

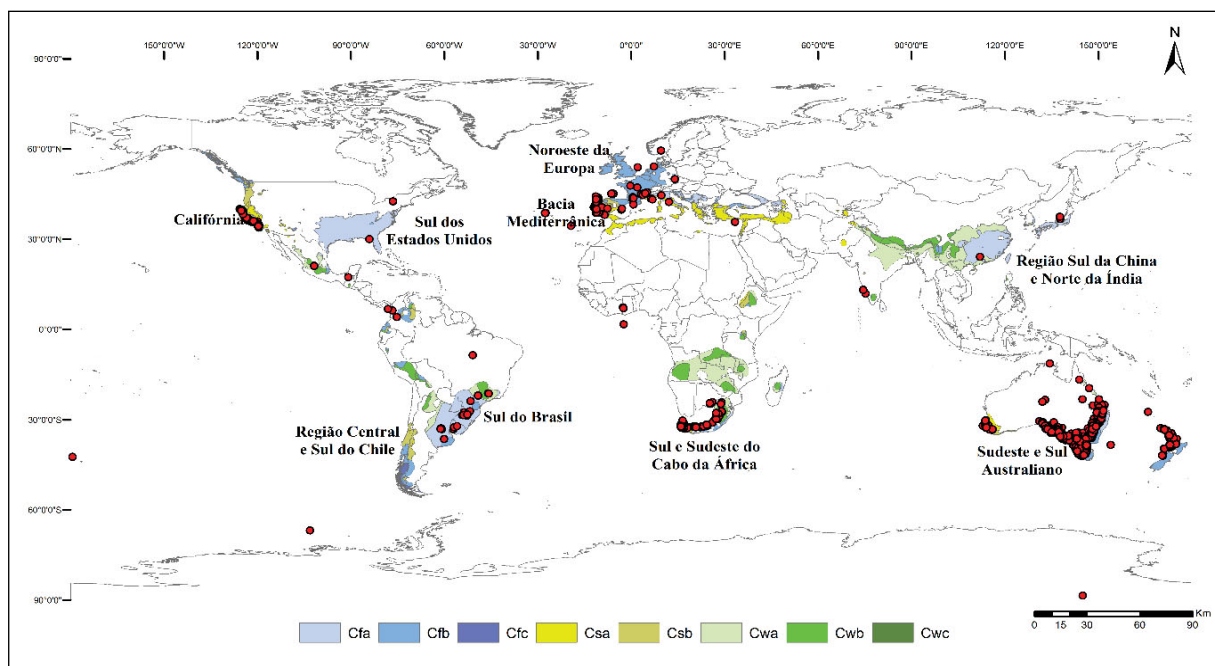
A conceptual map of invasion by *Acacia longifolia*

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An unresolved problem in the invasibility study of the Australian *Acacia longifolia* species is that many of its invaded ranges, characterized by coastal environment systems in the boundaries between the continents with a long history of human presence are classified as 'temperate zones' when they are functionally a mix of specific climate conditions (oceanic, humid, subtropical, mediterranean, and others different types).



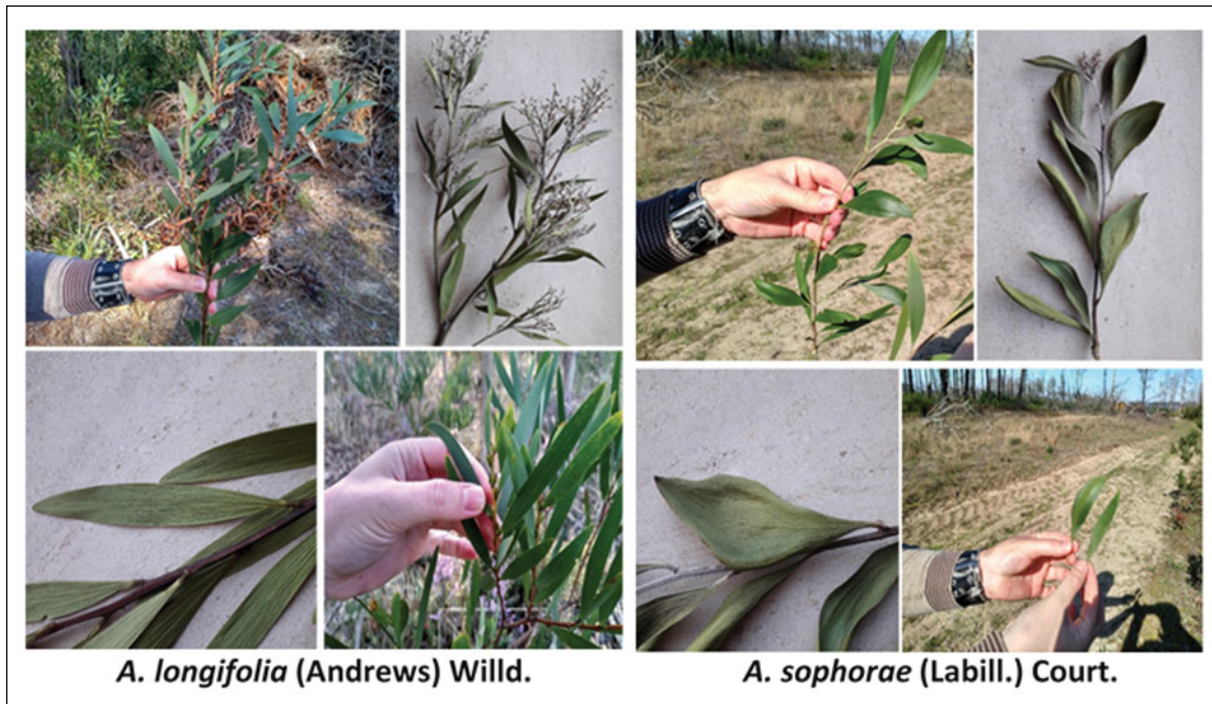
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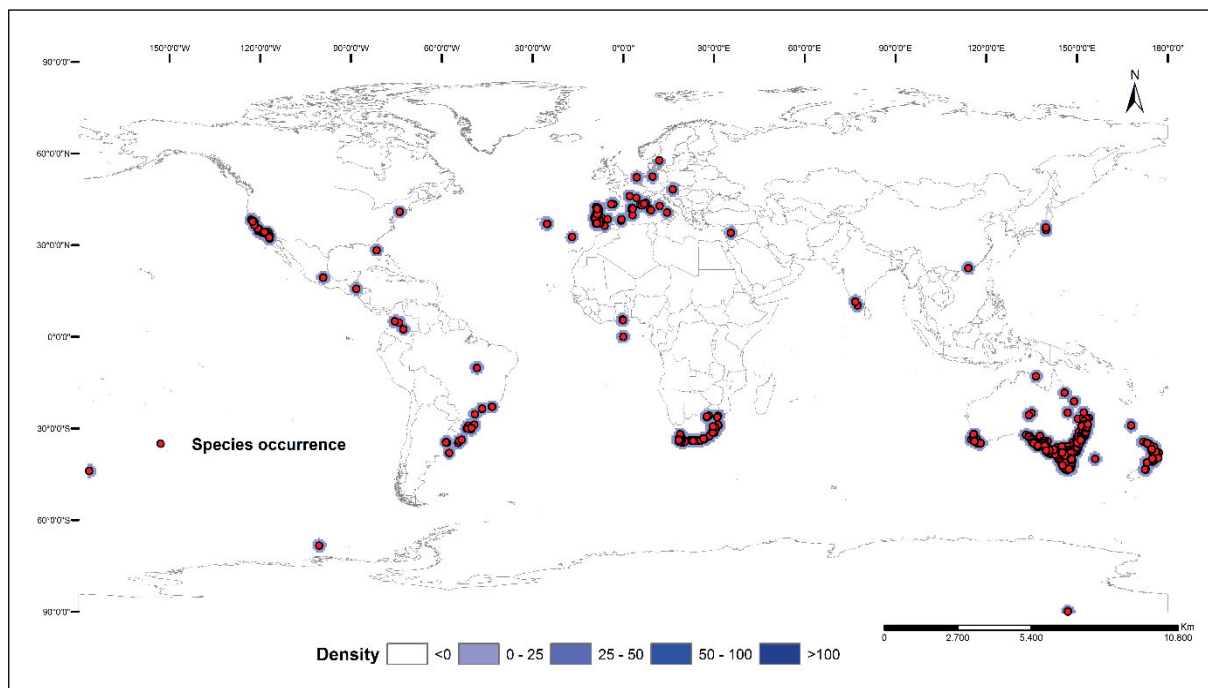


More problematically, this climate zone is widely regarded as the ecological niche of *Acacia longifolia*'s invasive species distribution, both because the two *Acacia longifolia* species (*A. longifolia* subsp. *longifolia* and *A. longifolia* subsp. *sophorae*) occur predominantly in areas of coastal dunes with poor soils and ecosystems historically modified, and because the temperate Australian regions where many of these species occur can also climatically support both *Acacia longifolia*'s native and no-native species distributions.



Here we examine multiple lines of evidence to try to untangle this issue, about how determinant is ecological similarity between different invaded ranges to explain the susceptibility to invasion by *Acacia longifolia*.





First, to understand the *A. Longifolia's* invasibility, what is the best climate resolution of analysis? Evidences in several studies establishes that *A. longifolia* invasive species, most likely *A. longifolia* subsp. *longifolia*, is distributed by the Mediterranean and Humid Subtropical climates. Species occurrences further suggest that *A. longifolia* prevalence normally increases from the coastlines to the inlands, expressing a non-human influence in the establishment and spread of *A. longifolia* in this scale of analysis.

Second, what current/potential distribution in native range should we consider? Distribution patterns analysis establish that, in the Australia, the *Acacia longifolia* species fall within well-established bioclimatic envelopes, but little is known about the *A. longifolia* patterns of distribution ranges in the other continents.

Third, the taxonomic scale. How much do we gain considering the subspecies level? Taxonomic differences of *Acacia longifolia* species from multiple most invaded sites across world clearly distinguish between these areas. Specifically, '*A. longifolia* subsp. *longifolia*' is distributed in a higher covered area, with wide eco-geographical conditions, and have more significantly available plant traits informations than '*A. longifolia* subsp. *sophorae*'. Critically, the significantly habitat susceptibility to invasion by *Acacia longifolia* species seems to occur much more frequently with *A. longifolia* subsp. *longifolia*. All these evidences are consistent with expected invasibility differences between invaded ranges by *A. longifolia*.

Fourth, to tackle susceptibility without losing detail: Are these evidences able to tackle the habitat susceptibility by *A. longifolia* invasions at global scales?

All these reflections will be used to produce a detailed conceptual model to contextualize the susceptibility of invasion by *Acacia longifolia* in the subtropical climate regions and help to distinguish the different patterns that we encounter.



