International Cartographic Association
Association Cartographique Internationale

Mapping Exotic Plant Invasions in the Caribbean

Maarten B. Eppinga [a,*] Maria J. Santos [a], Margarita E. López-Álzate [b]

[a] *Department of Geography, University of Zurich, Zurich, Switzerland, maarten.eppinga@geo.uzh.ch*
[b] *Sustainable Island Solutions through Science, Technology, Engineering and Mathematics (SISSTEM), University of Aruba, Oranjestad, Aruba*

* Corresponding author

Keywords: cartography, islands, sustainable development, invasive species

The terrestrial ecosystems of the Caribbean comprise a global biodiversity hotspot, but are experiencing species losses at an accelerating rate due to multiple anthropogenic pressures. One of the main drivers of current losses of biodiversity is the introduction and subsequent proliferation of exotic plant species. While this phenomenon is well documented for many Caribbean islands, monitoring exotic plant species invasion poses a significant scientific and logistical challenge. Recent advances in remote sensing provide a promising opportunity to monitor exotic plant species invasions at high temporal and spatial resolutions using publicly available data. Nevertheless, interpretation of satellite imagery through supervised classification methods still requires the collection of ground truthing data. It is therefore of interest to consider to what extent unsupervised classification methods can approach the accuracy obtained with supervised classification of exotic plant species cover. In this study, we are comparing the ability of a supervised classification method and an unsupervised classification method to detect the presence exotic invasive vine *Antigonon leptopus* (common name: Coralita) on the Caribbean islands Saba and St. Eustatius. Support Vector Machines (SVMs) comprise a supervised classification method, and our results confirm previous successes using this algorithm to map the Coralita distribution on St. Eustatius. Similarly, for the island of Saba, SVMs are able to detect Coralita with more than 90% overall accuracy. Surprisingly, however, we find that an unsupervised method using Self-Organizing Maps, yields only slightly lower accuracies (5-10%), which can be attributed to a few areas on each island where misclassification occurs. This type of local misclassification can be mostly avoided when using ground truthing points from these locations within supervised classification. We use these results to discuss how unsupervised and supervised classifications of remotely sensed data can complement each other in the detection of exotic plants in Caribbean terrestrial ecosystems. These approaches provide a promising way to monitor invasive species at the island scale timely and efficiently.

Abstracts of the International Cartographic Association, 11, 9, 2026
ICA Cartography and Sustainable Development Workshop, 26–28 January 2026, University of Aruba, Oranjestad, Aruba.
https://doi.org/10.5194/ica-abs-11-9-2026