



POLLINATION PATHWAY CLIMATE ADAPTATION

Annual Newsletter

March 2022

Pollination of native plants by native pollinators underpin the sustainability of ecosystems. Diverse plant-pollinator communities form the basis of the food chain for all wildlife and for people. The Pollination Pathway Climate Adaptation Initiative is working to enhance plant-pollinator communities in the Lower Columbia area of the West Kootenay, British Columbia.

This Program, with 13 sites and more than 20 partners, will build ecological resilience and connectivity within the ecosystem enhancement area.

Site-specific assessment and the incorporation of relevant climate research will guide restoration actions within three program areas:

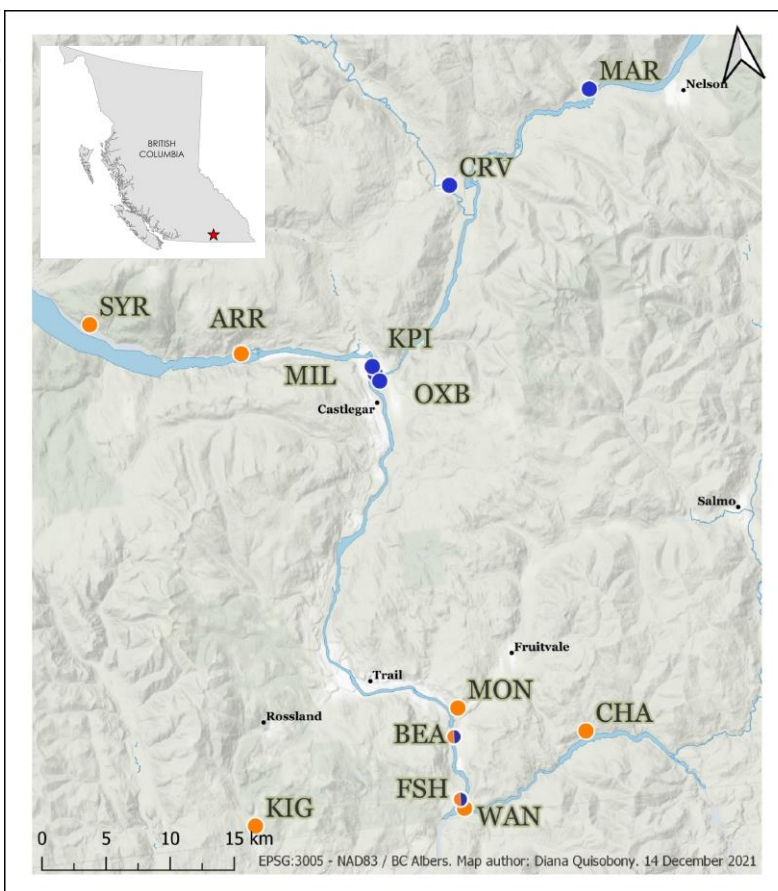
- ✳ Ecosystem enhancement of meadow/grassland communities supporting common camas and bees.
- ✳ Improving host and nectar plant availability for at-risk and climate-vulnerable butterflies.
- ✳ Increasing abundance and diversity of climate-adaptive, pollinator-preferred native plants through seed collection, custom growing, and out-planting.

Butterfly Sites

SYR	Syringa
ARR	Arrow Lake
MON	Montrose
BEA	Beaver Creek
CHA	Charbonneau
FSH	Fort Shepherd
KIG	King George VI
WAN	Waneta

Camas Sites

MAR	Marsden Face
CRV	Crescent Valley
MIL	Millennium Park
KPI	kp'tit'els (Lower Brilliant Terrace)
OXB	Oxbow
BEA	Beaver Creek
FSH	Fort Shepherd
	Conservancy



2021 Milestones

Collected over
5,000,000 seeds

Planted over
1,000,000 seeds

Nearly 60 species

Camas Plantings

11,000 bulbs planted
into beds

2,400 bulbs &
18,500 seeds into
5 field sites

Other Plantings

300 milkweed
rhizomes

1000 additional
native plants





King George Bees

Our intern Tannah Ernst helped us document bumble bee diversity in King George VI Provincial Park.

We detected 12 species of bumble bees; Half-black Bumble Bee and Vancouver Two-form Bumble Bee were the most common. Other species of note were Indiscr. Cuckoo Bumble Bee and the listed Western Bumble Bee.

Abuzz about Bees

We were joined by University of Calgary student Rowan Rampton in Year 2 of our FWCP-funded project, "Floral Relations of Native Bees in Camas Meadows." His MSc research focuses on:

- how the timing of plant-pollinator interactions are affected by environmental cues at varying elevations; and,
- the impacts of phenological mismatch.

There are eight meadow sites occurring from Marsden Face to Beaver Creek Provincial Park. Over the summer 2021, Rowan documented 800 pollinator

Need for Seeds

Pollinator habitat enhancement is limited by the availability of native plant seeds that support native bees and butterflies.

In 2021, we collected more than five million seeds of 59 plant species for our Wild Seed Library. Seven people and numerous volunteers spent more than 470 hours in the field. Processing of the seed took more than 250 hours.

Two public seed collection training days were held. On one day, 15 volunteers collected half a million seeds for a pollinator meadow project at the Kootenay Gallery of Art in Castlegar. On another, we collected seeds of 10 species for use on project sites.



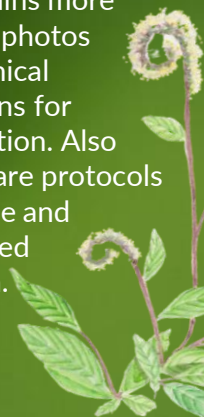
visits of 27 bee genera and the floral abundance and phenology of 94 plant species.

The observed diversity of plant and bee species associated with camas meadows supports their high ecological value.

Seed Collection Manual

To support volunteer training, the Program is creating a seed collection manual with 20 carefully selected plant species for restoration activities.

The manual includes species descriptions, methods of seed collection and forecasting, and info on similar species and associated pollinators, and contains more than 120 photos and botanical illustrations for identification. Also included are protocols for reliable and ethical seed collection.



Learning and Fun

Created by our intern Diana Quisobony, *Blozzom* is a new plant-pollinator card game that generates exciting player interactions and promotes ecological learning. It helps us all realize our role within the pollination pathway and have fun too!



Camas Meadows



“Riparian Camas Meadows” is a three-year project funded, in part, by Environment and Climate Change Canada (ECCC). The project goal is to begin the ecological restoration of degraded riparian and wet meadow ecosystems with special attention to camas (*Camassia quamash*) communities located along the Columbia and Kootenay rivers (5 sites), as well as two upland seepage sites. These meadow systems maintain high biodiversity and connectivity and

Planting Camas

Over 11,000 camas bulbs, ranging from 3-5 years old, and lomatium and yampah seeds were planted into reconstructed camas propagation beds at the Mir Centre, Selkirk College. These beds will supply plants for restoration sites.

Our camas efforts extended to our field sites as well - planting 2,400 bulbs and 18,500 seeds with the help of many volunteers and community groups.

Student Help

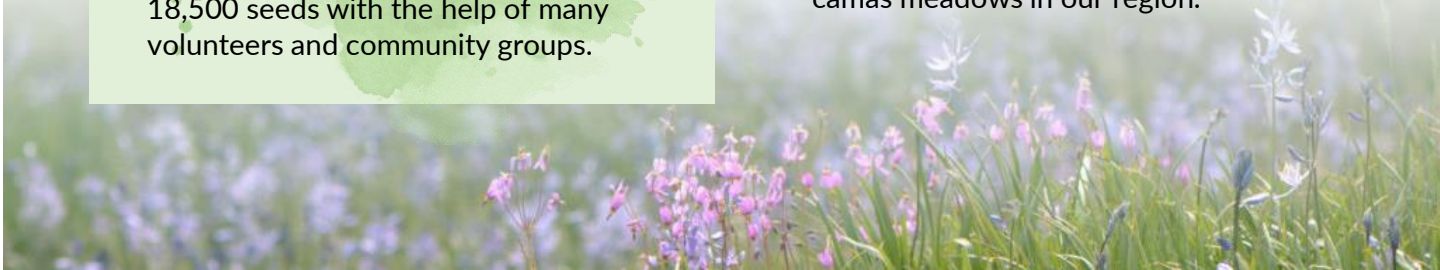
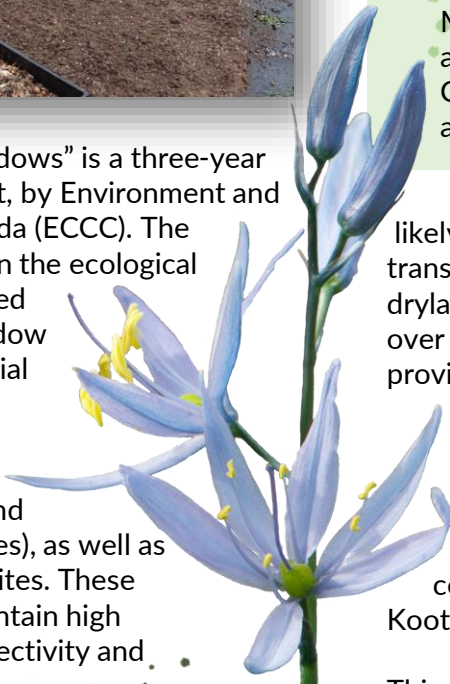
With funding from ECO Canada and Mitacs, and with support of Selkirk Innovates and Co-op Education and Employment Services at Selkirk College, we welcomed the help of three student summer interns: Diana Quisobony (seeds), Tannah Ernst (bees), and Josh Fogal (butterflies).

The CBT Job Experience Program also allowed us to hire Terri McRitchie (Restoration Coordinator) and Jenny Wallace (Seed Coordinator). All contributed to an amazing Pollination Pathway team!

likely are, and have been, important transition communities linking aquatic and dryland ecosystems. The meadows support over 90 species of native pollinators and provide early food sources for other wildlife. These meadows are also sacred Sinixt harvesting grounds for camas bulbs (*itxwa*, black camas), representing a deep heritage of plant stewardship, especially at the confluence of the Columbia and Kootenay rivers.

This work includes three main components:

- Applied research in plant composition, soils and hydrology, climate, and ecological structure, complemented with in-depth historical, cultural, and land use change investigations.
- Development and implementation of restoration prescriptions for the sites informed by previous, and on-going, research.
- Ecocultural events and outreach activities celebrating the wonders of camas meadows in our region.



Getting the Word Out

Connecting with more than 1,000 followers in the KNPS Facebook page so far, the "Pollinator Plant of the Week" series invites people to share their photos and perspectives.



In August 2021, our student interns took over the Kokanee Creek Nature Centre, first to premiere the new card game, *Blozzom*, and second, to showcase local plants and pollinators and share research with park visitors.

Thanks to these groups for helping us collect and plant seeds in 2021:

- Castlegar Butterflyway Rangers
- Rotary Sunshine
- Twin Rivers School
- J.L. Crowe
- Selkirk College
- Many Volunteers!



Butterflies in BC Parks

"Building Climate Resilient Butterfly Habitat" is a 3-year project funded by the BC Parks Living Lab for Climate Change and Conservation Program. A partnership among BC Parks, KNPS, and Selkirk College, we're studying regional plant-butterfly associations, with emphasis on at-risk and climate-vulnerable butterflies, and how best to establish meadow habitat at Syringa and Beaver Creek provincial parks (ref. site at Charbonneau Cr.).

In year 1, we found high plant, butterfly, and non-forest ecosystem diversity in the West Kootenay: 49 butterfly species and 160 plant species were identified and surveyed. Of the 141 nectaring observations, we found that butterflies prefer native asters, spreading dogbane, and brown-eyed Susan. Plants responded to severe heat and drought, and likely wildfire smoke, by shortening maturation periods, aborting growth, among other adaptations.

In Year 2, we'll continue our surveys and collect data on plant abundance and floral density. Data from these surveys, as well as Program climate research, will inform the restoration prescriptions within the parks.

An exciting additional part to this project is the development of an Interpretive Site at Syringa Park. Site preparation has begun, including planting of milkweed and native plant seeds. In 2022, we hope to continue with more site prep and planting and adding a pathway, signs, and a bench.

Complementing this work, our intern Josh Fogal conducted a Pale Swallowtail study noting that these butterflies peak in June, oviposit on snowbrush, and prefer spreading dogbane for nectar.



Funders and Supporters



Photo Credits

Seeds (D. Quisobony); camas meadow (N. Rammell); camas beds (V. Huff); pale swallowtail (J. Arndt).

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