

**Tree Species Diversity of the Riparian Vegetation
Along Sibalom River, Leon, Iloilo**

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Abstract

Riparian vegetation is perhaps one of the least recognized and appreciated ecosystems in the country, despite its crucial role in delivering ecosystem services. Unfortunately, there have been few studies conducted in the country, particularly in Sibalom River, Leon, Iloilo. Baseline information is necessary to assess the current status of this vegetation. Thus, this study aimed to determine the tree species diversity of the riparian vegetation along Sibalom River. Specifically, it sought to calculate tree density, relative density, the Shannon-Weiner Index of Diversity (H'), and Simpson's Evenness Index (J'). Six plots were delineated and surveyed: two upstream, two midstream, and two downstream. Results revealed a total of 467 individual tree species and 34 tree species documented, representing 16 families. *Swietenia Mahogani*, an invasive species, was found in all plots and exhibited the highest density, with some undergoing naturalization. Twenty native species and 14 introduced species were identified. Twenty-four species were classified as least concerned, while two were vulnerable and one endangered. Overall diversity was moderate at $H' = 2.72$, while the Evenness index, $J' = 0.07$, indicated very low distribution of individuals among species. Geographical Information System analysis showed that species diversity is affected by factors such as human activities, especially construction, water movement, and land use.

References

- Alemu, T., Bahrndorff, S., Pertoldi, C., Hundera, K., Alemayehue, E., & Ambelu, A. (2018). Development of a plant based riparian index of biotic integrity (RIBI) for assessing the ecological condition of highland streams in East Africa. *Ecological Indicators*, 87(2018)77–85. <https://doi.org/10.1016/j.ecolind.2017.12.032>
- Bertran, C. et al., (2017). Effects of local land-use on riparian vegetation, water quality, and the functional organization of macroinvertebrate assemblages. *Science of the Total Environment*, 609, 724–734.
- Biswas, S. R., Mallik, A. U., Braithwaite, N. T., & Biswas, P. L. (2019). Effects of disturbance type and microhabitat on species and functional diversity relationship in stream-bank plant communities. *Forest Ecology and Management*, 432, 812–822. <https://doi.org/10.1016/j.foreco.2018.10.021>
- Bombino, G., Zema, D. A., Denisi, P., Lucas-Borja, M. E., Labate, A., & Zimbone, S. M., (2019). Assessment of riparian vegetation characteristics I Mediterranean headwaters regulated by check dams using multivariate statistical techniques. *Science of the Total Environment*, 657, 597–607. <https://doi.org/10.1016/j.scitotenv.2018.12.045>
- Convention on Biological Diversity (2019). Philippines - Main Details. Biodiversity Facts. Retrieved from <https://www.cbd.int/countries/profile/?country=ph>
- Crabbe, T. C. (2018). Tree Density Calculator. *Tree Density*, 3.
- Crowther, T. (2015). Mapping tree density at a global scale. *Nature*, 201-205.
- EPA, U. (2022). Green Facts. Retrieved from <https://www.greenfacts.org/glossary/def/ecosystem.htm>

EPA, U. (2022). *Green Facts*. Retrieved from

<https://www.greenfacts.org/glossary/def/ecosystem.htm>

Grebner, D. L. (2017). Retrieved from [https://www.sciencedirect.com/topics/agricultural-](https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/natural-resource-management)

[and-biological-sciences/natural-resource-management](https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/natural-resource-management)

Howard, E. (2019, June 5). UNEARTHED. Retrieved from

<https://unearthed.greenpeace.org/2019/05/06/nature-crisis-biodiversity>

[dangerous-climate-change-extinction/](https://unearthed.greenpeace.org/2019/05/06/nature-crisis-biodiversity)

Iloilo Government Philippines. (2022). Retrieved from

<http://www.iloilo.gov.ph/en/node/162>

Knoepp, J. (2019). Retrieved from [https://www.sciencedirect.com/topics/agricultural-and](https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/forestry)

[biological-sciences/forestry](https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/forestry)

Malabrigo, E. E. (2020). Diversity Assessment of Tree Species in Sitio Dicasalarin,

Barangay Zabali, Baler, Aurora, Philippines. *Open Journal of Ecology*, 10(11), 717

728.

National Academies Press. (2002). Riparian Areas: Functions and Strategies for

Management. 33.

Nichols, M. R. (2018). What Is Biodiversity Loss and Why Is It a Problem. *Science*

Energy & Environment. Retrieve from [biodiversity-loss-and-why-is-it-a-problem](https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/biodiversity-loss)

Nix, S. (2019, August 16). ThoughtCo. Retrieved from <https://www.thoughtco.com/tree>

[structures-where-growth-occurs-1343496](https://www.thoughtco.com/tree)

Pearson, J. (2023, March 31). Retrieved from <https://www.greenbantling.com/what-does>

[relative-density-mean-in-ecology](https://www.greenbantling.com/what-does)

Queensland Government. (2014, November 12). Retrieved from

<https://www.qld.gov.au/environment/plants-animals/habitats/regrowth/regrowth-guides/euc-open/euc-open>

density#:~:text=The%20density%20of%20trees%20has%20a%20large%20bearing,replace%2C%20or%20add%20to%2C%20the%20existing%20canopy%20trees.

Rother, D. C., Liboni, A. P., Magnago, L. F., Chao, A., Chazdon, R. L., & Rodrigues, R.

(2019), Ecological restoration increases conservation of taxonomic and functional beta diversity of woody plants in a tropical fragmented landscape. *Forest Ecology and Management*, 451, 117538. <https://doi.org/10.1016/j.foreco.2019.117538>

Salemi, L. F., Groppo, J. D. Trevisan R., De Moraes J. M., Lima, W., & Martinelli L. A.

(2012). Riparian vegetation and water yield: A synthesis. *Journal of Hydrology*, 454–455, 195–202.

Santos, O., Marques, S. R., Rezende, A. C., & Silva, M. D. (2016). Composition and

richness of woody species in riparian forests in urban areas of Manaus, Amazonas, Brazil. *Landscape and Urban Planning*, 150, 70–78.

Weiskittel, C. W. (2021). Relative density of United States forests has shifted to higher

levels over last two decades with important implications for future dynamics.

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