Shoreline Buffer Restoration

A Guide for Landowners

Burnett County Land and Water Conservation Department

Siren, WI

May 2008

Prepared By

Harmony Environmental	Amery, WI
Leaning Pine Native Landscapes	South Range, WI
Design/DTP – Karla Schnorf	Minneapolis, MN
Cover Art – Sarah McCuker	Superior, WI

Table of Contents

Restore Your Shore

With shoreline development at an all time high, natural shorelines are becoming a scarce resource in northern Wisconsin. From 1990 to 2000, annual building permits in Burnett County increased by ninety percent. A recent survey estimated that only about thirty percent of the county's shoreline parcels have an adequate natural buffer. There are many compelling reasons to reverse this trend:

Keep the water clean

A thick cover of vegetation and an intact duff layer of leaves and pine needles serve to slow water flow allowing runoff water to soak into the soil or be filtered by the vegetation. The deep roots of native grasses and shrubs help to hold soil in place. Soil carries nutrients, which are better kept on your shore than in the lake, where they can fuel algae growth.

Provide a home

Diverse mixtures of native trees, shrubs, and groundcovers are important for the creatures that make their homes near the water. Trees and shrubs along the water's edge provide shade for fish and places for shoreline birds to nest and find food. Plants in the water and near the shore provide cover for fish, frogs, salamanders, turtles, and the aquatic insects that feed them.

Think about how your waterfront experience is enhanced by the sight of a loon or heron on the water, a turtle sunning itself on a log, or the call of a frog at dusk. All of these creatures depend on vegetation near the shore.

Create natural beauty

Buffers of natural vegetation screen views to and from the lake and create a wonderful sense of privacy. Take a look at your property from the water. Does it create the northwoods atmosphere you were looking for when you bought property here?

What is a Shoreline Buffer?

A shoreline buffer is a zone of native vegetation that extends from the ordinary high water mark inland. A buffer restoration seeks to restore functions originally provided by the natural vegetation.

Do Your Part

Many landowners are deciding to voluntarily restore shoreline buffers. These landowners and their human and animal neighbors will be reaping the benefits for years to come. Financial incentives are available to help pay for plants, materials, and labor for planting shoreline buffers. Additional incentives are available when you agree to permanently protect your shoreline. Call the Land and Water Conservation Department or visit the Burnett County web site for details.

Burnett County Shoreline Buffer Restoration

Burnett County requires that a natural zone of vegetation at least 35 feet deep be left intact next to the water. However, on many shoreline parcels, the protective zone of vegetation has been removed or greatly altered. To help mitigate the impacts that occur when structures closer than the allowed setbacks are enlarged or altered, the buffer zone must be reestablished.

Using This Guidebook

The landowner guidebook is designed to help you restore your shoreline buffer. It includes a summary of county buffer standards; instructions for preparing the site, planting, and maintaining the buffer; and information about plant selection and sources of plants, seeds, and supplies.

Shoreline Buffer Restoration and Preservation Standards

Standards have been developed to ensure that adequate natural buffers are planted and preserved. The standards apply to both voluntary sites where cost sharing and/or incentives are provided and to sites where a buffer restoration is required for permitting modifications to a nonconforming structure. The standards are summarized below. Copies of the complete standards are available from the Land and Water Conservation Department.

Shoreline buffer restoration and preservation standards are available from the Burnett County Land and Water Conservation Department.

The vegetation protection area (the buffer) must consist of a mix of native trees, shrubs, and groundcovers. A 35-foot minimum buffer depth is established in state rule. Burnett County has clarified these requirements in recent revisions to the Shoreland Zoning Ordinance. There are three major zones of a buffer.

"No-Touch Zone"

Once the buffer is established, vegetation removal and land disturbing activities are prohibited in this area that begins at the ordinary high water mark and extends 35 feet inland. Since mowing, raking, and cutting trees are not allowed; minimal labor is needed to maintain the no-touch zone. Removal of dead trees or limbs is allowed only if there is a significant safety hazard, and permission from the county Zoning Office or Land and Water Conservation Department is required.

The "no-touch" or no-mow zone is an area where natural vegetation is allowed to grow.

"Minimum Maintenance Zone"

Limited pruning and mowing are allowed in this area. In general, the minimum maintenance area begins 35 feet from the ordinary high water mark and extends inland. Exceptions to this rule are made for some setbacks as described under "buffer depth." A minimum maintenance zone must have a groundcover, but lawn grasses are acceptable here. Trees and shrubs may be less dense than in the no-touch zone.

"Viewing/Access Corridor"

The viewing/access corridor extends from the lake inland, more or less perpendicular to the shore. It may be up to 30 feet wide. Clear cutting, filling, grading, and other land disturbing activities are not permitted in the corridor. Limited tree removal, pruning, and mowing are allowed. Walkways, pathways, and stairs must be located in the corridor; and piers, wharfs, and lifts must be placed in the water immediately in front of the corridor. Viewing corridors on adjacent properties must have a minimum 30-foot separation of buffer area between them.

Extent of Buffer

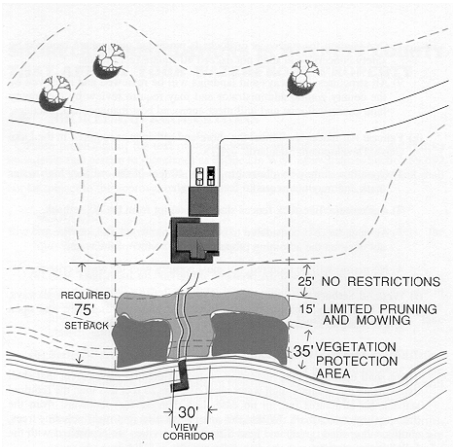
Buffer length

The buffer must extend the entire length of the lot along the shoreline except that a single viewing/access corridor up to 30 feet wide is allowed.

Buffer depth

Building setbacks greater than 60 feet

The buffer must extend from the ordinary high water mark to within 25 feet of the structure (for nonconforming setbacks) or to within 25 feet of the required structure setback. The no- touch zone must be at least 35 feet deep. The remainder may be minimum maintenance zone.



REMOVAL OF SHORELINE COVER

Building setbacks between 50 and 60 feet

The buffer must extend from the ordinary high water mark, 35 feet inland. The no-touch zone makes up the entire buffer.

Building setbacks less than 50 feet

The buffer must extend from the ordinary high water mark, 35 feet inland. The no-touch zone must extend to within 15 feet of the primary structure.

Re-establishing Native Vegetation

Selecting the appropriate technique for establishing native vegetation depends on an assessment of the existing vegetative cover and site conditions. There are two general techniques to choose from to establish native vegetation.

Natural Recovery

Native vegetation will recover naturally when the site is protected from disturbance and where adequate seed and/or root sources and appropriate site conditions are present. Natural recovery, or "no-mow" zones are encouraged to save time, effort, and money. Wet shoreline margins, where turf grasses are not well established, are particularly suited to natural recovery. Results may be slower than for planted buffers, but there is virtually no cost, and the end result may appear more natural.

The cheapest way to restore a shoreline buffer is to simply allow vegetation to grow.

An area where a dense growth of turf grasses has been maintained for several years is usually not well suited to natural recovery. Turf grasses frequently out-compete native vegetation, and the area may lack native seed sources. Areas of bare sand may lack native seeds and plant roots and may take many years to revegetate naturally. Areas with extensive stands of invasive weeds should also not be left to recover naturally. Web sites and other resources to assist with identification of invasive weeds are included at the back of this book.

Accelerated Recovery — (Planted Buffers)

Native vegetation must be seeded or planted in areas not well suited to natural recovery or where quick results are desired. Planting standards are established for native tree, shrub, and groundcover layers in the buffer restoration standards. The focus of this guidebook is to provide instructions for planted buffers.

On many sites, natural and accelerated recovery techniques can be combined. For example, natural recovery might be used along the shoreline where there are native plants, and accelerated recovery used for the remainder of the restoration, where turf grasses dominate.

Why Choose Native Plants?

Native plants have evolved for thousands of years with the local soils, climate, and shoreline environment. They provide the essential elements of food, shelter, and space for wildlife and fish species. Stands of native plants also act as an efficient sponge, soaking up rain and snowmelt runoff and maximizing groundwater recharge. Many have deep root systems that will stabilize soil and prevent erosion. There are many beautiful native plants to choose from to enhance the aesthetic value of your property. Once established, native plants will require little or no maintenance.

Addressing Your Concerns

You are likely to have a variety of questions and concerns about restoring a shoreline buffer. Your questions are addressed when you receive assistance with a shoreline restoration design.

Will there be a place to swim?

It is possible to leave a place for swimming and to allow a clear line of sight to see children that are near the water.

How will the restoration affect my view?

Restoration plantings can be arranged to frame rather than block desirable views.

Will mosquitoes increase?

Mosquitoes increase with added standing water, not increased vegetation.

How soon can I expect results?

The time it takes to see results varies with soil moisture, nutrients, and sunlight. Planting seedlings rather than seeding an area generally speeds up results. And, of course, planting larger trees and shrubs results in a more finished project, sooner.

Fire Prevention

Portions of Burnett County are prone to forest fires. Popular residential and recreational lakes and rivers are located in these areas in Northern Burnett County. Conifer (evergreen) trees are especially susceptible to fire. To reduce fire danger, avoid planting conifers close to structures – especially when planting on the landward side of the house.

Runoff Control

Runoff should be maintained in sheet flow (not channels) to the greatest extent possible. The very sandy soils in Burnett County infiltrate water quickly when runoff is directed to areas where it can soak into the ground.

Runoff from impervious surfaces (such as driveways and patios) and roof gutter downspouts should be directed to maximize infiltration. Rain gardens are one option for infiltration. Rain gardens are sunken areas planted with flowers designed to soak in runoff water. This practice is explained along with other possibilities for runoff control in the booklet: ***Controlling Runoff and Erosion From Your Waterfront Property***. It is available from the Land and Water Conservation Department.

Pay special attention to how water will run after the buffer is created. The desired end result is for runoff water to filter through rather than run around the buffer zone. A low berm placed above the viewing corridor opening can direct water flow through the buffer.

Cost of Buffer Installation

Costs for planting a shoreline buffer vary greatly. Establishing natural recovery or no-mow zones to encourage native plant growth in all or part of the buffer greatly reduces costs. Seeding groundcovers is generally cheaper than planting seedlings, but results will take longer to see and seeds require very frequent watering. Do-it-yourself installation costs for buffers have ranged from nothing for establishing no-mow zones and transplanting shrubs to over two dollars per square foot for professional installation. Costs of native plants and planting supplies only can generally be kept below one dollar per square foot. Professional landscapers charge more, but using an experienced contractor may result in a more successful project.

Planting shrubs or trees as bare-root stock greatly saves on the cost. Burnett County sponsors a shrub and tree sale annually in April. Shrubs and trees purchased through the sale are usually less than one dollar each. Order forms are available beginning in January. The County also sponsors a native wildflower and grass seedling sale with orders taken through March and distribution in early June. A tray of 48 seedlings will cover approximately 50 to 75 square feet. Additional sources of native plants and seeds are found in the back of this publication.

Burnett County offers economically priced trees, shrubs, and native plants each year.

Site Preparation

Proper site preparation is one of the most important steps in establishing a native plant landscape. Native plantings can survive on poor, sandy soils and eventually will require little maintenance. However, you might need to lessen the competition on the site by first removing the existing vegetation. Turf grasses can quickly out-compete newly planted native grasses and wildflowers if left in place.

Remove thick turf grasses to reduce competition for newly planted native plants.

Sometimes removing existing vegetation is not necessary, and it is possible to plant among existing scattered native plants and/or poor grass cover or to leave zones of vegetation intact. The moist zone near the water's edge often consists mostly of native plants because turf grasses are flooded out. Seeds and underground stems may quickly revegetate the area if allowed to grow. Selected native flowers, grasses, and shrubs can usually be planted among existing native vegetation to fill in bare spots or to add color and variety. Stands of invasive plants like reed canary grass or purple loosestrife should be removed from wet areas.

Sometimes removing existing vegetation is not necessary, and it is possible to plant among existing scattered native plants and/or poor grass cover

Ask for assistance with site evaluation if you are unsure if removing existing vegetation will be necessary.

Removing Existing Vegetation

You can remove existing vegetation by smothering, applying herbicide, or a combination of the two.

Smothering – Use Black Plastic

Covering a site with black plastic removes vegetation without chemicals.

Black plastic spread over vegetation eliminates light and creates heat that kills existing plants. This method is suitable for almost any site. In areas with high exposure to wind, extra care must be taken to anchor the plastic in place. Explain the purpose of the plastic to your neighbors; they might wonder!

1. You will need
   - 3.5 mil or thicker black plastic to adequately cover the area, plus extra to overlap sheets at least 6 inches.
   - 4 inch or longer, 11 gauge or heavier U-shaped metal staples. (enough to space 1 foot apart where plastic overlaps and at the edges).
   - Heavy objects like logs, cement blocks, boards, or tires to hold the plastic in place.
2. Prepare the site by mowing, weed whacking, or trimming vegetation to be removed.
3. If the soil is dry, water thoroughly.

In full shade areas, smothering with black plastic is less effective and an herbicide application may be necessary.

4. Lay down the plastic. Get some help and choose a calm day. Overlap the plastic at least 6 inches if using more than one piece. Go around or cut holes for any existing plants you wish to preserve.
5. Anchor the plastic firmly in place using long U-shaped staples and heavy objects to be sure it stays there. All seams and edges must be firmly anchored to exclude light.
6. Leave plastic in place 6-8 weeks during spring or summer. Make certain there is no sign of living vegetation before removing it.
7. Remove plastic and plant directly into dead vegetation without tilling.

Applying Herbicide

Herbicide is a much faster way to remove vegetation, but it must be used carefully and according to label instructions.

1. A glyphosate herbicide like Roundup® is recommended. These herbicides only affect plants directly sprayed, and will break down into harmless substances rapidly. Vegetation must be actively growing for this herbicide to be effective. To encourage growth, mow grass and allow it to regrow several inches.
2. When applying an herbicide, shield and spray around existing native plants. Avoid drift of herbicide to water. If herbicide is to be applied in or over the water, an aquatic glyphosate formulation such as *Rodeo®* must be used and a Department of Natural Resources permit is required.
3. Timing of herbicide application is crucial. Do not apply when rain is forecast within the next 24 hours or on a windy day.
4. Wait at least 7 to 10 days before planting native plants. **Be certain that vegetation is dead before planting. If turf is still green or yellow-green, a repeated application is recommended.**
5. Leave dead plant material in place. It will serve as mulch for the new plants by holding moisture, anchoring soil, reducing weed growth, and contributing organic matter to the soil.

Soil Preparation

In most cases soil preparation is not required to plant native plants as long as they are chosen to match the soil, moisture, and light conditions at the site. Adding black dirt or manure can be detrimental to shoreline plantings. These soil amendments may favor weed growth, and the native plants may grow more quickly and be less sturdy.

Occasionally, soil amendments are necessary. It is wise to have the soil tested if you have any questions concerning its type, pH, or fertility. Contact the University of Wisconsin Extension office for a soil test kit. In highly acidic soils (less than 5.5 pH), adding lime may encourage plant growth. Fertilizers may also be required for soils having low nutrients.

Avoid using fertilizer with phosphorus near the water. Phosphorus is the second number listed (6-0-6) on the label.

Fertilizer use is recommended where mulches are used because they demand nitrogen as they decompose. Fertilizer should never be broadcast due to the potential for runoff into the lake. Instead, apply a very small amount of organic fertilizer in each planting hole. For a 6-0-6 NPK ratio, use one teaspoon of organic fertilizer per grass or wildflower plant and ¼ cup per shrub or tree. Up to one cup can be added to larger shrub or tree planting holes. An organic rather than a chemical fertilizer will release nutrients more slowly and is less likely to burn plant roots or run off into the lake. Use phosphorus-free or very low phosphorus fertilizer. Phosphorus levels are adequate in most soils, and phosphorus can increase algae growth in the lake. Phosphorus is the middle number of the three given on the fertilizer bag.

Soybean meal is a good organically-based fertilizer with appropriate nutrient levels, but it may attract animals that dig up plants to get the soybean meal. Composted animal manures or sewage sludge are less likely to attract animal pests and may, in fact, repel them.

Avoid Soil Erosion — Leave Dead Vegetation In Place

Dead vegetation left in place after smothering or an herbicide application does not need to be removed. Leave the dead material to serve as a mulch to capture moisture, reduce weed growth, and add organic material to the soil. If planting seedlings, you can plant directly through the dead material. Be sure that the roots are buried in soil and not in the thatch of dead lawn, where the plant would quickly dry out and die. If seeding, additional soil preparation will be necessary.

Preventing Erosion of Exposed Soils

Bare soils must be stabilized to avoid serious erosion problems. Bare soils may be present because of erosion from runoff, bank instability, heavy use, or construction activities. Eliminate or minimize the cause of the bare soil and then stabilize the area following the guidelines below.[1] Any bare sand or dirt should be planted with seeds and / or seedlings and mulched. Additional stabilization methods are necessary on sloped areas.

Seeding Rates per1000 ft²

Annual Rye: (after August 1)	0.5 – 1 lb.
Oats: (until August 1)	0.5 – 1 lb.
Canada Wild Rye:	1 oz.

All sites	Seed or plant permanent vegetation and mulch
After September 15	Temporary seeding of annual rye Permanent seeding next growing season
Slopes >12%	Companion seeding of oats, annual rye, or Canada wild rye
Slopes >20%	Companion seeding of oats, annual rye, or Canada wild rye Mulch, net, and plant

Netting Instructions

Check with the Land and Water Conservation Department or the Zoning Office before adding fill or topsoil.

1. Divert channelized water from above (such as from a rain gutter downspout) to an infiltration area to help establish vegetation and minimize erosion.
2. Bring in small amounts of topsoil or sand to even the slope where it has eroded. Check with the Land and Water Conservation Department or the Zoning Office before adding fill or topsoil. Filling is regulated in the shoreland zone.
3. Seed a temporary cover of oats, annual rye, or Canada wild rye. Complete permanent seeding in this step unless seedlings are to be planted in step 6. Seeding instructions are included on page 13.

Sources of erosion control materials are listed on page 17.

4. Cover with an excelsior (wood fiber) erosion control mat. For best stabilization, unroll the netting parallel with the slope. Overlap netting 4-6 inches.
5. Stake mat or netting in place using 6 inch or longer no. 8 gauge or heavier wire staples to hold it in place. Staples should be spaced every 3 feet along the edge and where the nets or mats overlap.
6. Plant plugs of seedlings of native grasses and flowers through mulch. Choose plants from the appropriate list based on sunlight and soil moisture in back of this guidebook. Space seedlings 1 foot apart. Use at least 50 percent native grasses such as little bluestem, side oats grama, and big bluestem. The deep roots of the grasses will help to stabilize the slope. Additional instructions for planting seedlings are included on page 12.
7. You may need to replace mulches, mats, and nets after periods of prolonged rainfall. Replace mulch, netting, or matting as soon as possible to maintain suitable coverage and prevent erosion until permanent vegetation is established.

Installation of filter fabric fences may be necessary to capture sediment below exposed slopes. Instructions are available from the Land and Water Conservation Department.

[1] Detailed specifications are found in the Wisconsin Construction Site Best Management Practice Handbook.

Shrub and Tree Planting Steps

1. ***Keep bare-root stock moist and cool before planting.*** Dormant bare-root shrubs can be ordered in the fall or winter for delivery in the spring. Plant bare-root stock as soon as it arrives. If you must wait to plant, store bare-root stock close to 34 degrees Fahrenheit to avoid breaking dormancy. Keep roots moist by periodically sprinkling with water. Do not soak roots in water because this will deprive them of oxygen.
2. ***Dig the hole deeply enough*** so that the roots won't curl or bunch up. The trees and shrubs should be planted about one-half inch deeper than they were in the nursery. Paler colored bark and a slight swelling on the stem mark the old soil line.
3. ***Pack soil firmly around the roots.*** Air pockets left around the roots will dry them out. Pack soil firmly but gently around the roots with your foot.
4. ***Water regularly*** to keep soil moist but not saturated.
5. ***Mulch*** a two-foot diameter circle around each plant 2 to 3 inches deep with wood chips, straw, or leaves. This will reduce competition with other plants. Keep this area free of other growth by weed-wacking or hand-pulling weeds for the first couple of years.

Potted shrubs may be planted any time the soil is not frozen.

Transplanting Trees and Shrubs

It is best to transplant when trees and shrubs are dormant in the early spring or late fall. It might help to identify and label trees and shrubs when leaves are on the plant. Dig up as much of the root as possible. Replace the duff layer of leaves and stems to reduce erosion at the site. Only dig up trees and shrubs if they are part of a large stand or if the seedlings are numerous.

The best time to transplant trees and shrubs is in the spring before they leaf out.

Steps for Planting Seedlings

Plant seedlings from May 15 until September 15. A planting density of 70-120 plants per 100 square feet is recommended.

Plant at least 30 percent grasses to stabilize the soil and provide an attractive backdrop for flowers.

Watering new seedlings regularly is extremely critical for their survival.

1. ***Assess existing vegetation.*** It might be possible to plant among existing native vegetation or into a poorly established lawn. Ask for assistance from the Land and Water Conservation Department if you are unsure. If native vegetation dominates or lawn grasses are poor, skip step 2.
2. ***Remove non-native competing vegetation*** such as turf grasses and invasive weeds through smothering or applying herbicide as described earlier.
3. ***Plan your planting scheme.*** Spacing plants 8 – 12 inches apart is recommended for very sandy soils. Spacing of 12 – 18 inches is adequate for moist soils.
4. ***Lay mulch down prior to planting.*** Spread 3 inches of straw, leaves, or pine needles to conserve moisture and reduce weed growth. If you use oak leaves, we recommend chopping them up by running over them with a mower or through a leaf shredder. Avoid using field hay because it generally contains weed seeds. Two inches of wood chips can be used only in areas with moist, rich soils. Wood chips tend to shed moisture, retard spreading of plants, and demand nitrogen as they decay.
5. ***Be ready to water.*** Watering plant plugs is critical to their success. Be ready with hoses and sprinklers before you begin to plant.
6. ***Dig holes for plants.*** This will speed up planting. A bulb planter or bulb auger drill bit attached to an electric drill work well for planting. Make sure the holes for the plants penetrate the dead grass.
7. ***Fertilize.*** A small amount of organic, phosphorus-free or very low phosphorus fertilizer is recommended. The second number on the fertilizer label indicates the percentage of phosphorus. For a 6-0-6 NPK ratio, place a teaspoon in each plant hole. Excess fertilizer will encourage weed growth.
8. ***Place live plants in the ground soon after you they are brought to the site.*** If you must keep them a few days before planting, keep them in an area with partial sun such as on the east side of a building or under a deciduous tree. Do not leave them in a dark area for long periods; this will weaken plants. Water to keep packs moist once or twice a day.
9. ***Plant in the cool hours of the day.*** Plants will have a greater survival rate if planted on a cool day or during the morning or evening hours. To plant, separate the mulch, dig a hole, sprinkle organic fertilizer, place the plant plug in the hole, press the soil gently around the plug, and replace the mulch, being careful to keep mulch ½ inch from the stem of plants.
10. ***Water.*** Don't forget this important step to give your plants a good start! Water immediately after planting. Plan to water daily for the first few weeks or until plants are well established. If plants wilt or droop, a repeated watering during the day may be necessary. Once plants are established, water only if prolonged dry periods occur.

Steps for Planting Seeds

1. ***Remove non-native competing vegetation*** by smothering or applying herbicide as described in the site preparation section. Rake or till only enough to expose soil for planting seed – no more than 1-2 inches deep.
2. ***Select seed.*** Use 3-8 ounces of seed for every 1,000 square feet. Greater amounts of seed will result in denser growth and better chances for success. Include 1 ounce of Canada wild rye per 1,000 square feet as a companion seeding or cover crop if desired. This seed will germinate readily to indicate areas where seeding is successful and help to hold the soil in place. Canada wild rye is a short-lived native perennial grass.
3. ***Mix seeds with slightly moist sand.*** Fill an ice cream pail or similar one gallon bucket 2/3 full with moist, but not wet, sand. Add up to 4 ounces of seed and mix well. The seeds will adhere to the sand, so they can be spread more thinly and evenly.
4. ***Broadcast the seed/sand mixture.*** Use half of the seed/sand mixture to cover the entire area. Sow the remaining half by walking perpendicular to the line of the first pass to assure good seed distribution throughout the area you wish to plant. The sand will make it easier to see places that have not been seeded.
5. ***Press seed in*** by tamping down the soil with a rake or lightly raking the seeds in. You may also roll the site with a water-filled roller to insure good soil/seed contact. Never roll when soil is wet, this will compact the soil, decrease oxygen levels in the soil, and reduce seed germination.
6. ***Mulch lightly*** with 1/2 inch of weed-free straw. Do not use field hay, as it contains numerous weed seeds. Soil must be visible between the straw stems, or the mulch is too thick to allow seedlings to grow.
7. ***On steep slopes,*** hold the mulch in place by staking down a jute or plastic net. An excelsior erosion control blanket up to ½ inch thick may be used as an alternative to mulching and netting.
8. ***Water*** immediately following seedling. Don't forget this important step to give your plants a good start! Watering seeds and small seedlings after sprouting is critical for sandy soils. Plan to water daily, preferably in the morning, for the first few weeks or until plants are well established. Check to see that soil is moist beneath the mulch. Very sandy sites may require watering more than once daily for the first few weeks. Once plants are established, water only if prolonged dry periods occur.

Seed groundcovers from May 20th through August 10th. The best time to plant is in June.

Care and Maintenance

The easiest and most ideal buffer maintenance is to simply leave the buffer zone alone. Do not fertilize, do not mow, do not rake, do not "clean up" fallen limbs or trees. Allow natural vegetation to regrow.

In areas not well suited for natural recovery, some initial maintenance of planted buffers may be required. Pulling invasive weeds around native shrubs, trees, and groundcovers the first year or two eliminates competition and will help to give them a good start. Buffers must be maintained over the long-term according to the shoreland ordinance requirements described below.

"No-Touch Zone"

For the greatest benefit to wildlife and lake water quality, extend the no-touch zone into the lake. Aquatic vegetation provides food and habitat and breaks the force of waves.

Once the buffer is established, vegetation removal and land disturbing activities are prohibited in this area except for noxious or problem weed removal. The duff layer, made up of fallen leaves and pine needles, must be left intact. This layer covers the soil, thereby conserving moisture, preventing erosion, and allowing water to infiltrate into the soil.

"Minimum Maintenance Zone"

Limited pruning and mowing are allowed in this area.

Initial Maintenance of Planted Groundcovers

Weeding and watering the first two years will insure long-term success. In time, your maintenance duties will ease and you will have time to enjoy the scenic beauty you have brought back to the shoreline.

Year One

Watering

Regular watering in the first two months of a spring or summer planting is one of the most important factors for success. Without supplemental watering, roots may not reach the soil moisture they need. Watering at least 30 minutes each day allows vigorous root growth for plants to become well established. Timers to turn water on and off automatically are available from hardware and garden supply stores.

If drainage is poor, water less often and only in the morning, not at night when evaporation is reduced. Fungal diseases that start with excess moisture can kill young seedlings. This should not be a concern in the sandy soils that border many Burnett County Lakes. Use lake water if feasible, since this water is often warmer and more nutrient-rich than well water. Pumping water from the lake is allowed in Wisconsin as long as no type of structure is left in the lake.

Protection Against Deer Browsing

Whitetail deer and other animals may damage plantings, especially trees and shrubs. Protect against damage by physical or chemical means. Surround newly planted trees and shrubs with 4 – 6 foot high, galvanized wire mesh fence supported with wooden stakes or fence posts, or cover plants with bird netting.

Landscape products sprayed on plants deter browsing through strong tastes or odors. Red pepper spray is an example. Use of these products may need to be varied as deer become accustomed to their taste or smell. A few of these products are listed below. This listing does not constitute endorsement by Burnett County. Look for these and similar products at local hardware stores and nurseries.

Tree Guard distributed by Becker Underwood (www.nortechforest.com/products)
Hot Pepper Wax distributed by Hot Pepper Wax, Inc (1-800-627-6840 or www.hotpepperwax.com)
Ro-pel Mammal and Bird Repellent available through Forestry Suppliers, Inc. (1-800-647-5368 or www.forestry-suppliers.com) and Ben Meadows Company (1-800-241-6401 or www.benmeadows.com)

Home remedies include mixtures of Tabasco, water, egg, and sometimes soap and even human hair or urine. Protection against deer browsing is particularly important if deer are fed on the site or nearby. Deer feeding is discouraged near restoration areas.

Weeding

Weeding the first year will help to get native plants well-established.

Native plants are typically either slow-growing or warm season plants. Cool season weeds can crowd out natives by getting a quick start in the spring before natives have had a chance to grow. Weeds deprive native plants of water, light, nutrients, and space. Check for weeds once every two weeks. Pull them out immediately being careful to not disturb the native plants. Do not allow non-native invasive species like purple loosestrife, spotted knapweed, mullein, lamb's quarter, quack grass, reed canary grass, bluegrass, and others to take over the planting. Ask if you need assistance identifying weeds. Web sites to assist with identification of weeds (invasive plants) are included at the back of this book.

Weeding Seeded Groundcovers

Seeded groundcovers are a special challenge because it can be difficult to tell the weeds from the natives. Sprouting a small sample of the native seeds in a plant tray can help to identify their seedlings and make it easier to recognize and pull weeds. Cut off flowering heads of weeds before they go to seed. An alternative is to repeatedly trim weedy vegetation to 6 to 8 inches with a weed-whacker. Remove clippings immediately if they cover the native seedlings.

This will discourage weed growth, remove shade, and allow native seedlings to grow. Your investment of time will pay off next year and in following years. Be patient, the perennial natives will eventually out-compete annual weeds that sprout from seed.

Fertilizing And Applying Insecticides

Fertilizers and insecticides should be avoided. Applying fertilizers may encourage weed growth. If native plants are selected appropriately, supplemental fertilization should not be required. Also avoid applying insecticides since so many are non-specific and can harm or even kill non-target species.

Vegetative Cover

Leave dead vegetation in place to provide seeds for birds and next year's growth.

At the end of the first season, allow all dead vegetation to remain in place. It becomes a valuable seed source for next year's growth, provides cover and food for wildlife, and will help to cover the soil and slow spring runoff. The grass and dried flower heads also add appeal to the native landscape in the winter months.

Year Two

Watering

Water only during periods of severe drought.

Weeding

Thoroughly weed early in the summer. After this initial weeding, check for weeds and pull them once a month.

Year Three and Beyond

Put away your mower and rake and let nature take her course.

No watering or weeding should be necessary except for extreme drought conditions or stubborn invasive weed problems. Leave vegetation in place in the fall and through the winter months.

Tree thinning or removal of dead or diseased trees requires special approval from the County Conservationist or the Zoning Administrator.

Trimming of groundcover in prairie areas may be allowed once every three to five years. Special approval may be necessary. Mow after July 15 to minimize adverse effects on wildlife. Groundcovers should be cut no less than 8 inches high.

Vehicles should be excluded from the buffer except for limited use in the viewing access corridor.

Docks should be stored outside the buffer or in the viewing/access corridor, if possible.

Local Equipment and Supply Sources

Black plastic, planting tools , Round-up® *herbicide, phosphorus-free fertilizer, and mulch*[2]

Ace Hardware of Webster, Webster 715-866-8666
Burnett Dairy Co-op, Grantsburg 689-2467
Danbury Hardware Hank, Danbury 656-3100
Do It Best Hardware, Frederic 327-5664
Jenneman's Hardware Hank, Siren 349-5350
Webster Hardware Hank, Webster 866-4333
Walker Lumber and Hardware, Minong 466-2164

Landscape staples or pins

Ace Hardware of Webster, Webster 866-8666
Walker Lumber and Hardware, Minong 466-2164
Burnett Dairy Co-op, Grantsburg 689-2467
PK Forest Farms, Minong (in bulk only) 466-5246

Mulch materials[3]

Austin Lake Greenhouse, Webster (straw, shredded bark, wood chips) 866-7261
Golden Pond Landscaping, Webster (shredded bark, wood chips) 866-5099
Shadetree Landscaping, Milltown (straw, shredded bark, wood chips) 825-3329
Village of Siren (shredded yard waste) 349-2493
Wood River Garden Store, Grantsburg (shredded bark, wood chips) 463-2426

Rototillers, Sod Cutters, Planting Tools for Rent

Do It Best Hardware And Rental Center, Frederic 327-8656
Webster Hardware Hank, Webster 866-4333
Ace Hardware of Webster, Webster 866-8666

Erosion Control Materials (silt fence, woven erosion mats, etc.)

Burnett County Land and Water Conservation Department, Siren 349-2186
PK Forest Farms, Minong 466-5246
American Excelsior Company, Minneapolis 817-640-1555
American Excelsior Company, Rice Lake 234-6861

Native Plants (limited species available)

Austin Lake Greenhouse, Webster 866-7261
Wood River Garden Store, Grantsburg 463-2426

[2] Call for specific availability
[3] Check classified adds for sources of straw. Tree-removal services may drop off wood chips at no charge.

Natural Shorelines Landscapers [1]

Design and Installation Services

Creekside Landscaping
23610 Range Line Road
Siren, WI 54872
Contact: Tim or Jeff Evenson
715-689-2228

Evergreen Landscaping
Siren, WI 54872
Contact: Nate D'Jock
715-349-2877

Golden Pond Landscapes
3799 S. Peninsula Road
Webster, WI 54893
Contact: John Childs
715-866-5099

Leaning Pine Native Landscapes
3130 S. Camp Amnicon Road
South Range, WI 54874
Contact: Paul Hlina
715-398-5453
www.restoreshore.com
phlina@restoreshore.com

Rivers North Contracting
6028 Devils Lake Road
Webster, WI 54893
Contact: Chuck Brookshaw
715-866-8181
riversnorthcontracting@hotmail.com

Shoreline Designs
10608 Glenwood
Hayward, WI 54843
Contact: Carl Kozak
715-634-2219
CEKHH@CHEQNET.NET

[1] These landscapers have either completed a course about the Burnett County Natural Shorelines program and how to design and install buffers, or have equivalent experience.

Plant and Seed Sources*

Nursery	Seeds	Plants	Aquatics/ Wetland	Prairie – Grasses/Forbs	Woodland Plants	Woodland Trees/Shrubs	Other Comments	Catalog Available
Burnett County Land and Water Conservation Dept. Siren, Wisconsin—715-349-2186		✿		✿		✿	Order: beginning in January Pick-up: trees and shrubs – late April grasses/forbs – early summer	
Dragonfly Gardens Amery, Wisconsin —715-268-7660 www.dragonflygardens.net		✿	✿	✿	✿	✿	Wide selection of prairie and wetland plants. Native trees, shrubs, and woodland plants available	✿
Great Lakes Nursery Co. Gleason, Wisconsin —888-733-3564 www.greatlakesnursery.com		✿			✿	✿	Bare root deciduous and evergreen trees and shrubs	✿
Hild & Associates River Falls, Wisconsin —800-790-9495 www.hildandassociates.com		✿	✿	✿			Sedge meadow and littoral zone plants	✿
Ion Exchange Harpers Ferry, Iowa —800-291-2143 www.ionexchange.com	✿	✿		✿			More than 250 species of seeds and greater than 100 plant plugs	✿
Itasca Greenhouse Cohasset, Minnesota —800-538-8733 www.itascagreenhouse.com						✿	Trees/shrubs are grown in styrofoam blocks or square plant bands , all containerized.	✿
J&J Aquatic Nursery Wild Rose, Wisconsin —800-622-5055 www.tranzplant.com			✿		✿		Source for most wetland grasses, sedges, rushes and shrubs, also carries Pennsylvania sedge	✿
Jung's Seed Company Randolph, Wisconsin —800-247-5864 www.jungseed.com	✿	✿			✿		Economical source for woodland ferns	✿
Landscape Alternatives Shafer, Minnesota —651-257-4460 www.landscapealternatives.com		✿		✿	✿		Seed source collected within 100 miles of St. Paul/Minneapolis	
Kester's Wild Game Food Nursery Omro, Wisconsin —920-685-2929 www.kestersnursery.com	✿	✿	✿				In business almost 100 years	✿
Oak Prairie Farm Pardeeville, Wisconsin —800-894-3884 www.oakprairiefarm.com	✿			✿			Collected seeds, great variety	✿
Prairie Nursery Westfield, Wisconsin —800-476-9453 www.prairienursery.com	✿	✿		✿	✿		Catalog has great photos of native grasses and forbs, carries a few woodland edge species	✿

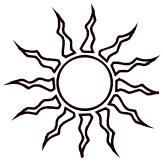
Nursery	Seeds	Plants	Aquatics/ Wetland	Prairie – Grasses/Forbs	Woodland Plants	Woodland Trees/Shrubs	Other Comments	Catalog Available
Prairie Moon Nursery Winona, Minnesota —507-452-1362 www.prairiemoon.com	✿	✿	✿	✿	✿	✿	Specializes in prairie plants, and has several woodland edge species	✿
Prairie Restoration Scandia, Minnesota —800-837-5986 www.prairieresto.com	✿	✿	✿	✿	✿	✿	Several specialized seed mixes. Installation ser vices available.	✿
Chief River Nursery Hayward, Wisconsin —800-367-9254 www.chiefrivernursery.com		✿				✿	Bare root trees/shrubs, minimum order of 6	✿
Wood River Garden Store Grantsburg, Wisconsin —715-463-2426		✿				✿	Limited species available	
Wildlife Nurseries Oshkosh, Wisconsin —920-231-3780	✿	✿	✿				Specializes in wetland species for waterfowl and other wildlife species	✿
Winter Greenhouse Winter, Wisconsin —715-266-4963 www.wintergreenhouse.com		✿	✿	✿	✿	✿	Selection of native woodland plants suited for the northwoods—does not ship plants	✿

*This is a partial list of nurseries that specialize in native plants. Check with local nurseries (listed on page 18) to find out if they sell native plants or will get them for you.

Plant Lists

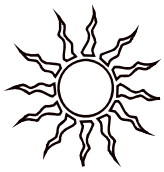
Prairie/Upland Meadow

Dry to medium soils ***Full sun 8 hours***



Common Name	Scientific Name	Height	Flower Color
Grasses			
Big bluestem	*Andropogon gerardii*	3-8'	NA
Blue grama*	*Bouteloua gracilis*	1-2'	NA
Bottlebrush grass	*Elymus hystrix*	3'	NA
Canada wild rye	*Elymus canadensis*	3-6'	NA
Indian grass	*Sorghastrum nutans*	3-6'	NA
June grass*	*Koeleria macrantha*	1-2'	NA
Little bluestem*	*Schizachyrium scoparium*	2-3'	NA
Needle grass*	*Stipa spartea*	3-4'	NA
Prairie dropseed*	*Sporobolus heterolepsis*	2-4'	NA
Side oats grama*	*Bouteloua curtipendula*	2-3'	NA
Wildflowers			
Anise hyssop*	*Agastache foeniculum*	2-4'	Lavender
Bergamot*	*Monarda fistulosa*	2-4'	Lavender
Black-eyed Susan*	*Rudbeckia hirta*	1-3'	Yellow
Bush clover*	*Lespedeza capitata*	3-4'	Green
Butterfly weed*	*Asclepias tuberosa*	2-3'	Orange
Canada milkvetch	*Astragalus canadensis*	2-3'	White
Common oxeye daisy*	*Heliopsis helianthoides*	2-5'	Yellow
Dotted mint	*Monarda punctata*	1-3'	Lavender
Fireweed*	*Epilobium angustifolium*	2-6'	Pink
Frost aster	*Aster pilosus*	1-3'	White
Harebell*	*Campanula rotundifolia*	4-20"	Purple
Heath aster	*Aster ericoides*	6-36"	White
Heart-leaf golden alexander	*Zizia aptera*	1-3'	Yellow
Hoary vervain*	*Verbena stricta*	2-3'	Blue
Lance-leaf coreopsis*	*Coreopsis lanceolata*	2-3'	Yellow
Leadplant*	*Amorpha canescens*	2-3'	Blue
Lupine*	*Lupinus perennis*	1-2'	Blue
Pasque flower*	*Anemone patens*	2-14"	Lavender
Prairie coreopsis	*Coreopsis palmata*	1-2'	Yellow
Prairie phlox	*Phlox pilosa*	1-2'	Pink
Prairie sage*	*Atemesia ludoviciana*	2-3'	White
Prairie smoke*	*Geum triflorum*	6-13"	Red
Prairie violet	*Viola pedatifida*	6-8"	Blue

** = Best for driest sites*
NA = Not Applicable, no flowers or inconspicuous flowers



Prairie/Upland Meadow (continued)

Dry to medium soils ***Full sun 8 hours***

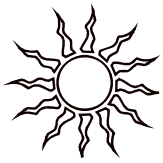
Common Name	Scientific Name	Height	Flower Color
Wildflowers (continued)			
Pearly everlasting*	*Anaphalis margaritacea*	1-2'	White
Purple prairie clover*	*Dalea purpurea*	1-3'	Purple
Rough blazing star*	*Liatris aspera*	2-3'	Purple
Showy goldenrod	*Solidago speciosa*	2-4'	Yellow
Smooth blue aster	*Aster laevis*	2-3'	Blue
Sky blue aster	*Aster oolentangiensis*	1-4'	Blue
Spike lobelia*	*Lobelia spicata*	8-40"	Lavender
Stiff goldenrod	*Solidago rigida*	1-5'	Yellow
Upland white aster	*Solidago ptarmicoides*	1-2'	White
Western sunflower*	*Helianthus occidentalis*	2-3'	Yellow
White prairie clover*	*Dalea candida*	1-3'	White
Yarrow*	*Achillea millefolium*	2-3'	White
Shrubs			
New Jersey tea*	*Ceanothus americanus*	1-3'	White
Prairie rose	*Rosa arkansana*	2-3'	Pink

** = Best for driest sites*
NA = Not Applicable, no flowers or inconspicuous flowers

Plant Lists

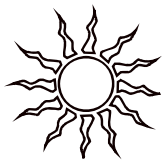
Wet Meadow

Moist to wet soils ***Full sun 8 hours***



Common Name	Scientific Name	Height	Flower Color
Grasses and Sedges			
Big bluestem	*Andropogon gerardi*	3-8'	NA
Blue joint grass	*Calamagrostis canadensis*	3-5'	NA
Bottlebrush sedge*	*Carex comosa*	1-2'	NA
Broad-leaved cattail*	*Typha latifolia*	5-9'	NA
Caterpillar/fringed sedge*	*Carex crinita*	2-5'	NA
Fox sedge	*Carex vulpinoidea*	1-3'	NA
Green bulrush	*Scirpus atrovirens*	3-5'	NA
Hardstem bulrush*	*Scirpus acutus*	3-9'	NA
Indian grass	*Sorghastrum nutans*	3-6'	NA
Lake sedge*	*Carex lacustris*	24-42"	NA
Path rush	*Juncus tenuis*	2-14"	NA
Pointed broom sedge	*Carex scoparia*	6-30"	NA
Prairie cordgrass	*Spartina pectinata*	4-8'	NA
Rattlesnake manna grass*	*Glyceria canadensis*	2-3'	NA
Retrorse sedge	*Carex retrorsa*	16-40"	NA
River bulrush*	*Scirpus fluviatilis*	3-6'	NA
Soft rush*	*Juncus effusus*	18-48"	NA
Soft-stem bulrush*	*Scirpus validus*	3-9'	NA
Spike rush*	*Eleocharis palustris*	2-3'	NA
Sweet flag*	*Acorus calamus*	2-3'	NA
Switch grass	*Panicum virgatum*	3-5'	NA
Tall manna grass*	*Glyceria maxima*	3-6′	NA
Tussock sedge*	*Carex stricta*	1-4'	NA
Wool grass	*Scirpus cyperinus*	3-5'	NA
Wildflowers			
Bergamot	*Mondarda fistulosa*	2-4'	Lavender
Blue flag iris	*Iris virginica*	18'-30"	Blue
Blue vervain	*Verbena hastata*	2-6'	Blue
Boneset	*Eupatorium perfoliatum*	3-4'	White
Bottle gentian	*Gentiana andrewsii*	18-30"	Blue
Cardinal flower	*Lobelia cardinalis*	2-5'	Red
Culver's root	*Veronicastrum virginicum*	3-6'	White
Cup plant	*Silphium perfoliatum*	3-8'	Yellow
Fireweed	*Epilobium angustifolium*	2-6'	Pink
Flat-topped aster	*Aster umbellatus*	1-5'	Cream

** = Best for wettest sites where standing water exists for extended periods of time.*
NA = Not Applicable, no flowers or inconspicuous flowers



Wet Meadow (continued)

Moist to wet soils ***Full sun 8 hours***

Common Name	Scientific Name	Height	Flower Color
Wildflowers (continued)			
Golden alexanders	*Zizia aurea*	1-3'	Yellow
Great blue lobelia	*Lobelia siphilitica*	1-4'	Blue
Green headed coneflower	*Rudbeckia laciniata*	3-12'	Yellow
Ironweed	*Vernonia fasciculata*	4-6'	Purple
Jewelweed	*Impatiens capensis*	2-5'	Orange
Joe pye weed	*Eupatorium maculatum*	4-6'	Pink
Grassleaf goldenrod	*Euthamia graminifolia*	2-3'	Yellow
Monkey flower	*Mimulus ringens*	1-3'	Violet
Mountain mint	*Pycnanthemum virginianum*	20-36"	White
Narrow-leaf loosestrife	*Lysimachia quadrifolia*	1-2'	Yellow
New England aster	*Aster novae-angliae*	2-5'	Purple
Northern Blue Flag Iris	*Iris versicolor*	1-3'	Blue
Obedient plant	*Physostegia virginiana*	2-5'	Pink
Panicled Aster	*Aster lanceolatus*	2-3'	White
Sawtooth sunflower	*Helianthus grosseserratus*	3-12'	Yellow
Showy tick trefoil[4]	*Desmodium canadense*	2-5'	Pink
Sneezeweed	*Helenium autumnale*	2-5'	Yellow
Swamp aster	*Aster puniceus*	2-6'	White
Swamp milkweed	*Asclepias incarnata*	3-4'	Pink
Tall blazing star	*Liatris pycnostachya*	2-4'	Purple
Turtlehead	*Chelone glabra*	3-4'	Cream
Shrubs			
Meadowsweet	*Spiraea alba*	3-6'	White
Steeplebush	*Spiraea tomentosa*	2-4'	Pink

** = Best for wettest sites where standing water exists for extended periods of time.*
NA = Not Applicable, no flowers or inconspicuous flowers

[4] Note: Showy tick trefoil has beautiful pink flowers that bloom from June – September. Be aware that later in the season, the seeds that form will stick to clothing and pets and are difficult to remove.

Plant Lists

Moist Woodland Edge

Medium, loamy to wet, organic soils ***Partial shade 4-8 hours***

Common Name	Scientific Name	Height	Flower Color
Groundcover			
Awl fruit sedge	*Carex stipata*	12-42"	NA
Blue joint grass	*Calamagrostis canadensis*	3-5'	NA
Caterpillar/fringed sedge	*Carex crinita*	2-5'	NA
Fringed brome	*Bromus ciliatus*	2-4'	NA
Prairie cordgrass	*Spartina pectinata*	4-8'	NA
Tussock sedge	*Carex stricta*	1-4'	NA
Shrubs			
American mountain ash	*Sorbus americana*	to 28'	White
Arrowood viburnum	*Viburnum dentatum*	to 16'	White
Chokeberry	*Aronia melanocarpa*	3-6'	White
Chokecherry	*Prunus virginiana*	to 20'	White
Elderberry	*Sambucus canadensis*	3-9'	White
Highbush cranberry	*Viburnum trilobum*	3-12'	White
Ironwood	*Carpinus caroliniana*	to 30'	NA
Meadowsweet	*Spiraea alba*	3-6'	White
Nannyberry	*Viburnum lentago*	to 20'	White
Northern bayberry	*Myrica gale*	3-4'	NA
Pussy willow	*Salix discolor*	10-25'	White
Red osier dogwood	*Cornus sericea*	3-10'	White
Sandbar willow	*Salix interior*	6-15'	White
Speckled alder	*Alnus incana*	10-25'	NA
Steeplebush	*Spirea tomentosa*	2-4'	Pink
Winterberry holly	*Ilex verticillata*	to 10'	White
Trees			
Black ash	*Fraxinus nigra*	to 50'	NA
Black willow	*Salix nigra*	to 60'	NA
Green ash	*Fraxinus pensylvanica*	to 60'	NA
Northern white cedar	*Thuja occidentalis*	to 70'	NA
Paper birch	*Betula papyrifera*	to 70'	NA
River birch	*Betula nigra*	to 75'	NA
Silver maple	*Acer saccharinum*	to 80'	NA
Tamarack	*Larix laricina*	to 80'	NA
White spruce	*Picea glauca*	to 100'	NA
Yellow birch	*Betula allengheniensis*	To 80'	NA

NA = Not Applicable, no flowers or inconspicuous flowers

Plant Lists

Maple Forest

Medium sandy to silt loam soils ***Less than 4 hours sun***

Common Name	Scientific Name	Height	Flower Color
Groundcover			
Cinnamon fern	*Osmunda cinnamomea*	2-5'	NA
False solomon seal	*Smilacina racemosa*	18-24"	NA
Lady fern	*Athyrium felix-femina*	18-24"	NA
Maidenhair fern	*Adiantum pedatum*	3-4'	NA
Meadow rue	*Thalictrum dioicum*	8-28"	Green
Ostrich fern	*Matteuccia struthiopteris*	3-4'	NA
Pennsylvania sedge	*Carex pensylvanica*	6-18"	NA
Red baneberry	*Actaea rubra*	1-2'	White
Sensitive fern	*Onoclea sensibilis*	1'	NA
White baneberry	*Actaea pachypoda*	1-2'	White
Flowers			
Bellwort	*Uvularia grandiflora*	1'	Yellow
Bloodroot	*Sanguinaria canadensis*	2-6"	White
Columbine	*Aquilequia canadense*	8-24"	Pink
False lily of the valley	*Maianthemum canadense*	3-6"	White
False solomon's seal	*Smilacina stellata*	8-24"	White
Jack-in-the-pulpit	*Arisaema triphyllum*	1-3'	Green
Jacob's ladder	*Polemonium reptans*	8-24"	Blue
Sessile-leaved bellwort	*Uvularia sessilifolia*	10"	Yellow
Trillium	*Trillium grandiflorum*	1'	White
Wild geranium	*Geranium maculatum*	1-2'	Lavender
Wild ginger	*Asarum canadense*	4-8"	Red
Woodland strawberry	*Fragaria vesca*	4-6"	White
Shrubs			
Bush honeysuckle	*Diervilla lonicera*	2-3'	Yellow
Common chokecherry	*Prunus virginiana*	to 20'	White
Ironwood	*Carpinus caroliniana*	to 30'	NA
Red-berried elder	*Sambucus pubens*	to 6'	White
Serviceberry/Juneberry	*Amelanchier laevis*	10-12'	White
Trees			
Balsam fir	*Abies balsamea*	to 60'	NA
Black cherry	*Prunus serotina*	80'	NA
Red maple	*Acer rubrum*	to 90'	NA
Sugar maple	*Acer saccharum*	to 100'	NA
Basswood	*Tilia americana*	100'	NA

NA = Not Applicable, no flowers or inconspicuous flowers

Plant Lists

Pine or Oak Forest

Dry, acid, sandy soils ***Less than 4 hours sun***

Common Name	Scientific Name	Height	Flower Color
Groundcovers			
Bracken fern	*Pteridium aquilinum*	2-3'	NA
Bunchberry	*Cornus canadensis*	6-8"	White
False solomon's seal	*Smilacina racemosa*	18-24"	White
Pennsylvania sedge	*Carex pensylvanica*	6-18"	NA
Solomon's seal	*Polygonatum biflorum var. commutatum*	1-4'	Green
Woodland strawberry	*Fragaria vesca*	4-6"	White
Wintergreen	*Gaultheria procumbens*	3-6"	White
Flowers			
Bellwort	*Uvularia grandiflora*	1'	Yellow
Big-leaf aster	*Aster macrophyllus*	6-12"	Lavender
Columbine	*Aquilegia canadensis*	8-24"	Pink
Common wood violet	*Viola papillionacea*	4-8"	Violet
False lily of the valley	*Maianthemum canadense*	3-6"	White
Harebell	*Campanula rotundifolia*	4-20"	Blue
Wild geranium	*Geranium maculatum*	1-2'	Lavender
Shrubs			
Bush honeysuckle	*Diervilla lonicera*	2-3'	Yellow
Chokecherry	*Prunus virginiana*	to 20'	White
Gray dogwood	*Cornus racemosa*	to 6'	White
Hazelnut	*Corylus americana*	to 8'	NA
Pin cherry	*Prunus pensylvanica*	to 25'	White
Serviceberry/Juneberry	*Amelanchier laevis*	8-10'	White
Snowberry	*Symphoricarpos albus*	2-4'	White
Trees			
Bur oak	*Quercus macrocarpa*	to 80'	NA
White pine	*Pinus strobus*	100+'	NA

NA = Not Applicable, no flowers or inconspicuous flowers

Plant Lists

Woodland Edge – Oak/Pine Barrens

Dry, sandy soils ***Partial shade 4-8 hours***

Common Name	Scientific Name	Height	Flower Color
Groundcovers			
Big bluestem	*Andropogon gerardii*	3-8'	NA
Bottlebrush grass	*Elymus hystrix*	3'	NA
Bracken fern	*Pteridium aquilinum*	2-3'	NA
Bunchberry	*Cornus canadensis*	6-8"	NA
Canada wild rye	*Elymus canadensis*	3-6'	NA
Fringed brome	*Bromus ciliatus*	2-4'	NA
Indian grass	*Sorghastrum nutans*	3-6'	NA
Little bluestem	*Schizachyrium scorparium*	2-3'	NA
Partridgeberry	*Mitchella repens*	2"	NA
Pennsylvania sedge	*Carex pensylvanica*	6-18"	NA
Sideoats grama	*Bouteloua curtipendula*	2-3'	NA
Wintergreen	*Gaultheria procumbens*	3-6"	NA
Flowers			
Big-leaf aster	*Aster macrophyllus*	6-12"	Lavender
Bird's foot violet	*Viola pedata*	6-12"	Blue
Canada anemone	*Anemone canadensis*	1-2'	White
Columbine	*Aquilegia canadensis*	8-24"	Pink
Common wood violet	*Viola papillionacea*	4-8"	Blue
Harebell	*Campanula rotundifolia*	4-20"	Blue
Pearly everlasting	*Anaphalis margaritacea*	1-2'	White
Slender beard tongue	*Penstemon gracilis*	1-2'	Blue
Woodland strawberry	*Fragaria vesca*	4-6"	White
Shrubs			
Bearberry	*Arctostaphylos uva-ursi*	2-6"	Pink
Blueberry	*Vaccinum angustifolium*	2-3'	Pink
Bush honeysuckle	*Diervilla lonicera*	2-3'	Yellow
Chokecherry	*Prunus virginiana*	to 20'	White
Gray dogwood	*Cornus racemosa*	to 6'	White
Hazelnut	*Corylus americana*	to 8'	NA
New Jersey tea	*Ceanothus americanus*	1-3'	White
Pin cherry	*Prunus pensylvanica*	to 25'	White
Red root	*Ceanothus ovatus*	1-3'	White
Serviceberry/Juneberry	*Amelanchier laevis*	10-12'	White
Silver buffaloberry	*Shepherdia canadensis*	6-8'	White
Snowberry	*Symphoricarpus albus*	2-4'	White
Sweet fern	*Comptonia peregrina*	1-3'	NA

NA = Not Applicable, no flowers or inconspicuous flowers

Woodland Edge – Oak/Pine Barrens (continued)

Dry, sandy soils *Partial shade 4-8 hours*

Common Name	Scientific Name	Height	Flower Color
Trees			
Big-tooth aspen	*Populus grandidentata*	to 60'	NA
Bur oak	*Quercus macrocarpa*	to 80'	NA
Jack pine	*Pinus banksiana*	to 70'	NA
Northern pin oak	*Quercus ellipsoidalis*	to 70'	NA
Northern red oak	*Quercus borealis*	to 70'	NA
Quaking aspen	*Populus tremuloides*	to 70'	NA
Red pine	*Pinus resinosa*	to 80'	NA
White pine	*Pinus strobus*	100+'	NA

Additional Resources

Web Sites

Plant Identification and Photos

http://www.botany.wisc.edu/herbarium

Vascular Plants of Wisconsin is produced by the Herbarium, Department of Botany, UW-Madison. This is probably the best and most complete site for Wisconsin plants. Search by scientific name, habitat type, status, county, family, genera, or common name. The results give a detailed description of the plant and most have a photo and distribution map. Also available is a link to the *Atlas of Wisconsin Prairie and Savanna Flora* and a key to WI conifers and rare lichens of WI.

http://www.klines.org/joanne/

Wisconsin Plant of the Week developed by a WI DNR employee. The features provide excellent photos of the plant as well as a detailed life history. The archive of past-featured plants is listed by scientific name.

http://plants.usda.gov

Search for plants found throughout the United States by common or scientific name. The search produces photos, life history, and range maps. Another feature lists literature references specific to the plant. Sponsored by the USDA - Natural Resources Conservation Service.

Invasive Plant (Weed) Identification

http://dnr.wi.gov/invasives

This site includes an extensive photo gallery of invasive plant photos and species information. Some of these plants are native to Wisconsin but tend to spread and out-compete other plants.

http://ipaw.org

Site of the Invasive Plants Association of Wisconsin. A list of Wisconsin invasive plants is included. Invasive plants are defined as non-native species or strains that become established in natural plant communities and wild areas and replace native vegetation.

http://www.wssa.net (go to plant photos)

Weed Science Society of America developed this web site. The Photo Herbarium includes over 200 common American herbs, plants, and weeds. The photos are listed alphabetically by common name. You can choose from either high or low-resolution photos. This site also has information on invasive plants.

Sources of Native Plants

http://clean-water.uwex.edu/pubs/native/index.htm

Wisconsin Native Plant Sources is a .PDF of a publication developed by the UW-Extension. The publication lists nurseries in Wisconsin and surrounding states and the type of native plants they carry.

Available from Burnett County

Controlling Runoff and Erosion From Your Waterfront Property. A Guide for Burnett County Landowners

This guide describes methods for controlling runoff from waterfront property. It describes methods for minimizing hard surfaces, vegetating, diverting water, and infiltrating runoff.

The Living Shore

A seventeen minute video about shoreline buffer zones.

Shoreland Restoration: A Growing Solution

A fifteen minute video that describes design, site preparation, and planting techniques for shoreline restoration. A printed companion instructional guide is also available.

A Guide for Developing and Managing Shoreland in Burnett County

An overview of the county shoreland zoning requirements and recommendations for shoreline property.

Burnett County Natural Shorelines Program

A slide presentation that describes the benefits of natural shorelines; gives examples of buffer types and components; and provides details of Burnett County financial and technical assistance, tax incentives, and education for natural shorelines.

For Additional Assistance

The Burnett County Land and Water Conservation Department offers technical and financial assistance for shoreline buffer restoration. Call the office to get advice about plants, shrubs, and trees appropriate for your property and directions on how to get them established. Native plant identification guides are available to borrow. Additional copies of this handbook are also available.

To Reach Us

Burnett County Land and Water Conservation Department
7410 County Road K, #109
Siren, WI 54872

715-349-2186

Email

LWCD@burnettcounty.org

Burnett County Web Site

www.burnettcounty.com