

Background: Coastal ecosystems in Mexico remain understudied in spite of their ecological, economic and conservation value and are being impacted by human activities along the coast. Knowledge on spatial patterns of plant species distribution that helps preserve these fragile ecosystems is crucial.

Aims: We evaluated differences in species richness, species diversity and species dominance patterns in 16 plant communities as well as the degree to which differences were driven by climatic conditions in sandy dunes in Yucatán. We evaluated the importance of invasive species in mediating patterns of species diversity and species dominance patterns.

Results: We found wide variation in plant species richness, species diversity and species dominance patterns among communities that stems from broad climatic differences along dune systems. Invasive plants represent almost one-third of total species richness and seem to be drastically changing the species dominance patterns in these communities.

Conclusions: Regional climatic differences along the Yucatán north coast seems to be a major driver of plant diversity and species composition. Our findings suggest that invasive plants have successfully colonised and spread along the coast over the past 30 years. Even though invasive species do not alter spatial patterns of species diversity, they are becoming more dominant with potential detrimental consequences for native plants.

