

Effects of habitat structure and lakeshore development on northern Wisconsin Odonata communities

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Lakeshores are hotspots for both biodiversity and housing development. Development simplifies shoreline vegetation structure, often by removal of the shrub layer. Because Odonates (dragonflies and damselflies) are good dispersers and generalist predators, habitat selection could play a key role in Odonate community composition. By comparing Odonata species diversity and density among lakeshore properties with and without a complex shrub layer, I investigated sensitivity to shoreline plant structures. Larval surveys conducted over two years at 50 lakeshore sites in Vilas County showed that lawns with taller grasses or shrubs had higher species richness ($F= 6.8, p= 0.004$) and density ($F= 6.2, p= 0.005$) than lawns without shrubs (mixed effects ANOVAs). Gomphidae species had the strongest correlation with shrub layer. Few significant relationships were found between Odonate larvae and aquatic plant presence or shoreline canopy index. Larval densities were positively correlated with exuviae (emergent odonate skins) at the shoreline, but not with adult densities at the same sites. However, for adult Odonates choosing oviposition sites, a shrub layer may facilitate perching, signal suitable aquatic conditions, or alter prey densities. Future research will test these hypotheses. As a conspicuous and beautiful component of lakeshores, dragonflies can serve as flagship organisms to promote natural shoreline management.