

In the Presence of Specialist Root and Shoot Herbivory, Invasive-Range *Brassica Nigra* Populations Have Stronger Competitive Effects than Native-Range Populations.(2017).

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SUMMARY

1 The evolution of increased competitive ability (EICA) hypothesis predicts that release from specialist herbivores enables invasive plants to evolve increased growth. The most powerful tests of EICA hypothesis are provided by approaches that simultaneously assess the effects of specialist herbivory and competitive interactions. However, such approaches are extremely rare, and hence how simultaneous release from root and shoot herbivory influence competitive ability of invasive plants remains little understood.

2 Here, we tested whether invasive-range *Brassica nigra* plants have evolved increased competitive ability, and whether expression of competitive ability depends on separate and simultaneous effects of specialist root and shoot herbivory. To do this, we grew *B. nigra* plants from eight invasive-range and eight native-range populations in the presence vs. absence of competition with a community of native plant species, and in the absence vs. presence of separate and simultaneous damage by a specialist root herbivore (*Delia radicum*) and a specialist shoot herbivore (*Plutella xylostella*). *Brassica nigra* performance was assessed by measuring biomass production and flowering of individual *B. nigra* plants.

3 In partial support of the EICA hypothesis, invasive-range *B. nigra* had greater flowering than native-range conspecifics in the absence of competition. However, contrary to a prediction of the EICA hypothesis, invasive-range *B. nigra* produced less above-ground biomass than native-range *B. nigra* in the absence of shoot herbivory and competition. Moreover, with simultaneous root and shoot herbivory, invasive-range *B. nigra* suppressed a competing community more strongly than native-range *B. nigra* did.

4 Synthesis. Our results suggest that invasiveness may be driven by mechanisms other than increased individual size. Simultaneous root and shoot herbivory in the invasive range may enhance suppressive effects of introduced plant species that have not completely escaped herbivore damage in the introduced range.

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