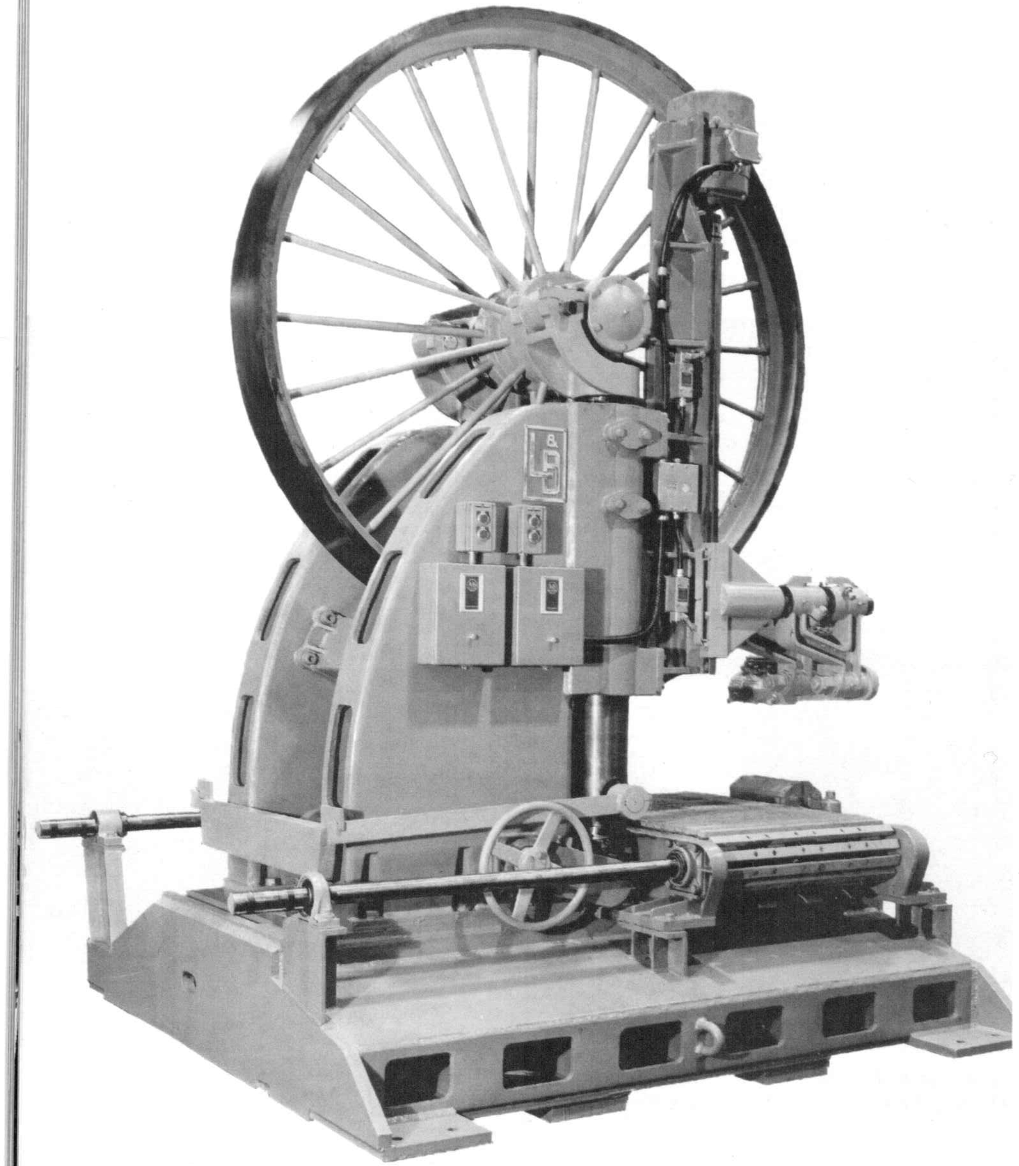


High-strain band sawing

Although it is now considered an industry standard, the development of high-strain band sawmilling is an interesting story in itself, with a significant breakthrough discovered by accident.

By Alan Froome

High-strain band sawing is now considered an industry standard, but that wasn't always the case, and how the method came about is an interesting story in itself.

High-strain band sawing was developed by a company called Letson & Burpee in Vancouver, BC, in the late 1960s and early 1970s. For 50 or so years before this, bandmill technology had remained static. But then a small group of talented people came together to change things in a dramatic way. And one of their most significant breakthroughs was, in fact, discovered by accident.

Letson & Burpee (L & B) was established in 1893 when J M K Letson and F W Burpee formed a partnership to design and build canning machines and pressure cookers. The company was incorporated in 1903, and Burpee moved to Bellingham, Washington, to better serve the many fish canning companies in Alaska. The company later built winches and after World War II, they started building woodroom and sawmill equipment.

L & B subsequently manufactured bandmills under licence with the Monarch brand name. These were what might be called today low-strain machines, strain meaning the load applied to a band saw blade to tension it. It's important to note that the type of strain mechanism used is critical to the performance of any bandmill.

It had been well established that you have to apply sufficient tension to keep a blade straight as it cuts wood, to prevent it from snaking in the cut. Like all the other machines on the market in the early days, a heavy weight hanging on the end of a lever arm was the standard method of tensioning the band saw blade on Monarch equipment. To reduce friction, the arm itself pivoted on hardened steel knife edges with this design.

Incidentally, many of these low-strain machines are still in use today, which is a testament to their heavy construction and durability. The drawback to the low-strain equipment, however, is that they have to run thicker kerf blades, with resulting lower lumber recovery.

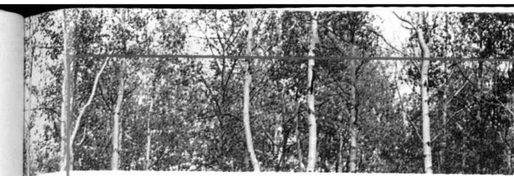
An Accidental Breakthrough

In 1965, L & B management decided to build its own bandmill to improve on the Monarch design. At the time, only single bandmills were in use and the first machine built at L & B was a seven-foot (wheel diameter) headrig machine for a customer in Quebec.

Design engineer Noel Jenkins worked with Ed Allen to draw up the new bandmill, which carried the name Letson & Burpee for the first time.

The concept behind the design of this machine was to retain the strain knives as part of the mechanical strain system, still using a weight arm to apply the strain. As part of the new design, the Monarch-style gibbed slideways for the top wheel lift were replaced by cylindrical plunger tubes. "We knew clearly that friction was the enemy," says Jenkins.

to page 52



Aspen: Prime real estate for nesting birds and mammals In Interior Douglas-fir forest in British Columbia

Trembling Aspen is hot real estate for cavity nesting birds and mammals in Douglas-fir forests in interior British Columbia.

"What we've realized over our ten year study period (1995 to 2004) is how incredibly important aspen is in sustaining bird and mammal biodiversity," Sustainable Forest Management Network research team member, Dr. Kathy Martin says. Martin and her team noted a 95 percent preference for Trembling Aspen among 2455 cavity nests used by 20 species of birds and six species of mammals. Only 15 percent of the trees in the mixed conifer stand were aspen, which is typical of stands in the interior of BC.

"What became particularly clear to us is that there is an interdependence among all the groups with respect to the creation and use of nest-cavity resources," she says. "We call it a nest web. Like a food web, there are producers and consumers of cavities and there is a group that does some of both strategies."

Martin and her research team now recommend that commercial forestry operators retain as much of the aspen and large fir veterans as possible, as well as all dead and dying trees.

"While these research results are operationally acceptable to many commercial forestry operations in the Central Interior forest of British Columbia, as their goal has been to primarily harvest spruce and pine, I think we will have to be even more diligent in protecting these aspen stands across the landscape," Martin says.

With this new information, Martin believes forest managers now have some additional tools at their disposal to improve their future harvest management planning or tweak those plans now underway. On a more general basis, her research shows just how important aspen stands are across the country in helping to maintain the biodiversity of forest songbirds and certain mammals. Boreal forest researchers in Alberta and Quebec, as well as researchers located in Alaska and Florida are now using this nest web model.

Species that rely on cavities can be classified into three guilds and represent about 30 percent of the bird and mammal species living in these forests. Woodpeckers are the primary cavity excavators and create holes in trees for nesting and roosting. A second guild, weak cavity excavators, may excavate their own cavities in decayed trees, using naturally occurring holes, or use cavities created by other species. A third category included songbirds, ducks, birds of prey and small mammals that require cavities for breeding but cannot excavate holes themselves. Instead, they rely on the shelters created by excavators or a limited number of naturally occurring holes. In addition, such mammals as red squirrels, northern flying squirrels, bushy-tailed woodrats, chipmunks, deer mice, and short-tailed weasels nest or roost in tree cavities.

The full range of live and dead aspen trees (95 percent of nests) were used by the various bird and mammal species, but overall, there was a strong preference for live trees with decay (45 percent) and dead trees (45 percent). Of the remaining tree species, 3 percent of the nests were in Lodgepole Pine, 1 percent in Douglas-fir, and 0.6 percent in spruce.

Aspen may be the preferred tree for excavators because it is susceptible to heartwood rot, which provides a soft substrate for excavation while retaining a firm sapwood shell that gives stability for the cavity. Aspen bark retains its integrity even when trees are in advanced stages of decay, thus allowing weak excavators to create cavities. Because aspen is shorter-lived than conifers, but have sufficient structural integrity to remain standing when dead, dead or decaying trees comprise a considerable proportion of mature forests. On the various research sites, 45 percent of standing aspen was dying or dead compared to 10 to 15 percent of three conifer species.

Kathryn Aitken, a PhD student in Dr. Martin's lab, and coauthor in the recent paper, checks a nest cavity in an aspen tree using a mirror and a flashlight and counts the number of eggs or young. This particular cavity was probably created by a Northern Flicker. However, afterwards it could be used by a range of birds and mammals including: European Starlings, Northern flying squirrel, Bushy-tailed woodrat, Mountain Bluebird, Tree Swallow, Mountain Chickadee or Bufflehead Duck.

For more information contact: Dr. Kathy Martin, University of British Columbia, Forest Sciences, Telephone: (604) 822-9695
Canadian Wildlife Service, Environment Canada, Telephone: (604) 940-4667
E-mail: kmartin@interchange.ubc.ca

Citation: "Nest sites and nest webs for cavity-nesting communities in interior British Columbia, Canada: Nest characteristics and niche partitioning." The Condor, 106, 1: 5-19, 2004. Authors: Dr. Kathy Martin, Kathryn E. H. Aitken and Karen L. Wiebe.

The Sustainable Forest Management Network is a not-for-profit nationwide centre of research excellence under the federal Networks of Centres of Excellence Program. The Program is a federal initiative administered jointly through the Natural Sciences and Engineering Research Council (NSERC), the Canadian Institutes of Health Research (CIHR) and the Social Sciences and Humanities Research Council (SSHRC) in partnership with Industry Canada.