German research protects the Amazon rainforest

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In the future, there will be regulations for each type of tree in the flooded forests, specifying how often and at what trunk circumference they can be cut down. Image: Florian Wittmann, MPIC

The forestry industry in a highly sensitive part of the Amazon rainforest has just become more sustainable thanks to the work of a team of researchers, including scientists from the Max Planck Institute for Chemistry. They produced an inventory of extensive forest areas, regularly flooded by the Amazon and Solimões rivers, and calculated the rates of growth and reproduction of individual species of trees. The Brazilian state of Amazonas has taken these findings as the basis for its new logging legislation for the floodplain forests.

The state of Amazonas, Brazil has recently passed an amendment to deliver more sustainable logging in the floodplain forests. The

amendment governs how often a species may be logged, how many trees may be taken and the necessary tree circumference. The forested areas along the Amazon and Solimões rivers, which specialists refer to as the Várzea forests, extend up to 100 kilometres inland from each side of both rivers and cover a total of around 300,000 square kilometres , an area virtually the size of Germany. Since the Várzea forests are regularly flooded, they form a unique ecosystem, but it is at serious risk from intensive logging.

The amendment is based on studies conducted by the Max Planck Institute for Chemistry in Mainz and the National Institute of Amazonian Research (INPA). Researchers from both institutions spent more than ten years studying the growth and population dynamics of the species of tree found in the floodplain forests.

"We produced an inventory of the Várzea forests. In other words, the species of trees, their numbers and ages," said Florian Wittmann, one of the two Max Planck researchers involved. Together with his colleagues, Jochen Schöngart from Mainz, and Maria T. F. Piedade from the Brazilian partner INPA, he discovered that the existing logging regulations were not protecting some species, including many precious woods. "Even though the trees in the floodplain forest grow faster than those in dry areas, the rate at which they have been removed in the past is too high for many species to survive," added Wittmann.

The old legislation allowed five trees, with a diameter of 50 centimeters or more, to be removed every 25 years per hectare, regardless of species. Many species of tree, however, only reproduce when they are older and thicker so these would have been removed at too high a rate. At some point in time this would have meant that these species would have disappeared from the floodplain forests.

Based on their findings, the scientists are now proposing different

diameters and removal rates for trees for specific species and ecosystems. For example, the diameter for one species has been increased to 100 centimeters. "We are very proud that our fundamental research is being directly applied to better protect the floodplain forest and that our group of researchers is even mentioned explicitly in the legislation," says Wittmann.

The scientist is most confident that the new legislation will also be respected. "The state of Amazonas is imposing stringent monitoring," says Wittmann. "There is also a good incentive for the timber industry to observe the strict rules because otherwise they won't be given an environmental certificate and so won't be able to sell their timber." It's not just Brazilian but also international timber companies which operate in the floodplain forests.

Provided by Max-Planck-Gesellschaft