

Alien plants as mediators of ecosystem services and disservices in urban systems: a global review

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**ABSTRACT:**

Urban areas have unique assemblages of species which are governed by novel ecological processes. People living in these environments have specific needs and demands in terms of ecosystem services (ES). Urban ecosystems are transformed in many ways by human activities and their floras comprise a high proportion of alien plant species, many of which were intentionally introduced to provide, augment or restore ES. Urban environments also have novel disturbance regimes and provide colonization sites for the establishment, dispersal and proliferation of alien plant species; such conditions often generate biological invasions which may cause marked changes to ES. We review the roles that alien plants play in providing urban ES and ecosystem disservices (EDS) globally. We identify the main ES and EDS associated with alien plants, and highlight the key species involved. A literature search revealed 335 papers, representing studies in 58 cities or urban areas in 27 countries. These studies recorded 337 alien plant species, contributing to 39 different ES and 27 EDS—310 species were recorded as contributing to ES and 53 species to EDS. A small number of alien plant taxa were frequently recorded as providing multiple ES in many urban ecosystems; the 10 most recorded species accounted for 21% of the ES recorded. Some of these

species also result in significant EDS; three species accounted for 30% of the EDS recorded. Cultural services (notably aesthetics) are the most reported ES provided by alien plants in urban areas of developed countries, while provisioning services (notably food production) are most reported in developing countries. The most commonly studied EDS provided by alien plants is the impact on human health (notably allergic reactions). Eighty percent of studies on alien plants and ES and EDS have been done in developed countries. To elucidate the full range of effects of alien plants, more work is needed in developing countries. Urban planners and managers need to be mindful of both the positive and negative impacts of alien plant species to maximise the provision of ES.