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Inter- and intraspecific hybridization affects germination and vegetative growth in Eurasian watermilfoil)

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We used artificial crosses to compare the development and vegetative growth of hybrid versus parental crosses of northern watermilfoil (*Myriophyllum sibiricum* Komarov) and two genetically distinct biotypes of Eurasian watermilfoil (*Myriophyllum spicatum* L.). These crosses simulated the different opportunities for sexual reproduction encountered by a newly introduced Eurasian watermilfoil population: 1) habitats where native northern watermilfoil is present, 2) habitats where a genetically distinct biotype of Eurasian watermilfoil is present, and 3) habitats where only closely related individuals of the same biotype are present. In two separate experiments using different parental Eurasian and northern genotypes, we found a clear trend of interspecific (Eurasian 3 northern) and intraspecific (hybridization between two Eurasian biotypes) hybrid vigor for vegetative growth traits, and germination percentages and rates were generally higher for hybrid compared with parental crosses. Although variation in watermilfoil growth is undoubtedly influenced by numerous environmental and genetic factors, our results suggest that differences in the opportunities for hybridization with either northern watermilfoil or other Eurasian watermilfoil biotypes may underlie some of the variation in vegetative growth observed among populations identified as invasive Eurasian watermilfoil; specifically, that first-generation hybrids are likely to have higher vegetative growth than parental genotypes. Therefore, aquatic plant scientists and managers should consider the potential for genetic composition and dynamics to affect the potential for establishment, spread, impact, and control when designing and assessing Eurasian watermilfoil management plans.

Key words: heterosis, *Myriophyllum sibiricum*, *Myriophyllum spicatum*, northern watermilfoil.