



The effect of emerald ash borer (*Agrilus planipennis*)-caused tree mortality on the invasive shrub Amur honeysuckle (*Lonicera maackii*) and their combined effects on woody seedlings

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Invasive insects and plants are major threats to the health and viability of North American forests. Emerald ash borer (*Agrilus planipennis*) (EAB) may cause extensive changes to forest composition due to rapid ash (*Fraxinus* spp.) mortality. Invasive shrubs like Amur honeysuckle (*Lonicera maackii*) may benefit from EAB and have negative effects on woody seedlings. We predict that ash mortality has positive effects on seedling abundance, recruitment, and survival, but that these effects are influenced by *L. maackii* abundance. We sampled 16 sites, representing a chronosequence of ash mortality throughout western Ohio. We tested whether *L. maackii* growth and fecundity varied in relation to ash decline. We also investigated effects of ash decline, stand basal area (BA), *L. maackii* abundance (BA and percent cover) on woody seedling abundance, recruitment, and survival using linear mixed models evaluated with Akaike's Information Criterion. These same responses were also investigated for four seedling groups: *L. maackii*, invasive plants (excluding *L. maackii*), shade tolerant natives, and shade intolerant natives. We found a significant positive relationship between ash decline and *L. maackii* BA growth. Lower seedling species richness, recruitment, and abundance corresponded with greater *L. maackii* BA, whereas ash decline was related to few seedling responses. Sites with poorer quality ash and greater *L. maackii* BA had more *L. maackii* seedlings. These findings indicate that the negative effects of *L. maackii* are more important to future forest composition than ash decline; however ash decline increases *L. maackii* growth, hence exacerbating the effects of this invasive shrub.

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