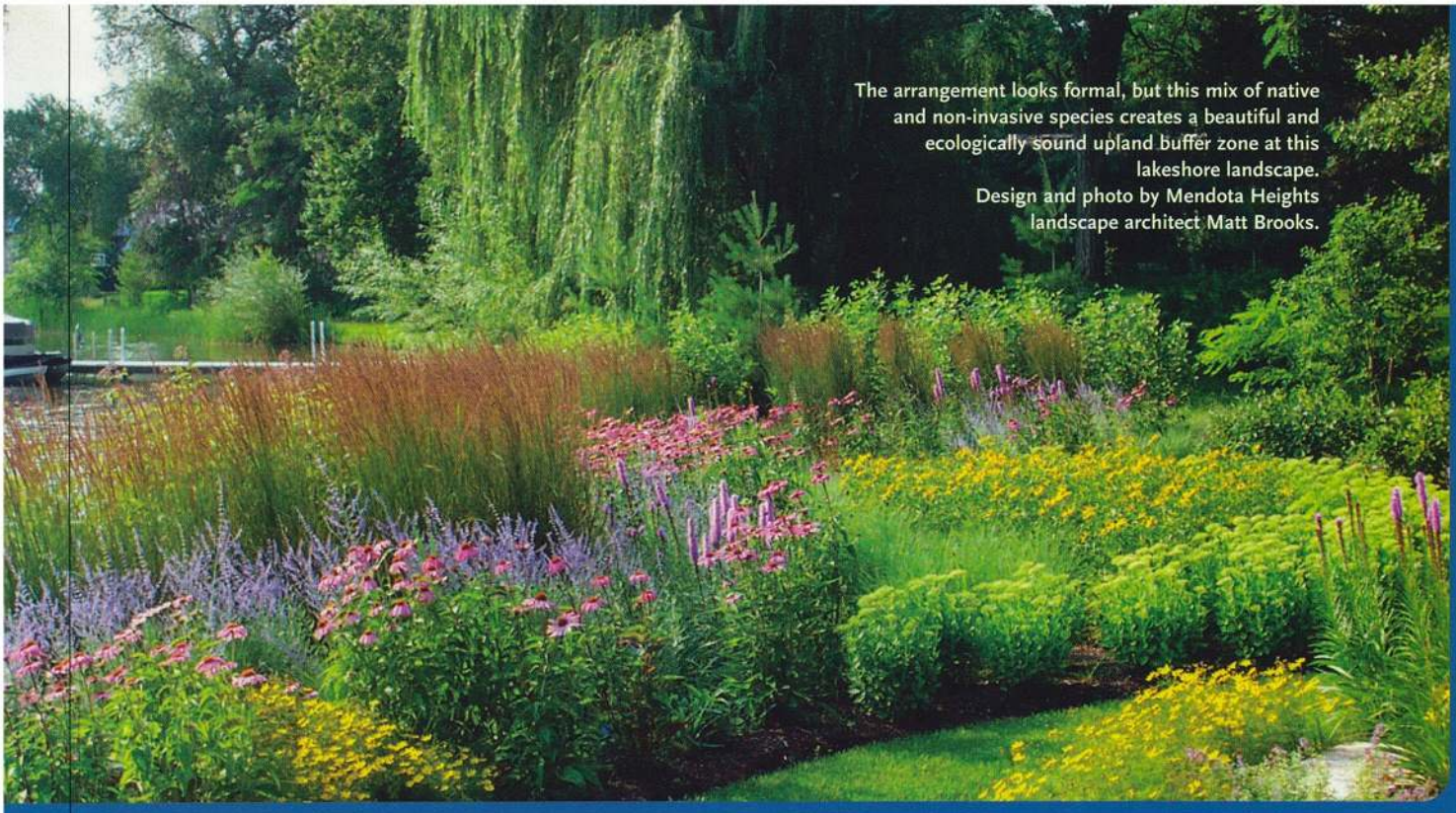


The arrangement looks formal, but this mix of native and non-invasive species creates a beautiful and ecologically sound upland buffer zone at this lakeshore landscape. Design and photo by Mendota Heights landscape architect Matt Brooks.

Love Your Lakeshore

Get rid of the grass (and geese!) for a healthier environment that looks good too.

By Felicia Parsons

Despite what your license plate may tell you, Minnesota is actually the land of 11,842 lakes — and that's only counting those over 10 acres. Wisconsin is the land of 15,081. Minnesota is also the land of tens of thousands of boats: one for every six people. Waterskiing was invented here. Ice fishing isn't just a sport, it's a way of life. There's no sense being shy about it: we *love* our lakes. Unfortunately, sometimes we love them to death.

Natural lakes are healthy: clean, clear, vibrant with wildlife. That's what draws us to their shores. For many of us, living on the lake is the ultimate goal. We come, we build our cabins and homes, lovingly tend our lawns, and one day notice the loons are gone. The fish too. And the herons. But not the geese. There are whole honking hordes of geese. It turns out geese love our lawns even more than we do. And what do geese do on those lawns? Well I'm not going to upset you with the details; let's just say that running barefoot through the grass is not recommended.

Breaking the Lawn

When folks moved onto the lakes, they brought their lawns with them. But the lawns we have come to love — or at least come to accept as the norm — are also a big part of the reason our lakes are degrading. Lawn grass roots are very short, and offer no filtering effect for chemicals and no erosion control along the water's edge. As Connie Fortin, founder and principal consultant with Fortin Consulting, Hamel, Minn. environmental consulting firm, says, "A lawn is like having a big sheet of plastic between your house and the lake." Everything — fertilizer, sediment, pollutants — just runs right over it and into the water, resulting in cloudy lakes and lost property due to erosion. But all the news is not grim. Our lakeshores can be reclaimed, our lakes restored to health, and anybody can do it.

First, Some Words for the Water-Wise

Lakescaping is the term used by the Minnesota Department of Natural Resources and others to describe the process of planting a lakeshore in a healthier, more lake-friendly style. Lakescaping requires some understanding of ecology. One way to think about lakeshore areas is in terms of three broad ecological zones, each defined by the sorts of plants that grow there:

The **Aquatic Zone** is just like it sounds: in the water. Plants here fall into the **emergent** (feet wet, heads dry), **submergent** (completely under water), and **floating-leaved** types. While

swimmers and boaters are sometimes annoyed by plants growing in shallow water, they provide habitat for fish and wildlife. Plant the aquatics, and the fish will come. Aquatic plants also reduce the impact of waves, thus helping decrease erosion.

The **Transitional Zone** is just like it sounds too: transitioning between the water and dry land. The soil here is usually moist to very wet, and the zone may be wide or narrow, depending on how the water level of the lake fluctuates. Typically the transitional zone extends from the edge of standing water to the **Ordinary High Water Mark** (that hard-to-define area which may not always be under water, but is when the water level is at its typical high point). A sand or gravel beach is one kind of transitional zone, but there are also wet meadows, fens, bogs, and swamps.

The **Upland Zone** is everything past the transitional zone, and can include mesic prairie (mesic meaning medium and referring to the moisture content), dry prairie, savanna, and various types of forest. Most Minnesota lakes were surrounded by forested upland zones prior to human settlement.

Finally, a distinction must be made between **Restoration** and **Replanting**. Restoration involves trying to plant exactly what was growing on your lakeshore before humans moved in. It entails examining historical records, talking to experts, and researching government-collected ecological data. It also means planting according to nature's design. Replanting your lakeshore involves removing the existing lawn and planting a buffer using appropriate species in a manner that may be designed any way that pleases you while meeting your ecological goals.

The Buffer Zone

One of the most important particulars to understand about lakeshore revitalization is the **Buffer**, or **Buffer Zone**. The buffer is simple in concept, but profound in effect: A densely planted area along the lakeshore—including the upland, transitional, and aquatic zones—the buffer not only looks lovely, it accomplishes much:

- Emergent and aquatic vegetation reduces property loss due to erosion by reducing wave impact caused by wind and boat wakes.
- The deep roots of the upland plants filter fertilizer and pesticide runoff, keeping the lake cleaner and clearer. Excess nutrients from fertilizer are the primary cause of algal blooms.
- Aquatic vegetation further removes contaminants and allows suspended soil particles to settle to the lake bottom.
- Fertilizer, pesticide, and herbicide use is reduced. Lawns are chemical-intensive; buffer plantings are self-supporting.
- Mowing time is decreased.
- Plantings provide shade, food, and hiding areas for desirable wildlife, including spawning areas for fish, nectar for butterflies, and food for birds.
- Plantings create a barrier that discourages Canada geese from congregating on the lawn.
- Many people think plantings will increase mosquitoes, but the opposite is actually true. Plant habitats encourage the presence of dragonflies, birds, and amphibians that love to eat those pesky bugs.

Authorities dispute how big a buffer is big enough. Everyone agrees though, the bigger the better. Some research says that to be effective a buffer zone should extend lengthwise across 75 percent of a property's water frontage, and widthwise at least 25 feet into the water and another 25 feet onto the land. The Wisconsin Shoreland Management Program (WDNR Chapter NR 115), defines what it calls a "vegetative protection area" from the Ordinary High Water Mark extending inland 35 feet. Some counties have zoning ordinances that require wider buffer zones.

How big your buffer should be depends on what you wish to accomplish. If you really want to create optimal wildlife habitat, research indicates that a planted zone should be at least 300 feet wide. But much smaller vegetative strips can still reduce run-off and sedimentation. Bottom line: Something is better than nothing, and any lawn replaced by a buffer planting is a good thing.

Designing Your Lakeshore

Establishing a buffer is the primary objective of lakeshore rehabilitation. As far as the turtles, fish, and birds are concerned, what the end result looks like isn't nearly as important as the restoration of habitat and the preservation of water quality. Humans, however, are aesthetic creatures. We want our landscapes to look good. Luckily, a healthy lakeshore can also be a beautiful lakeshore, if attention is paid to design principles as well as ecological requirements.

PHOTO BY FORTIN CONSULTING

Protection for newly planted vegetation is critical, or wave action and surface runoff will uproot the plants before they can establish. Here, Carolyn Dindorf of Fortin Consulting works with a coir roll and erosion control fabric.

Know your site

Ask yourself many of the same questions you would consider when starting any new gardening or landscaping project: What kind of soil is present? What is the sun exposure? How big is the site? Where are the existing structures or views you wish to preserve?

Consider lake-specific issues as well, such as the degree of slope to the water, the level of the Ordinary High Water Mark, boat traffic, the degree of wave action, and the presence of any existing erosion-control elements such as riprap.

For those of us for whom the challenge is just getting started, help is readily available. The *Restore Your Shore* CD put out by the Minnesota DNR includes an excellent site-assessment worksheet, and assistance in the planning stages is available from many watershed district offices — often free of charge — and private firms specializing in lakeshore restoration.

Know the law

In most states, navigable waters are government property, and the land adjoining lakes and streams is subject to a variety of laws and zoning requirements. Some lakescaping activities require the landowner to obtain a permit from their local government or the DNR. In this case, better safe than sorry—check first. Even upland landscaping can be subject to local zoning laws, and any work done below the Ordinary High Water Mark may fall under the jurisdiction of the DNR. Information on DNR permits can be found at: www.dnr.state.mn.us/permits/water/needpermit, or at dnr.wi.gov/org/water/fhp/waterway/ in Wisconsin. If you don't know your watershed or aren't sure who you need to talk to in local government, call your county zoning office.

Another good reason to check with your local watershed is that some offer financial incentives to property owners wishing to improve their lakefronts. The Prior Lake-Spring Lake watershed district, for example, will share the cost of 50 percent of the plants used in an approved lakeshore planting, up to a maximum of $1,200. Similar programs are available in other districts.

Formulate a plan

The planning portion of a lakescape is a lot like designing a landscape or a garden: many of the same techniques apply, and there are endless books and articles on how to make site plans. If you like diagrams, then make a diagram, plotting out the positions of buildings, trees, tire swings. If you're more a seat-of-the-pants type who prefers to walk your property, pacing out areas according to how you plan to use them, that can work too. The point is to understand how you want to use your property—where you want to play lawn sports, where you want to sit and relax, the best place for a path to the water from the house, and where you want the buffer plantings—then start envisioning the possibilities. Keep in mind that not all glorious visions need to be implemented over the weekend. It's OK to dream large and work small.

The details of design

Many people fear replanting their lakeshore because they worry about what the neighbors will think, or they don't want their valued property to look like an abandoned lot. Designing around a lakeshore does require a degree of ecological understanding not normally associated with gardening or landscaping, but the aesthetic principals of design remain intact: color, form, line, and texture can all be used to good effect:

Color: L. Peter Macdonagh, a principal designer at The Kestrel Design Group, Inc., and an instructor in the University of Minnesota landscape architecture program, says that for many people, color is the key when implementing a design that looks intentional rather than haphazard. Flowers are an obvious choice, but color can also be appreciated more subtly in variations in bark and leaf tones.

Well-defined edges: An attractive post and rail fence dividing the buffer planting from the lawn serves as a visual definition of space. A hedge of shrubs, grasses, or mounding perennials can perform the same function.

Form and texture: Give careful consideration to overall plant silhouette, height, and visual weight, as well as to such details as leaf shape, winter texture, and other considerations.

Repetition/grouping: Plants can be arranged formally, in geometric patterns, or randomly in a naturalistic style. Techniques such as drift planting are as appropriate to buffers as to front yard borders.

Site lines: Vegetation should be planned to frame attractive views and to direct the viewer to that mother of all focal points: a beautiful lake. Likewise, vegetation can be used to block views of the neighbor's purple pontoon boat and disintegrating dock. Carolyn J. Dindorf, coauthor of *Lakescaping for Wildlife and Water Quality* and primary consultant for Fortin Consulting, recommends placing shorter plants along view lines, with taller plantings along the outer edges to achieve the framing effect.

While many people prefer naturalistic, curving bed lines, you may not, and there's no law that says buffer zones can't

Before: a lawn slopes to the lake.

The buffer planting beds and path are laid out.

Once the sod is killed, the plants are planted.

After: a paradise for butterflies and birds.

PHOTOS BY FORTIN CONSULTING

Erik Olsen's Favorite Lakescaping Plants

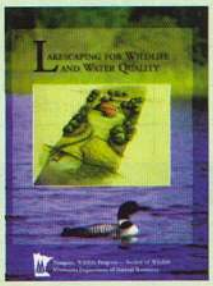
Erik Olsen, an award-winning designer for Out Back Nursery of Hastings, Minn., has compiled a list of reliable lakescaping favorites for the upland and transitional zones: "The plants I selected are based on their overall ability to adapt well to a wide variety of soil types, soil moisture, inherent beauty, and availability in the nursery trade."

Scientific Name	Common Name	Habitat Aquatic – A Transitional – T Upland – U	Sun	Zone	Height (ft)	Flowers
Perennials						
Acorus calamus	sweet flag	A, T	☼	4-9	2-3 1/2	yellow/green
Anemone canadensis	Canada anemone	T, U	☼ ◐	2-6	1-2	white
Aster novae angliae	New England aster	T, U	☼	4-8	3-5	violet, pink
Aster umbellatus	flat-topped aster	T, U	☼	3-8	3-4	white
Chelone glabra	turtlehead	T	☼ ◐	3-8	1-3	white
Eupatorium maculatum	spotted Joe Pye weed	T, U	☼ ◐	3-8	3-6	pink
Galium boreale	northern bedstraw	U	☼ ◐	4-8	1-2 1/2	white
Gentiana andrewsii	bottle gentian	T, U	☼ ◐	3-7	1-2	blue
Helenium autumnale	sneezeweed	T, U	☼ ◐	3-8	2-5	yellow
Iris versicolor	northern blue flag iris	T	☼ ◐	3-9	1 1/2-3 1/2	blue/violet
Liatris pycnostachya	prairie blazing star	T, U	☼ ◐	3-9	2-5	lilac/purple
Onoclea sensibilis	sensitive fern	T, U	◐ ●	4-8	3-4	NA
Physostegia virginiana	obedient plant	T, U	☼ ◐	3-9	2-4	pink, white
Pycnanthemum virginianum	mountain mint	T, U	☼ ◐	3-7	1-3	white
Verbena hastata	blue vervain	T, U	☼	3-8	2-5	purple/blue
Vernonia fasciculata	ironweed	T, U	☼ ◐	4-9	3-6	purple
Veronicastrum virginicum	Culver's root	T, U	☼ ◐	3-8	4-7	white
Grasses, Sedges, Rushes, Reeds						
Andropogan gerardii	big bluestem	U	☼	4-9	4-6	reddish
Carex crinita	fringed sedge	T	☼	unk	2-3	NA
Carex lacustris	lake sedge	T	☼	4	3-4	NA
Carex scoparia	oval sedge	T	☼	unk	1/2-2 1/2	NA
Eleocharis acicularis	spike rush	T	☼	3	<1/2	NA
Eleocharis palustris	great spike rush	T	☼	3	1 1/2-3	NA
Juncus torreyi	Torrey's rush	T, U	☼		1-3	NA
Panicum virgatum	switchgrass	U	☼ ◐	4-9	3-5	NA
Scirpus atrovirens	dark green bulrush	T	☼	4	4-5	NA
Scirpus cyperinus	wool grass	T, U	☼	4-9	3-6	NA
Sparganium eurycarpum	giant bur reed	A, T	☼	unk	2-5	NA
Spartina pectinata	cord grass	T, U	☼	4-9	3-6	NA
Woody Plants						
Cornus amomum	silky dogwood	T, U	☼ ◐	4-8	5-12	white
Cornus sericea	red-twigged dogwood	T, U	☼ ◐ ●	2-7	5-9	white
Ilex verticillata	winterberry	T, U	☼ ◐	3-9	6-15	white
Sambucus canadensis	Elderberry	T, U	☼	3-9	8-12	white
Viburnum trilobum	American highbush cranberry	T, U	☼ ◐	2-7	8-12	white

RESOURCES:

The software:
Restore Your Shore
If you can only get one reference tool — particularly if you live in Minnesota — get this one. The searchable plant database alone is worth the price of admission. You can find appropriate plant species based on your county, the habitat you're looking to plant in, and the height of the plant you'd like to use. Other highlights include a list of invasive plants, a site assessment worksheet for planning your shoreline restoration, tips for calculating the materials you'll need based on the size of your site — including a cost estimate worksheet — examples of real-world restorations from before to after, and even some shoreline sing-along songs.

Minnesota's Bookstore
660 Olive St.
St. Paul, MN 55155
tel. 651-297-3000
800-657-3757
TTY: 651-282-5077 or 800-657-3706
www.comm.media.state.mn.us/bookstore/bookstore.asp



The book:
Lakescaping for Wildlife and Water Quality
by Carrol L. Henderson, Carolyn J. Dindorf, and Fred J. Rozumalski
Written in 1999 and produced by the Minnesota DNR, *Lakescaping for Wildlife and Water Quality* remains the definitive text on the subject of lakescaping. Many professional landscape designers and installers refer to it as their bible, and while it covers the topic with accuracy and detail, it remains very accessible to the novice gardener and lakeshore property owner.

MSHS Bookstore
www.northerngardener.org/bookstore.htm
1755 Prior Ave. N.
Falcon Heights, MN 55113-5549
651-643-3601 or 800-676-6747
Fax: 651-643-3638

The plants:
Out Back Nursery
15280 110th St. S.
Hastings, MN 55033
651-438-2771
www.outbacknursery.com/

(continued on page 43)

PHOTO BY FORTIN CONSULTING

Plant them and they will come. A black swallowtail butterfly visits a cup plant *(Silphium perfoliatum)*

be linear and formally laid out. Paths to the water are the one exception — they should curve to avoid becoming a water runway from the lawn to lake.

Dense planting is key, regardless of whether you plant in drifts, in blocks, or in scattter-shot style. Widely spaced plants with miles of mulch between them do not make a good buffer.

Impervious surfaces — concrete, flagstone — encourage run-off and should be kept to an absolute minimum.

Put your plan into action
Site preparation and planting for a buffer is a familiar process to gardeners, with some tweaks for the aquatic and transitional zones.

Layout the beds by marking their perimeters (use marking paint, garden hose, string, the usual suspects) noting where upland meets transitional zone, mark any paths or features.

Kill the sod (herbicides, smothering, sod cutters) and any weeds or invasive species on dry land. If you're going to use herbicides, be certain that you choose a type appropriate to your situation and follow the label directions exactly, and only apply these chemicals in upland areas. Killing plants in the water requires a DNR permit.

Planting can be done with plugs, bare root plants, and potted plants:

- Aquatics should be planted in late spring after the water temperature has warmed above 65 F.
- Plant to the correct soil depth, so that the top of the root ball is at the soil surface.
- Where geese and ducks are a problem install temporary fencing to keep them out of the planted areas.
- Be sure to label your new plants. You'll need to weed around them for the first year or so and you don't want to yank out all your earlier efforts.

Erosion control is critical to success:

- Protect your upland plants with bark mulch.

PHOTO BY FORTIN CONSULTING

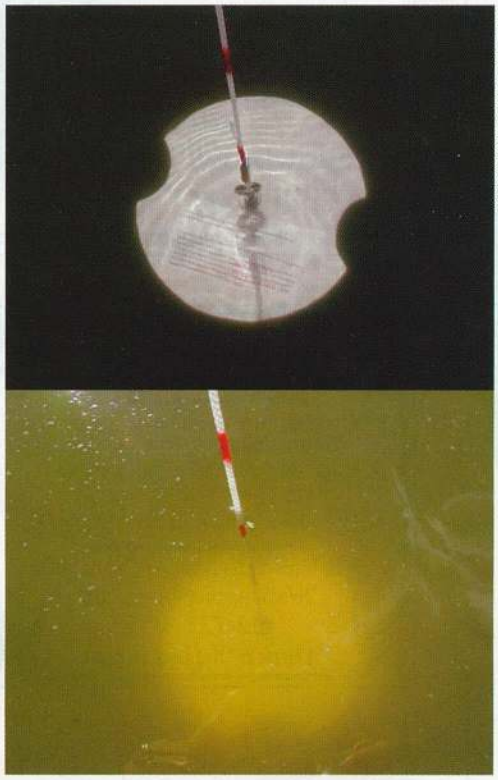
Arrowhead (*Sagittaria latifolia*) produces edible potato-shaped rhizomes and should be planted with leaves both above and below the water surface. Fallen logs provide excellent habitat for turtles.

PHOTO BY FORTIN CONSULTING

Native plantings such as blazing star (*Liatris aspera*) attract insects, birds, and other beneficial wildlife to lakeshores as well as protecting water quality.

- Protect your transitional plants with biodegradable erosion-control fabric such as coir mesh.
- Protect your aquatics with wave breaks such as coir logs. This may require a DNR permit.

Erosion control allows the plants to establish—without it, planting is a waste of time. Wave action will overcome new vegetation and wash away all your work. By the time the erosion control measures biodegrade, the root systems will have firmed in and the plants will begin their task of shore stabilization. Along with weeding, maintenance during the first year includes watering regularly as well as replanting and reanchoring plants that have become uprooted.



PHOTOS BY FORTIN CONSULTING

A Secchi disk is a device for measuring water clarity. Clarity decreases as sediment and algae increases. Buffer plantings reduce the runoff that causes water quality in our lakes to degrade.

Go native?

The discussions these days, with such terms as native varieties, invasive species, dangerous exotics, can leave a person feeling as though they've fallen out of the benign world of gardening and into some dark underbelly of political doom. Gardening suddenly feels fraught with menace. We thought we were planting a pretty flower, making the world a lovelier place, and it turns out we were wreaking havoc on the entire biosphere. Ecologists are telling us we need to learn to love plants — they call them "natives" — we used to call weeds. How do we cope? More importantly, what do we plant?

There are those who argue that only native plants should be used anywhere, and others who have no concern at all for the ecological sensitivity of a landscape. Connie Fortin, a strong proponent of native plant usage, suggests that if you are reluctant to devote your property entirely to natives, it is still a good idea to increase the native plant population the closer you get to the water. It is illegal in many places to plant non-natives below the water line. Lakeshores are sensitive habitats, and should be treated accordingly. Closer to the house —possibly even incorporated into a sensitively designed upland buffer—is the place for horticultural specimens chosen for their non-invasive habits. But in and near the water, natives are your best choice. They require no pampering and most have the deep root system necessary for an effective buffer planting. Luckily, there are many lovely specimens—graceful, beautiful, bone-hardy, and far from weedy—from which to choose, and an ever-increasing number of nurseries making them available to the public. ng

Felicia Parsons is a Prior Lake, Minn.-based horticulturist and writer.