

CHARACTERISTICS OF THE NATURALIZED FLORA OF SOUTHERN AFRICA LARGELY REFLECT THE NON-RANDOM INTRODUCTION OF ALIEN SPECIES FOR CULTIVATION

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Abstract

Most studies on biological invasions focus on the later stages of the invasion process, i.e. after species have already become naturalized. It is frequently overlooked, however, that patterns in origin, phylogeny, and traits of naturalized alien species might largely reflect which species have been introduced in the first place. Here, we quantify and account for such introduction biases by analyzing 5,317 plant species introduced for cultivation in Southern Africa. We show that this cultivated alien flora represents a non-random subset of the global flora, and that this bias at the introduction stage largely drives patterns in origin, growth form and phylogenetic composition of the naturalized flora. For example, while species from Australasia are, compared to the global flora, disproportionately overrepresented in the naturalized cultivated flora of Southern Africa, this pattern is solely driven by their higher likelihood of having been introduced for cultivation. We also show that among cultivated aliens, naturalization success was correlated with intermediate seed mass and height, as well as high specific leaf area. Our quantification of introduction biases demonstrates that they are huge, and that accounting for it is essential to avoid over- or under-estimation of the characteristics of successfully naturalized alien plants.

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