

The logging of Tapajós

Reduced impact logging is being applied in one of Brazil's national forests

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IN THE 1970s, Brazil's military government had a policy of encouraging the occupation of the Amazon. Roads were built to facilitate immigration, and settlers were allowed to take up lots on both sides of these roads. A few conservation units were also established; one of these was the 600 000-hectare Tapajós National Forest (FLONA), located in the Santarém region of Pará state about 3° south of the equator.

FLONAs are conservation units covered by natural forest that are designated for the rational use of forest resources, including timber, under a regime of sustainable management. Large-scale logging had not been attempted in Tapajós or any other tropical-forest FLONA until, in 1992, an ITTO project (PD 68/89 REV.1 (F)) commenced with the aim of testing sustainable forest management (SFM) in Tapajós in accordance with Brazilian forestry legislation and an environmental impact assessment. A management plan for the forest was devised and a pilot area selected for logging using reduced impact logging (RIL) techniques. This article describes some of the results and lessons learned; a second article (page 10) describes the impacts of the project on communities living in or near the Tapajós FLONA.

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Annual production units

The purpose of the project, which was implemented by IBAMA (a national government agency), was to develop a realistic RIL harvesting experience in a large tropical FLONA. It focused on a 3222-hectare area of forest within a larger, 136 000-hectare area designated for logging within Tapajós. The area was further subdivided into five annual production units (known as AMFs) of about 600 hectares each, and 38 working units, most of which were about 100 hectares in size. Logging commenced in 1999; the total volume extracted from the five annual production units in the period 1999–2003 was 63 392 m³ (averaging 6.4 m³/tree and 20.25 m³/hectare). Training in RIL was provided progressively between 1999 and 2003; accordingly, post-harvesting surveys should be able to detect any improvement in practices over the period.



Preparation: workers receive training in forest operations in the Tapajós National Forest.

Logging standards

RIL is the improvement of conventional logging based on the planning of the activities to be carried out, the training and qualification of workers, and the adoption of new techniques and technologies suited to the characteristics of the forest (Pereira Jr 2004). In comparison to conventional exploitation it aims to reduce damage to residual forests, maintain water quality, minimise the risk of forest fires and protect biological diversity. The annual operational plans (POAs) drawn up for the annual operating areas in Tapajós prescribed forest management aimed at mitigating the environmental impacts of logging.

Management planning was based on 100% inventories, which determined the timber stock and mapped the forest. The infrastructure of the management area, including the main and feeder access roads, bridges, storage yards, skid trails and camping areas were all planned and built according to RIL standards, and conservation areas—particularly around rivers, streams and other water bodies—were designated.

Assessment

The management operations and forest harvesting practices were assessed recently using data collected from the AMFs, interviews, literature reviews and the project's archives at the IBAMA head office in Santarém. ITTO's criteria and indicators for the sustainable management of natural tropical forests were used to assess the quality of the operations and their conformity or otherwise with SFM. The collected data were also used to assess the compliance of the management regime with the requirements specified in the environmental impact assessment.

Post-logging data were collected in all five AMFs; in each, one work unit was selected at random and, in that, one feeder road was chosen, along which all log yards were assessed. From the yards, a skid-trail was chosen at random, along which stumps were located and felling practices assessed.

On the feeder roads, in the log yards and along the skid trails, data were collected on: width and length of tracks, canopy opening/closing, soil exposure, damage to lateral vegetation, and natural regeneration. The assessment of the felling was conducted by observing the types of cutting and felling techniques used.

According to Johns et al. (1998), if trees are felled correctly they create smaller openings in the canopy and damage fewer trees compared to 'conventional' techniques; moreover, damage to the soil associated with the manoeuvring of machines in the skid trails is four times greater in a non-planned operation than under RIL. Holmes et al. (2002) reported that in a RIL operation less than 10% of skid trails show exposed soil.

In 1999 and 2000, harvesting in Tapajós exhibited characteristics of conventional activity, especially in such activities as the building of roads and yards, and the felling and skidding of logs. From 2001, as RIL training was intensified and logging operations were more closely supervised by qualified technicians, logging standards began to approach those expected of RIL.

The evaluation also showed that permanent conservation areas were respected and preserved and buffer strips along watercourses were maintained. Hunting by logging crews was also strictly prohibited.

Thus, the pilot logging can be deemed a success, environmentally at least. But is it sustainable? Tapajós was not empty when it was created, and is even less so now. Critical to the long-term success of the Tapajós operation as a sustainable development activity is the relationship between it and the communities that live in or near the forest. The next article deals with this issue in more detail.

References

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Showing the way: workers watch a demonstration on directional felling, a component of RIL, in the Tapajós National Forest.

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Measured approach: a researcher assesses the recovery of a logging track after harvesting.