

The Triad: Is it really win-win?

by Mitch Lansky

Level of cut. Triad proponents claim that new reserves can be created while maintaining *current* levels of cut by doing more intensive management. Intensive management, they argue, will grow more wood on fewer acres, freeing up land for other uses, including protecting biodiversity. This is supposed to present an environmental/industrial tradeoff that is "win-win."

This approach suggests that the level of cut and industrial capacity are fixed, but the forest is a variable. The level of cut (at least in Maine), however, has not been stable--it has grown at an average rate of around 1.4% a year between 1960 and 2000. Indeed the level of cut has increased significantly since the early 1990s when Robert Seymour and Mac Hunter first proposed the Triad concept in Maine.

Landowners and mill owners have certainly not announced their intentions to freeze production at any given level. Nor have they announced that they intend to dedicate any increased yields from their intensive management to reserves rather than to increased mill capacity. Triad advocates, therefore, want us to accept intensive management now based on the *theoretical possibility* that there might be reserves as a result later. For this possibility, the public is supposed to drop their concerns over clearcuts, monocultures, and pesticides and instead look at such practices with gratitude.

Nutrient capital depletion. Plantations start with whole-tree clearcuts--which remove a significant amount of nutrients and organic matter from the ecosystem. There is also leaching of nutrients from the site as the soil heats up and organic matter breaks down. The bigger the removal of nutrients and organic matter, the *longer* it takes the soil to recover. Because plantations and intensive management involve substantial investments in early stand management--investments that are not paid back for decades--landowners have a strong incentive to *shorten*, rather than *lengthen* rotations, however.

Herbicides. One way to shorten rotations is by spraying herbicides on the pioneer species (such as raspberries, pincherries, poplar, or birch) that spring up in the open gaps offered by clearcuts. These broad-leaved species help slow the nutrient leaching and act as a nurse crop for more shade-tolerant species that come up in the understory. Spraying herbicides to knock down these pioneers reinitiates nutrient leaching. Thus, if rotations are to be sustainable, they should be *longer*, if herbicides are used, not *shorter*.

Fertilizers. Fertilization of plantations is more at the experimental, rather than operational, phase in Maine. While fertilizers could supply some nutrients that may be lost from biomass removal and leaching, chemicals do not supply the organic matter and wildlife habitat that are supplied by leaves and downed woody debris. Broad-leaved "weeds" respond to fertilizers better than softwoods do, meaning a need for even more herbicides if fertilizers are used.

Pre-commercial thinning and productivity. To reach bigger diameters faster, landowners do pre-commercial thinning on young stands. To cut costs, companies in Maine hire Central American guestworkers, who come from some of the poorest countries in the hemisphere. There are thus social, as well as ecological, costs to intensive management.

Growing larger diameters faster allows landowners to shorten rotations to get a faster payback from early-stand investments. Shortening rotations, however, does not lead to higher productivity. Thinning *delays* the culmination of the mean annual increment (the peak of productivity) by decades. If there is thinning, rotations should be *longer*, not *shorter*. One longer rotation (100 years) yields more fiber, and much more lumber, than two shorter rotations (of 40 or 50 years). Cutting the stands

as soon as they reach harvestable diameters at age 40, therefore, *lowers* potential productivity. Because of the advantages for biodiversity, productivity, and value, even-aged stands on public lands in Maine have rotations of more than 100 years, except when the dominant species are fir and poplar.

Timber quality. Short-rotation plantations that have been pre-commercially thinned yield trees that have branches nearly to the ground and significant taper. The wood has lots of knots, fat growth rings, low density, juvenile wood, and high lignin content. It is wood that is inferior for both lumber and pulp. Another tradeoff for accepting intensive practices, such as clearcuts and herbicides, therefore, is poor-quality wood.

Stand stability. Trees are not just growing over a few years like agricultural crops; they grow for decades and even centuries. Over such time periods, there are risks from insects and diseases, let alone wind and fire. To determine the true yield of plantations, therefore, you need to see the total average yield (accounting for those plantations that are poorly established or have diminished growth) of many plantations, not just the short-term responses to a shot of herbicides on an experimental site.

The even-aged stand structures of plantations simplify or even eliminate many natural predator/prey complexes that regulate forest health. Plantations offer a plentiful food supply for pests, but may not offer the habitats required for predators of the pests. Because plantations are less able to self regulate, they are more dependent on outside regulation with chemical pesticides. The total average yield of operational plantations may be much lower than what is projected from a few experimental plots. And the public will have to accept more insecticide spraying as part of the tradeoff.

More growth compared to what? While researchers in Maine are promising plantation yields 4 times greater than non-plantations, a closer look at these comparisons shows serious fudging. These researchers are comparing projections of experimental plots on good sites to actual growth on operational (commonly high-graded) forests on average sites. And, the researchers are only comparing yield of softwoods--ignoring the growth of hardwoods on the non-plantation sites.

Intensive management promoters are not comparing averages from operational plantations (which may have planting failures, "weed" problems, and reductions due to insects and disease) with a legitimate silvicultural system on the same site types. Silvicultural guides and actual experience show that selection cutting can lead to high yields that are also a multiple of current typical growth on poorly-managed average sites in Maine. Indeed, on good sites (sites that might be favored for plantations) selection forestry can yield more than a cord/acre/year. The wood from selection cutting (grown in partial shade) is far superior in quality and value to wood grown in open plantations.

More growth when? Only one landowner class, industrial landowners, has been establishing most of the pulpwood plantations in Maine since the 1970s. One would think that this class of landowner is at least boosting the growth rate for the entire forest by doing "high-yield silviculture" on their land. The reality, however, is that in the last US Forest inventory of Maine (1995), industrial landowners were growing half as much wood per acre per year as other private landowners. Industrial landowners have brought the state average *down*, not *up*, despite using herbicides, plantations, and thinnings, on 3/4 of a million acres.

The reason growth rates on industry land are so low is because the promised high growth from plantations and intensive management does not kick in for decades. The process starts with clearcuts, which, in the first few decades, yield seedlings and saplings which do not put on much volume/acre/year. Maine currently has 5 million acres of seedlings and saplings, much of it on

industry land (or former industry land--the forest industry in Maine has sold off millions of acres in the last decade).

While some proponents argue that we need more plantations to prevent a softwood shortfall, establishing plantations now does little to help a deficit of spruce that has already started. The plantations will come on line 40 years from now--at a time when the 5 million acres that are now seedlings and saplings will have trees big enough to cut. The best way to ensure more spruce in the shorter term is to put more growth on existing trees, not on seedlings.

Transition to tradeoff? This brings up the issue of transition. Taking out reserves now (when growth rates and volume are low) means the timber base is reduced. To support current mill capacity would require importing wood. Taking out reserves later (when plantations are finally producing higher yields) means that the reserves will have to be on cut-over lands. This is not the win-win scenario promised by Triad supporters. As mentioned earlier, landowners have not been announcing their intention to convert part of their lands to reserves either now or in the future.

Headed where? The strategy of ever-increasing intensification of management to meet ever-increasing demand is not sustainable. In a thousand years, if this trend continues, we would have to grow trees in outer space, since there would not be enough room for all the needed trees on earth. There are limits to how much wood we can grow in our forests, regardless of the level of intensive management. If we continue following the path of ever-increasing management, we will have fewer options for wild forests when the limit is reached.

The point of development is not to manufacture and consume more and more products; it is to better meet needs and have a better quality of life. Part of human needs are to have fresh air, pure water, healthful surroundings, and functional social systems. Our economic measuring stick, the Gross Domestic Product, includes expenditures on air and water pollution controls, dumps, prisons, and hospitals as *benefits* to our national "wealth" rather than as *costs* of "illth." A more thoughtful approach for government is to try to benefit the *whole system*, rather than benefit a few at the expense of the many, or industrial expansion at the expense of the life-support systems upon which we depend.

Reducing demand on wood products is a strategy that benefits the whole system. There are possible savings and efficiencies at every step of paper or lumber chains that lead from growing the wood, to harvesting, to manufacture, to consumption. These savings multiply through the chains leading to major reductions in the acreage required for cutting while still meeting the needs of consumers. Some studies have estimated that global paper consumption can be cut in half without affecting current needs for communication, information storage, or essential packaging.

Ecosystem-based low-impact forestry combined with demand reduction can create more options for setting up reserves and protecting biodiversity than can monoculture plantations feeding an ever-growing industrial appetite. It is not a win-win deal to accept unwanted forest practices so we can continue burning up imported fossil fuels to create paper used for junk mail and excessive packaging that ends up clogging landfills.