

Biological control of South African plants that are invasive elsewhere in the world: A review of earlier and current programmes

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South Africa supports a rich floral diversity, with 21 643 native plant taxa that include a high proportion (76.3%) of endemic species, and many of these favoured as ornamentals, both locally and globally. Consequently, South Africa has contributed substantially to global plant invasions, with 1093 native taxa (5% of all species) naturalized in other countries. At least 80 taxa are invasive in natural or semi-natural ecosystems elsewhere, while an additional 132 taxa are potentially invasive. Of the global naturalized flora, 8.2% originate from South Africa and largely comprise species of Poaceae, Asteraceae, Iridaceae and Fabaceae. Australia, in particular, but also Europe and North America are major recipients of South African weeds. However, few countries have targeted South African plants for biological control (biocontrol), with most efforts undertaken by Australia. Previous and current targets have involved only 26 species with 17 agents (15 insects, one mite and one rust fungus) of South African origin released on five target species in Australia and the United States of America. South Africa's history of weed biocontrol, together with a large cohort of active scientists, is currently facilitating several internationally funded programmes targeting invasive plants of South African origin. In particular, the recently inaugurated Centre for Biological Control at Rhodes University and the University of KwaZulu-Natal have provided the impetus for novel efforts on five new target species and renewed efforts on four previously targeted species. In this contribution, we review the history of earlier biocontrol programmes against weeds of South African origin and the status of projects currently in progress in South Africa.

Key words: African boxthorn, Cape ivy, crystalline ice-plant, fireweed, invasive grasses, oxygen weed, weed biocontrol.

INTRODUCTION

South Africa boasts a rich floral diversity, hosting 21 643 native plant taxa including 16 507 (76.3%) that are endemic to southern Africa (SANBI 2016). In addition, another 1139 exotic plant species are naturalized in South Africa (Pyšek *et al.* 2017). South Africa has contributed substantially to global plant invasions, with 1093 native plant taxa (5% of total plant richness) recorded as naturalized elsewhere in the world

(Pyšek *et al.* 2017). Of these, 80 taxa are categorized as invaders of natural or semi-natural ecosystems in other countries, while an additional 132 taxa are listed as invasive, but do not currently fulfil all of the invasive criteria (see Pyšek *et al.* 2020). Overall, 8.2% of the global naturalized flora originates from South Africa (Pyšek *et al.* 2020).

The 1093 South African taxa that are naturalized elsewhere belong to 132 plant families but comprise



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Received 29 October 2020. Accepted 13 July 2021

ISSN 1021-3589 [Print]; 2224-8854 [Online]
DOI: <https://doi.org/10.4001/003.029.1005>

African Entomology 29(3): 1005–1029 (2021)
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