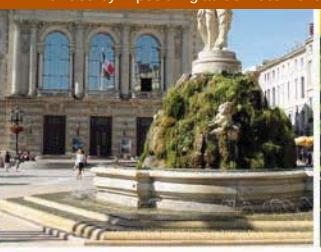
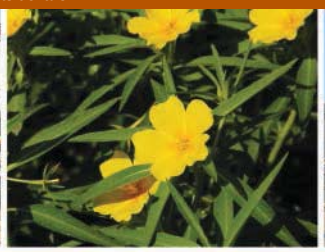


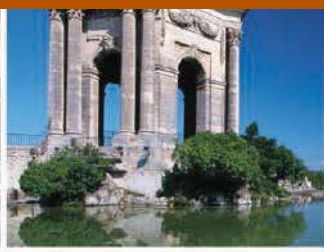

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Montpellier SupAgro, Montpellier, France

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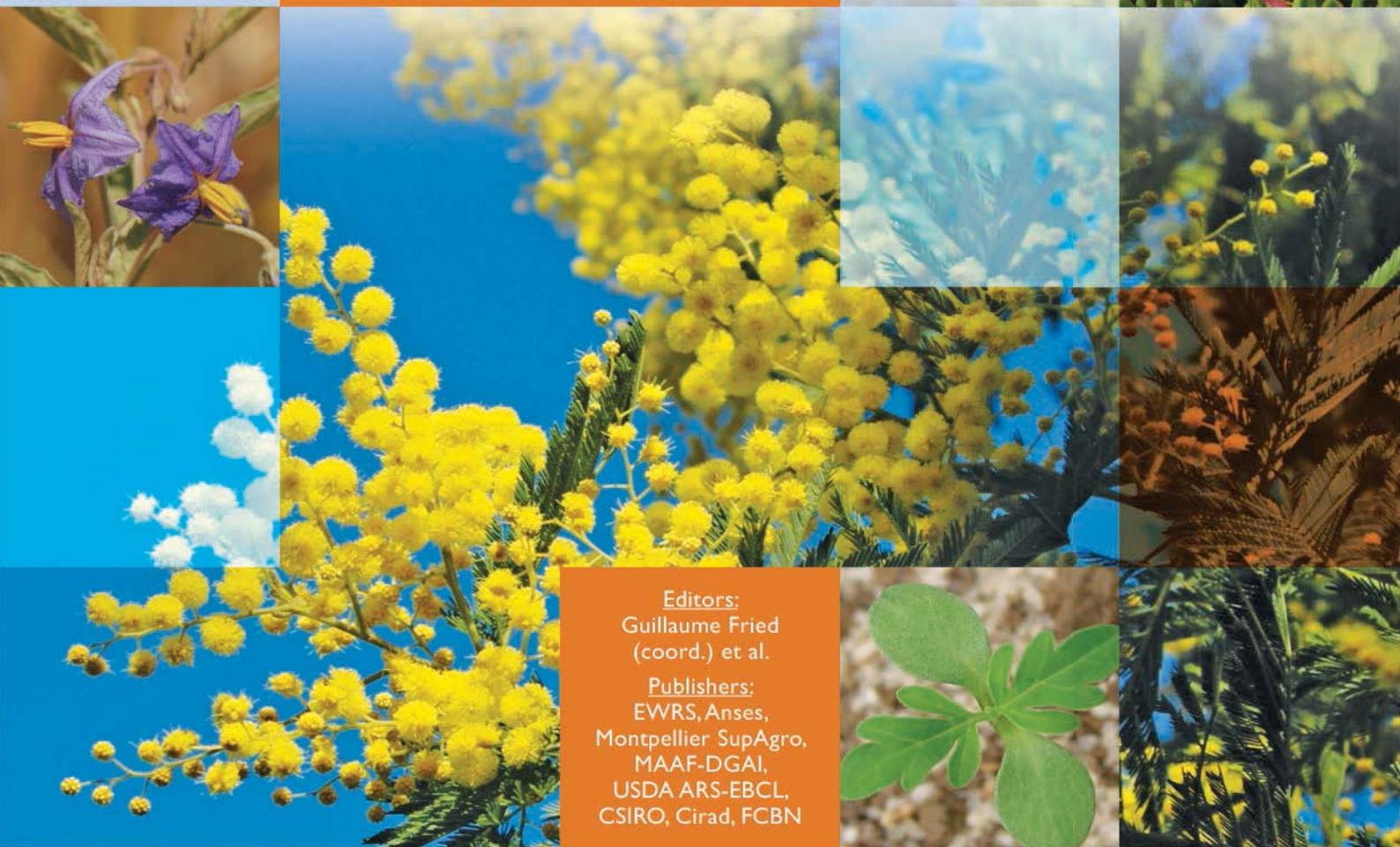

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Contemporary evolution of *Senecio pterophorus* DC. in response to climate but not to herbivory

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Divergence in plant traits and trait plasticity after invasion has been proposed as an important mechanism favoring invasion success. Current hypotheses predict a rapid evolution in response to changes in the abiotic conditions after invasion, or to changes in the herbivore consumption pressure caused by a decrease in the enemies associated at the area of origin (e.g. evolution of increased competitive ability –EICA– hypothesis). Here we have evaluated, simultaneously, the role of climate and herbivore consumption on the rapid geographical divergence in plant traits and trait plasticity of the exotic plant *Senecio pterophorus* (Asteraceae).

S. pterophorus is a perennial shrub native from Eastern South Africa and a recent invader in Western South Africa (~100 years ago), Australia (>70-100 years ago) and Europe (>30 years ago). In Australia it has been declared a noxious weed subject to eradication. The four distributional regions of *S. pterophorus* differ in their summer drought stress and in their interactions with herbivores. We performed a common garden experiment with plants sampled throughout the entire known distributional area of *S. pterophorus* in the native and non-native ranges to test geographical differences in individual-level traits, leaf-level traits and reproductive-level traits, and their plastic response to water availability.

Native and non-native populations differed in plant traits, but not in trait plasticity, in response to their local climatic conditions. However, our results are contrary to the role of herbivory as a selective factor after invasion.

Keywords: Adaptation; Biological invasions; Drought stress; Evolution of increased competitive ability (EICA) hypothesis; Herbivory; Phenotypic plasticity; Plant traits