

Carbon Dynamics in Central African Forests Managed for Timber

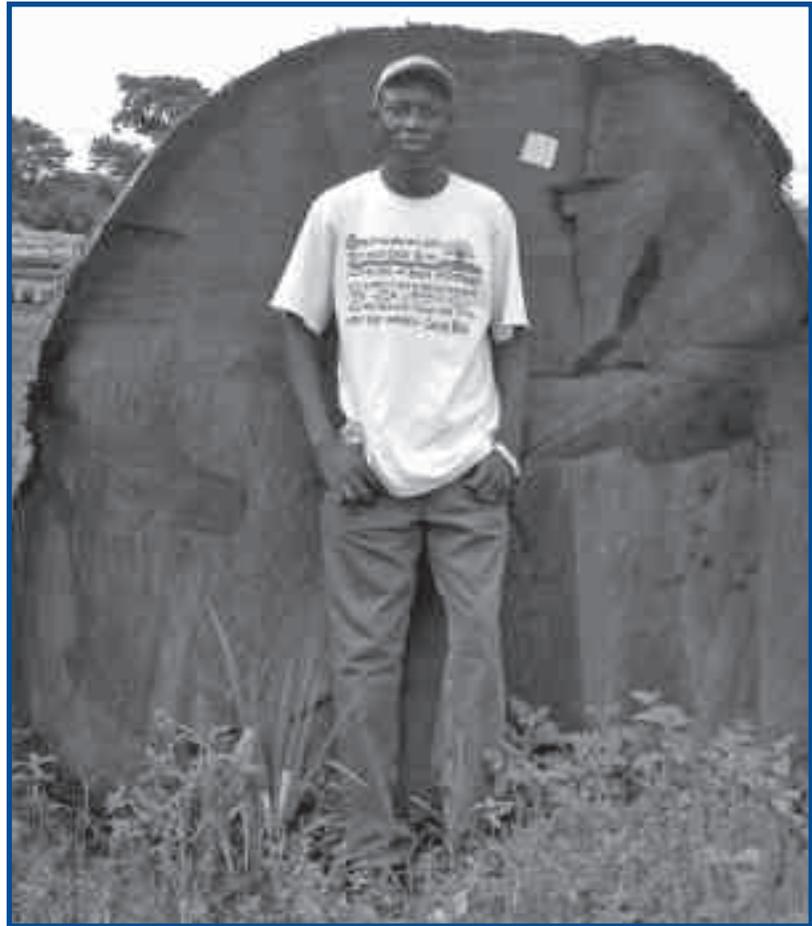
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My research aims to understand the effects of reduced-impact logging (RIL) and conventional logging (CL) techniques on carbon stocks in a forest managed for timber in Central Africa. I conducted my pre-dissertation research in a timber concession in Gabon. Gabon has 85% forest cover, which store large quantities of carbon and provide goods and services for humanity. But the various ways in which these forests are being used has different effects on their structure, soils, wildlife, and carbon stores.

The primary objective of this pilot study was to estimate aboveground forest biomass and carbon stocks before logging then evaluate damage on trees after logging as surrogate of biomass loss. From June to August 2009, I worked on Mont Cristal, about 150 km from Libreville, Gabon. I worked in collaboration with Tropical Forest Foundation (TFF) and Wildlife Conservation Society who share similar objectives. In addition, SEEF allocated a portion of its concession for the study and ENEF (National School of Water and Forests) in Libreville provided interns to learn forest management methods and research. Timber production constitutes a major source of revenues for the Central African countries, which have high forest cover and low deforestation rates. But there is a lack of data and information on how logging affects carbon stores in these forests.

During the fieldwork, with the help of interns and WCS field staff, we demarcated an area of 72 hectares in the site to be harvested using reduced-impact logging techniques. Within that area, we established 10 one-hectare plots to collect data on above-ground biomass before and after selective logging. We also conducted the tree inventory; the first plot was logged using directional felling and other RIL techniques damaging about 14% of the inventoried trees.

Preliminary findings show that the vegetation on Mont Cristal is diverse with high density of tree species but logging is a major threat to these ecosystems. In view of the international focus on



efforts to reduce emission from deforestation and forest degradation (REDD), it is important to develop strategies to improve forest management in Central Africa.

The pilot study provided essential information to focus my dissertation research. However, more needs to be done in the field, and I hope to capitalize on the strong partnerships with WCS, TFF, and ENEF to compare financial costs and benefits of activities associated with conventional and reduced-impact logging and to explore the extent to which reduced-

impact logging approaches sustain timber yields of commercial species.

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