



The Colour of Wood *Utilizing our red, dead pines*

salad set:

Woodworkers are finding that the colours present in wood affected by the mountain pine beetle can actually be an advantage in their products.

by **Matt J Simmons**

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The air in the workshop is thick with the alluring scent of fresh pine. Shavings cover the floor and various tools and implements surround the woodturning lathe in the corner. The pine on the machine is a curious shade of streaky blue, as are the bowls in varying stages of completion on the workbench. Outside, large rounds of pine covered with a distinctive reddish bark dry under a slanted roof.

Steve Brunsdon, of Okanagan Woodworks, does a lot of woodturning with pine these days. He was contracted a couple of years ago by an Okanagan company called Beetlewood Industries to produce various products from wood affected by the mountain pine beetle (MPB). Around the province, and around the world, progressive-minded people are turning to MPB pine for their products.

The spread of trees affected by the mountain pine beetle is no secret: tree by tree, BC's pines are succumbing to the devastating efforts of that hardy little insect. The evergreens should be called ever-reds these days. "The current beetle epidemic has now killed over 400 million cubic metres of merchantable timber," reads the government report on the mountain pine beetle. As the climate warms, so continues the pervasive spread. The Ministry of Forests has even developed a Beetle Action Plan that includes these objectives:

- Conserve the long-term forest values identified in land-use plans;
- Encourage immediate and long-term economic sustainability for communities;
- Maintain and protect public health, safety and infrastructure;
- Recover the greatest value from dead timber before it burns or decays, while respecting other forest values;
- Prevent or reduce damage to forests in areas that are susceptible but not yet experiencing epidemic infestations;
- Restore the forest resources in areas affected by the epidemic.

The fourth on that list of goals offers a hint of hope to some, and a glint of gold to others. While some researchers madly—and nobly—seek an overall remedy to the rapidly worsening situation, others pragmatically look at what can be done with the trees already gone.

Wood power

The idea of taking MPB pine that is otherwise unusable and turning it into electricity is catching on. Earlier this year, Trace Resources, a company based near Merritt, started to grind pine waste for electricity production. Because burning wood for electricity is like using biodiesel in that its output of carbon dioxide is neutralized by its intake of CO₂ as a live tree, this is actually a very progressive, environmentally savvy idea. It's just like the adage says: reduce, reuse, recycle, but on a really large scale. Last year, the provincial government rolled out the *BC Bioenergy Strategy* to promote this use of MPB pine.

Some industrious, entrepreneurial people, like Brunsdon and Beetlewood Industries, are creating the same products they were creating before MPB pine came along, but substituting the new material. Blue wood, as it's sometimes called, or 'denim pine,' is becoming increasingly popular all over the world. Beetlewood Industries offers an astonishing range of products from home furniture and decorative knick-knacks to flooring, fencing, lumber, and decking. Large-scale projects have adopted the raw material as well; the stunning roof of Richmond's new Olympic Oval was made almost exclusively from MPB pine.

Other industrious and entrepreneurial people are creating entirely new

materials. Pasca Sorin grew up in Romania and studied forest engineering at Transylvania University before moving to Canada in 2004 to get a Masters degree at UNBC. "I landed in Prince George in the middle of a huge debate," he says: "What to do with the millions of trees killed by beetles." That debate hasn't exactly tapered off since then, but a few solutions have been developed.

The creation of 'beetlecrete'

Studying under Dr. Ian Hartley, UNBC's wood-product specialist, Pasca started to look at creating a wood-cement composite. "Wood-cement composites have been developed for decades in Europe," he explains.

... continued on **Page 20**



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... continued from Page 19

"However, there is a big issue impeding their development: the wood-cement incompatibility." Most woods do not mix with cement at all, he says—but a few do. He found that of all the wood species in North America, lodgepole pine has the highest level of compatibility with cement. Taking it one step further, he asked the question, "Does beetle-killed pine keep that same level of compatibility?"

Based on his initial test results, the answer to Pasca's question was a resounding "yes." In fact, beetle-killed pine was even *more compatible* than ordinary pine. Based on those early tests, Pasca and Hartley were prompted to develop a new product. "It is basically a concrete where the minerals are replaced by wood particles," Pasca says. "It's a hybrid between ordinary concrete and wood particle-boards. Among its strengths: water/fire/fungal resistance, workability, moldability, [and] no petroleum-based binders." It also takes nails well, unlike regular concrete—and it looks better too.

An impressive list of strengths then, and its weaknesses are virtually nil—or at least none have been found to date. "The lack of funding impeded the completion of the tests we had planned," he admits, and explains that he has taken the material, informally dubbed "beetlecrete," and started making decorative rather than structural products. The original idea was to create a substitute for gypsum, or drywall, which, if it were successful, could utilize the entire province's dead wood while generating a useful, eco-friendly product. For now, though, Pasca is content to create countertops and benches and other similar non-structural products out of beetlecrete. Most recently, Pasca made a front-desk countertop for Victoria's new, environmentally progressive Local Government House.

As the reddening forests flush across the province like an embarrassed flush of cheeks, so continues the debate on what to do with the increasing expanse of dead timber. Burning it for fuel, using it for building, turning it into desirable products, making it a trend, combining it with something else to create a new material...all good ideas.

And maybe most important is simply that they *are* ideas. Maybe, like Pasca's idea of combining wood with cement, it's a combination of all of these ideas that will yield a successful resolution. And maybe then we'll come out of this epidemic with a new appreciation for the changing colour of our forests.



photo courtesy UNBC

hard wood:

Pasca Sorin has worked on the development of a composite that combines the strength of wood fibres with the adhesive properties of cement. It turns out that beetle-killed pine is one the best woods available for this use.

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