

MANAGEMENT OF BIRCH FOR WILDLIFE HABITAT

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THE LIST of wildlife species known to prefer paper birch and yellow birch as food is a long one. To mention a few: beavers and porcupines chew on the bark and wood; sapsuckers feed on the sap; other songbirds—notably the redpoll, pine siskin, and chickadee—relish the seeds; ruffed grouse eat the catkins, buds, and seeds (in northern Maine and Canada this bird is often called the “birch partridge”); and snowshoe hare, moose, and whitetail deer browse on the twigs. At least 24 different kinds of animals are known to feed on birches (*Martin et al. 1951*).

Our whitetail deer in the Northeast exhibit a clear preference for the birches. This information comes from deer-browse surveys conducted on National Forests in the Northeast in the early 1960's. In systematically located transects on each Ranger District, all twigs between 1 and 5 feet from the ground that showed 1 inch or more of current annual growth were counted by species and recorded as browsed or unbrowsed.

Deer browsing on birch twigs (predominantly yellow birch but some paper birch) was consistently greater than would have occurred by random feeding. For example, on the White Mountain National Forest in New Hampshire, birch twigs comprised 7 percent of the total twigs produced and available to deer; yet 28 percent of all twigs browsed were birch. This indicates that birch is browsed four times as heavily as would be expected by random chance. This is called a browse index of 4. An index of 1 would indicate browsing in direct proportion to availability. The four National Forests where birch twigs were produced in significant amounts are listed below, along with the browse index of each (*Stiteler and Shaw 1966*). There can be little doubt that deer browse birch by preference.

National Forest	State	Browse index for birches
Allegheny	Pennsylvania	4.8
White Mountain	Maine & New Hampshire	4.1
Monongahela	West Virginia	2.7
Green Mountain	Vermont	2.6

Two of the general findings from the browse survey are relevant to discussions here. First, on five of the six forests surveyed, an average of 85 percent of all browsing occurred on twigs of noncommercial species—berry bushes, mountain maple, and other weed species. Second, twigs of sprout origin were preferred better than 2 to 1 over twigs of seedling origin. Low-growing nontimber plants such as *Cornus*, *Rubus*, and *Vaccinium* (all preferred by deer) are particularly abundant in areas regenerated by clearcuttings, and so are stump sprouts.

From this it can be deduced that: (1) clearcutting for birch regeneration, with certain precautions mentioned later, will enhance wildlife habitat, and (2) there will be a better chance for survival of seedlings desired for timber management in clearcuttings because of the buffering effect of nontimber plants and sprouts that are preferred by deer, provided of course that the weed species are not appreciably reduced under the guise of a silvicultural practice. Maybe the deer will help to do the weeding job for the forester if the right kind and amount of nontimber plants are present.

The key to planning an overall timber-management system to produce optimum wildlife habitat is to strive for good distribution of forest stands representing different age groups over the entire home range of the wildlife species for which you wish to manage. Consider the following:

Young Stands

Young (seedling-sapling) stands established by clearcutting, seed-tree cutting, or two-cut shelterwood methods provide a surge of lush vegetation. The invasion of forbs, grasses, berry bushes, seedlings, and sprouts offer wildlife a complete high-protein diet for about 10 years after cutting. If saplings are weeded, the wildlife values of these superfood areas may even be extended to the time small pulpwood sticks can be cut as part of a thinning operation.

It is best for wildlife if regeneration areas are between 2 and 20 acres. Long narrow cuttings are better than square or circular cuttings because they create more edge (*Allison 1966*). If more than 20 acres are involved, strive to keep the short dimension to an average of 5 to 10 chains. The following guidelines by Roach and Gingrich (1962) should also be followed:

Space areas chosen for regeneration cuts far enough apart to permit creating one or more additional openings between them during some future cut. . . . Openings should total no more than 10 to 15 percent of the area of any working unit during a cutting interval in order to provide for sustained production.

Although written as a timber management guide, this sustained-production concept applies to both timber and wildlife habitat. The more these openings are dispersed throughout the working unit (home range of the wildlife species), the more benefit there will be for wildlife.

Poletimber Stands

As forest stands proceed from young to middle age, the wildlife food zone is gradually transferred from the ground to the tree canopies where seeds, nuts, and fleshy fruits are produced. Most untreated pole stands are relatively unproductive as wildlife habitat because their tight canopies prevent undergrowth development; and tree crowns are too small and crowded to produce much

mast. To maintain wildlife values, improvement cuts are essential. The released crowns will put out more fruit and seeds, and the sunlight reaching the ground will result in temporary but significant increases in ground plants and low-growing woody material. For example, the number of woody twigs available to deer will more than double if the basal area is reduced from 110 to 80 square feet (*Shaw and Ripley 1965*). The good effects will remain on the plus side for nearly 10 years, so intermediate cuts at 10-year intervals are desirable.

Sawtimber Stands

Sawtimber stands produce the lion's share of the acorns, beechnuts, hickory nuts, and other tree fruits that drop to the ground and are so eagerly sought by squirrels, deer, bear, grouse, and turkey. Improvement cuts in sawtimber stands of less than rotation age have the same beneficial effects as in pole stands, perhaps more so because thinning the high irregular crowns of older stands permits more sunlight to reach the forest floor.

For wildlife purposes, an ideal distribution of stand size classes to aim for is 25 percent seedling-sapling (2-5 inches d.b.h.), 25 percent poletimber (6-10 inches d.b.h.), and 50 percent sawtimber (11 inches d.b.h. and over) (*Shaw 1967*). In the northern hardwood type where paper and yellow birch are favored in the forest management system, this 25-25-50 stand-size distribution can be reached rather easily in a few cutting cycles if an 80- to 100-year rotation age is set as a goal. In fact, it is about what you would expect under a sustained-yield plan with timber production as the only objective.

If the few precautions mentioned earlier relative to regeneration areas—size, distribution, and extent—are heeded, forest management for birch production is completely compatible with forest management for wildlife production. Any of the silvicultural systems and cultural work mentioned during this symposium can be made to serve both purposes.

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