Annual ring in nine tree species in a Neotropical Island with high precipitation: Coco Island, Costa Rica

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Abstract

Coco Island is of volcanic origin with an area of 24 km², located 530 km from the Pacific coast of Costa Rica and is the furthest Costa Rican Island from the continent and with a rainfall of over 7000 mm years⁻¹. Two types of forest are present, low elevation humid forest and high elevation cloud forest. This study aims to establish different distinctiveness of annual rings and dendrochronological potential (DP) of nine tree species. Any annual ring boundary were not observed in C. pettieri and H. fascicularis; therefore, they did not present any DP. Annual ring type 1 (density variation) was presented in A. compressa, H. succosa, H. odorata, and P. cocosensis, however the annual rings boundary was more defined in A. compressa and H. succosa than other species. O. insularis and S. Holdridgei presented annual rings boundary type 5, fiber band and were adequate distinctiveness. Finally, Eugenia pacifica presented annual ring type 3 (pattern de fiber/parenchyma) and type 4 (vessels distribution), but its distinctiveness was limited. Coco Island’s trees presented seven species with more or less distinctive of annual ring, but three species (A. compressa, E. pacifica, and P. cocosensis) presented low DP. Meanwhile H. succosa, H. odorata, O. insulares, and S. holdridgei showed medium DP. These species growth in the two types of forest in the island and add to abundance and tree diameter, these species have some DP and they can be used to establish a chronology from 50 to 130 years.

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