

# Impact of the invasive plant *Solidago gigantea* on plant parasite and soil free-living nematodes

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Soil nematodes are abundant, ubiquitous, and diverse soil biota, and alterations of their community compositions can illustrate changes in belowground ecosystems. In 2016 and 2017, we determined the response of species diversity, community composition, and trophic composition of the soil nematode communities to the invasion by the alien plant *Solidago gigantea* in two ecosystems, forest and grassland where invasion takes place. Nematode abundance was higher and number of identified nematode species was lower at invaded than uninvaded sites, indicated by lower species diversity, regardless of ecosystem. Plant parasite nematodes were the most affected trophic group. Plant parasite nematodes abundance was higher at invaded than uninvaded sites and in grassland than forest. The plant parasite species *Boleodorus thylactus*, *Paratylenchus bukowinensis*, *Pratylenchoides crenicauda*, and *Rotylenchus robustus* were more abundant at the invaded sites. Abundances of nematodes in the other trophic groups were limited or not affected. The invasion did not significantly affect the ecological and functional indices, except for the Channel Index in 2016. Differences were observed in values of Enrichment index (indicator of resource availability), Channel index (indicator of ascendant bacterial/fungal decomposition channel) and Basal index (indicator of depleted-perturbed soil food webs) between grassland and forests. We can thus conclude, that invasion by *S. gigantea* significantly alters nematode community indicators (abundance, species diversity and specific trophic groups), however this effect seem to be significantly influenced by the type of ecosystem where invasion takes place.

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