

**Trait-based approach to select plant species in urban areas:  
a database to support climate change adaptation and mitigation**

Catarina Patoilo Teixeira<sup>1,2,3</sup>, Cláudia Oliveira Fernandes<sup>1,2,3</sup>, Jack Ahern<sup>4</sup>,  
Paulo Farinha-Marques<sup>1,2,3</sup>

<sup>1</sup>*CIBIO, Centro de Investigação em Biodiversidade e Recursos Genéticos, InBIO  
Laboratório Associado, Campus de Vairão, Universidade do Porto*

<sup>2</sup>*Departamento de Geociências, Ambiente e Ordenamento do Território, Faculdade de  
Ciências, Universidade do Porto*

<sup>3</sup>*BIOPOLIS Program in Genomics, Biodiversity and Land Planning, CIBIO, Campus de  
Vairão*

<sup>4</sup>*Department of Landscape Architecture and Regional Planning, University of  
Massachusetts, Amherst*

Response to climate change in cities is increasingly urgent as most of the world's population lives in urban settlements. The urban green infrastructure plays a key role in adapting and mitigating climate change effects, which is an imperative endeavor to guarantee a comfortable, healthier, and safer urban environment. How the urban green infrastructure is designed and managed and which plant species are selected and combined will determine whether the response to climate change is efficient and multifunctional. This way, this study aimed to develop a database of plants for climate change adaptation and mitigation in order to support better decision-making when designing and managing urban green spaces. Based on a review of existing plant databases and a literature review about which traits are relevant for climate change adaptation and mitigation, more than 280 plant species were analyzed, organized, and cataloged in the database. Traits relevant for ornamental value were also considered since they are essential to ensure cultural value and social acceptance. The database was developed for the northwest Portuguese context but gathers information relevant to other urban contexts as well. Ultimately, the database intends to inform and assist the design and management process by selecting and combining the most suitable plant species, i.e., the right species for each location. This process will support biodiversity and resilience, improve the urban green infrastructure, making it more efficient to tackle climate change in cities.