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Effects of the sustainable forestry initiative fiber sourcing standard on the average implementation rate of forestry best management practices in Georgia, United States

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ABSTRACT

Much of the discourse on the sustainability of forestry resources revolves around certified forestland. It is typically assumed that certified forestland is the hallmark of sustainable forestry. This reasoning has led to a general perception that uncertified forestlands are not sustainably managed. In this regard, the role of the Sustainable Forestry Initiative (SFI) Fiber Sourcing Standard is instrumental in promoting sustainable forest management on uncertified forestlands. We used an advanced spatial approach to determine the influence of the SFI Fiber Sourcing Standard over space and time on Georgia's forestlands. We also assessed differences in the implementation rate of forestry Best Management Practices (BMPs) in Georgia on harvested sites located within the sourcing radius of mills certified to SFI Fiber Sourcing Standard relative to those harvest sites located outside the sourcing radius of certified mills. Our results suggest that the SFI Fiber Sourcing Standard affects 80% or more of total forestland in Georgia. We also found that the average BMP implementation rate on harvested sites located within the sourcing radius (about 65 km) of certified mills is about 2% higher relative to harvested sites located outside the sourcing radius of such mills over time. Our results indicate that the SFI Fiber Sourcing Standard is helping in ensuring sustainability of forestlands in Georgia, as forestry BMPs are an important indicator of sustainable forest management. We hope our results will bring clarity to the overall sustainability of uncertified forestlands in Georgia and other forested regions in North America in the context of global private forest governance systems like the SFI Fiber Sourcing Standard.

1. Introduction

Forest certification systems like the Programme for the Endorsement of Forest Certification (PEFC) and the Forest Stewardship Council (FSC) promote sustainable forestry practices worldwide. Most existing certification systems focus on certification of forest management (this includes forestland certification) and chain of custody (CoC). PEFC certifies over 303 million hectares and 11,000 CoCs worldwide, with over 47 million hectares and 200 CoCs in the United States alone, by endorsing over 30 certification systems (PEFC, 2016).

The Sustainable Forestry Initiative (SFI) is a PEFC endorsed system operating in the United States and Canada which, in addition to forest management and CoC standards, offers a unique Fiber Sourcing Standard for those wood consuming mills that procure wood directly from certified and uncertified forestlands (SFI, 2015). The SFI, 2015–2019 Fiber Sourcing Standard promotes responsible forestry practices through 14 principles, 13 objectives, 21 performance measures, and 55 indicators. These fiber sourcing requirements include measures to broaden the practice of biodiversity, use forestry Best Management Practices (BMPs) to protect water quality, provide outreach to landowners, and use the services of qualified logging professionals who have successfully completed an approved wood producer training program such as Georgia's Master Timber Harvester Program (SFI, 2015). Additionally, the participating wood consuming mills under the SFI Fiber Sourcing Standard must be third-party audited to ensure compliance with the requirements of the standard.

Sustainable wood procurement from uncertified forestlands is especially important in the southeastern United States, a region dominated by family forest landowners for whom forest management certification may be out of reach due to cost considerations. This is especially true in Georgia, the largest roundwood producing state in the United States, where about a half million family forest landowners own about 5.7 million hectares of forestlands, i.e., 58.3% of total forestlands (Oswalt et al., 2014), yet only about 18% of the forestland in Georgia is

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certified to various forest management certification systems including the SFI Forest Management Standards. However, there are nearly 200 primary wood-consuming mills in Georgia out of which 41 consume > 317,514 metric tons (350,000 short tons) of roundwood per year (GFC, 2017) totaling about 65% of total annual roundwood consumed in Georgia. Of the 41 large, wood-consuming mills, 28 were certified to the SFI Fiber Sourcing Standard prior to 2015. As a result, it is generally believed that the SFI Fiber Sourcing Standard is instrumental in ensuring the sustainability of forestry resources in Georgia beyond certified forestlands. In turn, the SFI Fiber Sourcing Standard helps wood consuming mills in Georgia to access national and global markets where buyers are seeking finished wood products made from wood sourced from sustainably managed forestlands.

1.1. SFI fiber sourcing standard and forestry BMPs

A prominent feature of the SFI Fiber Sourcing Standard is adherence to forestry BMPs for maintaining water quality. Wood consuming mills must include a contractual obligation to follow forestry BMPs in their procurement agreements with trained loggers and must perform periodic random checks on harvested sites located on uncertified forestlands that are subject to their own procurement activities. In addition to the BMP audits performed by wood consuming mills certified to the SFI Fiber Sourcing Standard, the Georgia Forestry Commission (GFC) performs a biennial survey throughout the state to track BMP implementation rates on recently (typically less than two years) harvested sites (GFC, 2015). The GFC uses the results of these surveys to comply with the Federal Clean Water Act of 1972 as amended. These surveys follow guidelines in Georgia's Best Management Practices for Forestry manual for estimating the average BMP implementation rate.

Increasing BMP implementation rates concur with the introduction and expansion of the SFI Fiber Sourcing Standard beginning the mid-1990s (Fig. 1). The mean implementation rate of forestry BMPs for the first Georgia survey performed in 1991 was only 65%, but the rate steadily increased and had remained above 90% since 2004 (GFC, 2015). Many forestry experts acknowledge a positive relationship exists between the implementation rate of forestry BMPs and the adoption of the SFI Fiber Sourcing Standard by wood-consuming mills in Georgia over time. However, previous academic research has not attempted to assess the relationship between the SFI Fiber Sourcing Standard and implementation rates of forestry BMPs in Georgia. It is important to explore this relationship as forestry BMPs are a strong indicator of sustainable forest management especially when the maintenance of soil and water resources is a criterion featured in the National Report on Sustainable Forests in the United States (Robertson et al., 2011).

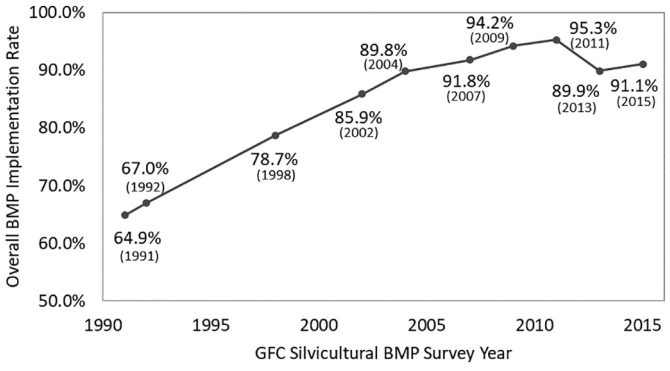

Fig. 1. Overall implementation rates from the Georgia Forestry Commission's Silvicultural Best Management Practices Implementation and Compliance Survey. A decrease in the implementation rate in 2013 is attributed to a historic drought in 2011 and 2012.

2. Literature review

The role of private environmental governance as a tool for ensuring sustainability of forestry resources is critical in modern times. Cashore (2002) developed an analytical framework to understand the emergence of non-state market-driven governance systems and the conditions under which they gain authority for making either new or revising existing policies in the context of forest certification. Gulbrandsen (2004) argued that global private forest governance could be improved by including a broad range of stakeholder groups in standard development, promoting strong environmental and social performance standards in forestry, providing effective control mechanisms, securing producer participation, and through market capture. Ebeling and Yasué (2009) reported that certification is likely to be more successful where governments enforce forestry laws, provide financial incentives for certified forestry, provide land tenure security, and where large-scale and vertically integrated forestry operations are commercially feasible. Sundstrom and Henry (2017) analyzed forest certification data from Brazil and Russia and found that FSC has influenced domestic rhetoric, laws, and enforcement practices over time, showing the influence of private forest governance in shaping national forest policies in selected countries.

Several studies have also investigated the institutional aspects of global private forest governance. Pattberrg (2005) argued that rule-making in the context of FSC towards global governance performs three tasks: a) facilitates a solution to complex multi-interest problems; b) brokers knowledge and norms among diverse stakeholder groups; and c) constitutes a learning network in environmental governance. Bartley (2011) argued that an understanding of the operation of transnational private regulation requires attention to the layering of multiple rules and the politics surrounding them in the context of given geography, as rules related to private governance of forestry resources are not additive in nature, but they create new synergetic networks with the existing rules across scales. Johansson (2012) deliberated that institutional actors have realigned their positions on forest certification in Sweden over time in search for public reputational accountability and market accountability to the extent that management of conflicting views has become a necessity for institutionalizing the concept of private forest governance. Overdevest and Rickenbach (2006) emphasized on the need for matching expectations and satisfaction with forest certification across stakeholder groups for ensuring stronger institutions for effective private forest governance in the United States.

Only a handful of studies have empirically analyzed the impact of forest certification on environmental resources. Marx and Cuypers (2010) reported that the role of certification in preventing deforestation at the global level is limited. Similarly, Johansson and Lidestav (2011) reported only minor improvements in forest conditions in relation to the targets of biological diversity in certified forestlands in Sweden. These improvements were less evident on large-scale properties certified to FSC than small-scale private properties certified to PEFC systems. Kalonga et al. (2016) reported that biodiversity indicators were higher on certified than uncertified forestlands in Tanzania.

A perusal of current literature on global private forest governance regimes suggests that most of the studies have only focused on the FSC Forest Management Standard. There is no study, to the best of our understanding, which focuses on the influence and impact of SFI Fiber Sourcing on forestry BMPs in the United States and Canada. The majority of studies focusing on forestry BMPs in the United States analyze the impact of BMPs on water quality (Aust and Blinn, 2004; Cristan et al., 2016; Grace, 2005). Only a handful of studies have analyzed the economic and welfare impacts of forestry BMPs (Cubbage, 2004; Shaffer et al., 1998; Sun, 2006). Studies which focus on social dimensions of forestry BMPs examine the attitudes of forest landowners and the impact of policy instruments on the adoption of sustainable forest management practices, including BMPs by landowners (Knoot and Rickenbach, 2011; Maker et al., 2014; Mcgill et al., 2006; Munsell et al.,

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