BISS Biodiversity Information Science and Standards

Biodiversity Information Science and Standards 5: e75705
doi: 10.3897/biss.5.75705

OPEN ACCESS

Conference Abstract

ecoTeka, Urban Forestry Data Management

Mathias Aloui‡, Gaëtan Duhamel‡, Manon Frédout‡, Olivier Rovellotti‡

‡ Natural Solutions, Marseille, France

Corresponding author: Olivier Rovellotti (olivier_rovellotti@natural-solutions.eu)

Received: 23 Sep 2021 | Published: 27 Sep 2021

Citation: Aloui M, Duhamel G, Frédout M, Rovellotti O (2021) ecoTeka, Urban Forestry Data Management. Biodiversity Information Science and Standards 5: e75705. https://doi.org/10.3897/biss.5.75705

Abstract

It is now well known that a healthy urban ecosystem is a crucial element to healthier citizens (Astell-Burt and Feng 2019), better air (Ning et al. 2016) and water quality (Livesley et al. 2016), and overall, to a more resilient urban environment (Huff et al. 2020). With ecoTeka, an open-source platform for tree management, we leverage the power of OpenStreetMap (Mooney 2015), Mappilary, and open data to allow decision makers to improve their urban forestry practices. To have the most comprehensive data about the ecosystems, we plan use all available sources from satellite imagery to LIDAR (light detection and ranging) and compute them with the DeepForest (Weinstein et al. 2020) learning algorithm. We also teamed with the French government to build an open standard for tree data to improve the interoperability of the system. Finally, we calculate a Shannon-Wiener diversity index (used by ecologists to estimate species diversity by their relative abundance in a habitat) to inform the decision making of urban ecosystems.

Keywords

urban forestry, open data, GIS, taxonomy

Presenting author

Olivier Rovellotti

Presented at

TDWG 2021

References

- Astell-Burt T, Feng X (2019) Urban green space, tree canopy and prevention of cardiometabolic diseases: a multilevel longitudinal study of 46 786 Australians. International Journal of Epidemiology 49 (3): 926-933. https://doi.org/10.1093/ije/dyz239
- Huff E, Johnson M, Roman L, Sonti N, Pregitzer C, Campbell L, McMillen H (2020) A Literature Review of Resilience in Urban Forestry. Arboriculture & Urban Forestry 46 (3): 185-196. https://doi.org/10.48044/jauf.2020.014
- Livesley SJ, McPherson EG, Calfapietra C (2016) The Urban Forest and Ecosystem Services: Impacts on Urban Water, Heat, and Pollution Cycles at the Tree, Street, and City Scale. Journal of Environmental Quality 45 (1): 119-124. https://doi.org/10.2134/jeq2015.11.0567
- Mooney P (2015) An Outlook for OpenStreetMap. Lecture Notes in Geoinformation and Cartography319-324. https://doi.org/10.1007/978-3-319-14280-7_16
- Ning Z, Chambers R, Abdollahi K (2016) Modeling air pollutant removal, carbon storage, and CO_2 sequestration potential of urban forests in Scotlandville, Louisiana, USA. iForest - Biogeosciences and Forestry 9 (6): 860-867. https://doi.org/10.3832/ifor1845-009
- Weinstein B, Marconi S, Aubry-Kientz M, Vincent G, Senyondo H, White E (2020) DeepForest: A Python package for RGB deep learning tree crown delineation. Methods in Ecology and Evolution 11 (12): 1743-1751. https://doi.org/10.1111/2041-210x.13472