

BIRCH MANAGEMENT ON NEW HAMPSHIRE STATE LANDS

by *SARGENT GOODHUE, Chief, Forest Management Section, Division of Resources Development, Department of Resources and Economic Development, State of New Hampshire, Concord, N.H.*

Paper Birch

PAPER BIRCH occurs on New Hampshire's state forests in association with almost all other upland species. The quality wood is found as far south as the Sunapee Range and the Lake Winnepesaukee area. In this northern zone, there is a ready market that recognizes grade and makes paper birch management worthwhile. In the white pine area in the southeastern part of the State, paper birch wood is generally of poorer quality and is apt to bring but little better price than the cheaper hardwoods.

State land management of paper birch begins, when funds are available, with the sapling stands. Weeding (or cleaning) with herbicides kills competitive undesirable species as well as poorly formed birch. It is seldom necessary to make a choice between well-formed stems of paper birch and other desirable species simply because of low stocking of the better stems.

Very little hardwood pruning has been done to date, but current plans call for this practice on some of the better sites. It would seem that pruning of white birch would be an even better investment than pruning of other hardwoods because of the fast growth, short rotation, and quality recognition by the market even in the smaller diameters.

Commercial thinnings are seldom required because paper birch stocking is usually low and volumes available do not justify a cutting.

Since there are very few pure paper birch stands, our harvest of this species is usually done as part of an intermediate cutting in a system of uneven-aged management for the mixed stand. Marking is done on a single-tree and group selection basis, depending upon the distribution of the species within the stand. The paper birch component in these mixedwood stands tends to be even-aged, so

it is seldom possible to leave many stems for a later cut. The smaller trees are usually of low vigor and are apt to deteriorate rapidly when the stand is opened up. Intermediate cuts in mixed stands are usually desirable to assure maximum growth on the desirable stems, but this type of cut often produces so much low-grade wood that it is not economically feasible unless there is a good market for these grades. The paper birch component provides an added volume of readily marketable wood that could make the intermediate cut in a mixed stand practical and profitable.

The condition of the paper birch is often the determining factor in the timing of the intermediate cut. Early maturity, decadence, dieback, and crown breakage due to ice storms, combined with the rapid rate of deterioration of paper birch wood, make prompt salvage cuts necessary. To detect these conditions, regular periodic inspections should be made of stands with appreciable paper birch volumes, especially those at the higher elevations and on exposed sites.

Decisions concerning the type of harvest cuts in our stands containing paper birch have been dictated by considerations other than reproduction of this species. Public use of these relatively small and accessible tracts precludes clearcutting in many instances. The high costs of a true silvicultural clearcut and early weedings are investments that will probably not pay off in less than a rotation. When reproduction of other desirable species seems assured, increased costs can be justified only by greatly increased returns at the end of the rotation. Thirty-five years ago, we were girdling yellow birch to release spruce. Hindsight tells us now that this was often a poor investment. What will the market be 80 years from now? Will improvement in wood-processing techniques and changes in consumer

tastes make other species competitive with birch?

Even though our harvest cuts are not specifically designed for maximum reproduction of this species, they usually do provide conditions favorable to reproduction of intolerants over much of the acreage. Group-selection cuttings in pine, mixed hardwoods and old-pasture spruce stands, strip cuttings in spruce and fir, and occasional clearcuts in the salvage of overmature stands all result in openings favorable to birch reproduction. Hardwood sprout control is one of our standard TSI practices in cutover areas where seedling growth of desirable species will benefit from this practice. The removal of the sprout overstory in this early stage of the development of the new stand is especially beneficial to the intolerant species. So we expect that our overall paper birch stocking will be maintained or increased with these management practices.

The value of paper birch to the economy of New Hampshire is much greater than its portion of our total wood volume would indicate. It is a wood that provides more employment for local labor per thousand board feet than most species, because both primary and secondary processing take place in several communities around the State. It is also an important scenic asset, and we should attempt to insure its place in future stands.

Yellow Birch

Yellow birch attains its greatest commercial importance in New Hampshire in the general area of the White Mountains and north to Quebec. It occurs further south at the higher elevations but does not reach its maximum development in these areas. On State lands it occurs in the usual association with beech and sugar maple as well as with white ash, red maple, paper birch, and red spruce. Precommercial management practices do not differ from these followed with paper birch. As soon as we begin commercial cuts, the similarity ceases.

Because of past agricultural use and a pattern of small ownerships, our State-owned stands containing yellow birch tend to be less uniform than those on larger, more remote tracts. Our stands frequently contain areas of mature northern hardwoods mixed in with areas of pole and small sawtimber stands. This mixture of size classes is one factor that seems

to dictate uneven-aged management. We must work with what we have on the site. In marking these irregular stands, we try to include the entire sale acreage wherever there is enough volume to be cut to make an operation feasible. If we were to separate the mature areas from the pole or small sawtimber areas, there would not be enough high-grade volume to make a commercial improvement cut in the pole or small sawtimber areas. So we try to get improvement cutting done by lumping these areas with more mature areas in a single sale.

However, this approach still has its problems. What do we do with cull and low-grade wood in the mature stands? And how do we handle the younger stands to insure the best chance of satisfactory development? Where a good market for pulpwood and pallet-type logs exists, we have no problem in removing this component from the stands. But we do not generally have such markets. In a recent sale, we avoided marking pulpwood because of the lack of a market, but we did mark some low-grade hardwood logs. The successful bidder bid nothing at all on this low-grade wood.

If we are to avoid simply high grading these areas, these lower-value trees must be removed. And it must be done soon after the sale if we expect reproduction of intolerant species. If reproduction of intolerants is not desired, removal of the low-value trees can be delayed and mortality will take care of part of the problem; but eventually the remaining stems must be removed. To date we have handled most of these areas by killing these residual stems after the slash has rotted down enough to facilitate access.

A system that makes the removal of these stems the buyer's responsibility would be the best answer. However, most of our buyers do not have satisfactory markets for the low-grade wood, and they are able to meet their wood requirements without depending on areas where they must undertake TSI work.

In our improvement cuts in the small sawtimber stands, we attempt to remove all the low-grade wood that the market will take, the high risk stems in the better grades, and the less desirable species. There are, of course, several exceptions to these general rules. Stems that will serve as trainers and protect crop trees, especially yellow birch,

from exposure (which could result in decadence and epicormic branching) are left standing. Trees of the less desirable species are left uncut in situations where their removal would reduce the residual basal area below approximately 70 square feet per acre. If the potential volume to be removed in a given small sawtimber stand is considered marginal in value, we stay out of the area because logging damage may exceed the benefits of the improved cut.

No practices specifically designed to favor

yellow birch reproduction have been initiated. Success in obtaining yellow birch reproduction is apparently a problem of seedbed preparation and of control of the residual overstory. Bare-ground logging, as opposed to winter operations, will improve seedbed conditions to a certain extent. The removal of the large crowns typical of mature northern hardwoods invariably leaves some openings large enough to reproduce yellow birch. As with proper birch, we feel that our management practices will maintain present proportions of this species.

