist for the Vilas County Land and Water Conservation Department. "Most Wisconsin lake fish need to spend part of their life cycle in the near-shore zones for spawning and carrying out other essential life activities."

Fallen trees along lakes and streams enhance the quality of the fishery. Tree canopy cover normalizes water temperature extremes, provides shade and creates habitat diversity. Shoreland plants in the form of roots, grasses and other types of vegetation help maintain shore stability and prevent bank and soil erosion. Shoreland vegetation also traps polluted runoff and prevents silt from choking spawning beds and other productive areas within lakes and streams that are typically rich in aquatic life.

Many species of wildlife, from frogs and salamanders to a variety of birds and small mammals, are dependent on shoreline buffer strips. Shrubs and forested areas along shorelines are important nesting sites for several different kinds of songbirds while grassy areas provide nesting cover for waterfowl. Loons require undisturbed shorelines for nesting. Bald eagles require perch trees for nesting sites. Numerous amphibians and reptile species are dependent on areas of dense vegetation as a source of cover, shade and food.

Residential development can increase the flow of water and associated sediment and nutrients to a lake or stream. The buffer strip, if well vegetated, acts like a filter to trap excess sediment and nutrients and minimize water quality impacts from development.
"Densely vegetated shorelines can reduce the amount of nutrient-laden sediment entering the waterway and prevent the degradation of habitat in stream beds and near-shore zones," said Goggin.
Like sponges these lakeside buffer strips soak up runoff from rainstorms, preventing erosion.

"Our shorelands are the 'buffers' and the links between the water and the land; they are a living ecosystem, as well as a necessity for good water quality--far more than just a bunch of weeds," said Goggin. These shorelands are also a prized location for people to live and play, said Bob Wojtusik, a board member of the Three Lakes Waterfront Association.
"The number of people living near and using lakeshore areas and waters is at an all-time high, and it continues to increase. As more of us buy or build homes on the shores of lakes and rivers we threaten the very qualities that make the Northwoods special--beautiful lakes and clean water."

Shoreland research
Department of Natural Resources researchers Mike Meyer and Martin Jennings have been studying how shoreland development affects fish and wildlife that inhabit lake-side buffer strips. Their research shows just how vital undisturbed shoreland and near-shore habitats are to lake ecosystems (see sidebar).

“What we learned from our research was ironic,” said Meyer, a wildlife toxicologist and one of the study’s authors.
The rich ecology of the North Woods that draws tourists and home owners in the first place is now being threatened by development right along the shoreline that eliminates critical habitat.
“If we don’t increase our shorland protection, in five to 10 years we will lose many of those features that we now treasure about the North Woods.”
The study found that on developed lakes, people are clearing away the shoreline plants and aquatic vegetation that are critical in providing food and shelter for a whole host of critters and critical in sustaining the food chain for fish.
"It was unsettling to go from the din of a full chorus of frogs and toads on an undeveloped lake to a developed lake that was absolutely silent þand only two miles apart," he said

The researchers listened for calling frogs and found, for example, that undeveloped lakes averaged one frog per every 126 feet of lakeshore, compared to one frog per every 220 feet for developed lakes and one frog per 470 feet on very densely developed lakes.

They also found dramatic differences in plant cover: shrubs covered 64% of the shoreland at undeveloped lakes and 16% at developed lake; trees with leafy canopies covered 35% of the shoreland at undeveloped lakes versus 22% at developed lakes.

Many of the birds the researchers counted at the developed lakes were species such as robins, goldfinches, grackles, brown-headed cowbirds and mourning doves -- birds that prefer human-dominated habitats. Conversely, most birds at undeveloped lakes were species such as thrushes, warblers, and other migrating birds.

Choose right plants
There is much that people can do to balance the use of shorelands with the needs of lake and river life, according to Goggin.
“Placement of natural vegetation with varying colors and textures at the waterfront will provide a rich mosaic to frame your lake views and provide privacy, as well as providing a functional buffer to filter runoff pollutants and support wildlife habitat,” said Goggin. “Yes, it can even be done on highly developed waters with manicured lawns! It’s not about planting a ‘jungle’ in the backyard or propagating ‘weeds.’ It is about choosing the right combination of native plants that will allow you to enjoy your property as well as to restore other functions lost from you shoreland.”
Goggin said people often purchase property on the waterfront and take suburban lifestyle concepts with them, not realizing the negative impacts of their land-use decisions.
“One may be tempted to clear out the natural vegetation and create the familiar, urban environment,” he said. “However, lakeshore property owners have a unique opportunity to be environmental stewards, and at the same time protect their investments by maintaining natural buffer strips. We need to ensure that future generations of home owners will continue to be attracted to North Woods lakeshore property because of its natural beauty and water quality.”
Education and technical assistance about natural buffer strips and their potential restoration is available from the county Land and Water Conservation Department.

Sidebar:

Lake-side buffer strips for frogs, birds and plants

Green frogs are an excellent indicator of healthy near-shore habitat. Male green frogs establish breeding territories within two feet of a lake's edge and defend it against other breeding males. During the breeding season (early June-late July) researchers survey green frogs on 24 developed and undeveloped lakes in Vilas and Oneida counties. Results indicate that as lakeshore development becomes denser, green frogs decline in abundance.

During the summer of 1997, biologists measured the **native vegetation** at 146 lake sites to compare the physical structure of vegetation along undeveloped shorelines with those along developed shorelines. Understory trees and shrubs were reduced to very low levels along developed shorelines.

Songbirds may also be affected by shoreland development. Meyer's results show that although the total number of birds has not changed, the species have changed. Less common neotropical migrant species like warblers and vireos have declined, while abundant suburban-style birds like blue jays and grackles have increased.

For more information see: WISCONSIN OUTDOORS AND CONSERVATION NEWS

http://www.dnr.state.wi.us/org/caer/ce/news/on/1998/on980210.htm