

Lake Wise Info Sheet



Shoreland Best Management Practices for Lake-friendly Living.

Benefits

- Water Quality
- Wildlife
- Prevents Erosion
- Slow, Spread, Sink Stormwater
- Visual Appeal
- Low Cost
- Low Maintenance
- Small spaces
- Protection & Resiliency

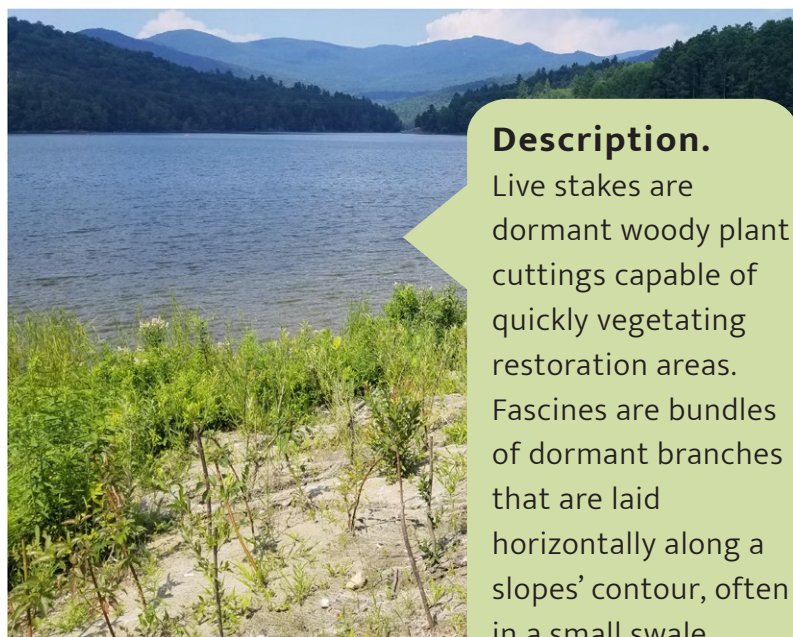
Acceptable BMP under the Vermont Shoreland Protection Act

Related Info Sheets:

- Lakeshore Buffers
- Bioengineering
- Turnouts & Rock Aprons

LIVE STAKES & FASCINES

Stabilize shorelands naturally



Live stake planting in early spring; Plant growth in first season.

Description.

Live stakes are dormant woody plant cuttings capable of quickly vegetating restoration areas. Fascines are bundles of dormant branches that are laid horizontally along a slopes' contour, often in a small swale.

Applicability.

Live stakes are a good, low-cost source of plant material for stabilizing banks and restoring shoreland vegetation. Live stakes can be installed on a wide variety of slopes and bank conditions and are often a good solution for steep and/or rocky slopes. They can be staked directly through erosion control blankets or areas stabilized with rock. Live fascines can provide further stabilization and rooting capacity on long and/or steep slopes. These vigorous native woody shrubs provide strong root systems for bank stability, protection from wind and wave erosion, stormwater filtering, and shade and food for fish and other aquatic species along shorelands.

Recommended plant species.

Native species like shrub willows and dogwoods are good for live stakes because they have adventitious roots, excellent root strength, and are easy to grow.



Red Osier Dogwood
Cornus/Swida sericea
3-8' tall, sun/part-shade



Silky Dogwood
Cornus/Swida amomum
3-8' tall, sun/part-shade



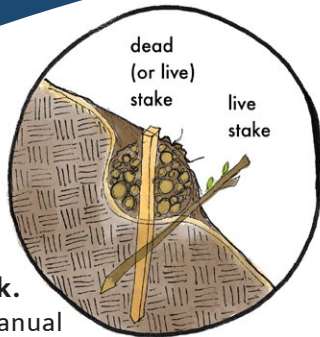
Pussy Willow
Salix discolor
5-15' tall, sun/part-shade

VERMONT

DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WATERSHED MANAGEMENT DIVISION



Graphics by Greenleaf Design, LLC



Section of a fascine >
staked into a steep bank.
Vermont Bioengineering Manual



How to.

Purchase vegetative cuttings. Live stakes and fascines can be purchased from some local nurseries, typically conservation nurseries. Make sure the plant species are native to Vermont when purchasing.

Collect vegetative cuttings. You can also harvest live stakes and fascines yourself. Only certain types of woody shrubs and trees can be reproduced via vegetative cuttings. Cuttings should be collected from mature plants, which does not weaken the plant and can actually invigorate its growth through pruning. Make sure to ask permission before taking cuttings from someone else's property.

For best results, live stakes should be harvested and planted during dormancy and while the ground is not frozen. This is typically between mid-October to mid-November and between mid-April and mid-May in Vermont.

1. Cut branches that are roughly ½ to 1 ½ inches in diameter at the thick end and about 2 to 3 feet long.
2. Make a flat cut at the tip of the branch, just above a bud or side branch node. Cut the base of the branch at an angle to make a point so that it is easier to drive the stake into the ground and to indicate the base. The live stake must be planted upright with buds pointing up.
3. Trim off all the side branches to help the stake from drying out. You can keep the side branches to be used during installation for additional plant material.
4. It is best to plant your live stakes within 24 hours after harvest. However, you can store them in cool, moist, shady conditions wrapped in wet burlap or newspaper in a plastic bag for up to 2 weeks. Soaking your live stakes in a bucket of water for a day or two prior to planting can increase survival and growth rate.

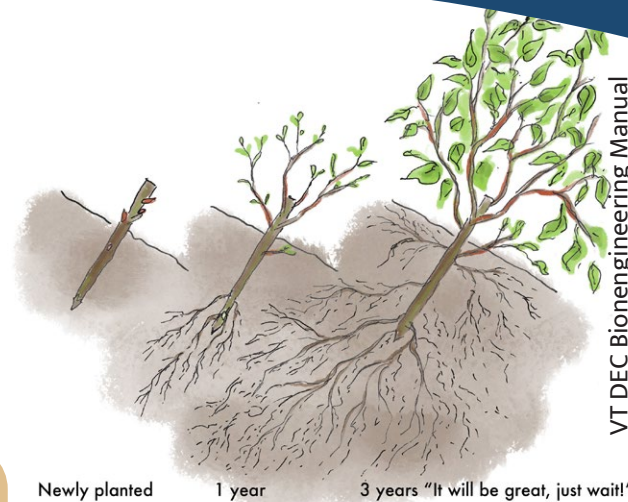
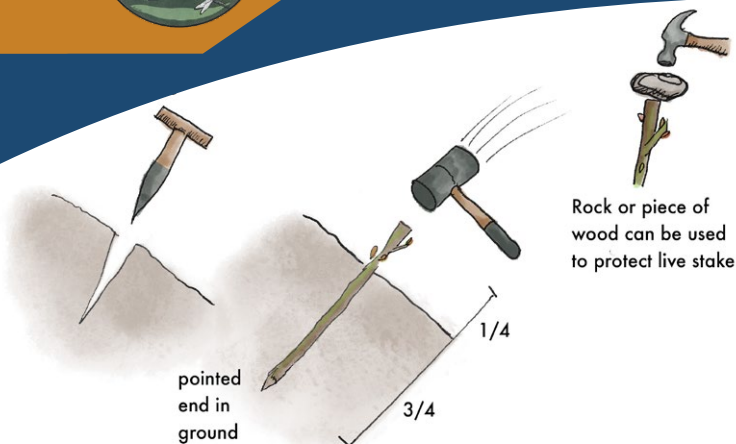
How to: Fascines.

Fascines are typically 3 to 10 foot long bundles of dormant branches that create a log-like structure to break up long and steep slopes and provide greater density of plant material and stabilization.

1. Dig shallow on-contour trenches about 1 to 3 feet apart from each other and at the same depth as the fascine width, typically 4 to 6 inches.
2. Lay fascines in the trench(es) and stake every couple feet with live stakes or biodegradable wood stakes. A wood stake through the middle and a live stake at the base can provide the greatest stability and plant cover. Partially cover with soil.

Watershed Consulting Associates





How to: live stakes.

1. Installing other erosion control measures may be necessary to stabilize steep or eroded banks, such as regrading the slope and installing biodegradable matting and fiber rolls. See the **Vermont Bioengineering Manual**.

Removing invasive species may be necessary prior to planting live stakes. See **Managing Invasive Species**.

2. Plant stakes about 1 to 3 feet apart in a triangular pattern, planning for about 70% survival rate. Planting more densely will speed up soil stabilization and establishment of vegetative cover. Optional: dip the base into rooting powder.

Drive the stakes (pointy side down) into the ground at a 90 degree angle, perpendicular to the ground, using your hands or a rubber mallet. If you only have a hammer, a rock or piece of wood can be placed on top of the stake to protect it as you pound it into the ground. If the live stake is damaged, prune the damaged part off. If the ground is firm or rocky, a piece of rebar or a dibble can be driven into the ground first to make an opening.

Sink the stakes 2/3 to 3/4 of the length into the ground, leaving a few buds sticking out from the exposed portion. If the stake will be shaded by surrounding vegetation, use longer stakes and/or leave up to 1/2 of the stake exposed.

3. Optionally, cover bare soil with a conservation seed mix and mulch with straw or hay to help prevent erosion and suppress weeds until the stakes are established.

Materials.

- ☀ Loppers, pruners, or hand saw
- ☀ Bucket of water
- ☀ Burlap or newspaper and plastic bag
- ☀ Rubber mallet or hammer
- ☀ Rebar if needed
- ☀ Optional: rooting powder
- ☀ Optional: conservation seed and straw or hay mulch

Maintenance.

To increase survival, water the live stakes once a week during their first growing season and during dry spells or whenever possible. Inspect and fill in new stakes in areas that did not survive. There may not be much above-ground growth at first, since root growth is the most important in the first season. It may take 2 to 3 years to start seeing branches and leaves fill out.

For more information...

- 💧 The Vermont Bioengineering Manual (2021)

