

## GUEST EDITORIAL

### HAS REDUCED-IMPACT LOGGING OUTLIVED ITS USEFULNESS?

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I don't know who coined the term 'reduced-impact logging' and its acronym RIL. The first time I heard it was in connection with a pioneering reduced-impact logging project initiated in 1992 by the Sabah Foundation's Innoprise Corporation on a forest management unit of its timber concession in the north of Tawau, Sabah. The project was made possible with financial support from New England Electric System (NEES), an electricity-generating company based in Massachusetts, USA. NEES regarded the project as a way to gain experience with carbon-offset forestry. The principle focus of research related to the project, carried out by Jack Putz and Michelle Pinard of the University of Florida, was on that particular aspect of reduced-impact logging (Putz & Pinard 1993).

NEES and the Sabah Foundation were brought together by a carbon broker, Don Justin Jones, who was in the business of promoting the adoption of carbon-offset activities by power-generating companies. Jones used the term 'reduced-impact logging' in an interview with a reporter from the *Los Angeles Times* in August 1992 (Parrish 1992), and I believe that's the first time it ever appeared in print. When I visited the site not long after that I noticed that the logging team's pickup trucks had 'RIL Project' emblazoned on their doors, so the term may have originated from someone within the project such as Cyril Pinso, Innoprise's general manager of forestry, or Richard Taumas, the project manager. Another possible source is Richard Donovan, the head of the Rainforest Alliance's Smartwood programme, who was retained by NEES to monitor the project. Or, it could have been suggested by either Jack Putz or Michelle Pinard, both of whom were actively involved with the project. Whoever it was, I thought it was brilliant. At FAO, Rudolf Heinrich and I had been working to develop an international forest harvesting code of practice (Dykstra & Heinrich 1996), and we had been using the term 'environmentally

sound forest harvesting'. When I heard 'reduced-impact logging' I realised that it was a far better choice because it did not imply that reduced-impact logging practices were perfect; only that they could reduce impacts as compared with conventional harvesting practices.

It is important to note that the term 'reduced-impact logging' has achieved international standing largely because it is acceptable to the environmental community. Alternatives such as 'environmentally sound forest harvesting' and 'low-impact logging' never caught on because environmentalists felt they were contradictory. An environmentalist once told me that she could not abide the use of 'low-impact' and 'logging' in the same breath. However, she was perfectly happy with 'reduced-impact logging' because she regarded it as a neutral term. When international organisations such as WWF and IUCN started promoting reduced-impact logging projects in the 1990s, the term acquired a degree of legitimacy with environmentalists and the general public that foresters themselves could never have provided.

Although Innoprise's RIL Project in Sabah was one of the first to be supported financially under a carbon-offset scheme, it was not the first reduced-impact logging project in the tropics, or even in Malaysia. Mattson-Marn and Jonkers (1982) reported on an FAO/UNDP project they undertook in Sarawak in the 1970s testing many of the ideas that eventually came to embody reduced-impact logging. Their work in turn was based on earlier efforts by well-known tropical foresters such as Dietrich Brandis, John Wyatt-Smith, Eberhard Bruenig, DJ Nicholson, EC Foenander and JED Fox. An interesting point about the project of Mattson-Marn and Jonkers was that they did not explicitly set out to reduce logging impacts; rather, their intention was to carry out logging operations as an integrated component of sustained-yield forest management (Jonkers 2002). To accomplish this, they conducted a

pre-felling inventory, determined a sustainable level of harvest, prepared maps showing the topography and the locations of trees to be harvested, planned the extraction routes, utilised directional felling, and trained the felling and extraction crews in improved working methods that increased efficiency, improved safety, and reduced both wasted wood and collateral damage to the residual vegetation. As a result, compared with a 'conventional' logging operation on a nearly identical site, logging costs per cubic meter of logs extracted were 23% lower on the reduced-impact logging operation. This was due partly to lower skidding costs from comprehensive planning and also improved working methods and substantially better utilisation of felled trees. Perhaps even more importantly, damage to residual trees was reduced by half in comparison with conventional logging operation.

At about the same time as the RIL project at Innoprise, other reduced-impact logging experiments were getting underway throughout the tropics. CIRAD-Forêt, the French tropical forestry research institute, implemented a comprehensive research and demonstration project in the Berau area of Indonesian Borneo in collaboration with the Ministry of Forestry of Indonesia. The Tropical Forest Foundation (TFF), originally a US/Brazil venture, initiated a series of reduced-impact logging trials and launched a comprehensive training programme at Cauaxi in the Brazilian Amazon with financial support from USAID, the USDA Forest Service, ITTO and other agencies. TFF later expanded into South-East Asia and Central Africa. The Forest Department Sarawak, working with the Sarawak Timber Association and several of its member companies, began experimenting with helicopter logging. Timber concession holders in the Congo Basin of Africa, working with several universities, development-assistance agencies and international environmental organisations, began investigating reduced-impact logging methods. Wageningen University in the Netherlands sponsored research on reduced-impact logging in Suriname that was later expanded into neighbouring Guyana. The Tropenbos Foundation of the Netherlands incorporated reduced-impact logging into its portfolio of projects in Indonesia, Cameroon, Guyana, and Bolivia. In Brazil, a private timber company, Precious Woods Amazon, undertook its own evaluation of reduced-impact logging

and decided to adopt such practices in all of its harvesting operations.

By the end of the 1990s, reduced-impact logging was being adopted by many timber companies and concession holders in the tropics. This resulted partly from pressure by the public and governments to reduce environmental impacts, and partly from the realisation that reduced-impact logging had become a requirement of certification under sustainable forest management (SFM) standards. The Forest Stewardship Council (FSC) and other certification bodies insisted that reduced-impact logging standards must be adopted and enforced before certification could be considered. The reduced-impact logging standards from the original Innoprise project, in fact, were based on guidelines that had been developed for tropical forests in Queensland, Australia, combined with those of the Smartwood Certification Program of Rainforest Alliance, a US-based certifier for FSC (Marsh et al. 1996).

Tropical timber companies have good reason to adopt reduced-impact logging. It significantly reduces logging impacts on managed forests and their ecosystems and is an essential requirement for forest management certification. In many cases, such as the study reported by Jonkers (2002), it also reduces logging costs. However this outcome is less certain. As pointed out by Putz et al. (2008), financial results from reduced-impact logging operations depend on forest and terrain conditions, competence of logging crews, methods of compensating loggers, timber markets and other factors. Even when the immediate financial benefit is uncertain, however, reduced-impact logging helps ensure that a forest harvested today will continue to be a productive forest in the future. This is the fundamental idea of sustainable forest management, and the reason that SFM certification systems include reduced-impact logging as an integral part of their standards.

For these reasons, I was surprised recently when I addressed a professional society on the topic of reduced impact logging and was interrupted during my introduction by a member of the audience who said that reduced-impact logging had outlived its usefulness. Asked to expand on this thought, the commenter stated that reduced-impact logging is only part of the solution and that without the other components its achievements come to nothing. Specifically,

the commenter indicated that emphasising reduced-impact logging, or even speaking about it separately from SFM, detracts from the emphasis that should focus on SFM. I pointed out that the title of the session in which I was speaking was 'Sustainable Forest Management' and that my presentation had been prepared in that context. Nevertheless the commenter was not mollified and left the room in protest.

I was disheartened by this encounter and have often thought about it over the weeks since that presentation. As someone whose research has focused largely on reduced-impact logging, I have been gratified at what I perceive to be a tremendous amount of progress in the management of tropical forests that has occurred over the past two decades. In my view, a significant fraction of that progress can be attributed to the adoption of reduced-impact logging. Literally hundreds of articles in refereed journals and many more in the popular press have been published about various aspects of reduced-impact logging. Not all authors conclude that reduced-impact logging delivers all the benefits it promises, but I have not seen a single article in which conventional logging is preferred to reduced-impact logging. Certainly some individuals believe that forest harvesting should not be permitted in any forest under any circumstance, but that's a different issue. It ignores the reality that the majority of humans world-wide depend upon wood products harvested from forests and that our population, now numbering more than seven billion, continues to grow.

On the other hand, I agree that reduced-impact logging is not the goal; rather, the aim is to achieve sustainable management in all types of forests, everywhere in the world. If that could be done easily it would have been accomplished long ago. If it could be done without reduced-impact logging, there would never have been a need to develop codes of practice or reduced-impact logging guidelines.

From the perspective of a timber company, reduced-impact logging is not something that can be adopted once and then forgotten. It has to be done every day. If it is done today it will also need to be done tomorrow, next week and next year. It requires a continuing commitment to support the training of logging crews, provide proper equipment and safe working conditions, and ensure that loggers are properly supervised. It requires continual monitoring of logging

operations so that workers can be provided with feedback on how they are doing, and so that managers can assess the degree to which forest management is being successful.

Recently, there have been several widely publicised appeals, often by scientists who have contributed significantly to our understanding of what reduced-impact logging is and how it works, arguing that we need to 'move beyond reduced-impact logging'. One important example is a special issue of *Forest Ecology and Management* that was organised by Plinio Sist and colleagues entitled 'Moving beyond reduced-impact logging towards a more holistic management of tropical forests' (Sist et al. 2008). In arguing that we need to move beyond reduced-impact logging, the authors do not suggest that it should be abandoned; quite the opposite, they insist that it constitutes an essential part of sustainable forest management. However there are important questions related to the management of tropical forests that have yet to be answered. Often these questions, and their answers, will be site-specific or will need to be considered in a local socio-political context. As one example, the authors argue that silvicultural objectives must be clearly defined and their implications understood for each type of forest. Only then can reduced-impact logging operations be implemented properly to accommodate those objectives. All too often reduced-impact logging has been applied in a mechanistic way without taking full account of specific silvicultural requirements. In such situations reduced-impact logging may reduce impacts compared with conventional logging but it will not achieve the aim of forest management.

The papers in the compilation by Sist et al. (2008), as well as other compilations such as the book *Life after Logging* published by CIFOR (Meijaard et al. 2005), address a number of important issues that should be considered when planning reduced-impact logging operations. One example common to both compilations is the need to develop logging guidelines that take account of special requirements for wildlife. However, loggers and the timber companies that employ them, cannot be expected to develop such guidelines on their own—this is a task for scientists and other specialists who understand the issues and also have a basic understanding of logging requirements. The CIFOR publication *Logging for the Ark* (Gustafsson et al. 2007) provides

an excellent example of how this can be done, providing specific, detailed recommendations that can be adopted in reduced-impact logging (and in sustainable forest management more generally) to improve the conservation value of production forests in South-East Asia. This publication is a model that should be emulated in every region of the tropics.

My conclusion is that reduced-impact logging has not outlived its usefulness. Rather, it has reached a stage of maturity when reduced-impact logging guidelines can be developed by specialists other than forest engineers to fit site-specific situations and to achieve goals that go well beyond the production of timber. I am certain of one thing: if there is a future that does not include reduced-impact logging, it will also not include sustainable forest management.

## REFERENCES

- DYKSTRA DP & HEINRICH R. 1996. *FAO Model Code of Forest Harvesting Practice*. FAO, Rome.
- GUSTAFSSON L, NASI R, DENNIS R, NGUYEN HN, SHEIL D, MEIJAARD E, DYKSTRA D, PRIYADI H & PHAM QT. 2007. *Logging for the Ark: Improving the Conservation Value of Production Forests in South East Asia*. Occasional Paper No. 48. Center for International Forestry Research, Bogor.
- JONKERS, WBJ. 2002. Reduced impact logging in Sarawak, Guyana and Cameroon: the reasons behind differences in approach. Pp 199–207 in Enters T et al. (eds) *Applying Reduced Impact Logging to Advance Sustainable Forest Management*. FAO Regional Office for Asia and the Pacific, Bangkok.
- MARSH CW, TAY J, PINARD MA, PUTZ FE, SULLIVAN TE. 1996. Reduced impact logging: a pilot project in Sabah, Malaysia. Pp 199–207 in Schulte A & Schöne D (eds) *Dipterocarp Forest Ecosystems: Towards Sustainable Management*. World Scientific, Singapore.
- MATTSON-MARN H & JONKERS WBJ. 1982. Logging damage in tropical high forest. In Srivastava PBL et al. (eds) *Tropical Forests, Source of Energy Through Optimisation and Diversification*. Penerbit Universiti Pertanian Malaysia, Serdang.
- MEIJAARD E, SHEIL D, NASI R, AUGERI D, ROSENBAUM B, ISKANDAR D, SETYAWATI T, LAMMERTINK M, RACHMATIKA I, WONG A, SOEHARTONO T, STANLEY S & O'BRIEN T. 2005. *Life After Logging: Reconciling Wildlife Conservation and Production Forestry in Indonesian Borneo*. Center for International Forestry Research, Bogor.
- PARRISH M. 1992. L.A. firm helps utility with innovative plan. *Los Angeles Times*, 4 August 1992. [http://articles.latimes.com/1992-08-04/business/fi-5190\\_1\\_carbon-dioxide](http://articles.latimes.com/1992-08-04/business/fi-5190_1_carbon-dioxide) (Accessed 4 Nov 2011)
- PUTZ FE & PINARD MA. 1993. Reduced-impact logging as a carbon-offset method. *Conservation Biology* 7: 755–757.
- PUTZ FE, SIST P, FREDERICKSEN T & DYKSTRA D. 2008. Reduced-impact logging: challenges and opportunities. *Forest Ecology and Management* 256: 1427–1433.
- SIST P, GARCIA-FERNANDEZ C & FREDERICKSEN TS. 2008. Moving beyond reduced-impact logging towards a more holistic management of tropical forests. *Forest Ecology and Management* 256: 1427–1516.

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