



LOST TREASURES

A British Columbia logging company uses Cat equipment to harvest a trove of underwater wood

BY CAILYNN KLINGBEIL

A picturesque inland lake, Ghana's Volta Lake borders Digya National Park on the western side of its 5,200-kilometre shoreline. Home to 90 per cent of Ghana's inland fishery, 80,000 fishers ply its blue waters. But beneath that expansive surface stands another prize: an underwater forest.

There's the occasional sign of its existence, with trees poking from the surface here and there, looking like crooked fingers. For the most part, the massive forest remains submerged, a state it's been in since 1965 when the lake – actually a reservoir resulting from the damming of two rivers – was created. But now harvesters are bringing those trees surface-side again with the help of a B.C. company.

Triton Logging Inc. specializes in underwater harvesting and is set to begin logging the timber that remains perfectly preserved in the

lake. And Triton is using its SHARC system (*see sidebar, page 19*), which includes a Caterpillar excavator, to get the job done.

Triton got its start in the underwater logging business, which traditionally involves small operations with divers using hydraulic chain-saws, when it saw the opportunity to mechanize the process. Using patented technology systems to harvest underwater timber improves safety and productivity.

“The SHARC system, with the Caterpillar equipment, allows us to take proven forestry equipment and to add some unique and proprietary components to it. We place it over the underwater forest and achieve similar productivity that you would find with land-based mechanical logging,” says Jim Hayhurst, Triton's vice president, business development and global services.



UNDERWATER RESCUE: Triton's SHARC system relies on Caterpillar equipment to harvest submerged timber.



SHARCS: Meet the pod; (L-R) Lucas Miller, Stan Worsley, Richard Shipley and Rick Braun.

The flooding of hydro dam reservoirs around the world is where Triton uses that equipment, as the oxygen-deprived environment means wood-decaying fungi and microbes are unable to attack the wood, leaving trees dead, but in a preserved state.

Triton estimates that some 300 million trees exist around the world in such underwater forests, a resource worth \$50 billion. "It's a huge resource, especially in a shrinking fibre basket, where living forests are more and more important," says Hayhurst, whose company has completed forestry projects in underwater forests from British Columbia to Southeast Asia.

In addition to Ghana, Triton is currently working in Brazil, where a number of large hydro electric facilities and reservoirs have flooded areas of rainforest. "We have agreements with governments and with hydro managers to look at harvesting on three reservoirs in Brazil," says Hayhurst.

As Triton expands its project scope and builds more SHARC systems, Finning will benefit from the growth of the underwater logging company. So too, it seems, will many others. "The environmentalists love it because we're not impacting natural habitats," says Hayhurst. "The technology geeks love it because it's kind of cool, and the business people love it because there are really good returns and it's a big opportunity."

Finning got involved when Triton first approached the company to aid in the development of the SHARC system.

"Finning was great," says Hayhurst. "I think they were really curious about the project when we approached them – but we've known them and they've known us for a bit. Previously, we were just using their machinery in traditional ways, so when we said 'this is what we want to do, we have the designs and we'd like to use the Cat system as the basis of it,' they worked with us to integrate that system."

Another benefit of working with Finning, says Hayhurst, is the company's worldwide network. "We're based in B.C. but the majority of our harvesting actually takes places overseas. Having that global network is really important to us."

Triton's Ghana project is its biggest job yet. The company has 20 employees working there, and expects to deploy more equipment and people to the country. "We'll be working hard to ensure that the value of Volta Lake grows exponentially over time," says Hayhurst. In March, Triton began working under a 25-year har-

HOW THE SHARC BITES (TREES)

Triton originally used a system called the Sawfish to harvest trees in deep water reservoirs. The Sawfish is a patented vehicle system remotely operated by a pilot in a control room on a barge. Harvesting operators have successfully used the system in northern Canada, Southeast Asia and the United States. But work in the tropics, where submerged timber tends to stand in shallower water, meant Triton had to innovate. That's how it came to its SHARC system.

The SHARC system harvests in depths up to 25 metres, though new versions of the SHARC, now in the planning stages, will operate in depths up to 37 metres.

A single pilot operates the SHARC, with all navigational, cutting, tracking and retrieval software integrated into the cab. Information from video, maps and sonar equipment, available on interactive multi-view displays in that cab, help guide the pilot to the underwater trees.

The SHARC is a barge-mounted, self-contained surface system comprising four main components: a sectional barge that moves by itself and doesn't have to be towed, a Caterpillar excavator, a telescopic arm mounted on the excavator and a cutting head at the end of the arm.

After trees are located using on-board technology, the telescopic arm extends the cutting head to the base of the tree, where the grapple cutting head, with a 1.5-metre opening, attaches to the tree and the saw cuts through its base.

When the tree is lifted up, the GPS automatically marks the cleared area on a map. The tree stem is then raised to the surface and rotated into a floating bunk storage system, and once that system is full, the bunk is towed by tugboat to the shore. The bunks are then unloaded at the shore and taken to staging areas, where logs are sorted and readied for transportation or milling.



vesting license for 350,000 hectares of the submerged forest – an underwater resource that is the largest and most valuable of its kind in the world. “The base log value we believe is about \$1.5 billion,” says Hayhurst.

The project is significant for both Triton and the country of Ghana, where Volta Lake serves as a huge transportation corridor. “As you can imagine, with trees sticking out of the lake, it's quite dangerous,” says Hayhurst. “They've had a lot of accidents and deaths in the past from people hitting trees with their boats. So part of our project is also about clearing channels, and clearing areas where boat traffic can go and not have to worry about hitting trees.”

After Triton's SHARC system brings up logs from the underwater forest, the wood will go to both international and local markets. The wood is treated like any other wood: cut, dried, and then used in a variety of ways, “anything that regular wood gets used for,” says Hayhurst.

“There's probably a couple dozen tree species that we'll find underwater in Ghana and many of them are quite valuable, as they are

species that are difficult to find on land,” Hayhurst says.

Because of the low environmental impact of the SHARC system, which doesn't disturb the lake bed or kick up dirt in the water, the wood can be certified by the Rainforest Alliance's SmartWood Rediscovered Wood program, making it a sought-after product for anyone seeking an environmentally sound wood choice.

“It's in demand around the world for its environmental credentials and also because it's kind of a cool story,” Hayhurst says. “People can say, ‘I have wood that came from a forest that was flooded 40 years ago’, and that's quite remarkable.”

Wood harvested from Volta Lake will be available locally for use by Ghanaian companies, while other wood will be sold in high-end markets around the world. Wood harvested by Triton has previously been used to make a temple in Japan, a green building development in Victoria, and has been sold to high-end luxury resorts and furniture companies.

“At the end of the day, it's just like any other wood,” Hayhurst says, “except it comes with this incredible story and this great environmental benefit.”