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Assessing Biodiversity Conservation through EUDR Compliant Rubber Cultivation in Sri Lanka: A Case Study of Ingiriya Rubber Estates

Ranasinhage, C.L.N.[1,2,3*], Perera, K.M.A.R.[3,4], Abegunawardhana, P.D.[3]

[1]Premier Rubber Products (pvt) Ltd
[2]Department of Zoology, University of Colombo, Sri Lanka
[3]Young biologists' Association, Sri Lanka
[4]Department of Coastal and Marine Resources Management, Ocean University of Sri Lanka
**charithlakshan827@gmail.com*

Abstract

Deforestation and habitat destruction are among the most critical global environmental challenges, leading to significant loss of biodiversity. In response to these issues, the European Union Deforestation Regulation (EUDR), enacted in 2023, seeks to mitigate deforestation associated with agricultural expansion by ensuring that products entering the EU market are not grown or raised on land that was subject to deforestation. The regulation applies to seven commodities: cattle, cocoa, coffee, oil palm, rubber, soya, wood, and their derivative products. This study investigates the implications of the EUDR for biodiversity conservation within rubber plantations in Sri Lanka. The study was conducted in August 2024 at a rubber estate located in Ingiriya, Poruwadanda, Sri Lanka, which operates in compliance with the EUDR. The study site is bordered on one side by the Mawak Oya River, and the habitat types identified within the area include forest patches, rubber plantations and grasslands. The total study area encompassed 6 acres of rubber state. This comprehensive approach aimed to provide an in-depth understanding of the local biodiversity present within the estate. Species were systematically identified within rubber plantations, and its surrounding habitats utilizing a combination of random sampling, visual observations, and opportunistic methods. A total of 57 faunal species were recorded during the survey comprising 45 species of vertebrates distributed across five taxonomic classes (mammalia, avian, amphibian, reptiles and fish) and 12 invertebrates species belonging to two class Lepidoptera (6) and Odonates (6) were documented. Vertebrate species included representatives from various orders Anura (4), Squamata (11), Testudines (1), Passeriformes (3), Psittaciformes (4), Accipitriformes (1), Columbiformes (1), Piciformes (2), Suliformes (1), Primates (1), Artiodactyla (1), Chiroptera (1), Carnivorac (1), Rodentia (1), Lagomorpha (1), Cypriniformes (6), Synbranchiformes (1), Siluriformes (1), Cyprinodontiformes (1), Anabantiformes (1), and Beloniformes (1). The baseline data generated during the period provides an idea about various species present in the area. Notable observations included the presence of the vulnerable endemic fish species *(Pethia nigrofasciata)* and the endemic bird species *(Loriculus beryllinus)*, both of which were found in robust populations within the study area. The results of this study indicate that implementing rubber cultivation practices in accordance with the EUDR may effectively safeguard biodiversity by preventing further deforestation, habitat fragmentation and ensuring the conservation of adjacent ecosystems. Specific EUDR practices implemented include, geolocation mapping, chain of custody documentation, restricting rubber cultivation to previously cleared agricultural lands, maintaining buffer zones, and conducting regular monitoring for deforestation. This study recommended future research is necessary to explore long-term ecological outcomes and investigate the adaptability of these practices over the time.

Keywords: *Biodiversity conservation, Deforestation, EUDR, Rubber cultivation, Sri Lanka*