THE BENEFITS OF FOREST EDGES ON FARMS AND RANCHES FOR POLLINATORS IN BULKLEY-NECHAKO AND FRASER-FORT GEORGE

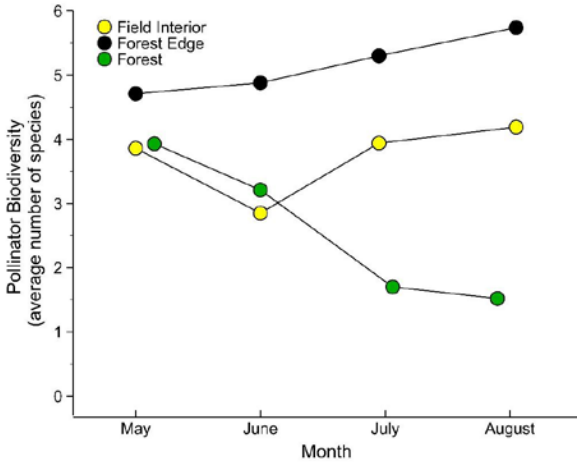
This factsheet is a part of the Pollinator Factsheet Series for the project *Creating climate resilient pollinator communities in Bulkley-Nechako and Fraser-Fort George (BNFFG).* This series summarizes key findings from two years of field work on agricultural properties in BNFFG that studied the distribution and emergence patterns of pollinators, along with factors that promote pollinator biodiversity and resilience. Full project information and reports are available on the Climate Change Adaptation Program website.

SUMMARY

From mid-May until early-September, 2022, we surveyed native pollinators and flowering plants on 25 farms across the Bulkley-Nechako and Fraser-Fort George Regional Districts. The diversity of both insect pollinators and food resources for pollinators (number of plant species in bloom) were generally highest on field edges near forests. Early in the spring when few herbaceous plants are in bloom, deciduous trees and shrubs found in forests may be important food sources for insect pollinators. Retaining forests and native vegetation on forest edges is likely to promote pollinator biodiversity.

POLLINATORS ARE MOST DIVERSE ON FOREST EDGES

On 25 farms located between Dunster and Smithers, British Columbia, we sampled pollinators in the interiors and on the edges of agricultural areas, and in adjoining forested areas. After identifying pollinating bees (Hymenoptera) and hoverflies (Diptera from the family Syrphidae) in samples, we found that overall biodiversity (the number of species of pollinating insects present, see the graph to the top right) varied over the course of the growing season, but was generally always greatest on the edges of fields (black markers in the graph to the top right).



The groups of native pollinators that were more diverse and abundant in samples collected near or in forested areas include cavity-nesting mason bees (Osmia spp.; photo A), long-horned bees (Eucera spp.; photo B), and peat hoverflies (Sericomyia spp; photo C).


A


B


C

WHY IS POLLINATOR BIODIVERSITY GREATER ON FOREST EDGES?

The vegetation and coarse woody debris in and around forest patches may provide valuable nesting habitat for many native pollinators. Some bee species excavate cavities in dead wood or soil, and others use hollow plant stems as nest cavities; many hoverfly species prefer to lay their eggs in damp or rotting wood, which is found in and around forest patches.

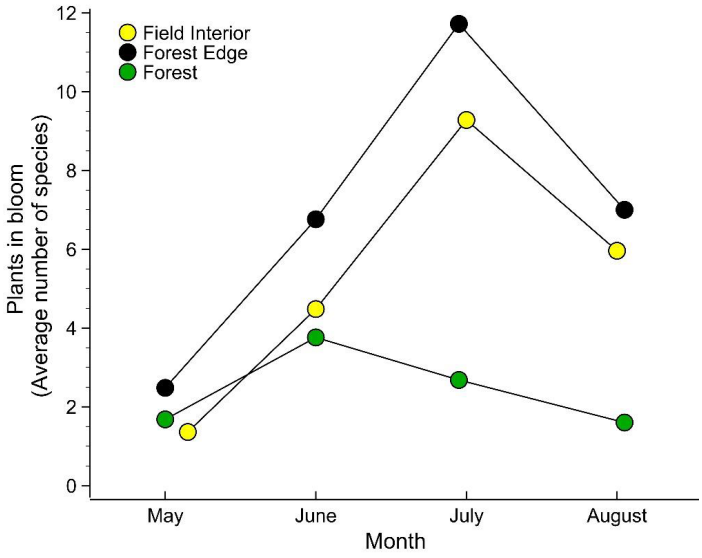
Few plants bloom early in the spring, and so spring-emerging native pollinators likely depend on pollen provided by shrubs and deciduous trees, particularly those in the family Saliaceae

(especially willow) in addition to spring ephemeral plants found under the forest canopy (e.g., False Salomon's Seal, Hooker's Fairy Bells, Clasping-leaved and Rosy Twisted-Stalk, and Baneberry). Our study found that early in the season there were more resources (species of plants in bloom; see graph to the right) available in forests (green markers) and on forest edges (black markers) than in field interiors (yellow markers). Later in the season, resources for pollinators were most concentrated on forest edges, but also became more numerous in field interiors.

Many native flowering plants blooming later in the season grow best in partial shade; these are abundant on field edges, where forests provide shadier conditions. American Vetch (Vicia sativa) and native peavines (Lathyrus spp.), which are extremely attractive to many native bees, thrive in these areas.

WHAT ARE THE IMPLICATIONS OF THESE FINDINGS FOR LAND MANAGEMENT?

Clearing forested areas is likely to reduce pollinator biodiversity in neighbouring agricultural areas, due to the loss of native vegetation. Producers considering clearing forest to increase cropland area should be aware that this will likely have negative consequences for pollination success in crops, due to the loss of pollinators. One way to reduce declines in pollinator biodiversity is to limit the amount of native vegetation removed, and to replace floral resources following disturbances.



Funding for this project has been provided in part by the Regional District of Bulkley-Nechako and the Regional District of Fraser-Fort George, and in part by the governments of Canada and British Columbia under the Canadian Agricultural Partnership, a federal-provincial-territorial initiative. Additional project support was provided by the University of Northern British Columbia. The program is delivered by the Investment Agriculture Foundation of BC.

REGIONAL DISTRICT of Fraser-Fort George

UNBC UNIVERSITY OF NORTHERN BRITISH COLUMBIA

REGIONAL DISTRICT OF BULKLEY NECHAKO

CANADIAN AGRICULTURAL PARTNERSHIP

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