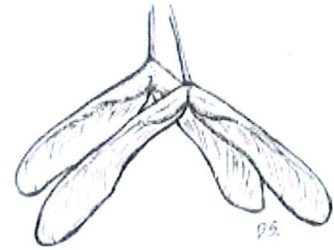




Lakeshores

Lakeshores are typically areas of high wildlife use and can play an important role for water quality improvement and slope stability.

Site Selection – Projects should be located where they will have the greatest functional water quality or habitat benefits (depending on program goals). When selecting projects for wildlife it is important to define specific species that will be targeted by the project. The [Minnesota Wildlife Action Plan](#) is a document that outlines a set of species of greatest conservation need for different areas of Minnesota. [Fact sheets](#) about habitat needs for specific species are also available. Buffer should be planned based on slopes, topography, watershed size, soils, vegetation cover, target wildlife species, adjacent corridors and natural areas, as well as landowner and partner input. Buffer widths should typically be a minimum of 10-30 meters landward of the ordinary high water level for water quality projects, and 30-100 meters for wildlife habitat projects depending on habitat needs of target wildlife species. Buffer widths should be planned based on slopes, soil types, target wildlife species, watershed size, and other factors related to landownership and site characteristics. Buffers should also cover at least 75% of the shoreline.



Achieving High Function - A variety of trees shrubs, grasses, sedges and flowers can be used along shorelines to provide wildlife and water quality functions. Shrubs and various bioengineering techniques are sometimes used if there is a focus on stabilizing soils along steep banks.



Medium to high diversity levels (20-40+ species) are typically planted to provide habitat for a variety of wildlife species ranging from pollinators to amphibians, reptiles and bird species. To support pollinators species should be planted that will provide nectar and pollen sources through the entire growing season.

Key Plant Species - Trees, shrubs, grasses, forbs, sedges, rushes and ferns are all commonly used as part of shoreline restoration projects. Species should be selected that are native to the area and well adapted to site conditions. The “Restore your Shore” website is an effective tool for species selection.

Trees:	Tamarack, Black spruce, Basswood, Oaks, Maples, Hackberry, Birch, Cherries
Shrubs:	Willows, Dogwoods, Viburnums, Elderberry, Alder, Serviceberries, Prairie plum, High bush cranberry, Buttonbush, False Indigo
Grasses:	Prairie cordgrass, Manna grasses, fowl bluegrass, rice-cut grass, Canada blue-joint grass, Big bluestem, Indian grass, Kalm’s brome, Prairie brome
Forbs:	Marsh milkweed, Butterfly milkweed, Culver’s root, Blue lobelia, Cup plant, Mountain mint, Grass-leaved goldenrod, Joe-pye weed, Boneset, Red-stemmed aster, Swamp aster, Marsh aster, Giant goldenrod, Giant-bur reed, Sweet flag, Wild iris, Common ox-eye, Black-eyed Susan, Stiff goldenrod
Sedges:	Tussock sedge, Bottlebrush sedge, Lake sedge, Slough sedge, Porcupine sedge
Rushes:	Torrey’s rush, Riverbulrush, Soft-stem bulrush, Spikeruses, Green bulrush, Soft rush

Source Recommendations - Local sources of seed and plants are recommended for shoreline projects, as these areas may have direct connections to natural plant communities where genetic interactions may be a consideration. The seed/plant source sequence outlined in the guide is recommended for shoreline projects.

Establishment - A variety of techniques are commonly used to establish shorelines depending on slopes, moisture levels, and erosion. Seeding is commonly conducted in upland portions of projects, while containerized plants are typically used along the edge of open water for more rapid establishment. Biologs are commonly used along the water's edge to break the force of wave and to prevent erosions as plants establish. A variety of bioengineering techniques may also be used for eroding slopes.

Maintenance - Upland portion of plantings may be mowed during the first couple years to suppress annual and biennial weeds and promote seedling growth. Hand weeding is commonly conducted in smaller lakeshore plantings to control weeds. Spot herbicide treatment may be used for perennial grasses such as reed canary grass but it is important that aquatically certified herbicides be used.

Information Sources -

A Soil Bioengineering Guide for Streambank and Shoreline Stabilization www.fs.fed.us/publications/soil-bio-guide/

Restore Your Shore <http://www.dnr.state.mn.us/restoreyourshore/index.html>



Shoreline restoration with native grasses, forbs, sedges and rushes