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Diverse heathland bee communities provide limited pollination services for lowbush blueberry species

Emily A. Walker, Alana Pindar and Jeremy Lundholm

ABSTRACT

Providing pollinators, especially bee species, with floral and nesting requirements is essential in order to ensure the pollination service they provide is maintained, especially in agroecosystems. Here, we investigated the importance of floral and nesting provisions provided by common and rare plant species in heathland habitat to maintain pollination services in cultivated blueberry fields in Nova Scotia, Canada. Bee species, along with their associated floral records were collected in late May and June 2016, within coastal, inland, and highland heathlands. We also compared measured rates of blueberry flower visits by bees, as well as flower abundance and resulting fruit set, in natural coastal barrens and managed lowbush blueberry fields. Our results indicate that heathland habitats support a high diversity of bees, 97% of which are known pollinators of provincial fruit crops and efficient pollinators of blueberry. Our study also resulted in one new provincial record, *Osmia nigriventris* (Zetterstedt), for Nova Scotia. Estimates of blueberry fruit set calculated from bee visits underestimated observed fruit set in both natural and managed barrens habitat, with both measures indicating suboptimal fruit set. The presence of high-quality lowbush blueberry pollinators like *Andrena* and *Bombus* visiting berry-producing plants and rare plant species like golden heather, *Hudsonia ericoides* Huder (Cistaceae), show that heathlands represent key floral and nesting elements that should be targeted in agroecosystem conservation efforts for important blueberry pollinators and other berry-pollinating bee species.