Patterns of timber harvesting and its relationship with sustainable forest management in the Western Amazon, Ecuador case

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ABSTRACT

The Amazon rainforest lies within the most diverse forest ecosystem in the world. However, a large part of the tropical rainforest is being degraded because of timber harvesting without any sustainability criteria, and owing to a limited understanding of the effects of forest exploitation. The Ecuadorian Amazon (EA) is part of the Andes Amazon (AA), an area covered by five countries (Venezuela, Colombia, Ecuador, Peru and Bolivia). This research identified the patterns of legal timber harvesting in the EA and determined current trends with respect to mostly harvested forest species. Two harvesting programs aimed at small farmers prevail in the

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EA: first, naturally regenerated trees felling program and, simplified timber harvesting programs in native forests. Considering the surface and volume of logging, significant differences were detected between logging procedures and ecosystems in the region. Two hundred and thirty-two genera are registered for harvest and, 51.93% of the total harvesting volume comes from eight genera and ten species. This research shows that in fallows of fragmented forest ecosystems, small farmers are harvesting fast-growing pioneer species. Maintaining a sustainable production in timber harvesting depends, by and large, on the harvesting and felling programs established on small farms.

Keywords: Andes Amazon, Timber Harvesting, Forest Species, Ecosystem productivity, Sustainable Forest Management

INTRODUCTION

Large portions of tropical rainforests have been degraded because of logging without sustainability criteria (Kobayashi, 2004; Blaser et al., 2011; Burivalova et al., 2014). However, in many areas of the tropics, sustainable timber harvesting has become an important tool of land uses and a significant economic activity (Asner et al., 2006; Foley et al., 2007; Herrero-Jauregui et al., 2013). It has also increased in frequency and intensity in tropical rainforests (Nepstad et al., 1999; Curran et al., 2003; Asner et al., 2005) with an important impact on forests structures and functions (Verissimo et al., 1992; Asner et al., 2006). In particular, sustainable harvesting causes less damage to the landscape compared to unsustainable harvesting approaches or deforestation.