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Impacts of alien invasive Parthenium hysterophorus on flower visitation by insects to co-flowering plants

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Impacts of alien invasive *Parthenium hysterophorus* on flower visitation by insects to co-flowering plants

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Abstract

The exotic invasive plant *Parthenium hysterophorus* is invading many tropical habitats. While much work has been done on its interactions with other native plants, little is known about its interaction with insect floral visitors and how it impacts pre-existing pollination networks when it invades a site. We carried out surveys on sites with and without *P. hysterophorus* (invaded and uninvaded, respectively) to investigate its impact on plant–pollinator interactions with two common indicator or target plants (*Ocimum gratissimum* and *Ageratum conyzoides*) in Tanzania. During multiple 15 min observation periods in quadrats, the number of arriving flower visitors, duration of visits and visitation rate were measured and compared between sites. Visitation networks of flower visitors were developed by observing flower visitor taxonomic groups and plants visited across both invasion categories. *Parthenium hysterophorus* was heavily visited by a diversity of flies as taxonomic groups. Indicator plants received fewer flower visitors overall in the invaded site, implying *P. hysterophorus* may be disrupting pollen flow. Foraging behaviour and flower visitation by *Apis mellifera* and flies on target plants were particularly negatively affected in the invaded quadrats. Flower visitation rate to target plants was significantly lower in invaded quadrats than in uninvaded quadrats. This study supports work in other parts of the world demonstrating that invasive species can strongly disrupt pollination networks. By attracting flower visitors that could otherwise serve as pollinators of native plant species, *P. hysterophorus* which is rapidly spreading in eastern African ecosystems could have complex deleterious effects on the wider ecosystem.

Keywords

Biodiversity; Exotic species; Insects; Pollinators Africa Tanzania