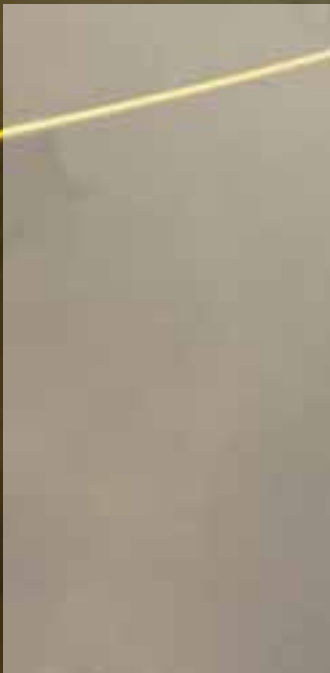


# UNMANNED SYSTEMS

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## ROV Logging



*Timberrrrrrrrr...*

# Watch that Floating Tree!

Company Relies on Sawfish ROV to Cut Submerged Forests

By Gaea Honeycutt



**F**or centuries, lumber companies have lost valuable waterlogged tree trunks to the icy depths of the rivers used to transport freshly harvested timber.

Relatively recently, modern technology has allowed companies to more efficiently reclaim (or recover) these logs that have spent decades or centuries under water. But a newer, and potentially more promising, area of the industry is underwater logging of trees submerged due to flooding of forests.

These forests are often submerged after construction of hydraulic dams, but they still represent valuable timber, just timber that's harder to get to. Underwater logging is a tough business, with divers descending dozens of feet with hydraulic saws and equipment to harvest trees, or with companies using heavy equipment to pull trees out of lakebeds, roots and all.

As with many dull, dirty and dangerous—and in this case, wet—jobs, unmanned systems have a role to play. The most advanced technol-

ogy for underwater logging was developed nine years ago by Triton Logging—an unmanned remotely operated vehicle called the Sawfish Underwater Harvester. Weighing 7,000 pounds, the unique Sawfish provides a competitive edge unmatched by any logging company.

“There have been several companies trying to duplicate what Triton does,” says Chris Godsall, founder and CEO of the Saanichton, British Columbia, Canada company, while discussing how tough it is for entrepreneurs to enter the industry.

Triton Logging has spent the past nine years honing techniques, training and methodologies, as well as refining the Sawfish itself.

“It's not an inexpensive thing to do,” Godsall says. “And, really, engineering is half the battle.” The first Sawfish cut more than 10,000 trees.

Able to operate at any depth, the Sawfish sports eight cameras, a 55-inch chainsaw and inflatable, reusable airbags. A pilot remotely



Sawfish takes to the water to begin work.  
Photo courtesy Triton Logging.



guides the robotic submarine to a tree, where it latches onto the tree with pinchers. An airbag is then attached to the tree using a drill. Once cut, the airbag is deployed, bringing the log to the surface for capture and transport.

Triton experienced a few bumps in the road during development, but the Sawfish hasn't encountered what Godsall would see as major complications, saying that "surprisingly little" has changed over the years. A few of the modifications surrounded the airbags. In early trials the Triton team found that the airbags were too powerful, shooting the logs out of the surface.

"We didn't account for the amount of propulsion that would be generated by the airbags, and the trees were being sent up at incredible speed," he says, so an early adjustment was reducing the acceleration power of the airbags.

The company also re-engineered the airbag release system.

"We used to protect the airbags with a canister, which had to be lifted off," he says. After a while, no one remembered why the process was so complicated. "We overbuilt the thing. It didn't need to be so elegant."

To the shock of employees at the local superstore, Godsall checked out with some 200 packages of women's stockings—a far more practical alternative to the canisters.

Since then, most of the modifications have focused on making the Sawfish more robust and adaptable, such as for operations in different environments, handling more hours of work and increasing visibility in waters with greater particle density.

"We have been logging in various environments in British Columbia, and we've been logging in Asia in tropical underwater forests," he says.

## Environmentally Sound?

Increasingly, underwater logging and underwater reclamation is seen as an environmentally responsible alternative to logging standing forests above ground. Dan Harrington, director of product development at EcoTimber, says that depends on the timber. Underwater harvesting can disturb ecosystems that have grown around the abandoned timber because after centuries of lying on a lakebed, the underwater environment has incorporated the log.

"Now, if you're going into a recently flooded forest, then the ecosystem hasn't yet adapted and it's not as much of a problem from an environmental standpoint," he says. For example, the recent increase in dam construction in South America has resulted in a number of newly submerged forests.

EcoTimber is the first company in the United States trying to bring wood products to market based not just on how they look but where they come from. Harrington finds and chooses sources of selectively harvested material for the company. He's unfamiliar with the Sawfish but says the focus on cutting the trees is more beneficial than reclaiming logs that have settled on lakebeds or uprooting trees from submerged forests.

"The more important consideration is how long that wood has been under the water," he says. "Is it part of the ecosystem, or has it been recently introduced?"

Godsall says he believes environmental responsibility is integral to his company's operations, with a certification from the Rainforest Alliance and membership in the Canada Green Building Council.

"We're a company that was built to remove these trees safely," he says.

Triton works with local authorities to evaluate a site's suitability and identify which trees can be harvested. Powered by a 75-horsepower electric motor, the Sawfish uses biodegradable and vegetable oil-based hydraulic fluids to lessen its impact. Another practice is to leave the less valuable branches and treetops behind in the water to support natural habitats.

## Untapped Resource

Underwater logging could potentially harvest millions of trees around the world, from Canada to Brazil to newly discovered Mahogany forests in Ghana. Despite the sluggish economy, Godsall sees Triton at the forefront of the industry.

"Our company has one plan. That is to lead this industry," he says. "The Sawfish is the golden key for us and we're going to continue to use it to open up new markets.

"This economy has slowed things down for a lot of businesses ... but we're focused on expanding the opportunity out there," he says.

As a successful, trendsetting company with the benefit of being first to market, Triton sits more comfortably than competitors but remains selective in choosing sites.

"The main factors are good quality wood, reasonable working conditions and favorable marketing and licensing arrangements," Godsall says. And then there's negotiating with multiple governments—local, regional, national—all at once.

"The biggest challenges are finding partners in countries around the world that share our priorities, and share the priorities of a health environment and long-term opportunity," he says.

Triton is also focused on refining its star vehicle, the Sawfish. It has looked into lasers for cutting but hasn't found the right match. It's also open to new applications for its star underwater system, which could see it swimming into new areas of competition in the future.

*Gaea Honeycutt is president of G.L. Honeycutt Consulting, LLC, and a freelance writer.*

### For More Information:

[www.tritonlogging.com/engineering.html](http://www.tritonlogging.com/engineering.html)

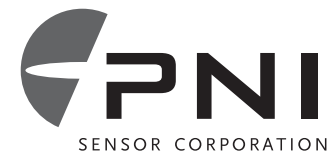
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