

PRIMARY TROPICAL FORESTS

ECOSYSTEM INTEGRITY OF PRIMARY TROPICAL FORESTS IS CRITICAL FOR BIODIVERSITY AND CARBON

The statements made in the primary tropical forest infographic were drawn from the following publications.

Carbon

- Houghton, R. A., & Nassikas, A. A. (2018). Negative emissions from stopping deforestation and forest degradation, globally. *Global Change Biology*, 24(1), 350-359.
- Huang, M., & Asner, G. P. (2010). Long-term carbon loss and recovery following selective logging in Amazon forests. *Global Biogeochemical Cycles*, 24(3), GB3028.
- Mackey, B., Kormos, C. F., Keith, H., Moomaw, W. R., Houghton, R. A., Mittermeier, R. A., Hole, D., & Hugh, S. (in press). Understanding the importance of primary tropical forest protection as a mitigation strategy. *Mitigation and Adaptation Strategies for Global Change*.
- Pinard, M. A., & Cropper, W. P. (2000). Simulated effects of logging on carbon storage in dipterocarp forest. *Journal of Applied Ecology*, 37(2), 267-283.
- Watson, J. E. M., Evans, T., Venter, O., Williams, B., Tulloch, A., Stewart, C., ... Lindenmayer, D. (2018). The exceptional value of intact forest ecosystems. *Nature Ecology and Evolution*, 2, 599-610.

Carbon Numbers

- Mackey, B., Kormos, C. F., Keith, H., Moomaw, W. R., Houghton, R. A., Mittermeier, R. A., Hole, D., & Hugh, S. (in press). Understanding the importance of primary tropical forest protection as a mitigation strategy. *Mitigation and Adaptation Strategies for Global Change*.
- Morales-Hidalgo, D., Oswalt, S. N., & Somanathan, E. (2015). Status and trends in global primary forest, protected areas, and areas designated for conservation of biodiversity from the Global Forest Resources Assessment 2015. *Forest Ecology and Management*, 352, 68-77.
- Pan, Y., Birdsey, R. A., Fang, J., Houghton, R., Kauppi, P. E., Kurz, W. A., ... & Ciais, P. (2011). A large and persistent carbon sink in the world's forests. *Science*, 333(6045), 988-993.

Big, Old Trees

- Alroy, J. (2017). Effects of habitat disturbance on tropical forest biodiversity. *Proceedings of the National Academy of Sciences of the United States of America*, 114(23), 6056-6061.
- Bradford, M., & Murphy, H. T. (2019). The importance of large-diameter trees in the wet tropical rainforests of Australia. *PLoS ONE*, 14(5), e0208377.
- Brown, I. F., Martinelli, L. A., Thomas, W. W., Moreira, M. Z., Cid Ferreira, C. A., & Victoria, R. A. (1995). Uncertainty in the biomass of Amazonian forests: An example from Rondônia, Brazil. *Forest Ecology and Management*, 75(1-3), 175-189.
- Ewers, R. M., & Banks-Leite, C. (2013). Fragmentation Impairs the Microclimate Buffering Effect of Tropical Forests. *PLoS ONE*, 8(3), e58093.
- Fichtler, E., Clark, D. A., & Worbes, M. (2003). Age and Long-term Growth of Trees in an Old-growth Tropical Rain Forest, Based on Analyses of Tree Rings and ¹⁴C1. *BIOTROPICA*, 35(3), 306.
- Ghazoul, J. and Sheil, D. (2010). *Tropical Rain Forest Ecology, Diversity, and Conservation*. Oxford University Press, New York.

- Köhl, M., Neupane, P. R., & Lotfiomran, N. (2017). The impact of tree age on biomass growth and carbon accumulation capacity: A retrospective analysis using tree ring data of three tropical tree species grown in natural forests of Suriname. *PloS One*, 12(8), e0181187.
- Lutz, J. A., Larson, A. J., Freund, J. A., Swanson, M. E., & Bible, K. J. (2013). The importance of large-diameter trees to forest structural heterogeneity. *PLoS ONE*, 8(12), e82784.
- Luyssaert, S., Schulze, E. D., Börner, A., Knohl, A., Hessenmöller, D., Law, B. E., ... Grace, J. (2008). Old-growth forests as global carbon sinks. *Nature*, 455(7210), 213-215.
- Nascimento, H. E. M., & Laurance, W. F. (2002). Total aboveground biomass in central Amazonian rainforests: A landscape-scale study. *Forest Ecology and Management*, 168(1-3), 311-321.
- Sillett, S. C., Van Pelt, R., Koch, G. W., Ambrose, A. R., Carroll, A. L., Antoine, M. E., & Mifsud, B. M. (2010). Increasing wood production through old age in tall trees. *Forest Ecology and Management*, 259(5), 976-994.
- Slik, J. W. F., Paoli, G., Mcguire, K., Amaral, I., Barroso, J., Bastian, M., ... Zweifel, N. (2013). Large trees drive forest aboveground biomass variation in moist lowland forests across the tropics. *Global Ecology and Biogeography*, 22(12), 1261-1271.
- Stephenson, N. L., Das, A. J., Condit, R., Russo, S. E., Baker, P. J., Beckman, N. G., ... Zavala, M. A. (2014). Rate of tree carbon accumulation increases continuously with tree size. *Nature*, 507(7490), 90-93.
- Thompson, I., Mackey, B., McNulty, S., & Mosseler, A. (2009). Forest Resilience, Biodiversity, and Climate Change. A synthesis of the biodiversity/resilience/stability relationship in forest ecosystems. Technical Series (Vol. no. 43, p. 67).

Biodiversity

- Blonder, B., Both, S., Coomes, D. A., Elias, D., Jucker, T., Kvasnica, J., ... Svátek, M. (2018). Extreme and Highly Heterogeneous Microclimates in Selectively Logged Tropical Forests. *Frontiers in Forests and Global Change*, 1, Art. 5.
- Corlett, R. T. (2014). *The ecology of tropical East Asia*, 2nd edn. Oxford University Press, Oxford.
- Ghazoul, J. and Sheil, D. (2010). *Tropical Rain Forest Ecology, Diversity, and Conservation*. Oxford University Press, New York.
- Golley, F. B. (1986). Chemical plant-soil relationships in tropical forests. *Journal of Tropical Ecology*, 2(3), 219-229.
- Pimm, S. L., & Joppa, L. N. (2015). How Many Plant Species are There, Where are They, and at What Rate are They Going Extinct? *Annals of the Missouri Botanical Garden*, 100(3), 170-176.
- Salati, E., Dall'Olio, A., Matsui, E. & Gat, J. E. (1979). Recycling of water in the Amazon Basin: an isotopic study. *Water Resources Research*, 15(5), 1250-1258.
- Scheffers, B. R., Edwards, D. P., Macdonald, S. L., Senior, R. A., Andriamahohatra, L. R., Roslan, N., ... Williams, S. E. (2017). Extreme thermal heterogeneity in structurally complex tropical rain forests. *Biotropica*, 49(1), 35-44.
- Spracklen, D. V., Arnold, S. R., & Taylor, C. M. (2012). Observations of increased tropical rainfall preceded by air passage over forests. *Nature*, 489(7415), 282-285.
- Stork, N. E. (1996). Tropical forest dynamics: the faunal components. Pp. 1-20. In Edwards, D. S., Booth, W. E. & Choy, S. C. (eds.). *Tropical Rainforest Research – Current Issues*. Kluwer Academic Publishers, Amsterdam.
- Terborgh, J., Robinson, S. K., Parker, T. A., Munn, C. A., & Pierpont, N. (1990). Structure and organization of an Amazonian forest bird community. *Ecological Monographs*, 60(2), 213-238.
- Thompson, I., Mackey, B., McNulty, S., & Mosseler, A. (2009). Forest Resilience, Biodiversity, and Climate Change. A synthesis of the biodiversity/ resilience/ stability relationship in forest ecosystems. Technical Series (Vol. no. 43, p. 67).