

# PROTECTING WATER RESOURCES:

## PLANTING AND CARING FOR HOME WETLANDS AND OTHER RIPARIAN AREAS



## Introduction

Some homeowners are lucky enough to have streams, ponds, or other bodies of water on their property. The transitional area between water and land requires careful management to protect the health of both ecosystems. This publication will help home gardeners and other private landowners to create an aesthetically pleasing landscape without damaging environmentally sensitive natural areas.

## What are riparian areas, and why are they important?

Riparian areas include wetlands and other property next to streams, rivers, ponds, and lakes, whose soils and vegetation are controlled by temporary or permanent flooding. We used to call these areas “swamps,” but this negative-sounding term hides the benefits of a healthy wetland. Wetlands play important ecological roles, many of which directly benefit homeowners:

- Improve water quality by filtering out and breaking down fertilizers, pesticides, and other soil and water pollutants.
- Reduce flooding of adjacent land by retaining stormwater like a sponge, then slowly releasing it over time.
- Prevent stream bank erosion and sedimentation.
- Provide food, shelter, and breeding habitat for aquatic, terrestrial, and amphibious organisms.
- Create habitat for terrestrial wildlife.

The Ramsar Convention on Wetlands (2018) provides a detailed and comprehensive list of important functions (provisioning, regulating, cultural, and supporting services) that wetlands play in the environment.

## How can I create a healthy wetland?

In general, your wetland will benefit from a diverse planting of native trees, shrubs, grasses, and herbaceous plants. Before you make any plans, you’ll need to check your county and state regulations, as permits and monitoring may be required. These agencies can also help you get started designing your planting site and choosing the best native plant species for your location. Government cost-share assistance may be available for wetland and riparian restoration.

Once you have an approved plan in hand, use the following guidelines (and additional websites at the end of this publication) for creating a healthy, sustainable wetland landscape.

### *I. Choosing appropriate trees and shrubs*

- For wet areas, choose *obligate* (requires flooding) or *facultative* (tolerates flooding) plant species; for upland areas, choose facultative species only.
- Consider the mature size of different species, so that you don’t block views or create overgrown conditions.
- It’s best to purchase sun-loving species first for open areas, and then buy shade lovers in a year or two when canopies start to form. Focus on shade-loving species for wetlands under a tree canopy.
- Bare-root plants (Figure 1) are the least expensive to buy, the easiest to plant, and over time most likely to establish and survive. But they are smaller than container (Figure 2) or balled-and-burlapped (B&B) plants (Figure 3). If you must have larger trees or shrubs, you’ll need to buy containerized or B&B specimens and plant them correctly (see Section IV). Many local nurseries and garden stores do



Figure 1. Bare-root tree or shrub.



Figure 3. B&B tree, covered (top photo) and uncovered (bottom photo).



Figure 2. Containerized shrub, removed from its pot.

not sell native plant species or sell in the quantity needed. Local conservation districts may have an annual tree and shrub sale that focuses on species for conservation plantings.

- It's best to plant in the fall, when moist, cool conditions will reduce transplant stress. Avoid planting later than February, as summer heat and drought will hurt transplant success. Because bare-root plants are commercially available late winter to early spring, be aware that you may need to provide supplemental irrigation for the first growing season to ensure root establishment. If necessary, these bare-root plants can be potted up into containers and held until fall for planting.

## *II. Preparing the roots (for bare-root plants, skip to next section)*

- Keep roots shaded and moist at all times.
- Remove all containers and other foreign materials from the roots.
- Using a hose or a water bath, remove all media from the roots (Figure 4). If root mass is too dense, use cut and spread method (Figure 5).
- Let root balls soak for several hours if they are too dry to work.
- Prune excessively long, fine, and fibrous roots.
- Prune away girdling, circling, or kinked woody roots (Figure 6).



Figure 4. Root washing B&B.



Figure 5. Cut and spread root system.



Figure 6. Poor roots, before (top photo) and after (bottom photo) cutting.

### III. Preparing the soil

- Dig the hole to mirror the root system—twice as wide and just as deep.
- Avoid incorporating *any* soil amendments (Chalker-Scott and Downer 2019). Wetlands naturally have a high level of organic material (OM). It's very unusual for riparian soils to need compost or other sources of OM before planting. A soil test will reveal the OM content, and as long as it's greater than 3%, no more OM needs to be added. The wetland will generate its own OM. Excessive use of organic amendment will:
  - a. Interrupt water and air flow within soil.
    - i. Roots may not establish (Figure 7).
    - ii. Perched water table during wet season (the "bathtub effect").
    - iii. Dehydration during dry season.
  - b. Generate nutrient overload.
    - i. Excessive use of organic material increases runoff of nutrients, including phosphorus and nitrogen.
  - c. Cause subsidence (sinking of amended soil) over time.
    - i. OM in soil profile cannot be replaced after planting.
    - ii. Amended soil and installed plants will settle below grade when OM decomposes (Figure 8).



Figure 7. Failed restoration planting, due to planting the tree in potting media. Original soil from the hole is the clay mound to the right and in front of the tree.



Figure 8. Soil subsidence.

### IV. Planting your plants

- Plant at grade—the root crown should be at or slightly above the soil surface. If the plant settles during the next steps, gently pull it back into place.
- Arrange the roots in a starburst pattern over the mound (Figure 9) and backfill with unamended native soil. Do not use commercial topsoil.
- Water well, adding native soil as holes develop (Figure 10). This process is called "mudding in." Do not step on or press soil. If done properly, there will be no further settling after mudding in is complete.
- No staking should be required, but occasionally taller trees require some temporary support during root establishment. If necessary, stake trees low and loose for no more than six months (Chalker-Scott and Downer 2018).



Figure 9. Spreading root system in shallow hole.



Figure 10. Mudding in.

## V. Aftercare

Little care is needed for properly planted trees and shrubs. Don't prune any limbs, as this will hurt root establishment, and don't waste your money on expensive and unnecessary transplant supplements (Chalker-Scott and Downer 2019, 2018). Here are the recommended practices:

- Mulch:
  - a. After planting, add at least 6 in. (and up to 12 in.) of coarse wood chip mulch (Chalker-Scott 2015) over all exposed soil, up to, but not touching, trunks of trees and shrubs (Figure 11). Coarse wood chips are inexpensive and readily available from tree service companies. Do not use bark mulch, as it will not absorb water and is readily dislodged. The deeper the mulch layer, the better weed control will be.
  - b. Woody mulch provides many documented benefits to any landscape, including:
    - i. Improvement of soil structure by reducing compaction and allowing aggregates (sometimes called peds) to form.
    - ii. Enhanced establishment of trees and shrubs (Figure 12).
    - iii. Increased levels of beneficial microbes and other soil life.
    - iv. Effective weed control for several months or, in some cases, years.
- Irrigation:
  - a. Water your new plants well during the first year of establishment.
  - b. Properly planted trees and shrubs should only need additional water for the first growing season, unless summers are unusually hot and dry.
- Fertilizer:
  - a. Wetland soils are naturally rich in nutrients. If a soil test indicates a nutrient deficiency, topdress with a thin layer of compost as it will provide a slow release of nutrients. Be sure to cover the compost with coarse

wood chips as described earlier to prevent weed growth in the compost.

- Protect plantings from damage:
  - a. Plastic planting tubes (Figure 13) protect young trees from mower, rodent, and grazer damage; remove before they interfere with tree growth. Pehling (2016, 2014, 2013) has published fact sheets on managing pests that damage plants.
  - b. Chicken wire fencing can be used to protect trunks from beaver, deer, and other browsers.
  - c. If browsing animals become common in your wetland, plant new trees and shrubs that can grow back after being grazed. Species that naturally form thickets are good choices.



Figure 11. Mulching.



Figure 12. Mulched (top photo) and unmulched (bottom photo) snowberries in restoration sites.

## *VI. Protecting your riparian landscape*

Many of the typical problems which cause wetland landscape plants to die can be avoided if you follow the guidelines listed above. Beyond that, there are other ways to protect your landscape and its inhabitants:

- Avoid the use of all pesticides and fertilizers.
- Remove nearby paved or other hard surfaces that create runoff into your wetland. Use gravel, permeable pavers, or other easily draining materials instead.

- Avoid storing machinery and other equipment near your wetland where leaking pollutants could contaminate your landscape.
- Avoid grazing any livestock near your wetland to prevent soil compaction, plant damage, and fecal contamination of water.
- If mosquitoes are of concern, manage them in an environmentally appropriate manner (Kerr et al. 2016).



Figure 13. Commercially available plastic planting tube.

## Additional Resources

For an article demonstrating the value of deep arborist chip mulches as a way to suppress weeds while supporting desirable plant growth, see:

Cahill, A., L. Chalker-Scott, and K. Ewing. 2005. Wood-Chip Mulch Improves Plant Survival and Establishment at No-Maintenance Restoration Site (Washington). *Ecological Restoration* 23:212–213.

For several relevant chapters containing information on site design, analysis, and preparation; plant selection, installation, and management; and fertilizing, watering, pruning, and propagating plants, see:

Chalker-Scott, L., ed. 2009. Sustainable Landscapes and Gardens—Good Science, Practical Application. *GFG Publishing*. Yakima, WA.

## Useful Websites

The University of Washington Burke Herbarium website has native species distribution information: <http://biology.burke.washington.edu/herbarium/imagecollection.php>

The Washington Native Plant Society maintains current lists of native plants for riparian planting: <https://www.wnps.org/files/147/Plant-Lists-by-Habitat/573/Plants-for-Aquatic-and-Wetland-Habitats.pdf>; <https://www.wnps.org/files/147/Plant-Lists-by-Habitat/574/Plants-for-Freshwater-Shoreline-and-Riparian-Habitats.pdf>

Washington State Department of Ecology's Wetlands pages include information on regulation, mitigation, and stewardship of wetlands: <http://www.ecy.wa.gov/programs/sea/wetlands/index.html>

The Washington State Noxious Weed Control Board has current information about weed control and contact information for county weed control boards: <http://www.nwcb.wa.gov/>

The Washington State Conservation Commission has cost-share programs that landowners may qualify for. Conservation Reserve Enhancement Program: <https://scc.wa.gov/crep/>

## References

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