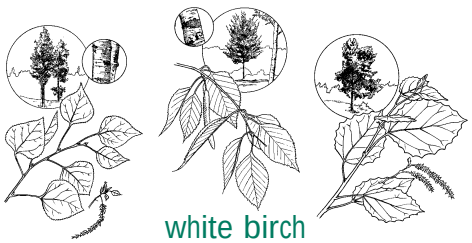
PRIVATE LAND PARTNERSHIPS
WORKING TOGETHER FOR WILDLIFE

ASPEN

Aspen is an early successional species that is within many different forest types. Aspen forests are most often found in northern Lower Michigan and the Upper Peninsula and are dominated by trembling (quaking) aspen and big-toothed aspen, both of which are shade-intolerant, fast growing, and short-lived. Other trees associated with the aspen community include white birch, balsam fir, pin cherry, red maple, and white and red pine.

Historically, aspen and birch were found in openings of many different forest types scattered throughout northern Michigan, particularly in the upper Peninsula. Overall, aspen birch forests covered less than one percent of Michigan in the mid 1800's. Aspen and birch established themselves in both small and large forest openings created by natural disturbances such as fire, windthrow, insects, and disease. When aspen and birch matured, they would provide shade for more shade tolerant species such as maple, beech, hemlock, and basswood. Eventually these species would become the dominant trees in the upper canopy until the next disturbance created another opening. On some sites, disturbance was so frequent or severe and soils were either very wet or very dry that aspen was able to maintain a foothold and create dense stands. This commonly occurred in red and white pine forests on dry, sandy, south facing slopes and lowland conifer forests on shallow soils.

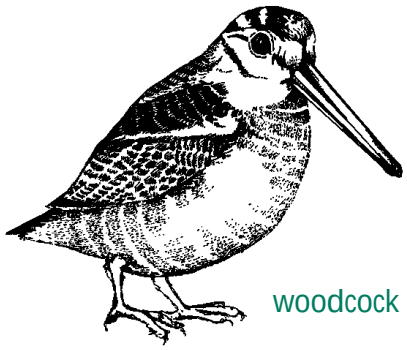


quaking aspen | white birch | big-toothed aspen

The logging era, which began in the mid 1800's, brought significant change to the mature pre-settlement forests that covered Michigan's landscape. Entire forests were cleared for lumber and the remaining slash was piled up and burned. This intense burning altered soil chemistry, and combined with the forest clearing, created a very harsh environment for plants to reestablish. Plants that thrive in open disturbed conditions, such as aspen and birch, however, were able to spread relatively quickly across the state in areas that were previously beech maple forests, red pine white pine forests, jack pine barrens, conifer swamps and other forest communities. Between the early 1900's and 1966, aspen forests steadily increased from approximately 290,000 acres to a record 4.2 million acres, or a 14 fold increase from the mid 1800's. Aspen forests increased during this period by colonizing open disturbed sites, and through active timber and wildlife management. Natural resource managers discovered that aspen responds very positively to cutting. In fact, once aspen is cut, its root systems respond with a rapid production of 5,000 to 70,000 suckers per acre. However, between 1966 and 1993, aspen forests have declined by approximately 1.5 million acres or 36 percent. The primary reason for this decline is that many forests in northern Michigan, particularly those on private land, are maturing and succeeding to more long-lived species such as oak, maple, and pine. Today, aspen forests occupy approximately 10 percent of Michigan's landscape.

If aspen is not cut, it will eventually convert to either more shade tolerant species, species dependent on the forest type it is in, or it will die and grass and/or tag alder will appear. Left undisturbed aspen will be replaced by more shade-tolerant species such as maple, beech, balsam fir, or spruce, depending on the soil nutrients, moisture, and seed sources. On poor quality sites, grasses and shrubs may replace aspen. This process may take 50 to 70 years. If your goal is to regenerate aspen on your land, you must cut it. On the other hand, if your goal is to convert it to another forest type, you need to let it mature and die.

Therefore, when managing aspen for wildlife there are usually two management options to consider: even-aged or mature stand management. Each type will be described in more detail throughout this chapter. However, it is



woodcock

important to realize that administering either type will benefit some wildlife species and harm others. As has been mentioned in many previous chapters and will be mentioned in many others after this, there are always trade-offs within wildlife management. The landowner must decide what their goals are and what type of management achieves those goals while in turn producing the least amount of detrimental impacts to wildlife. Before engaging in aspen management on your property we recommend speaking to a wildlife biologist or forester to discuss your options in more detail.

Wildlife Value

Aspen forests support a wide range of plant diversity over the stand's life span of 50 to 70 years. Different growth stages in aspen forests result in different ground cover, fruiting shrubs, and competing tree species that advance or retreat. It is this plant diversity that attracts many different species of wildlife.

Young stands of aspen saplings are less than three inches in diameter, 10 to 20 feet in height, and less than 10 years old. These saplings attract the chestnut-sided warbler, mourning warbler, indigo bunting, and golden-winged warbler, which is a species that is quickly disappearing in Michigan. Other species that use this stage of the aspen forest as habitat include woodcock, deer, cottontail rabbit, snowshoe hare, and ruffed grouse.

When the stand grows to pole size, it will be 10 to 40 years old, 20 to 70 feet high, and contain trunk diameters of four to nine inches. Species that use this stage of the aspen forest as habitat are the least flycatcher, yellow-bellied sapsucker, ruby-throated hummingbird, red-eyed vireo, ovenbird, pileated woodpecker, woodland jumping mouse, porcupine, deer, and ruffed grouse.

When diameters exceed nine inches, foresters classify the stand as a sawlog forest. Tree heights may exceed 70 feet, and the stand will be at least 40 years old. Species attracted to this stage of aspen forests include the black bear, porcupine, flying squirrel, white-footed deer mouse, pileated woodpecker, veery and--where conifers are mixed in--the American redstart and pine marten, and fisher.

Management Considerations

As mentioned earlier, there are two ways to manage your aspen forest stand--let it grow to maturity, or subscribe to a series of planned even-aged timber harvests. If you decide to cut your forest, you must decide between a short rotation period that will produce ruffed grouse and deer habitat, or a long rotation period to grow sawlogs that will produce habitat for bears and porcupines. The other option is to allow natural succession to occur which will convert your stand to a different forest type that would benefit other wildlife species.

Mature Stand Management

Mature stands of aspen will contain many trees that are dead or dying (mature aspen is vulnerable to hypoxylon canker disease). These trees host an accumulation of insects, which in turn provide food for many kinds of wildlife. As the forest matures and more trees die, other species will eventually replace the aspen and dominate the stand. On good to high quality sites, shaded areas provided by the maturing aspen likely help to increase pines, oak, maple, beech and other shade-tolerant species. On a poor site consisting of dry, sandy soils the aspen will often be replaced by grasses, forbs, shrubs, and a few scattered oaks or pines. In areas that previously supported northern hardwoods, beech-maple forests, white pine-red pine forests, or savanna openings, it may be possible to successfully manage for these forest species.

Letting the forest mature will result in a very diverse array of species composition. With each change of vegetation, the habitat for wildlife will also change. For example, if the aspen is replaced by an oak forest, it will attract the fox squirrel, wild turkey, white-breasted nuthatch, black-capped chickadee, and downy woodpecker. If you continue to let the forest mature, and the oak is replaced by a maple-beech forest it will attract the broad-winged hawk, red-shouldered hawk, black-

ruffed grouse

black bear

throated blue warbler, and northern goshawk. If instead, the oak is replaced by a stand of upland pines it will draw pine warblers, black-throated green warblers, crossbills, redpolls, and red squirrels.

If you do not want your aspen to be replaced but wish to maintain a mature aspen stand on your property, instead of a young stand, you will need to do small amounts of clearcutting. Without some type of large disturbance, such as clear-cutting, some successional change will happen. If you cut the stand when at least half the aspen is in healthy condition, then the site will regenerate to aspen. On many sites, this would need to be conducted before the stand is 80 years old. To help maintain the stand as a "mature" aspen forest, make small clear-cuts of one to two acres each scattered within the forest. The regeneration that occurs will provide diversity and give healthy, young aspen a chance to replace older, dying aspen. Also, shelterwood or seed-tree cuttings that promote a mix of conifers, oaks, beech, or maple will add diversity to the stand. For more information on these timber harvesting methods, see the chapters on **Timber Harvesting**.

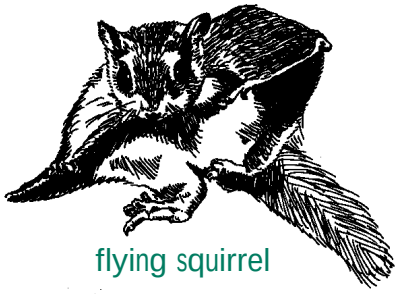
Even-Aged Timber Management

If your goal includes maintaining many ages of aspen on your land, you will need to conduct a timber harvesting rotation. Most professional managers prefer even-aged management for the regeneration of aspen. Besides quick regeneration, this management technique also can lead to increased revenue to the landowner. The goal is to create a mixture of young (sapling), medium-aged (pole) and mature (sawlog) aspen by clear-cutting blocks of one to 10 acres in size at intervals that will establish a 40 to 60 year rotation. This means that the whole stand will have been cut after 40 to 60 years. Cuts should be adjacent to each other to attain the maximum wildlife benefits. This method can be used to manage aspen stands as small as eight acres. For example, cutting two acres of an eight-acre stand every 10 years will result in a 40-year rotation.

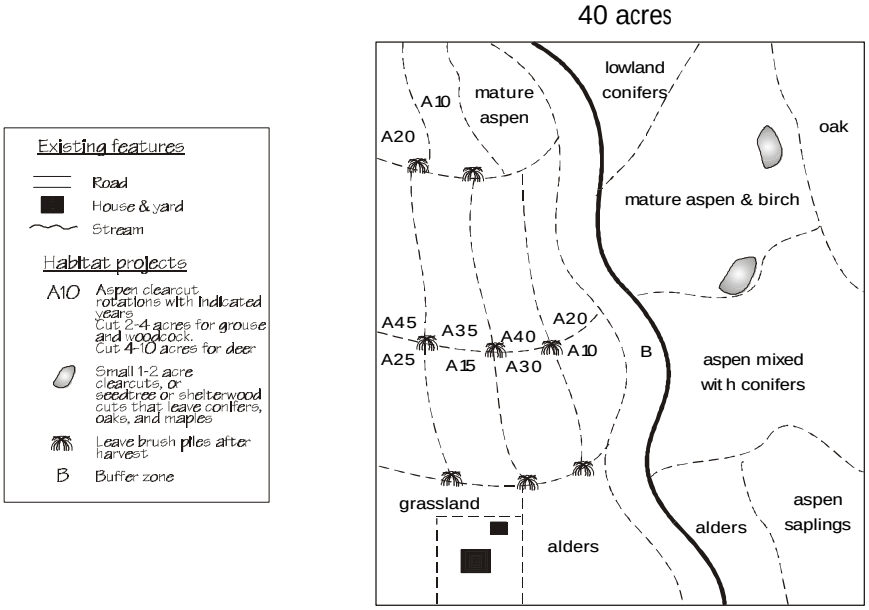
To ensure regeneration, you should cut in winter when the trees will have stored energy in their root systems. The following spring this energy will be released in the form of numerous new sprouts. Depending on soils and other factors, clearcutting at the other times of the year is possible, but professional assistance should be received to insure success. Each harvest should be at least one-acre in size to minimize shading from trees left standing, which will defeat your purpose. Remove all trees larger than one inch in diameter. A long, linear cut provides more edge than a square, checkerboard harvest, but the best prescription is to follow the topography of the land when possible. Make the cut at least 50 yards wide and 100 yards long in a north/south direction if possible to let sunlight penetrate along the north side.

If managing smaller stands up to 10 acres in size, cut a quarter of the stand every five to 10 years by taking out two to three acres at each harvest. Begin with the southeast quarter, followed by the southwest quarter, then the northeast parcel and finally the remaining northwest piece. The goal is to cut the entire stand over a period of 40 years and then start the cycle again. This same plan can be used to manage smaller stands of only 20 to 30 mature aspens if you shorten the rotation. Simply cut one-fourth of the stand every three years, starting with those in the southeast quarter. Clearcuts that are two to four acres in size benefit ruffed grouse and woodcock. Smaller cuts make more economic sense if they are connected by trails or are relatively close to each other.

If managing larger tracts from 20 to 40 acres in size, make larger cuts more often. On aspen stands larger than 40 acres, manage the forest as several 20- to 40-acre parcels with cuttings following the above prescription. Larger cuts of up to 10 acres each are most helpful to white-tailed deer. Larger cuts may be necessary to ensure regeneration in areas where deer and elk are numerous, as this will help minimize the browsing and subsequent loss of all or most of the saplings. In areas with moderate to high



flying squirrel



This map is an example that demonstrates the many management options discussed throughout this chapter. The option(s) you choose should depend not only on your goals, but the location, condition, and present use of your land.

deer or elk numbers, cuts may have to be 40 acres in size or larger. Larger cuts are also more economical for commercial harvest.

To increase stand diversity for wildlife, leave several non-aspen trees per acre. Small clumps of two to 10 individual trees and shrubs such as white pine, hemlock, cedars, spruce, oaks, hickory, serviceberry, and hazelnut will all help to provide the habitat mix that favors a variety of wildlife. Another management option is to leave 20 to 40 foot strips of mature standing trees between cuts to help minimize the short-term disturbances after the cut and lessen the denuding appearance of the clearcut.

Avoid clearcutting trees near streams or seasonal wetlands--the best assurance is a vegetation buffer of at least 100 feet around these sensitive areas. If cutting in this area is necessary professional help should be solicited in order to minimize the potential negative impacts. Leave standing snags (dead trees) and occasional wolf trees (large, short-trunked, widely branching trees), which will provide food and homes for wildlife. A forest floor that is completely free of debris is not beneficial to many, if any, wildlife. Many insects, amphibians, reptiles, birds, and small mammals depend upon leaf litter, decaying logs, and fallen branches for food and shelter.

Build brush piles from the harvest slash by incorporating live-lopped trees when possible. These small trees are only partially cut and then bent over the pile, which should be at least 15 feet in diameter and five feet high. Reptiles, amphibians, rabbits, ground nesting birds, and other small mammals will use brushpiles for shelter. Limit the number of brushpiles to one to two per acre to reduce over-browsing of saplings by rabbits.

In summary, aspens an early successional stage of many forest types. These forests offer great opportunities for landowners that wish to manage their property for wildlife. The relatively fast-growing trees love sunlight and are fairly easy to regenerate when cut. Aspen forests permit a variety of understory shrubs and ground covers to grow. It is this diversity that attracts many kinds of animals. However, you may choose to let your aspen forest mature and be replaced by other forest and grass species. This too will attract a variety of wildlife to your property.

FOR ADDITIONAL CHAPTERS CONTACT:
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Private Land Partnerships: This partnership was formed between both private and public organizations in order to address private lands wildlife issues. Individuals share resources, information, and expertise. This landowner's guide has been a combined effort between these groups working towards one goal: Natural Resources Education. We hope this manual provides you with the knowledge and the motivation to make positive changes for our environment.

FOR ADDITIONAL ASSISTANCE: *CONTACT YOUR LOCAL CONSERVATION DISTRICT*