

Preserving Fish and Wildlife Habitat

Shorelands are a living bridge between the aquatic world of lakes, rivers, and wetlands, and the terrestrial world of woodlands and grasslands. As roads and houses creep into shoreland areas, the behavior, reproduction, and survival of animals can be affected as human activities and structures degrade the surrounding wildlife habitat.

A growing body of research documents these impacts -- but also that preserving and restoring shoreland plants and trees can lessen development's impacts.¹ Here are some examples:

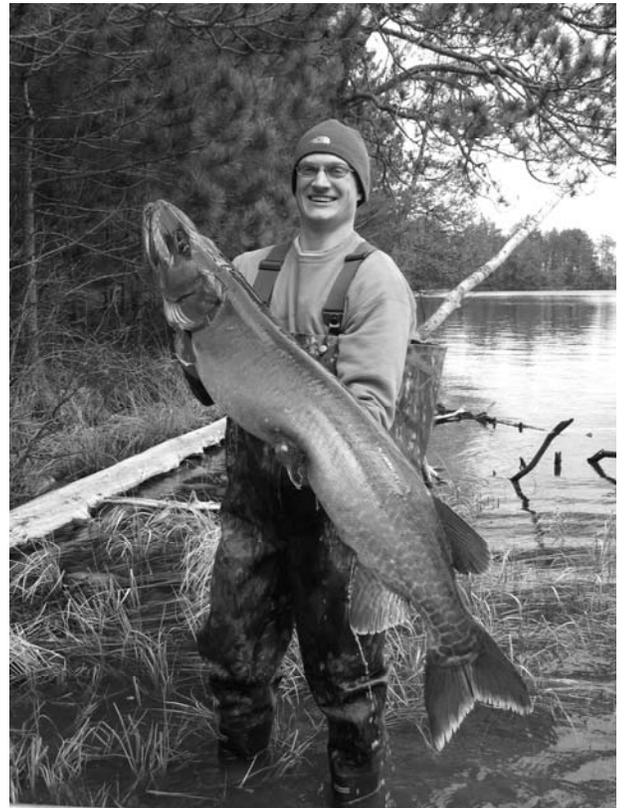
Fish communities

* Good naturally reproducing muskie populations have on average 20% of their shoreline developed while poor muskie populations have on average 40% of their shoreline developed.²

* Bluegill production is 2.5 times higher in lakes with no development versus developed lakes.³

* Trout populations were eliminated in watersheds with more than 11% hard surfaces like pavement, roofs, etc.⁴

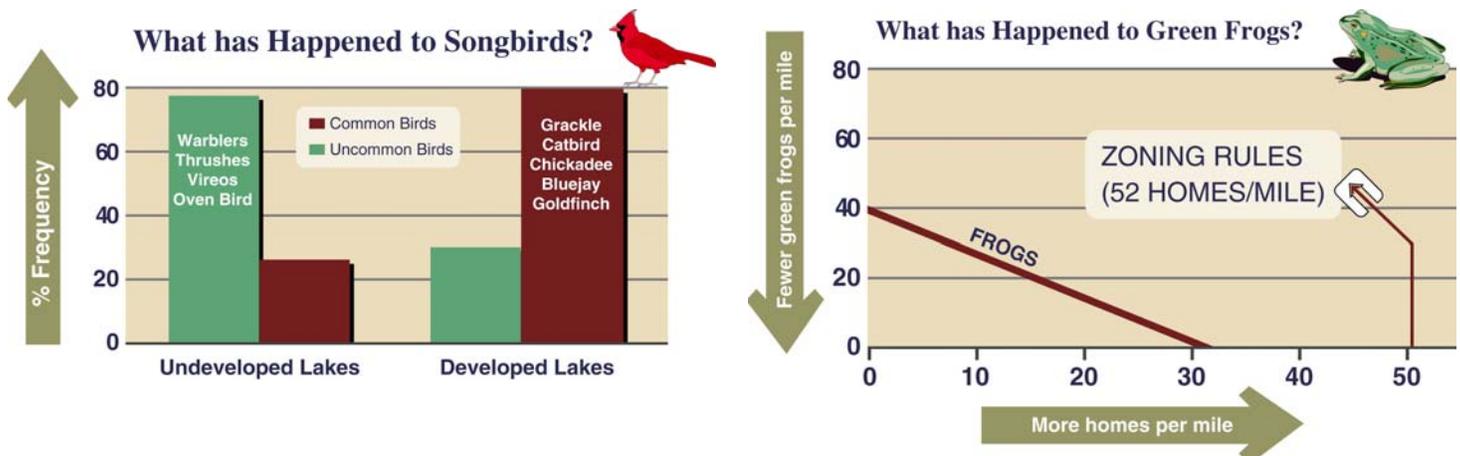
* The amount of woody cover, aquatic plants, and bank cover is 30-600% higher along natural shorelines versus riprapped shorelines, and 100-600% higher along natural shorelines versus seawalled shorelines¹⁰.



Songbirds and Amphibians

* Cowbirds, grackles and other common species became more numerous and songbirds less numerous along developed northern Wisconsin lakes, according to a 1990s study by DNR and Sigurd Olson Environmental Institute researchers comparing developed and undeveloped northern Wisconsin lakes.⁵

* Studies have shown that green frog populations decline with increasing density of shoreland development, and disappear altogether around approximately 30 homes per mile of shoreland.⁶ Current state standards allow over 50 homes per mile of shoreland in unsewered areas and over 80 per mile in sewerred areas.



¹Duerksen, C.J., D.L. Elliott, N.T. Hobbs, E. Johnson, and J.R. Miller. 1997. *Habitat Protection Planning: Where the Wild Things Are*. American Planning Association. Washington, D.C.

²Lake characteristics influencing spawning success of muskellunge in northern Wisconsin lakes. 2002. A.J. Rust, J.S. Diana, T. L. Margenau and C. J. Edwards. *North American Journal of Fisheries Management* 22:834-841.

³Patterns of fish growth along a residential development gradient in north temperate lakes. 2000. D. E. Schindler, S. I. Geib and M. R. Williams. *Ecosystems* 0:1-10.

⁴Watershed urbanization and changes in fish communities in southeastern Wisconsin streams. 2000. L. Wang, J. Lyons, P. Kanehl, R. Bannerman and E. Emmons. *Journal of the American Water Resources Association* 36(5):1173-1189.

⁵Shoreline Protection Study: A report to the Wisconsin State Legislature. 1996. M. Jennings, K. Johnson and M. Staggs. Wisconsin Department of Natural Resources. PUBL-RS-921-96.



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