

Abstract

# Invasive *Rosa rugosa* Reduces the Species Richness of Yellow Dune Vegetation and Causes a Shift in the Species Composition of Grey Dune Vegetation <sup>†</sup>

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**Abstract:** This study aimed to determine the impact of invasive *Rosa rugosa* Thunb. on the plant communities of Baltic coastal dunes. The study was carried out in 22 sites scattered along the Hel Peninsula (Poland). Each site consisted of a pair of plots: a plot with the invader and an adjacent plot with resident vegetation (control plot). For each plot, botanical data (abundance of individual species, total species richness and richness of species belonging to different functional groups) were collected and basic soil parameters were measured. According to the analysis of the control plot species composition, the study sites can be divided into two groups, with plant communities characteristic of yellow dunes (*Elymo-Ammophiletum arenariae* association, EA; N=11 sites) and those characteristic of grey dunes (*Helichryso-Jasionetum litoralis* association, HJ; N=11 sites). *R. rugosa* influenced these two communities differently. In the EA sites, it displaced many species leading to a significant decrease in species richness. In the HJ sites, it caused a shift in species composition; although it outcompeted some species (e.g., zoochores), it also created conditions for the existence of others (e.g., graminoids; interestingly, this plant group was negatively affected by the invader in the EA sites). Changes in plant communities probably resulted not only from the direct impact of *R. rugosa* on plants (shading, occupying space) but also from invader-induced soil alternations (increase in the organic layer thickness, increase in pH and the content of some nutrients).

**Keywords:** community structure; invasive plant species; plant traits; *Rosa rugosa*; soil properties; successional accelerator

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