



Managing Riparian Forests

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Introduction

In recent years we've shifted our focus from single species, single stand management to an emphasis on larger ecological communities - ecosystems, watersheds, and landscapes. All these scales are important. We need to understand the complexities of ecological systems, as we apply management strategies to specific habitats, stands, and species.

Riparian areas can help us incorporate larger landscape concerns into forest management planning and activities. Riparian areas and their associated water courses often cross ownership boundaries. This provides a unique opportunity for adjoining landowners to work together on mutual management objectives.

What Are Riparian Areas?

Riparian areas are those lands located next to and are influenced by or have an influence on a stream or water body. They support many different functions: removing sediment, phosphorus and nitrogen; stabilizing shorelines; reducing flood waters; moderating water temperatures; affording wildlife travel corridors; supporting in-stream and terrestrial habitat; and providing recreational opportunities.

Riparian Areas as Wildlife Habitat

Several features in riparian areas make them attractive to a wide diversity of wildlife. The stream course creates a natural opening in the forest, allowing sunlight to reach the ground. The greater warmth and light allows multiple layers of vegetation to develop along the shoreline. Mosses, lichens, ferns, and flowers take hold on the ground. A variety of shrubs, vines and trees create a layering of vegetation up to the forest canopy. This vertical diversity of vegetation supports a diversity of wildlife from salamanders, beetles, and weasels on the forest floor to songbirds, bats, and raptors in the overstory.

Riparian areas tend to have an abundance of cavity trees and woody debris. Dead, dying and downed woody material is important for many of New Hampshire's wildlife species. Bats roost under the loose bark of dying trees, while flycatchers, kingfishers, osprey, and other birds use snags along the water as feeding perches.

The presence of water adds diversity to the forested environment. Some species (e.g., salamanders, beaver, otter, trout) depend on both the forest and the water for food and shelter. Leaves, twigs, and other organic matter from streamside vegetation is a major food source for in-stream invertebrates, the foundation of the aquatic food web.

Riparian areas are used by birds and mammals as travel corridors. In northern New Hampshire, riparian forests link areas of suitable pine marten habitat, enabling this species to expand its range. Other mammals routinely hunt along streams. Songbirds use riparian forests as rest stops during migration. Other wildlife use riparian corridors as they disperse from their birthplace.

Riparian forests often support unique micro-climates, critical for some wildlife. Deer wintering areas are often associated with softwood stands in riparian areas. The prevalence of fallen logs and cool shade creates a moist, micro-climate for salamanders.

How Wide is a Riparian Area?

The width of a riparian area depends, in part, on the functions and values that are being protected. A stream that serves as the headwaters of a drinking water supply may need a large buffer to protect water quality. Riparian area dimensions are also influenced by the unique site conditions such as stream size, soil type, bank slope, and associated vegetation.

To protect multiple values, including fish and wildlife habitat, riparian areas should encompass adjacent spring seeps, wetlands, riparian vegetation, and wet or highly erodible soils. Therefore, riparian areas will vary in width up and down the length of a water body. Riparian areas should be large enough to protect the designated values and to maintain their ecological functions. Forested buffers of 100 feet along a stream may be sufficient to protect water quality. Larger buffers are often required to maintain suitable habitat for invertebrates and fish (>100 feet) and birds and mammals (200-600 feet).

It is nearly impossible to set a width that applies to all riparian areas and that protects all the values. A set width may be too narrow in some areas and too wide in others. Ideally the width is determined by the site conditions and in the context of its surroundings.

Forest Management in Riparian Areas

In New Hampshire, the Basal Area Law allows no more than 50% of the basal area of trees to be cut within 50 feet of a stream. In addition, *Best Management Practices for Erosion Control* has recommendations for filter strip widths based on slope. Beyond these provisions, forest managers can follow some general principles within riparian areas that will help maintain the ecological integrity of these ecosystems:

1. Use small scale harvesting - single tree or group cuts; no whole tree harvesting in riparian area.
2. Use long rotations, allowing older aged stands to develop.
3. Leave all cavity trees, dead or alive, and fallen logs.
4. Operate timber harvests in late summer or during frozen ground periods to minimize disturbance to the forest floor and understory vegetation. This will also avoid conflicts with wildlife breeding periods (typically April-June).
5. Incorporate riparian areas in land cover maps, showing their clients the link between uplands, wetlands, and water bodies and their location within the watershed.
6. Locate log landings and haul roads outside the riparian area or at least 200 feet from the stream, whichever is greater.

These recommendations will help protect in-stream and riparian fish and wildlife habitat. By using these management practices in riparian areas, landowners will be protecting these unique ecosystems for multiple benefits.

For additional information about the management of wetlands and riparian areas consult *Good Forestry in the Granite State*, available from the UNH Cooperative Extension Publications, Nesmith Hall, Durham, NH 03824