Passive government, organized crime, and massive deforestation: The case of western Mexico

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Abstract
The mountains of western Mexico contain one of the highest numbers of conifers and hardwood species for the country. The extraction of those species represents about 82% of the national timber production. Governmental practices had been the burden to conservation and sustainable forestry practices in the last two decades by allowing illegal logging and circumventing environmental laws. In the last 5 years, pervasive illegal logging is led by organized crime gangs. These gangs work in complete impunity, using intimidation, kidnapping, and bribery to silence the landowners, the entire community, and government officials. As a consequence, community forest enterprises declined and the illegal logging increased. For example, 4% of the national production was illegally extracted in the Talpa de Allende municipality during 2017–2019, and an estimated of 70% of the timber in Mexico lack of extraction permits. Institutional practices, reduced budgets, corruption networks, and impunity are producing environmental degradation in western Mexico, and likely elsewhere in the country as well.

KEYWORDS
biodiversity loss, corruption, green crime, impunity, institutional practices

1 | INTRODUCTION

The western mountain range system running through the Mexican states of Nayarit, Jalisco, and Michoacán is rich in species, endemism, and ecosystems (Vargas-Rodriguez, Platt, et al., 2010). Pines (Pinus spp.) and oaks (Quercus spp.) are highly diverse in Mexico, the country ranks first in pine species (49), followed by Asia 27, and Europe 12 (Gernandt & Pérez-de la Rosa, 2014; Nobis et al., 2012), and first in oak species (164) followed by China (117) and the U.S. (91) (Valencia, 2004). Plant endemism is high along the fragmented cloud forests of Jalisco, with 40 species growing only in that type of vegetation (Vargas-Rodriguez, Platt, et al., 2010). In addition, the region hosts hardwood species (e.g., Acer binzayedii, Magnolia ilitisana, Tilia caroliniana subsp. occidentalis, Quercus insignis) listed as critically endangered, vulnerable, rare or disjunct, and restricted to fragmented cloud forests (Crowley et al., 2020; Rivers et al., 2016).
The majority of the forestry industry in Mexico is located in the states of Chihuahua, Durango, Jalisco, Michoacán, and Oaxaca, accounting for more than 60% of the timber production (Álvarez-López et al., 2015; López & Flores, 2020; SEMARNAT, 2021). Michoacán and Jalisco are third and fourth place in total stem tree volume production, comprising 13% and 8% respectively from the total national production (SEMADES, 2006). In Jalisco, the municipalities of Mascota, Talpa de Allende, and San Sebastián del Oeste are among the largest in surface, and contribute with 14% to the produced timber (SEMADES, 2006).

Notwithstanding the biological significance of the mountainous system of western Mexico and its relevance for the forestry industry the area has been affected the lack of governmental decisive actions for pursuing a sustainable conservation policy. Recent illegal extraction of timber by organized crime along with institutional weaknesses has resulted on the deterioration of forest resources. This work synthesizes these practices and activities that are impeding the sustainability of forest resources in western Mexico, particularly in the mountainous system of Talpa de Allende, Jalisco.

2 | STUDY AREA

The western Mexico region is a mountainous territory defined here as the area that extends from the states of Nayarit (23°N) to Michoacán (18°N). The northern border connects with the Western Mexican Cordillera (Sierra Madre Occidental), the central portion of Jalisco is formed by the Trans-Mexican Volcanic Belt (Eje Neovolcánico), and the southern area of Jalisco, Michoacán and the border with Guerrero state is distributed along the Southern Mexican Cordillera (Sierra Madre del Sur) (SEMARNAT, 2010). Along the western mountainous chains of Jalisco there are protected areas: Sierra de Manantlán Biosphere Reserve, the Maple Forest State Park, as well as the proposed protected area Jalisco Costa Norte Biosphere Reserve (Figure 1).

3 | STATE OF AFFAIRS IN WESTERN MEXICO

Timber harvest businesses have taken advantage of the high numbers of tree species and abundance in the

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**FIGURE 1** Western Mexico region. The corresponding portion of the Western Mexican Cordillera for the study area is depicted in yellow, the Trans-Mexican Volcanic Belt is in green and the South Mexican Cordillera is in orange. The Mexican states and localities considered in this work are listed.
region. At a national level, pines represent the 70% of the total timber production, oaks 9.8%, and firs (Abies spp.) 2.5% (CONAFOR, 2021). Pines, oaks, and firs have been historically extracted in the region, providing community income and employment (Frey et al., 2019). Timber production from the 1900s was concentrated in maximizing financial benefits but without implementing management or silvicultural practices (López, 2021; Mathews, 2002). Forests with low quality woods, forest fragmentation, and soil erosion were the result of those practices (López, 2021; Mathews, 2002). During the 1980s, the establishment of the Sierra de Manantlán Biosphere Reserve restricted land use, implemented conservation plans, and suspended logging permits (Carabias et al., 2000). Because of the restrictions, most of the logging companies migrated to other mountain regions, along Jalisco state, in the areas of Sierra Madre del Sur and Trans-Mexican Volcanic Belt (SEMARNAT, pers. comm.). During the 1990s and 2000s, other protected areas were designed and proposed for the region, such as the Jalisco Costa Norte Biosphere Reserve (Vázquez et al., 2000). However, the strong opposition of loggers and their coercion against communities did not facilitate the protected area decree and the legal proceedings. A more recent attempt to preserve and manage the forest ecosystems in the territory was the proposal of a 56,395 ha protected area (Ojo de Agua del Cuervo, Talpa de Allende municipality, Jalisco), which again received strong opposition of loggers and the lack of interest from the environmental agencies (Vargas-Rodriguez, Platt, et al., 2010). Overall, during a 25 years period (1982–2007) Jalisco state had 2,815,896 ha transformed to secondary vegetation, representing 42% of the territory and constituting 77% of the state land with some level of degradation and fragmentation (Bautista-Andalón & Alcaraz-Rodríguez, 2016).

More recently, the temperate forests in Talpa de Allende have been subjected to illegal and pervasive logging. During the early 2000s, private companies were extracting pines, oaks, and firs in the zone without federal or state permits, lacking of any regulation. Municipal authorities and civil society were able to obtain the order for termination of the extraction, through the established and legal procedures, but the Federal Attorney for Environmental Protection (Procuraduría Federal de Protección al Ambiente, PROFEPA) did not enforce the order until 2 years later. The PROFEPA is a deconcentrated body of the Ministry of Environment and Natural Resources (SEMARNAT). PROFEPA is an administrative authority for environmental regulation, and as the main enforcement agency it can verify forestry permits and sanction irregular activities (OECD, 2013). Other unauthorized logging activity began in 2004, in the mountains of Altamira, Talpa de Allende, and continued without any governmental intervention or community opposition. Another illegal event followed in the area, with a deforestation of about 50 km to create a paved road from Talpa de Allende to Llano Grande. Although it was a transport infrastructure planned by the state government (Secretaría de Desarrollo Urbano), it did not follow the regulations and lacked of the environmental impact assessment and the land use change permits (del Castillo, 2005). A year later, the PROFEPA sanctioned the infrastructure project, conditioning the construction until compensation measures were executed. Thus, as compensation, the state government invested nine million pesos ($825,688 US in 2006) to purchase 150 ha of cloud forests, which had been previously pointed out as biodiverse and proposed for legal protection and conservation (Vargas-Rodriguez, 2005). The 150 ha were in proximity from the paved road and thus it was affected by the construction, hence, the purchase was viewed as way to preserve areas adjacent to the road (del Castillo, 2005). Besides being state property, this forest lacked of any protection until 2016, when the 150 ha were decreed as state park. Yet this new state park lacks of state funds to implement any conservation and management measures. The proposed protected area, as biosphere reserve, was originally conceived of 56,395 ha (Vargas-Rodriguez, Platt, et al., 2010; Vargas-Rodriguez, Vázquez, et al., 2010).

Federal and state institutional practices were the burden to conservation and protection of natural resources in western Mexico, until the organized crime gangs took the lead to use and extract resources in complete impunity (del Castillo, 2021a). The criminal organizations from Jalisco and Michoacán states have been controlling all logging activities in the region since 2016, extracting both tropical and temperate tree species; both states are among the five states with the highest incidence of environmental crimes (Peralta et al., 2017). As modus operandis, the crime gangs select a forested area of interest and approach the owner offering a payment for the wood, if the landowner does not want to sell it, often at very low prices, the gangs perform the extraction anyway, and even without a compensation. Landowners submitted complaints to PROFEPA and often received an answer consisting of an inspector making a supervision visit to the area; however, once the federal authorities arrive to supervise, the gangs intimidate or kidnap them and make them run away (del Castillo, 2020). Intimidation, kidnapping, and bribery are the most common ways to silence the landowners, entire communities, and government officials.

Federal and state authorities have passively allowed the illegal logging and the continuous degradation of the forests in western Mexico, facilitated by impunity and a corruption network among criminal organizations. The pervasive illegal logging has been continuous since 2016; it does not stop even during forest fires (Figure 2). Pines,
firs, and oaks, including their endangered species, are being cut. The Talpa de Allende municipality estimates that roughly 700,000 m$^3$ of total stem tree volume (rollo total árbol, RTA) were extracted from 2017 to 2019 (pers. comm.). In 2019, the total timber production in Mexico was 7.5-million m$^3$ total stem tree volume (CONAFOR, 2021). Thus, the illegally extracted timber only in Talpa de Allende could represent 4% of the total national production. The authorized tree volume for extraction for Jalisco in 2018 was 295,403 m$^3$ (SEMARNAT, 2021). There is not an exact estimate of the amount of illegally extracted timber in Mexico, but between 2013 and 2018, 70% of the commercialized timber in the country did not have extraction permits (CONAFOR, 2020). Local inhabitants and authorities see this day-by-day illegal extraction, as the logging trucks are constantly passing through the towns, villages, and using the main roads to transport the log to the ports of Colima and Michoacán to be shipped overseas (municipality, pers. comm.). Hence, the governmental authorities have passively allowed these irregular activities by the absence of sanctions (PROFEPA's attribution) and the lack of any legal prosecution, which is a responsibility of the Attorney General's Office through its office of environmental crimes, that investigates and prosecutes complaints validated and submitted by PROFEPA or by any citizen, however incarcerations in this matter are a rare occurrence (Gutiérrez Nájera, 2000).

Community forest enterprises from the region have declined in recent years as a consequence of the criminal organizations pressures. The community enterprises in Jalisco have been subject to continuous intimidation and bribery. For citizens in Talpa de Allende, massive deforestation has carried environmental conflicts such as air quality degradation, forest fires, water scarcity, and soil degradation, along with significant loss of fauna (García Jiménez et al., 2019). Other forest enterprises from Guerrero (ejido El Balcón), once an exemplary sawmill, have been almost completely disintegrated by the organized crime, which are controlling the region and the forest activities, the latter more evident since the assassination of local sawmill leaders in 2017 (del Castillo, 2021b). Illegal logging to convert land for avocado farming used for money laundry is common in Michoacán. Only a few community enterprises (Nuevo San Juan Parangaricutiro) have resisted the criminal organization pressures (Carmona et al., 2014; Ornelas, 2018). The community enterprises contribute with 70% of the legal timber
harvest of Mexico, yet the underlying pressures could decrease this proportion (CONAFOR, 2021).

Institutional practices, corruption networks and the impunity of criminal organizations are producing environmental degradation and biodiversity loss (Arroyo-Quiroz & Wyatt, 2018; Smith et al., 2003). Environmental authorities are allowing logging without environmental permits and active supervision. At the same time, criminal organizations in conjunction with local authorities work together to circumvent the law (Garay-Salamanca & Salcedo-Albarán, 2012). On the other hand, the local communities are intimidated and silenced by constant treats, murders, and kidnappings. The current Mexican president, Andrés Manuel López Obrador, promised at the beginning of his presidential term that he will end the corruption in the country using his personal policy of “abrazos no balazos” (“hugs and no gunshots”) and appointing “honorable people” in the highest federal positions of control. However, the illegal environmental activities and the absent enforcement of any conservation or management plan continue in western Mexico without any single attempt to execute the law or improve the situation.

Weak leadership at the leading environmental institution could be affecting its efficacy. During the current presidential administration, two SEMARNAT’s ministries have resigned, and more recently the ministry of the National Forestry Commission (CONAFOR) resigned. Furthermore, the annual budget for SEMARNAT during the last two presidential terms decreased, 25.8% during 2012–2018 and 16.2% from 2019 to present (SHCP, 2021). A more important reduction is noticeable in PROFEPA’s budget, it declined 46.2% from 2019 to present, while the reduction during 2012–2018 was 7.2% (SHCP, 2021). These trends indicate that the environment is not a priority.

4 | CONCLUSIONS AND RECOMMENDATIONS

A robust environmental institution is needed in Mexico. SEMARNAT should revise and improve its normative functions and reduce bureaucratic inefficiencies, while PROFEPA should implement regulations through better-prepared inspectors, states’ delegations, and more personnel. A commitment to the environment needs a significant increase in financial resources for the environmental sector. Municipalities should be included on enforcement efforts, while the state and federal authorities should have joint responsibilities for a sustainable management of forests (OECD, 2013).

The Attorney General’s Office needs to hire specialized magistrates with training on environmental issues. This should be implemented to comply with the Escazú agreement and to comply with the federal law of environmental responsibility, which obligates offenders to repair environmental damages (CEPAL, 2018). Penalties and the rules on the application of sanctions should be revised, since environmental crimes are not considered a serious felony currently and criminals might receive just up to 9 years of prison and negotiable financial penalties (Apud & Apud, 2020).

Local, municipal, state, national, and international environmental agencies are urged to enforce the law to put an end to the plundering of natural resources in western Mexico. The country needs to shift to a credible national forest policy, and embrace new ways to produce timber consistent with sustainable economic development and biological conservation.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

AUTHOR CONTRIBUTIONS

Carlos Ignacio García-Jiménez: conceptualization, methodology and analysis, investigation, writing-original draft, editing, data analysis, data curation. Yalma L. Vargas-Rodríguez: writing-original draft, analysis, development of figures, funding acquisition, project administration.

DATA AVAILABILITY STATEMENT

All used data for generating this article are presented in the article.

ETHICS STATEMENT

This article is original work of the authors reflecting their own research and writing. It properly cites sources, and it appropriates credits to the authors involved in the research activities. The authors take responsibility for its content and research.

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