

LOCAL ASSESSMENT OF URBAN TREE DIVERSITY

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Abstract: This work provides an overview of tree diversity in the municipality of porbandar through an assessment of the road side tree flora in urban sectors of the city. An enumeration of roadside trees along major routes of porbandar city was examined. It is aimed to make available the knowledge required for supporting proactive action for plant documentation, diversity assessment and conservation. Biodiversity indices for individual roads and area were calculated and used to depict the biodiversity in the urbanized area. A total of 35 tree species belonging to 23 families were enumerated. Most of the trees were products of planted rather than wildling preservation at number of roads. Distribution pattern of tree species analysis depict the contiguous pattern except the *Avicennia marina* showed random distribution. The analysis was based on a tree census in which all tree species were counted and studied for various parameters. Sum total of indices of a city then compared with the major urban spaces in the saurashtra region resulted into species richness and evenness at regional level.

Keywords: Biodiversity, Roadside trees, Saurashtra region, Urban area

REFERENCES

- Anderson, M. J., Ellingsen, K. E. and McArdle, B. H.** (2006). Multivariate dispersion as a measure of beta diversity Ecology Letters, 9: 683–693 doi: 10.1111/j.1461-0248.2006.00926.x
- Andrieu, E., Thompson, J. D. and Debussche, M.** (2007). The impact of forest spread on a marginal population of a protected peony (*Paeonia officinalis* L.): the importance of conserving the habitat mosaic. *Biodiversity and Conservation*, 16(3), 643-658.
- Anonymous** (2007). United Nations Population Division, Urban Agglomerations [www.un.org/esa/population/](http://www.un.org/esa/population/publications.pdf) publications pdf.
- Burden, D.** (2008). 22 Benefits of Urban Street Trees. www.michigan.gov/documents/dnr/22benefits2080847.pdf.
- CBD** (2005). Handbook on the convention of the biological diversity CBD Secetariate UNEP, Nairobi, Kenya
- Crane, P. and Kinzig, A.** (2005). Nature in the metropolis. *Science* 308 (5726): 1225-1225.
- Donovan, G. H., Butry, D. T., Michael, Y. L., Prestemon, J. P., Liebhold, A. M., Gatzliolis, D. and Mao, M. Y.** (2013). The relationship between trees and human health: evidence from the spread of the emerald ash borer. *American journal of preventive medicine*, 44(2), 139-145.
- Garcillán, P., Rebman, J. and Casillas, F.** (2009). Analysis of the non-native flora of Ensenada, a fast growing city in north western Baja California. *Urban Ecosyst* 12:449–463
- Hiremath, V. T. and Taranath, T. C.** (2011). Phytotherapy associated with Jaundice in Chitradurga District, Karnataka. *International Journal of Medicinal and Aromatic Plants*, 1(2), 162-165.
- Jim, C.Y. and Chen, W.Y.** (2009). Diversity and distribution of landscape trees in the compact Asian city of Taipei. *Appl Geogr* 29:577–587
- Kendle, T. and Forbes, S.** (1997). *Urban Nature Conservation*. London: Chapman and Hall.
- Kühn, I., Brandl, R. and Klotz, S.** (2004). The flora of German cities is naturally species rich. *Evol. Ecol. Res.* 6(5):749-764. Available from https://www.ufz.de/export/data/1/22488_kuehn.eer1629.pdf [accessed 8 March 2016].
- Mack, R.N. and Lonsdale, W.M.** (2001). Humans as global plant dispersers: Getting more than we bargained for. *BioScience* 51: 95–102.
- Maco, S.E. and McPherson, E.G.** (2003). A practical approach to assessing structure, function and value of street tree populations in small communities. *Journal of Arboriculture* 29: 84–97.
- McDonnel, M.J., Hans, A.K. and Breuste, J. H.** (2009). *Ecology of cities and towns. A comparative approach* Cambridge university press
- Magurran, A.E. & McGill, B.J.** (2011). [Eds.]: *Biological diversity: frontiers in measurement and assessment*. XVII + 345 pp., Oxford University Press, Oxford.
- McKinney, M.L.** (2008). Effects of urbanization on species richness: a review of plants and animals. *Urban Ecosyst* 11:161–176
- Miller, J. R. and R. J. Hobbs.** (2002). Conservation where people live and work. *Conservation Biology* 16:330–337.
- Miller, R.W.** (1997). *Urban Forestry: Planning and Managing Urban Green spaces*, second ed. Prentice Hall, New Jersey
- Nagendra, H. and Gopal, D.** (2010). Street trees in Bangalore: density, diversity, composition and distribution. *Urban For Urban Green*. doi:10.1016/j.ufug.2009.1012.1005

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- Sala, O.E., Chapin, F.S. 3rd, Armesto, J.J., Berlow, E., Bloomfield, J., Dirzo, R., Huber-Sanwald, E., Huenneke, L.F., Jackson, R.B., Kinzig, A., Leemans, R., Lodge, D.M., Mooney, H.A., Oesterheld, M., Poff, N.L., Sykes, M.T., Walker, B.H., Walker, M., & Wall, D.H.** (2000). Global biodiversity scenarios for the year 2100. *Science* 287:1770–1774
- Seth, M. K.** (2004). Trees and their economic Importance. *Bot. Rev.* 69 321-376
- Stehlik, I., Friedman, J. and Barrett, S.C.H.** (2008). Environmental influence on primary sex ratio in dioecious plant. *Proc. Nat. Acad. Sci. USA* 105: 10847-10852.
- Stehlik, I., Kron, P., Barrett, S.C.H. and Husband, B.C.** (2007). Sexing pollen reveals female bias in a dioecious plant. *New Phytol.* 175: 185-194.
- Sukopp** (2004). “Human-caused Impact on Preserved Vegetation.” *Landscape and Urban Planning* 68: 347–355
- TEEB (The Economics of Ecosystems and Biodiversity).** (2011). The economics of ecosystems and biodiversity in national and international policy making. P. ten Brink, editor. Earth scan, London
- UNEP-CBD,** (1991). Convention on Biological Diversity (CBD), Secretariat on CBD, United Nations Environment Programme, Montreal,.
- UNHABITAT** (2010). Cities and climate change: global report on human settlements, 2011 / United Nations Human Settlements Programme.
- United Nations Centre for Human Settlements** (1996). An urbanizing world: global report on human settlements, 1996. Oxford University Press, Oxford
- Vitousek, P.M., Mooney, H.A., Lubchenko, J. and Melillo, J.M.** (1997). Human domination on Earth’s ecosystems. *Science* 277:494–499
- Wunderle, J. M. Jr.** (1997). The role of animal seed dispersal in accelerating native forest regeneration on degraded tropical lands. *For Ecol Manage;* 99: 223-35.