



Natural Resources Conservation Service
CONSERVATION PRACTICE STANDARD
RIPARIAN HERBACEOUS COVER

CODE 390

(ac)

DEFINITION

Grasses, sedges, rushes, ferns, legumes, and forbs tolerant of intermittent flooding or saturated soils, established or managed as the dominant vegetation in the transitional zone between upland and aquatic habitats.

PURPOSE

This practice is used to accomplish one or more of the following purposes—

- Provide or improve food and cover for fish, wildlife, and livestock
- Improve and maintain water quality
- Establish and maintain habitat corridors
- Increase water storage on floodplains
- Reduce erosion and improve stability on streambanks and shorelines
- Increase net carbon storage in the biomass and soil
- Enhance pollen, nectar, and nesting habitat for pollinators
- Restore, improve, or maintain the desired plant communities
- Dissipate stream energy and trap sediment
- Enhance streambank protection as part of streambank soil bioengineering practices

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to land adjacent to water courses, water bodies, and wetlands where natural riparian vegetation has been altered and bank stability is adequate to support the practice.

This practice does not apply to:

- Plantings that will be established on eroding streambanks or shorelines, for which the Maryland conservation practice standard Streambank and Shoreline Protection (580) is applicable;
- Plantings that are intended to intercept significant amounts of sediment or other pollutants, for which the Maryland conservation practice standards for Filter Strip (393) or Vegetated Treatment Area (635) are applicable.
- Plantings that are intended for the primary purpose of forage or biomass production, for which the Maryland conservation practice standard for Forage and Biomass Planting (512) is applicable.

CRITERIA

General Criteria Applicable to All Purposes

Determine the width of the practice based on the geomorphic potential of the site and project purposes, including the life history requirements of local fish and wildlife species, including pollinators. The minimum width of the riparian buffer shall be 20 feet, measured horizontally on a line perpendicular to the water body, beginning at the top of bank or wetland edge.

Select plant types and species that are adapted to site and hydrologic conditions, and will provide the structural and functional diversity for fish and wildlife habitat.

Site preparation and planting to establish vegetative cover shall be done at a time and manner to ensure survival and growth of selected species. Only viable, high quality seed and planting stock shall be used.

For additional requirements concerning species selection, planting dates, rates, methods, and care in handling and planting of the seed or planting stock, refer to the applicable sections of the Maryland Conservation Planting Guide.

Control or exclude livestock as needed to establish and maintain riparian vegetation and water quality.

Control plant and animal pest species to the extent feasible to achieve and maintain the intended purpose of the practice. Conduct pest management in a manner that mitigates impacts to pollinators. Control noxious weeds as required by state law.

Additional Criteria for Terrestrial Wildlife Habitat

Where wildlife habitat is identified as the primary purpose, the minimum buffer width shall be 35 feet. Select plant species and design buffers to provide wildlife food and/or cover for the desired wildlife species. Plantings shall consist of three or more species to provide greater vegetative diversity. Use native species or introduced species that provide wildlife benefits.

Schedule mowing, harvesting, weed control, and other management activities within the herbaceous buffer to accommodate reproduction and other life cycle requirements of desired wildlife species. Do not mow during the primary nesting season (April 15 to August 15), and allow time for adequate re-growth for winter cover.

Additional Criteria for Pollinator Habitat

Utilize a diverse mix of plant species that bloom at different times throughout the year. Include forbs and legumes that provide pollen and nectar for native bees.

To protect pollinators and maintain a diversity of plant structure, no more than one-third of the buffer shall be disturbed (mowed, grazed, burned, etc.) each year to allow for recolonization of pollinators from surrounding habitat.

Additional Criteria for -Additional Criteria to Improve and Maintain Water Quality

The minimum buffer width for water bodies and wetlands shall be 35 feet. For water courses, the minimum buffer width shall be 2.5 times the width of the water course (based on the horizontal distance between bank-full elevations), but not less than 35 feet.

Species selected for planting shall have stiff stems and high stem density near the ground surface to reduce water velocities and facilitate infiltration into the buffer.

Increase the buffer width in high nutrient, sediment, and animal waste application areas, where the contributing area is not adequately treated or an additional level of protection is needed.

Control excessive sheet-rill and concentrated flow erosion in the areas immediately adjacent to and upgradient of the buffer site. Maintain overland flow through the riparian area as sheet flow as much as practical.

Untreated concentrated flow from areas where manure, fertilizer or pesticides are applied shall not bypass the buffer. Address concentrated flow with supporting practices or treatments at the edge of the buffer (e.g., grass filter strips, saturated buffers), along the concentrated flow path (e.g., grassed waterways, bioreactors), or within the buffer (e.g., shallow excavated pools, water control structures).

Additional Criteria to Stabilize Streambanks and Shorelines

Select perennial species that will develop a deep, binding root system to strengthen streambanks and improve soil health.

Additional Criteria for Increasing Carbon Storage in Biomass and Soils

Maximize the width and length of the buffer to fit the site and increase total biomass production.

Select plant species that will have the highest rates of biomass production for the soil and other site conditions, consistent with meeting fish and wildlife habitat requirements.

Additional Criteria for Restoring Desired Plant Community

Base design criteria on best approximation of the desired plant community composition, structure, and function.

Note: Specific programs may impose criteria in addition to, or more restrictive than, those specified in this standard.

CONSIDERATIONS

Consider the long-term land use objectives of the client. For example, if the land user is primarily interested in using the riparian buffer to provide wildlife habitat or additional hay production, consider the plant species that may be suitable for these uses.

Assess site conditions, including surrounding land uses, soils, residual herbicides (to the extent known), available moisture during the growing season, and existing vegetation on the site and in adjacent areas, including any noxious weeds that may be present.

When making site and plant species selection, consider the maintenance and management activities (e.g., burning, disking) required for achieving the client's objectives. Also consider the client's limitations (e.g., equipment, time) for implementing the required management. Control of trees and shrubs is likely to be needed to maintain the herbaceous plant community and prevent dominance of the riparian zone by woody plants.

Consider using native plant species that have multiple values such as those suited for nesting habitat, fruit, seeds, browse, aesthetics, and tolerance to locally used herbicides. Native plant species usually provide the best overall benefits for wildlife and are well-adapted to local conditions.

Avoid plant species that may be alternate hosts to undesirable pests or that may be considered invasive or undesirable. Species diversity should be encouraged in order to minimize problems due to species-specific pests and maximize the potential for a variety of beneficial organisms.

If wildlife habitat is a concern, consider wildlife objectives such as habitat diversity, habitat linkages, daily and seasonal habitat ranges, limiting factors, and native plant communities.

Herbaceous riparian areas can function to link pollinators with adjacent fragmented habitat, and can serve as a conduit to move pollinators into areas requiring insect pollination. Different flower sizes and shapes appeal to different categories of pollinators. To support various pollinator species, consider establishing

the greatest plant diversity feasible. Consider incorporating nesting habitat, including patches of unshaded bare soil, for ground nesting bees. Where bumble bee conservation is a priority, consider establishing clump forming native warm-season grasses.

Consider the adverse impacts of high populations of nuisance wildlife, such as deer and groundhogs, on the establishment and maintenance of vegetation. When feasible, select plant species that are not preferred foods of nuisance animals, and utilize methods for protecting the plants until they become well established.

Also consider the potential for attracting nuisance wildlife into an area, either intentionally or unintentionally. Plantings that contain preferred wildlife foods may be used to attract nuisance wildlife away from valuable agricultural crops or ornamental plantings, but may also result in attracting additional nuisance wildlife into an area.

Existing, functional underground drains through the riparian area will pass pollutants directly to the outlet. To filter such pollutants, drains can be plugged, removed or replaced with perforated pipe/end plugs or water control structures to allow passage and filtration of drain water through the riparian root zone. Caution is advised that saturated conditions in the riparian and adjacent areas may limit existing land use and management.

Identify and evaluate any constraints such as economic feasibility, management options, and regulatory and program requirements. State and local laws and regulations may restrict or require permits or approvals for removal of existing vegetation in riparian zones. Laws pertaining to forest conservation, wetland protection, critical area protection, stream buffers, and erosion and sediment control may be applicable.

PLANS AND SPECIFICATIONS

Plans and specifications for this practice shall be prepared in accordance with the previously listed criteria. Refer to the applicable sections of the Maryland Conservation Planting Guide for specifications concerning species selection, planting dates, rates, methods, and care in handling and planting of the seed or planting stock. Plans and specifications shall contain sufficient detail to ensure successful implementation of this practice and may be recorded in narrative form, on Implementation Requirements (IR) sheets, or other approved forms.

Use the Maryland NRCS fact sheets *Warm-Season Grasses*, *Cool-Season Grasses*, *Native Herbaceous Plantings*, and *Forage and Biomass Planting* to provide additional planting and establishment information, as applicable, and complete the 390 IR sheet. The appropriate fact sheet(s) and IR sheet can serve as the planting plan and specifications for the practice.

The following items shall be addressed, as appropriate:

- Method of site preparation;
- Species and rates to be seeded/planted;
- Seeding/planting dates;
- Rate and type of soil amendments to be applied (if any);
- Method(s) used to protect plantings from animal damage (e.g., fencing, repellents, etc.) or for weed control.

Supporting Data and Documentation

The following is a list of the minimum data and documentation to be recorded in the case file:

- Location of the practice on the conservation plan map;
- Assistance notes. The notes shall include dates of site visits, name or initials of the person who made the visit, specifics as to alternatives discussed, decisions made, and by whom;

- Completed IR sheet, and copy of the appropriate fact sheet(s) or other specifications and management plans.

OPERATION AND MAINTENANCE

An Operation and Maintenance (O&M) plan shall be prepared and is the responsibility of the client to implement. The appropriate fact sheet(s) and IR sheet may serve as the management plan, as well as supporting documentation, and shall be reviewed with and provided to the client.

At a minimum, the following components shall be addressed in the O&M plan, as applicable:

- Describe the extent of management needed to maintain vegetation in the desired species composition, or no management required (e.g., natural area);
- Inspect the herbaceous buffer at least annually. Shape and reseed areas damaged by heavy rainfall, animals, chemicals, tillage, or equipment traffic, and any other areas where the stand is not adequate;
- Check for insects and diseases, and if an incidence threatens stand survival, take corrective action to keep the pest under control;
- Control undesirable plants by pulling, mowing, or spraying with a selective herbicide. Control noxious weeds as required by state law;
- Protect the buffer from wildfire and damage from livestock, wildlife, and equipment, to the extent feasible;
- Where wildlife habitat is a concern, do not mow during the primary nesting season (April 15 to August 15);
- Apply soil amendments periodically, if needed to maintain plant vigor. If nutrients are applied, refer to the conservation practice standard for Nutrient Management (590);
- Do not use the herbaceous buffer for hay storage or machinery parking for an extended period of time, especially if doing so will damage or impair the function of the practice;
- Describe the acceptable uses (e.g., flash grazing, haying, etc.) and time of year or frequency of use restrictions, if any. *Pay particular attention to regulatory and program requirements as they relate to acceptable vs. restricted uses, and other management restrictions.*

REFERENCES

Tufekcioglu, A., J.W. Raich, T.M. Isenhardt and R.C. Schultz. 2003. *Biomass, Carbon and Nitrogen Dynamics of Multi-Species Riparian Buffers within an Agricultural Watershed in Iowa, USA*. *Agroforestry Systems* 57(3):187-198.

USDA, Natural Resources Conservation Service. *Conservation Practice Standards*. Maryland Field Office Technical Guide, Section IV.

U.S. Fish and Wildlife Service, Chesapeake Bay Field Office with the Natural Science Center and Adkins Arboretum. 1995. *Native Plants for Wildlife Habitat*. Annapolis, MD.