Making an impact

Dr Bronson Griscom discusses how he became involved in measuring the effects of reduced-impact logging techniques on commercial logging carbon emissions in tropical forest concessions.

How did you first become involved with conservation and forest carbon science?

I began my research career as a Yale doctoral student rather lost in a remote part of the Amazonian rainforest at the foothills of the Andes. At the time I had no interest in practical applications, I just wanted to understand how rainforests work and meet the people that live in them.

What drew me to forest carbon science was the realisation that forests are one of the largest solutions to climate change. Globally, forest conservation and restoration is a near-term cost-effective solution to mitigating about one-third of greenhouse gas emissions.

Now, I am primarily concerned with finding ways to conserve these forests and help adapt the livelihoods of the people that live in them to a rapidly changing global economy. These individuals are the gatekeepers to healthy forests and we need to find ways to compensate them for the carbon sequestration service of forest conservation – a service that has major economic value to people everywhere.

What would be the benefits of the widespread introduction of reduced-impact logging (RIL) methods?

Our latest published research is on measuring the carbon performance of improved logging in tropical forests. We are in the process of developing a methodology for verifying the carbon savings from RIL practices that reduce carbon emissions (RIL-C). According to our models, carbon emissions can be reduced by 25-50 per cent without diminishing wood production. The benefits of RIL extend beyond carbon; reduced impacts on forests mean more biodiversity, cleaner water flowing out of forests, better flood control and fishing for downstream villages and cities, and improved worker safety.

What is the importance of heightening awareness of improved forest management (IFM)?

The numbers alone – on the potential benefits of IFM for flora, fauna, water and our climate – are very compelling. We believe that our focus on developing rigorous and verifiable measurement systems will significantly contribute to awareness and adoption of IFM. However, forging alliances between conservation organisations and logging companies is controversial. Part of the challenge is developing robust methods for monitoring and verifying outcomes. Another part is developing the institutional processes for financing and achieving those outcomes. Considering that less than 5 per cent of logging operations in the tropics practise some form of IFM, and that about one-third of all remaining tropical forests are managed for wood production (more than double the size of fully protected forests), there is a huge opportunity to expand the adoption of IFM.

We are also now looking at a broader landscape question assuming we achieve best practices: which types of wood production systems – ranging from selective logging to intensive plantations – offer the highest overall conservation values and human wellbeing outcomes for a given level of wood production?

Given that wood has a lower carbon footprint than alternatives like steel and cement, we need to find ways to enhance the conservation values of forests that maintain wood production. Low-impact selective logging in native forests can be achieved in a way that sustains virtually all biodiversity, but production levels are low compared to plantations. Intensive plantation systems have much higher impacts on biodiversity, but affect a much smaller area for the same production level. The combination of production systems that can achieve the optimal balance of conservation, social and economic outcomes is yet unknown.

What challenges do you encounter in your work?

Our biggest logistical challenge is effectively coordinating our efforts across many countries, partnering organisations and diverse cultures. The major conceptual challenge is convincing fellow environmentalists that a conservation alliance with loggers is a good bet – despite a long history of irresponsible and corrupt logging operations in the tropics.

Can these methods be redesigned to achieve yet more carbon benefits?

While existing standards for RIL achieve strong outcomes in terms of carbon, biodiversity and hydrology, they were not designed to achieve optimal carbon outcomes. This new generation of empirical carbon performance measurements allows us to improve RIL standards to more consistently achieve greater carbon and other conservation outcomes. For example, existing RIL standards are structured to improve the use of existing log skidding technology. Our carbon measurements identified much greater carbon savings if we shift to an alternative cable skidding technology.

How will The Nature Conservancy encourage climate policy reforms at the upcoming 20th Session of the United Nations Framework Convention on Climate Change Conference of Parties (UNFCCC COP 20) event?

The Nature Conservancy has a diverse delegation of policy advisors, practitioners, communications specialists and thought leaders who are working on a broad set of goals for improving the likelihood of strong climate policy outcomes emerging from UNFCCC COP 20. We consider it critical that nature-based strategies play a central role in global adaptation to, and mitigation of, climate change. Reducing the impact of logging to reduce emissions and improve resilience of tropical forests is a key example.
SUSTAINABLE, LOW-IMPACT management of forests is important for both conserving biodiversity and mitigating climate change. However, less than 5 per cent of tropical logging operations adhere to an improved forest management (IFM) scheme designed to ensure that logging concessions operate in a sustainable, low-impact way. Convincing commercial logging operations to change their practices in favour of IFM schemes is therefore a particular challenge. About one-third of tropical forests are managed for wood production; the area of forest under strict protection is less than half this size. The future of tropical forests lies not only in protecting land, but also in achieving sustainable and reduced impact management of lands reserved for wood production to preserve biodiversity and reduce carbon dioxide emissions.

The benefits of sustainable and reduced-impact logging (RIL) on the environment can manifest themselves in a number of ways. The Nature Conservancy promotes certification of IFM by the Forest Stewardship Council (FSC), based on the premise that it will have positive effects on climate and forest biodiversity. The benefits of FSC certification for generating climate and biodiversity benefits through avoided deforestation, associated with improved sustainability, have been supported by recent research, but emissions reductions due to better logging practices associated with FSC have yet to be shown in the tropics.

REDUCED-IMPACT LOGGING

To ensure that improved and certified logging practices actually achieve emissions reductions, The Nature Conservancy launched a study to measure the emissions performance of RIL, led by scientists Dr Bronson Griscom, Peter Ellis and Dr Jack Putz. Nine logging concessions in eastern Borneo, three of which were FSC certified, were monitored to measure existing implementation of RIL practices, and the potential for greater emissions reductions with additional RIL practices.

The researchers found limited evidence of emissions reductions, but identified opportunities for additional RIL practices that can achieve large emissions reductions. They discovered that a few strategic alterations to logging techniques and forest management could provide significant environmental benefits without commercial logging companies having to alter their practices completely. For example, by using a technique called the ‘plunge cut’, loggers can identify hollow trees that have no commercial value but high biodiversity and carbon value, and avoid cutting these trees. Additionally, employing directional felling to avoid damaging young trees and saplings and leaving buffer areas around streams was found to help reduce logging impacts.

Long, winch-powered cables can be used to drag logs out of the forest. Winch-powered cables cause much less damage to young trees than the conventional use of bulldozers and avoid the need for clearing pathways that are otherwise necessary to access logging sites.

In response to the need to both measure emissions reductions from RIL and improve RIL practices, Griscom, Ellis and Putz have defined a new term, RIL-C, which refers to the combination of RIL practices and scientific monitoring that result in a measureable reduction in carbon emissions.

SETTING TARGETS

The broader goal of The Nature Conservancy is to reduce emissions and other impacts from logging through FSC and RIL-C without reducing timber production or jobs. Encouraging uptake of FSC and RIL-C in an industry driven by near-term profit margins would rely on an affordable transition from the old method to the new.
ACHIEVING RIL-C

Forest certification should incorporate RIL-C (robust measures and improved practices) in order to achieve measured and verified emissions reductions. Currently, logging companies cannot receive internationally recognised carbon credits (and associated funding) for emissions reductions they achieve through RIL because no methodology exists to verify RIL emissions reductions. The Nature Conservancy, in partnership with the Tropical Forest Foundation (TFF) and TerraCarbon, is developing a RIL-C verification methodology under the Verified Carbon Standard (VCS) to overcome this challenge.

Using this new methodology, logging companies could access funds for mitigating climate change if they generate verified emissions reductions using RIL-C. The appeal of making climate funding available to enlightened logging companies is that it provides benefits not only for climate, but also for forest biodiversity and the prospects of green development in tropical countries. The broader team developing this green forestry strategy includes Greg Fishbein, Hamilton Hardman, Lex Hovani, Delon Marthinus, Fran Price, Bambang Wahyudi, Wahjudi Wardojo and many others.

MAKING THE SWITCH

Encouraging commercial logging companies to switch to greener methods has its challenges. The Nature Conservancy believes that climate-based incentives may offer a bridge to offset up-front costs of reduced impact logging, but ultimately certified sustainable low-impact logging practices must offer a competitive business model. Fortunately, while environmentally sustainable logging techniques require initial costs, they can reduce long-term expenses. For example, purchasing new machinery for removing logs from the forests costs money, but over time the improved efficiency of log removal can save trees, carbon and money while increasing the sustainable production of timber. Initially, logging companies would be required to retrain staff; however, The Nature Conservancy and partners are providing free training to avoid this up-front cost of making the switch.

A GREENER FUTURE

Various studies from different parts of the tropics suggest that if appropriate RIL methods are adopted, carbon dioxide emissions could be reduced by 30-50 per cent across at least 20 per cent of the remaining tropical forests while maintaining jobs and wood production and the lion’s share of biodiversity. A rigorous RIL-C monitoring scheme to verify emissions reductions could help generate the incentives needed to make the switch. This would create healthy competition between logging companies for financial incentives.

The important next step will be to move beyond theory and into practice. Whether winch-powered cables will remain as effective at removing logs as bulldozers in the long term will need to be tested at larger scales. Despite the apparent efficiency of winch-operated skidding, the durability and production levels of such machinery has yet to compare with that of conventional bulldozers. Yet the urgency for developing better logging methods has never been greater. Securing the future of these biodiverse forests is critical not only for the local people who depend upon them for jobs, food and fibre, but also for the global community that relies on them for a stable climate. Measuring and verifying these benefits is a critical step towards securing our common green future.