

Chapter 5. Managing Regenerating and Young Forest Habitat

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If you are a landowner and are reading this chapter for the first time, there are a few things you ought to know about regenerating and young forest habitats. First, regenerating and young forest habitats in any of the forested communities, with the exception of hemlock, contain a greater diversity of wildlife species than any other forest age class. Regenerating and young forest habitat availability is declining throughout the Northeast as the remaining forests mature or change to non-forest uses such as parking lots. Therefore, well-planned efforts to create or maintain these habitats will result in a big payoff for wildlife. If you are interested in wildlife you definitely should be interested in these types of habitat.

Second, the regeneration stage, in terms of age, starts right after a timber harvest or other type of disturbance and lasts from 10 to 15 years depending on which forest type, or forest community, is involved. Young forest habitat starts at age 10 to 15 years and continues to 40 or 50 years, again depending on the community involved.



Figure 1. Regenerating stands of forest in the seedling/sapling (foreground) and pole stages (middle of photo) provide excellent habitat for many species dependent on early-successional habitats. Photo by John Lanier.

Third, regenerating or young forest habitat can be established in two general ways. The first option is to wait for some natural event to flatten your present stand to the point that it will start over by itself. This usually takes a hurricane, fire, ice storm, or insect outbreak in catastrophic proportions. If this is how you want to establish young forest habitat on your property then you need read no further, just sit back and wait. Perhaps, during your lifetime, one of the above events will come to pass and naturally regenerate your forest. For those who would like to control when and how your forest is regenerated, this chapter will focus on important considerations and options for managing your forest.

Each forested community has different dynamics when it comes to how it regenerates. The forested communities discussed here are those listed in *New England Wildlife: Management of Forested Habitats* (DeGraaf et al. 1992). The management applications/silvicultural techniques used for your forests will vary from complete overstory removal (i.e. clearcutting) to small group selection harvests of less than 1/4 acre to 1/2 acre in size. Some communities regenerate better in full sunlight and others are adapted to more shaded

conditions. For example, regeneration in forests comprised of aspen or paper birch and, in some cases northern hardwoods, respond better to full sunlight; whereas coniferous, sugar maple, and oak stands regenerate better in partial shade. Specific silvicultural options for each community can be found in *New England Wildlife: Management of Forested Habitats*. There are also specific silvicultural guides available for nearly every tree species that has any commercial value.

By using these references and, if needed, consulting a professional forester or wildlife biologist, you can be confident that you can successfully grow any type of forest that your land will allow. The difficulty lies in deciding which of the communities are appropriate for your property, how much of those communities should be in a regeneration or young stage at any given time, and how the communities relate to each other across the landscape so that they provide optimum habitat for the wildlife species that you expect to be present. The answers to these questions define the real ball game for habitat managers. The ball game can be rather complex. The remainder of this chapter is aimed at helping you understand the rules of the game.

Management considerations

Prior to developing an early-successional forest management plan for your land, you must consider several important factors:

- What kinds of wildlife are you interested in?
- What are the current and past conditions of your property that will influence your management goals?
- Does the land have the potential or inherent ability to produce the kinds of habitats needed for the wildlife of interest?
- How large is your property?
- How does your property fit in the overall landscape perspective?
- What management actions need to be implemented to create or maintain the conditions you have chosen?

Wildlife goals

Making choices about the kinds of wildlife you want on your property will depend on property size and ability to produce the kind of habitat required for those animals. If you own one acre you will not be able to provide all the life requirements for a bear, and if you are interested in parrots you will not be very successful in growing tropical rain forest in the Northeast. This may sound elementary but it is the place we must start when deciding what to do.

There are a number of publications that describe the habitat requirements and home-range sizes of wildlife species found in the Northeast. These publications, some of which are listed at the end of this chapter, cover all northeastern species and can be helpful in identifying potential species that will use your property. You will find that nearly every forest-dwelling species in the Northeast utilizes at least some regenerating or young forest habitat during part or all of its life. The size of your property is going to make a big difference in your management decisions.

Most landowners in the Northeast own ten acres or less. Relatively few own hundreds of acres or more. However, there are many wildlife species with home ranges of less than ten acres including dragonflies, butterflies, and small mammals (e.g., meadow voles, white-footed mice, etc.), that act as an important prey base for larger species. A well-managed small property can provide all of their life requirements. Even if you are a small landowner, you should also consider providing some of the habitat elements for wildlife species that have larger home ranges and may only use your property some of the time.



Figure 2. Mid- and large-sized land holdings are appropriate for managing species with moderately-sized home ranges like ruffed grouse (a). However, even properties of ten acres or less can be effectively managed for many wildlife species including dragonflies (b), which act as an important prey base for many species. Photos by John Lanier (a) and Jim Oehler (b).

Current and past land conditions

Some wildlife species prefer specific communities such as northern hardwoods, spruce/fir, or oak/pine while others prefer more general community combinations. Soil characteristics on your property will dictate which forest communities will grow on your land. To further add to the confusion, past disturbances to your land, such as wildfires, timber harvests, heavy grazing, or other agricultural activities may have altered the soil and vegetative characteristics of your land. These considerations are important in determining what your land is capable of producing as it relates to the wildlife species you want to attract. Fortunately, there is help. Your county Extension Forester or your county agent from the USDA Natural Resources Conservation Service will have information on soil types that influence forested communities. They can tell you what soils you have and provide information on the effects of past land use on your property. Biologists from state wildlife agencies also can help you sort through the various options regarding creating potential habitat conditions and recommend specific management prescriptions.

Landscape perspective

How your property lies in relation to other landscape features will influence the wildlife that may use it and therefore is important to assess. If you only own a small amount of land, you should discuss wildlife goals with your neighbors and find out what types of habitat they are providing. If regenerating or young forest habitat is lacking in the surrounding landscape, then you may have a perfect opportunity to provide some. Even if you own an acre or less you likely can do something that will complement an adjacent habitat type. For example, you may be able to increase the size of an opening or enlarge an area of regenerating or young forest. By collaborating with adjacent landowners, you can increase the chances that wildlife species of interest will show up in your area.

Even if habitat is ideal on your property, but you live in a sea of lawns, buildings, or hayfields, wildlife may not use your land. You should try to persuade neighbors to plant trees to connect your habitat to others, increasing the probability that wildlife will find your “island” of habitat. Conversely, if trees dominate the surrounding landscape, some openings on your property would likely increase the diversity of species in the area.

If your land lies along a stream, river, or lake, you should expect occasional visits from wildlife species that follow river corridors such as otters, mink, or ospreys. You should consider creating or maintaining high-quality habitats to provide cover for the wildlife in these riparian areas. You should also provide a consistent supply of regenerating or young early-successional forest for beaver and other early-successional species, without completely eliminating the forest cover. Refer to chapter 9 for more information on management options in riparian areas.

There are many other landscape level factors to consider depending on the individual situation. By assessing the landscape, you can be sure your management activities do not become a barrier in some way to the natural movements of wildlife.

Management options

Regenerating and young forest habitat can be established using a variety of management techniques. Once you have determined your wildlife habitat goals and the associated forest communities required, you will need to select a management strategy to put the habitat “on the ground”. Your management should supply desired habitat components on a continuous basis to ensure high wildlife use of your land.

Typically, commercial timber harvest operations can be used to reach your habitat goals if your property is larger than 50 acres. We highly recommend that you consult a professional in the planning, preparation, and operation of commercial timber harvest operations. Many logging operations throughout the Northeast and elsewhere are “logger’s choice,” meaning the logger picks what he or she wants to cut (typically the commercially valuable wood) and leaves the rest. This leaves you with little or no recognizable regenerating or young forest habitat and no opportunity for future timber profits. A professionally trained forester or wildlife consultant can help you identify your goals and set up a program to reach those goals systematically over time. Many states require these individuals to be licensed or registered and you can get a list of names from your State Forester’s office.

Properties too small for commercial timber harvest operations can still be managed. Several states in the Northeast have assistance programs through the University Cooperative Extension, state wildlife agencies, or USDA Natural Resources Conservation Service that will help you establish desired regeneration or young forest using a variety of mechanical or hand tools. You may be able to do some yourself, and bring home some firewood if desired. A plan should be formulated to cut a certain amount of your property on an annual basis. A rule of thumb is to keep about 10% of the forested communities on your property in regeneration in any given ten-year period. This translates into cutting an average of 1% per year. If you currently have no regeneration on your property, you can start by cutting more than 1% to establish a significant amount of regeneration early, and then cut less during the last part of the ten-year cycle. The key is to decide what proportion of your property you want in regeneration and set an annual schedule to accomplish it.

If you are a larger landowner you should carefully plan your timber cuts throughout your property. You are likely to have several communities on your land and you should consider establishing a regeneration component in each of them. Your cutting patterns should not disrupt major travel corridors or other areas of concentrated use. An ideal cutting area size for regeneration in northern hardwood or aspen forests ranges between 10 and 50 acres. Softwood, or conifer, regeneration cuts should occur in patches of 1/4 to 2 acres. Larger units tend to encourage hardwood regeneration except in the far northern regions. Oak and sugar maple should also be regenerated in small patches. The percentage of the community that should ideally be in regeneration at any one time varies depending on the tree species, ranging from about 8% in northern hardwoods, Appalachian hardwoods, oak, pine, spruce, and hemlock communities to about 12% in aspen and fir stands. The cutting pattern should be thought out in advance so that the spacing between cuts allows the resident wildlife species to move between them and to continue to use them over time.

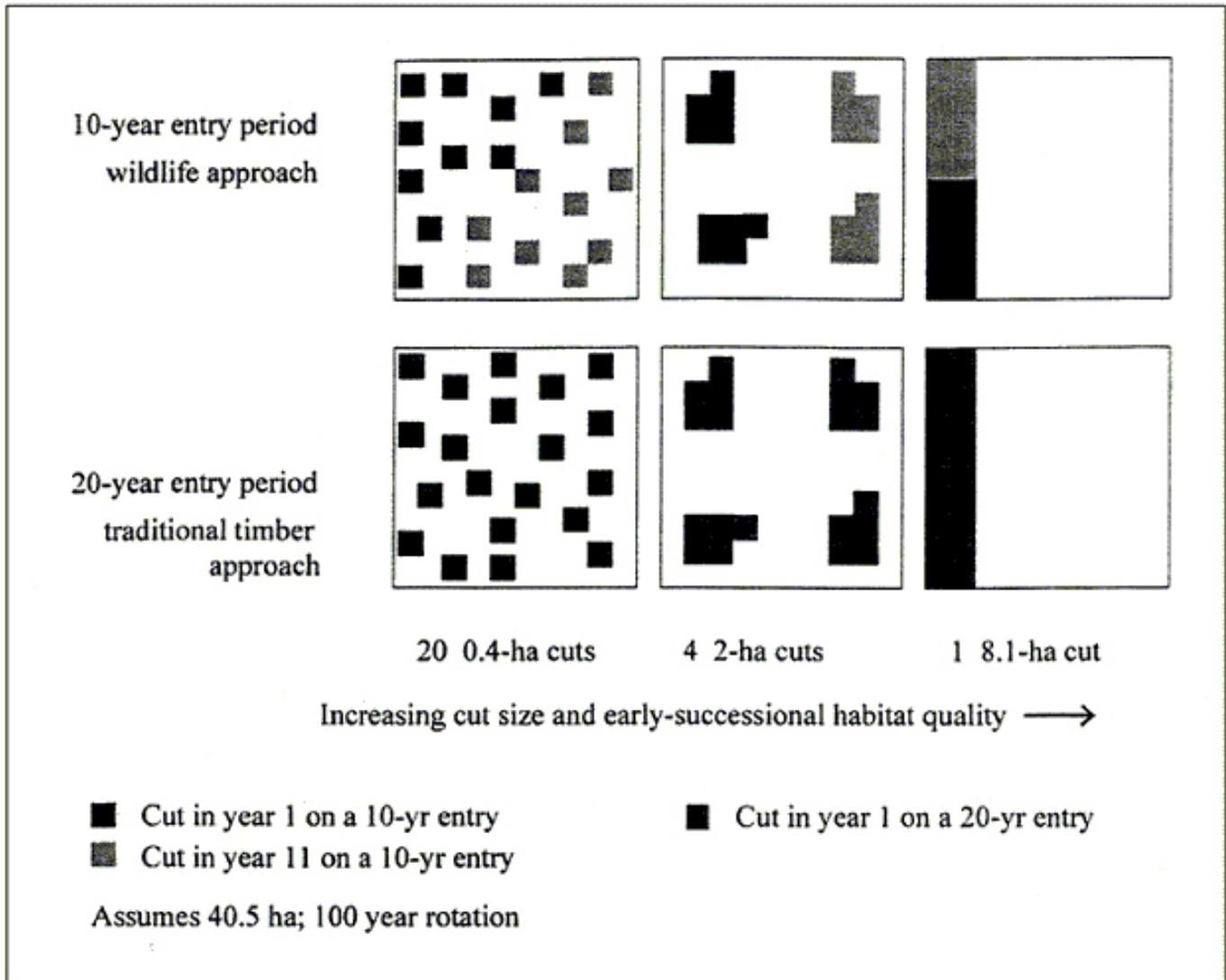


Figure 3. Comparison of stand entry periods under sustainable, regulated even-aged management for providing continuous early-successional wildlife habitat versus traditional silviculture in the northeastern U.S. Reprinted from DeGraaf and Yamasaki (2004) with permission.

The same principles apply on a smaller scale for smaller scale landowners. Set up a plan to work within the capability of your land, choose the community or communities you desire and establish the amounts of regeneration and young habitat you want to sustain over time. You may not have enough land to rotate your cutting schedule, but you can easily select a single area to maintain in permanent regeneration or young habitat through more frequent mowing or cutting.

Aspen forests, a common and important forest type in the Northeast, require special regeneration considerations. If you are interested in promoting aspen, look for individual aspen trees or small groups and focus your initial cutting on them. Clearcut at least 1/2 acre around each individual tree and at least one acre around groups. Be sure to include the aspen trees in the cut. Aspen regenerates both by seed and by root suckers. With adequate sunlight, root suckers will emerge up to 1/2 acre from the cut root system on one tree. Cutting should be done in the late fall or winter after the tree has stored most of its energy in its root system.

Pine regeneration is best accomplished in two stages. Wait for a good seed year and then cut about 60% of the mature trees, preferably in late summer of the following year. The cutting operation will disturb the ground, expose bare soil, and allow the pine seed to mix with the soil. Late summer cutting will reduce the chances of damage to the pine you are going to leave behind because the bark will have begun to harden up after the early growing season. The remaining 40% of the trees should allow enough sunlight to reach the

forest floor so that the pine seeds will germinate and grow, while creating enough shade to discourage white pine weevil. White pine weevil is an insect pest that invades young pine stands in full sunlight, resulting in deformed trees that exhibit forked branching at the top. Wait about 20 years after the initial harvest (this allows the establishment of a new pine stand), and then remove the remaining mature trees.

If forked tops and loss of value from a saw log standpoint is not a concern, then you have the option to harvest most of the mature trees during the first cutting, leaving a few scattered trees throughout the stand for perches and future cavity trees. The thick bushy pines with multiple tops that will eventually become established are excellent habitat and escape cover for many wildlife species.

There are a number of other techniques that can be employed by capable consultants depending on your objectives and the capability of the land in question. Prescribed fire can be successfully applied in oak forests. After a regeneration cut, typically a shelterwood type cut, and after oak seedlings have been established for two to three years, a spring prescribed fire will promote the growth and development of the oak seedlings. Be sure to consult a professional for prescribed burning assistance. Appropriate permits are required and conditions need to be suitable to ensure a safe burn. Refer to the prescribed burning section of chapter 10 for additional considerations.

You can evaluate wildlife responses and vegetative responses to your management over time. *New England Wildlife: Management of Forested Habitats* contains a table that describes responses by some selected bird species to clearcutting in northern hardwood forest. It is included in this chapter to give you an idea of the time frame in which some species respond to habitat changes. Keep in mind that regeneration habitat lasts for 10 to 15 years after a disturbance after which young forest habitat occurs up to 40 or 50 years or so. Some birds come in early and phase out early and others phase in and out at other times.

Regeneration and young forests in the Northeast are important habitat types for a large number of woodland wildlife as well as some wetland and grassland species. The supply of these habitats is in steady decline. This kind of habitat is created either through catastrophic wind, fire, or other storm events at periodic unpredictable intervals or through a number of management activities that can be planned and implemented on an annual basis. If you, as a landowner, decide to implement appropriate habitat management to supply regeneration and young forests for wildlife, you need to consider many factors. Determine what the overall habitat conditions are on a landscape level and what role your property can play. You need to know what your land is capable of producing, what you have out there now, and what you need to do to encourage the appropriate communities on your land. Many agencies and individuals can help you with this part of the process. There are management guidelines for every major tree species that will provide you with information regarding the best methods for stand establishment and regeneration. Commercial timber harvest is the most economical way to achieve regeneration goals on large properties. Harvest schedules should consider appropriate spacing and distribution so that wildlife travel corridors or other concentrated use areas are not disrupted. If you are a smaller landowner, young forests can be established and maintained using your own equipment or by hiring the work out. Many states in the Northeast have assistance programs for small-scale habitat work through cost sharing or professional advice.

If you decide to try your luck at early-successional forest management, you should record the changes observed on your land over time. A journal, log, or photographic record can provide you with an interesting look back at your property. You may be amazed how fast some of the changes take place and you will be able to take pleasure in demonstrating to others that the wildlife community responded favorably to the habitat you have provided.

Suggested reading

- Costello, C.A., M. Yamasaki, P.J. Pekins, W.B. Leak, C.D. Neefus. 2000. Songbird response to group selection harvests and clearcuts in a New Hampshire northern hardwood forest. *Forest Ecology and Management* 127:41-54.
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Biography

John W. Lanier received his B.S. Degree in wildlife management from the University of Massachusetts in 1967. He was the wildlife program leader on the White Mountain National Forest (WMNF) for 24 years. During that period he was extensively involved in the application of habitat management principles on numerous projects throughout the WMNF and New England. He worked closely with wildlife habitat researchers to determine the effects of management activities on wildlife species associations and habitats. He also worked for the New Hampshire Fish and Game Department for ten years managing habitat on state-owned properties until his retirement in 2004.

Table 1. Number of years after clearcutting an eastern deciduous forest that breeding early-successional birds first appear, become common, and then decline. Retention of some residual stems (snags and live trees) is assumed. Reprinted from DeGraaf and Yamasaki (2004) with permission.

Bird species	First appear	Become common	Decline
Ruffed grouse	10	15	20
Northern flicker	1	1	7-10
Olive-sided flycatcher	1	1	3-4
Willow flycatcher	1	2	5-7
Tree swallow	1	1	7-10
Winter wren	1	4	7-10
Eastern bluebird	1	1	2
Veery	3	10	20
Swainson's thrush	2	4	15
Cedar waxwing	2	4	7-10
Chestnut-sided warbler	2	4	10
Black-and-white warbler	3	10	a
Mourning warbler	2	5	10
Common yellowthroat	2	6	10
Canada warbler	5	15	a
White-throated sparrow	1	2	a
Rose-breasted grosbeak	3	15	a

^a Present until next cutting cycle