Improving Success With Bioengineering and Shoreline Restoration

The information contained in this fact sheet is not intended to replace the advice of a professional engineer or fish habitat biologist. The information also does not constitute an approval. Bioengineering may be effective for many stream bank and shoreline situations but it will not solve all soil erosion or slope failure problems. Success of a project depends on many factors such as proper design, plant selection, soil conditions, proper installation, maintenance (i.e., regular watering of plant material), weather conditions and impacts from animals. Working with professionals and contracting the services of bioengineering companies may be helpful and cost effective depending on the size and scope of the work you plan to undertake. The following tips can help you undertake a successful bioengineering project:

1. Check with local municipality, conservation authority or provincial regulatory authorities before beginning the project.
2. Consult with and/or contract a professional bioengineering company.
3. Research the a) normal, b) high, and c) low water elevations for the site.
4. Conduct work during an appropriate time of year to ensure success of plantings and dormant cuttings while protecting sensitive life stages of fish.
5. For Bioenginering projects use native plant material.
6. Fence out or protect plantings from animals and people.
7. Conduct regular monitoring and maintenance, especially during the first year when supplemental plantings may be needed.
8. Water plant material on a regular basis. Forgetting to water is the number one reason for planting failure.
9. The chosen stabilization method should follow the natural contour of the shoreline.

Working Together to Protect Fish Habitat

Help maintain the quality and quantity of fish habitat in our lakes and streams. For more advice on how to construct an environmentally friendly bioengineering structure, contact your local agency staff directly.

Remember to Protect Water Quality

If your work cannot be done in the dry (out of the water), sediment and erosion control measures around the entire work area may be required. Effective sediment and erosion control measures should be installed before starting work on your shoreline stabilization project to prevent entry of sediment into the water body and protect water quality. Inspect them regularly during the course of construction and make all necessary repairs if any damage is discovered. Consult with the agency staff for advice on how to install and maintain sediment control measures in order to protect water quality.

Technical

Contact information

Fisheries and Oceans Canada
www.dfo-mpo.gc.ca/canwaters-eauxcan

Canadian Hydrographic Service
http://biachss.bur.dfo.ca/danp/

Contact information – Ontario

If the property where the work will be carried out is . . .
Your first contact should be . . .

- in the Fathom Five National Marine Park and Bruce Peninsula National Park
  - Parks Canada Agency
    http:www.pc.gc.ca/index_e.asp
- in the Rideau Canal or Trent-Severn Waterway
  - Parks Canada Agency
    www.parkscanada.gc.ca
- in a federally owned small craft harbour
  - Fisheries and Oceans Canada (DFO) - Small Craft Harbours
    www.dfo-mpo.gc.ca/canwaters-eaux
- below the high-water mark in a public (Crown) land or on a private water lot
  - Your local Conservation Authority (CA). Where there is no designated CA, contact your local Ontario Ministry of Natural Resources office.
    www.conservation-ontario.on.ca
    www.mnr.gov.on.ca
- above the high-water mark but within a regulatory flood plain
  - Your local CA
    www.conservation-ontario.on.ca
- above the high-water mark and is on private property
  - Approvals may be required from your local CA if the structure is within the flood plain or cut-fill regulated line
    www.conservation-ontario.on.ca

For more information, see the electronic version of The Shore Primer on our website listed below under "Contact Information", "Infocentre", "Guidelines and Fact Sheets".

Canada

Cette publication est également disponible en français.

Working together to protect and conserve Ontario's aquatic resources

Fisheries and Oceans Canada / Pêches et Océans Canada
www.dfo-mpo.gc.ca/canwaters-eauxcan

Parks Canada / Parcs Canada
www.pc.gc.ca

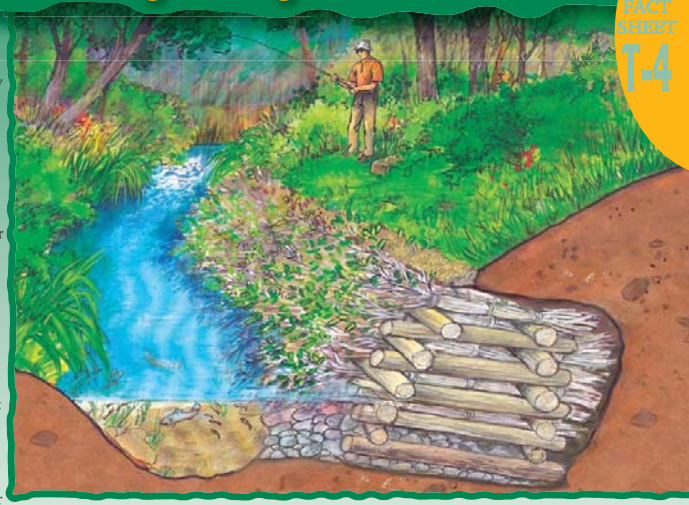
Ontario
www.mnr.gov.on.ca

Conservation Ontario
www.conservation-ontario.on.ca

Fish Habitat

& Bioengineering

FACT SHEET T-4



WORKING AROUND WATERS

EXERCISE BOOK Version 1.0

Shoreline areas provide habitat for a variety of aquatic organisms including fish. The nearshore area is where many fish species lay their eggs, feed, and seek protection from predators. Changes or disruptions to these areas can threaten their survival. If you own or lease waterfront property, you can help protect the fish populations in your lake or river by conserving and protecting fish habitat along your shoreline.

This fact sheet will help guide you through a few bioengineering techniques for stabilizing your shoreline in Ontario. Bioengineering is a "natural" or "soft" engineering technique. It incorporates the use of native plants together with natural materials in a project design. This fact sheet does not replace the advice of an expert and is meant only to provide information and improve awareness about bioengineering. Bioengineering techniques outlined in this fact sheet include the installation of live stakes, live fascines or wattles, brush layering, live cuttings or plantings, brush and prevegetated mats, live cribs and combining bioengineering methods.

Be Aware of the *Fisheries Act* and Other Legislation

When planning a bioengineering project, you should be aware of the Fisheries Act and other legislation applicable to works in and around water. The federal *Fisheries Act* provides for the protection of fish habitat. Under the *Fisheries Act*, no one may carry out any work or undertaking that results in the harmful alteration, disruption or destruction of fish habitat (HADD), unless authorized by the Minister of Fisheries and Oceans. In addition, the deposit of deleterious substances into water frequented by fish is also prohibited under the Act, and appropriate precautions must be taken to ensure that potentially deleterious substances (such as fuel, hydraulic fluids, oil, sediment, etc.) do not enter any waterbody. Other legislation that may also be relevant is outlined in Fact Sheet #1: Working Around Water? What you should know about Fish Habitat.

Violations under the *Fisheries Act* can result in substantial fines, and/or the risk of imprisonment. Persons found guilty of offences are often ordered to cover the costs of restoring the habitat at the site and/or pay a fine.

Contacts and Approvals

If your project involves building and modifying your shoreline using bioengineering techniques, the list on the back page will help you determine which agency you should contact. In some instances, you may have to contact more than one agency. Early consultation can save you from designing bioengineering structures that may not be approved. Remember you should obtain all approvals before starting work.

Information You Will Need to Submit

When seeking approvals or permits or approaching DFO for advice, you will likely be asked for the following information. It will save time if you have this information available when you contact any of the agencies listed on the back page.

- Your name, address, telephone number and if available a fax number and e-mail address
- Rationale for the project and construction method you have chosen
- Proof of ownership of the property where the work will be done and the most recent legal survey
- Water body name and location of the work site, including the lot and concession numbers, and part, or section, township, range and municipality
- A detailed description of the work site including a map, survey plan or sketch with dimensions indicating the location of existing buildings, shoreline structures, property lines and the high water mark
- Cross-sectional (side view) drawing (with dimensions) of proposed structures, indicating the current water level and high water mark, original unstable slope and proposed slope
- Sediment and erosion control plan before, during and after construction
- Plan view (bird's-eye) drawing of the shoreline to be stabilized showing length (m) of shoreline to be stabilized, existing shoreline and proposed works
- A list of any machinery required to complete the project
- Proposed start and completion date for the project
- Description of the substrate at the work site indicating approximate percentages of sand, silt, clay, rock, gravel, aquatic plant cover, or marsh etc.
- Any information you have about fish use of the site
- Several photographs showing the work site and surrounding shoreline
- A list of other agencies contacted

A site visit by agency staff may be necessary before your proposal can be approved.