



# BIMBY

BUTTERFLIES IN MY BACKYARD



BUTTERFLIES IN MY BACKYARD  
(BIMBY 2023 REPORT)

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**TWENTY-  
THOUSAND  
REASONS TO  
CELEBRATE!**

NOVEMBER 30, 2023

PHOTO: ERIC HABISCH

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PHOTO: MICHELLE TSENG

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# Introduction

## Twenty-thousand reasons to celebrate

In 2023, 505 butterfly enthusiasts from around the province joined BIMBY. About 200 of them uploaded a whopping 20,000+ butterfly observations (143 species) to iNaturalist. These numbers are 2.5 times higher than the observations BIMBY made in 2022 and represent 67 per cent of total 2023 iNaturalist butterfly observations in British Columbia. Although we had anticipated another successful butterfly-chasing year, the level of engagement and participation from BIMBY participants far exceeded these initial expectations. These BIMBY butterfly photographs, taken by participants young and old, from White Rock to Liard River, help scientists better understand which species are doing well and which need our help. These data also provide much-needed information about which habitats in B.C. support the greatest butterfly diversity and abundance.

## Kicking it up another gear

In 2023 we challenged participants to photograph butterflies as well as the plants they were using (if any). We also added features to our BIMBY iNaturalist webpage that allowed participants to note the behaviours of the butterfly (e.g., feeding, flying around, resting). iNaturalist does not have a built-in function to pair the butterfly and plant photos. Thankfully, BIMBY's resident iNaturalist guru and MS Excel wizard Stephen Deedes-Vincke worked his magic and was able to figure out a way to match the plant photo to the butterfly photo. In this inaugural year of collecting both butterfly and plant data, BIMBY participants reported over 4,000 butterfly-plant associations. Keep reading this report to discover which plant was associated with more than 250 butterfly observations.

BIMBY participants have now created one of the most diverse plant-butterfly association datasets in Canada, if not anywhere. This information allows us to better understand which plants attract the greatest number of butterflies. It also gives us data on whether certain butterflies are only found on specific plants. Creating this unique data set has been an innovative and remarkable achievement for the 2023 BIMBY team.



PHOTO: SHIRLEY MORRISON

## Walking across the province

As we did in 2022, participants who were interested could choose to walk a set route once a month (or more) at a leisurely pace and document all butterflies observed on this route. This type of butterfly monitoring, called "transect walks," allows us to standardize the number of butterflies observed by the amount of time spent looking. In 2023 BIMBY participants walked about 450 kilometres of transects and observed more than 5,000 butterflies. In comparison, in 2022 transect walkers completed 245 transects (about 245 kilometres).

BIMBY participants who walked the same transects in 2022 and 2023 reported that they generally saw the same or more total butterflies along these routes, but the diversity of species was quite different between this year and last. This type of year-over-year data is critical for understanding long-term butterfly health, and we are grateful to our participants for embracing this challenge.

## For the youth: Choose your own adventure

Today's youth are tomorrow's leaders, and BIMBY has been helping create the next generation of butterfly champions through the ongoing BIMBY Schools program. In 2023 we added a French-language version of our in-school educational materials, and we created tools to help schools run their own schoolyard Bioblitz. We thank all the schools and homeschool parents for participating this year!

# BIMBY Recruitment and Engagement

## RECRUITMENT

The BIMBY 2023 season began recruitment in March 2023. We recruited 220 new BIMBY Seekers to the project. Along with the 285 BIMBY Seekers who joined in 2022 and remained in the 2023 season, BIMBY 2023 hosted 505 citizen/community science volunteers.

In our April trainings, new and old BIMBY Seekers were encouraged to join the BIMBY project on iNaturalist. Seekers are trained to take the best butterfly photos, take notes on the weather and environment where the photos were taken and add the information to the BIMBY project on iNaturalist.

In 2023, Seekers were tasked with adding photos of the plants on which the butterflies were spotted. The added data will help the project understand more about the relationships between native plant species and the butterflies that feed or lay eggs on them.

Apart from the data input on BIMBY iNaturalist, Seekers were also encouraged to join transect walks. Structured visits and documentation about set routes are supervised by Michelle Tseng, UBC zoologist and BIMBY project science lead.

Teachers, parents and students also hosted BIMBY School Bioblitzes. Over 500 students participated in the annual nature search and made 158 observations.

### How do we engage BIMBY Seekers?

Once recruited, BIMBY Seekers were invited to meet in two Zoom trainings in April.

Starting in May, Seekers were invited to join our Speakers Series. These are 60-minute webinars in which BIMBY Seekers had the opportunity to learn from butterfly and nature experts.

Our 2023 BIMBY Series guest speakers included Crispin Guppy, John Reynolds and Heather Kharouba.

BIMBY Seekers also met monthly on Zoom starting in May. Seekers learn from each other and get to meet key experts that have helped their observations meet research grade. Our second-last monthly meeting was a 90-minute Q-and-A with our top iNaturalist identifier Steve Ansell. Steve shared his thoughts and findings as a BIMBY identifier in this report.

To ensure BIMBY Seekers are up to date with the eight-month project, a monthly newsletter was shared with Seekers starting in May. The last monthly newsletter was shared at the end of October. Seekers met up at the end of November to learn from the BIMBY work committee, which includes Michelle Tseng, Stephen Deedes-Vincke, Steve Ansell and Alex Wong.

During BIMBY season and off-season, Seekers exchanged news and thoughts on the BIMBY Facebook group and BIMBY project on iNaturalist.



BIMBY OBSERVATIONS 2023 | GRAPHIC: NIKITA WALLIA

### Special THANK YOU to:



PHOTO: SHIRLEY MORRISON  
(JOHN REYNOLDS, SUE ELWELL, STEVE ANSELL AND SHIRLEY MORRISON.)

When BIMBY reaches the end of its season, we often have a long list of special people to thank. This year is no different. Apart from our work committee, which donated their time and passion to help find butterflies in British Columbia, we'd like to offer special thanks to plant experts Sally Hocking and Selina Pope for helping Seekers identify their plants and ensure their plant observations meet research grade.

iNaturalist top identifier Steve Ansell will share his experience in the Identifier section in this report.

We'd also like to thank John Reynolds for sharing his support and strength with BIMBY. John was one of our top observers this season.

### IN THEIR OWN WORDS: SEEKERS' FEEDBACK

#### Amber Del Puppo

Joining BIMBY this year has transformed my life. I had been living in the West End of downtown Vancouver for the last six years. During the pandemic I was a youth addiction counsellor. In short this meant I was in a health-care sandwich, pandemic inside an opioid epidemic. My world became small and insulated in a bubble of crisis. I spent many days working during lockdown with a small number of youths who were struggling to find reasons to live. I remember the summer during the heat dome the youth faced climate change issues and they were worried for their future. Not only that but social justice issues were also climaxing at the same time. I tried my best to unpack these huge issues with them all the while trying to maintain some hope. We discussed many ways that they could be a part of the change we need so badly in this world.



PHOTO:AMBER DEL PUPPO

Eventually over time I slowly approached burnout. I needed to restore my own sense of hope. I needed to heal and let go. I got a job on a farm, and I joined the BIMBY and Butterflyway projects, both hosted by the David Suzuki Foundation. The change that happened was amazing. I had gotten so used to tuning out the city and walking through the city hardly noticing anything around me. Suddenly that changed. I was constantly scanning for butterflies. I was constantly noticing flowers and paying attention to small details. I also grew aware of how few wildflowers there are in Vancouver. Now this has become a new game, trying to identify plants linked to butterflies. I found immense joy in stalking these small creatures slowly and carefully to get the perfect shot. My world became all about butterflies very quickly. I rekindled my childhood passion for science that I had buried somewhere in myself a long time ago. I am happy to be directing my energy into another form of helping. It's extremely satisfying.

Thank you for opening my world. Thank you to the rest of the team who helped me identify and figure out the iNaturalist platform. I love this community of people and am thrilled for next season.

#### Eric Habisch

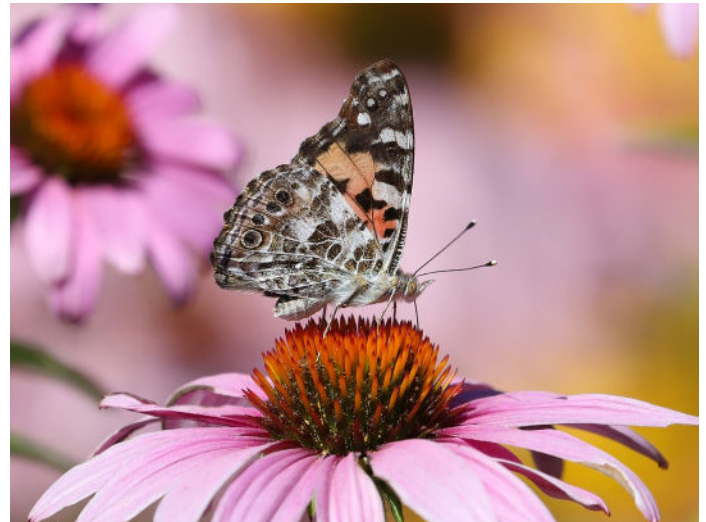


PHOTO:ERIC HABISCH

I considered 2023 an average season of seeking. I live in Langley, so the Lower Mainland and the Fraser Valley are the areas that I spend the majority of my time exploring. Rapid development of the area, the accompanying destruction of habitat and the very noticeable climate change we are all experiencing make every season even

more of a challenge to “observe” the butterflies that fly in this part of the province. As Steve Ansell mentioned in his presentation, of the 30 or so species that could possibly be found, most are north of the river and are near or in the mountains.

That being said, here are my highlights. The migrating monarch I observed at Boundary Bay June 25, Becker’s white in Hope July 25, the grey hairstreak in Pitt Meadows August 1 and closing off the 2023 season with a hike up Cypress Mountain with Steve Ansell was great.

The lowlight this season was trail maintenance completed and subsequent removal of a mud puddling hot spot in my local “go to” park where several species I’ve seen in the previous seasons and expect to observe did not return.

I love butterflies while observing them in their native habitat and look forward to the next season.

### **Courtney Ashford**

I absolutely loved my time on the BIMBY project. On my hunt for butterflies, I have become so much more aware of the environment and the life that surrounds me. I was taken aback by how I notice so many more insects now — bees, dragonflies, moths, flies and, of course, butterflies. I also have gotten to learn so much more about plants and trees (both native and invasive) and the importance and interplay between them and other species. I think the main take-away for me is to be more present when walking around. You would be amazed by all the different life surrounding you at each step. An informative and amazing season. Looking forward to next year!



PHOTO: COURTNEY ASHFORD

### **Puru Shrestha**

Hope my findings and inference will support better conservation of butterfly species in the Vancouver area — a component of the Canada-USA eco-regional butterfly corridor.



PHOTO: PURU LORQUINS

### **Jim Lawrence**

A favourite photo from the BIMBY experience is not my photo or of a Kootenay butterfly but that of my granddaughter. To me this illustrates how respect and appreciation for our winged friends spreads around. When Helen heard that her Grampa was out chasing butterflies, she talked her mother into getting a monarch rearing kit, was able to watch the metamorphism process and release 60 butterflies into the wild. And special thanks to Winnie for your commendable skill at organizing and stoking enthusiasm for this worthy project.



PHOTO: JIM LAWRENCE

### Shirley Morrison

First off, I want to thank you and your team again so much for all the work you do keeping us all informed and organizing all our data. The Zoom meetings are stellar and fun. I've especially enjoyed the incredible guest speakers who were kind enough to share their time and expertise.

How do I even begin to describe what this experience of seeking butterflies has been like for me this season? To be able to get out in nature and combine it with my love of photography has been priceless. I've especially enjoyed the task that Stephen gave us of trying to identify the plants that butterflies feed on. It's been a true joy learning more about how important plants are to the whole ecosystem. I have a new appreciation of how important even the common dandelion is. It's one of the first nectar plants to bloom in my area, and I'm still finding butterflies on late-blooming ones at the end of the season as well.

One of my favourite take-aways from this year was the visits Sue Elwell and I had from experts like Steve Ansell, John Reynolds, Bob Parsons and Neil Brady Mathes. They were all so gracious in sharing their expertise and I learned so much from them.



PHOTO: SHIRLEY MORRISON

### Sue Elwell



PHOTO: SUE ELWELL

It has been such a pleasure and positive experience to belong to the BIMBY group. Everyone is so helpful, from the team right through the membership. This year was amazing both in the number of butterflies seen and the species of butterflies found! The learning never stops, and my butterfly books are already worn out after only two years of constant referencing for host plants, habitat and time of year observed. There are so many butterflies that are exciting to see but for me this year it was the Rocky Mountain Parnassian. Having found a breeding area so accessible meant that it was possible to get good pictures of a beautiful butterfly that is in the one per cent of butterflies. This group have at the first mating a secretion by the male that forms a hard guard, a sphragus, on the end of the female body to prevent further mating. This was definitely a highlight for me.



PHOTO: SUE ELWELL

# Citizen Science/Community Science

Participating and contributing to scientific research can be difficult, especially if you have never been a part of the scientific community. And with growing global concerns about climate change and biodiversity loss, it can be difficult to deal with the anxiety associated with these issues. However, citizen science/community science is a low-barrier entry for interested people to get involved in science and to act.

As the name implies, citizen science or community science is the collaboration between trained scientists and amateurs. There are two main purposes: research and education. Although scientists create and uncover knowledge from their research, there is sometimes a lack of knowledge transfer from the scientific community to the public. Projects such as BIMBY help facilitate knowledge sharing while also collecting valuable data to help address pressing issues. It is a win-win for everyone!

## iNaturalist Identifier — Steve Ansell



PHOTO; AUGUST JOHN REYNOLDS AND STEVE ANSELL IN PRINCETON

Butterflies have always fascinated me, with their bright colours on summer days. Swallowtails are instantly recognizable, with their large size and typically yellow colouration. But is that slightly creamy coloured one in North Vancouver a faded western tiger swallowtail, or perhaps a pale swallowtail? And is that one in Kamloops that looks just like a western tiger swallowtail really the same species as at the coast, or might it be a Canadian tiger swallowtail that is flying there?

Butterfly identification can be a challenging subject, with many similar species, some of which cannot always be identified visually in the field. I first took an interest in identifying sightings on iNaturalist after noticing a couple of comma butterflies that I thought were incorrectly identified. I added a couple of comments and questions at first as I was hesitant to disagree. Once I got more comfortable, I subscribed to all butterfly reports for B.C. (and ferns as well), and started identifying any new sightings as they came in. Even just a couple of years ago there were only a few sightings coming in at first — little did I know how much BIMBY would take off and overwhelm me with butterfly reports all summer long.

My interest in identifying butterflies on iNaturalist has been driven by two things. First was the discovery aspect, to learn new locations for species (and give myself new things to chase!), and second was the desire to keep the information accurate (at least to the best of my ability). I still have much to learn, and seeing so many photos from across the province has helped immensely for species I am less familiar with. Patterns start to emerge, showing the degree of variation within one species, and the differences from others. Range maps also start to connect, following patterns of habitat and elevation.

Knowing what species to expect in a given area and time of year greatly helps with determining an ID. Any duskywing at low elevation in the spring around Victoria and the Gulf Islands in Garry oak habitat is almost certainly a propertius duskywing. Studying these pictures can help give an understanding of what the species looks like (at least in that region) and provide a contrast to species seen elsewhere in the province.

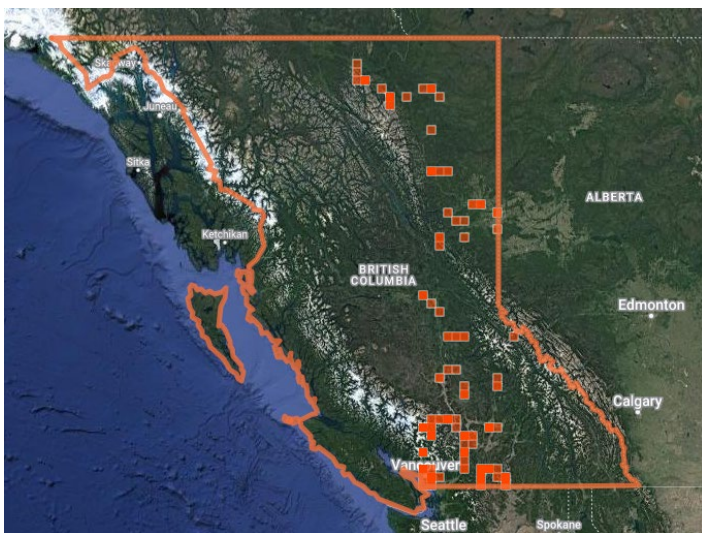
Blues are another challenging group. The underwing is diagnostic for most species, but not always visible when they are active, or sitting with their wings open. As you become familiar with a given area though, and learn which species are present, you can start to notice slight differences in the shade of blue in flight, or the width and darkness of the wing borders above. Anything different might be a clue to a different species and can narrow the time you spend pursuing everyone, in hopes that they will land for a photo.



Nobody is perfect with their IDs on iNaturalist, so everyone is always encouraged to reach out with questions and suggestions. From typos to not looking closely enough at the photos or location, mistakes will inevitably occur. Always be careful when “agreeing” with a suggested ID, even if it’s from an identifier you trust. In cases where someone disagrees with my ID and I think they are more knowledgeable, then I will typically just withdraw my original ID rather than clicking agree. This allows the new ID to be visible, but without me amplifying it if it isn’t something I feel knowledgeable enough on.

Photographing butterflies can be a challenge. Which side of the wings has the diagnostic fieldmarks, why won’t it land and how do I get close enough? I use a 70-300mm lens on an SLR-type camera, which is usually good enough to get a diagnostic photo without scaring the butterfly. This size lens is a good compromise compared to the huge “wildlife” zoom lens, being relatively small and affordable. Almost all the butterfly photos I upload are highly cropped, making them easier to see the subject and making the lens look better than it is. For a few species that are easy to ID, but often don’t land, a camera phone can also be surprisingly effective at close range. An orange tip flying by at the edge of a trail can make a good target, and with a bit of luck (and a lot of photos) yield nice photos when cropped.

Since discovering iNaturalist, I use my camera almost exclusively these days rather than binoculars, as I could often “miss” the photo by the time I got the butterfly in the binoculars for an ID, and then switched to the camera. Instead, the ID work is often done on the computer at the end of the day, in addition to in the field.



STEVE ANSELL-2023 BC BUTTERFLY SIGHTINGS

The computer vision (CV) or AI suggestions on iNaturalist are an amazing tool when used with caution. When travelling to unfamiliar areas or learning about new groups of species for the first time, having some ID suggestions to start from is an invaluable tool. And while there are lots of stats behind the scenes, the algorithm does not presently tell you “how” confident it is with any quantitative measures. I will always consider it a warning flag if the CV suggestion doesn’t match with my thoughts for the ID, but I will never “go” with this ID without confirming it against a field guide or other source. For cases where it gives me reasons to doubt my ID, I will often go with a genus-level ID to be safe. Or for cases where I’m travelling and don’t know if there are other similar species, I will leave a comment of “just a guess” so that at least there is a starting point for other identifiers to find my observation, while also letting them know that I am asking, rather than telling them, what I think it might be.

For confirming IDs in our region, the book *Butterflies of British Columbia (Guppy and Shepard)* is the best reference, showing local specimens and highly detailed maps. While not necessarily targeted at beginners, in combination with the iNaturalist computer vision to point you in the right direction, it is approachable to all. For books more suited to the field *A Swift Guide to Butterflies of North America (Glassberg)* is great for pointing out field marks (albeit for all North American species), and *Butterflies of the Pacific Northwest (Pyle and LaBar)* is also good for covering the southern part of B.C.

And even once you’ve studied the best books and walked all day in the hot sun carrying a good camera, don’t be surprised if your list at the end of the day consists of “5 Whites, 2 Blues and a Fritillary”, and all you have are a bunch of blurry pictures. It happens to all of us!

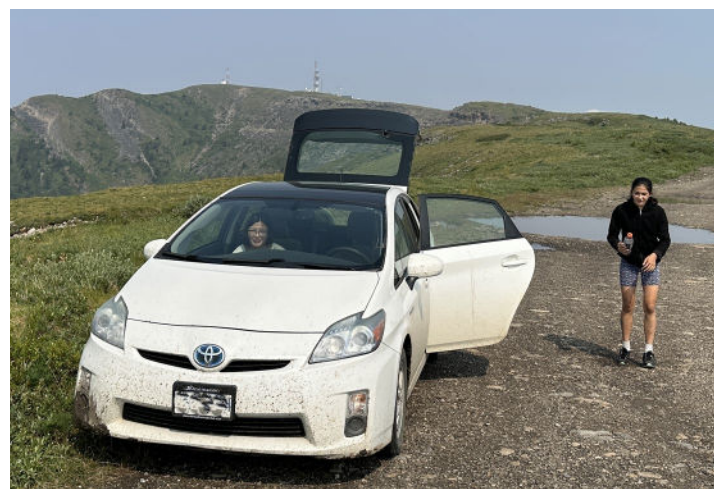


PHOTO: STEVE ANSELL

# iNaturalist Observations

## INTRODUCTION

The data from iNaturalist for this report was collected between January 1 and October 15, 2023, and includes all observations of butterflies (superfamily Papilionoidea) and their caterpillars in British Columbia, Canada. In addition, comparisons were made between the total number of observations in B.C. and observations made by the David Suzuki Foundation’s BIMBY Seekers.

In addition, only “verifiable observations” are being used for this report. “Casual status” observations — which are missing a valid date, location, photo or sound — have been ignored.

\* Please note that the number of observations will continue to rise as observers continue to upload their data to iNaturalist over the coming weeks and months.



### INATURALIST BIMBY PROJECT 2023

#### Overall, the BIMBY Seekers

- observed **20,188** butterflies in 2023 out of a total of **30,214** B.C. butterfly observations
  - a **67 per cent** contribution overall for the year
- an increase from **615** observations in 2021 and **8,392** observations in 2022
- **143** species were identified throughout this period
- Out of the **462** BIMBY Seekers on iNaturalist
  - **219** submitted observations
    - **20** members contributed plant observations only and no butterflies
    - **58** members contributed only butterfly observations and no plants
    - **141** contributed both butterfly and plant observations

This is a huge achievement that gives scientists access to quality data to better understand the impact of climate,

vegetation and human activities on butterflies. This report is based on data collected from BIMBY Seekers alone and includes the **20,188** observations. It is also a huge success to acknowledge the **141** BIMBY Seekers who contributed to **BOTH** plant and butterfly observations, which will help this year’s “plant and butterfly” association efforts. See section further below.

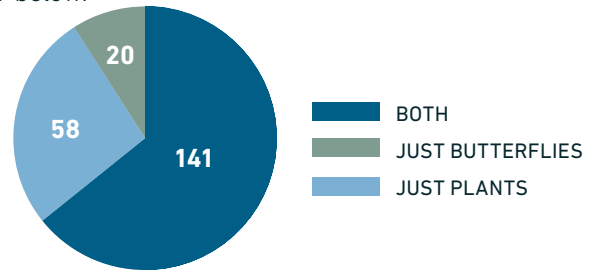


CHART 1: BIMBY SEEKERS OBSERVATION CONTRIBUTIONS

## QUALITY GRADE

For the purpose of this report, only “verifiable data” were used. A verifiable observation is an observation that has

- a valid date
- a photo (or sound)
- a location
- is not captive or cultivated

Verifiable data can either be “needs\_id” or “research grade.”

If it is not verifiable it is flagged as “casual.” Some “casual” observations have not been included in this analysis; however, we do not want to deter volunteer BIMBY Seekers from uploading observations and we encourage and support all observations.

QUALITY GRADE	# OF OBSERVATIONS	% OF TOTAL
research	15711	78%
needs_id	4477	22%
<b>Grand Total</b>	<b>20188</b>	<b>100%</b>













TABLE 1: TOTAL OBSERVATIONS BY QUALITY GRADE

A total of **22 per cent** of the observations are classified “needs\_id.” Verifiable observations are labelled “needs\_id” until they either attain “research grade” status or are voted to “casual” via the Data Quality Assessment.

A total of **15,711** or 78 per cent “research grade” observations were made. In addition to focusing on only the BIMBY Seekers’ observations, the data presented throughout the rest of this report is based on “research quality grade” observations only.

## BIMBY SEEKERS

As mentioned, BIMBY Seekers observed 20,188 butterflies or caterpillars throughout the year up to and including October 15, 2023. A special mention should go to three BIMBY Seekers who contributed over 1,000 observations each — Sue Elwell, Shirley Morrison and Jim Lawrence — and to the 22 BIMBY Seekers who contributed over 100 observations each.

Most Observations		Most Species	
 selwell	3,691	 steveansell	116
 shirleymorrison	2,946	 shirleymorrison	98
 jim22lawrence	1,303	 selwell	97
 coridxn	1,250	 jdulisse	83
 steveansell	1,046	 sachisnively	80
 kj250	896	 johndreynolds	75

Note that Cori Dixon and Steve Ansell made more than 1,000 observations as per the screen shot above; however, they were not all “research grade” quality. The table below shows the number of butterfly observations that were “research grade” only, highlighting observations of BIMBY Seekers who observed 100 or more.

BIMBY SEEKERS	# OF OBSERVATIONS
selwell	2,915
shirleymorrison	2,226
jim22lawrence	1,113
steveansell	851
coridxn	727
cathyglatiotis	720
kj250	688
ellensc	583
pumakit	483
johndreynolds	453
sachisnively	447
jdulisse	304
cakearns	298
alldée	277
amborg	189
juliakcarr	185
erichabisch	177
paul_prappas1	167
clairechristensen	135
bstarzomski	135
marlenejohnston	130
tracywhite	102

TABLE 2: BIMBY SEEKERS COUNT OF OBSERVATIONS (100 OR MORE)

## OVERVIEW OF 2023 OBSERVATIONS

Note that the number of observations does not show actual population numbers, but simply the presence of the species. Some inference can be made about which species are more abundant than others, but caution must be made in drawing any conclusion in terms of numbers. For example, there are probably more cabbage whites than recorded because they are a common introduced species, and observers tend to ignore them.

As with last year, the most common butterfly observed was the cabbage white, followed by the woodland skipper. In addition, the green comma, mourning cloak, Lorquin’s admiral and western tiger swallowtail had more than 500 observations.

ROW LABELS	COUNT OF OBS	% OF OBS
Cabbage white	1008	6.42%
Woodland skipper	965	6.14%
Green comma	699	4.45%
Mourning cloak	655	4.17%
Lorquin’s admiral	563	3.58%
Western tiger swallowtail	532	3.39%

TABLE 3: TOP 500 OR MORE BUTTERFLY OBSERVATIONS

The data collected also show seasonal variances with a possible connection to changes in weather conditions and climate change. The observations broken down by month show the earliest “research grade” observation was a cabbage white as early as February 21, 2023. It is a cabbage white chrysalis, not a butterfly, near Ladner, observed by BIMBY Seeker kairune.

- March 6, 2023, marked the first observation of an actual butterfly, by Kathy-115 near Harrison Hot Springs in the Fraser Valley. It is a mourning cloak. The mourning cloak topped the most observations for March and April, which makes sense as they overwinter in B.C.
- The Tortoiseshells such as the Milbert’s tortoiseshell, Compton tortoiseshell and California tortoiseshells also featured predominantly in March and April.



MOURNING CLOAK © KATHY-115

MONTH/BUTTERFLY	COUNT OF OBS
<b>Feb</b>	<b>1</b>
Cabbage white	1
<b>Mar</b>	<b>71</b>
Mourning cloak	33
Green comma	11
Milbert's tortoiseshell	10
Hoary comma	7
Compton tortoiseshell	4
California tortoiseshell	2
Cabbage white	2
Satyr comma	1
Canadian tiger swallowtail	1

- The last two observations for the official BIMBY 2023 season that were not cabbage whites were a purplish copper observed by selwell on October 9, 2023, and a western white by coridxn on October 11, 2023.



PURPLISH COPPER © ELLEN

TABLE 4: EARLY BUTTERFLY OBSERVATIONS

There was a noticeable drop in observations in the first week of June and on June 19 and 20, 2023. This appears to coincide with cooler weather and rainfall. It is not clear whether this was because BIMBY Seekers stayed home because of poor weather or they are heading out but the butterflies are taking shelter.

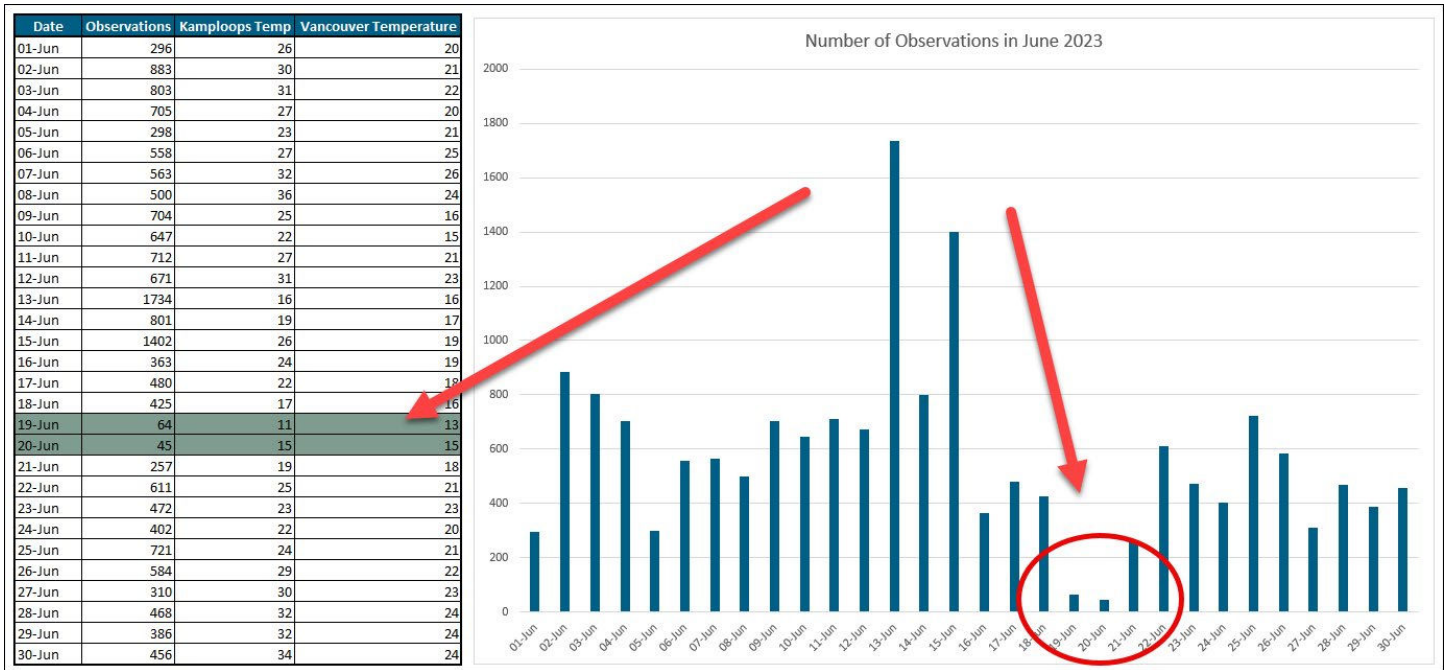


CHART 2: JULY 2023 OBSERVATIONS VERSUS TEMPERATURES

- Kamloops weather for June 19
  - Weather in Kamloops in June 2023 (British Columbia) - Detailed Weather Forecast for a Month (world-weather.info)
- There were similar weather patterns in the Metro Vancouver Regional District for June 19
  - Weather in Vancouver in June 2023 (British Columbia) - Detailed Weather Forecast for a Month (world-weather.info)

## B.C. CONSERVATION DATA

The BIMBY Project iNaturalist data, as with last year’s report, has been cross-referenced with the B.C. government’s Conservation Data Centre list of species to better understand the current status of at-risk butterflies.

- [B.C. Conservation Data Centre - Province of British Columbia \(gov.bc.ca\)](http://gov.bc.ca)

The data categorizations are based on a provincial list, a B.C. list and a global list. For the purpose of this report, the B.C. list codes are used. They are based on a colour scheme of Red, Blue and Yellow, as well as two additional categories, Exotic and Accidental. The observations from the BIMBY Seekers included butterflies in all five categories. Not all butterflies were cross-referenced with the B.C. CDC data due to subspecies complexity. The categories are as follows:

- Red: Any species or ecosystem that is at risk of being lost (extirpated, endangered or threatened)
- Blue: Any species or ecosystem that is of special concern
- Yellow: Any species or ecosystem that is apparently secure or secure (least risk of being lost)
- Exotic: Species that have been moved beyond their natural range as a result of human activity
- Accidental: Species occurring infrequently and unpredictably, outside their usual range. Accidental species are excluded from the Red, Blue and Yellow Lists as a Provincial Conservation Status Rank is not applicable

Overall, there was a **90 per cent** quality match between CDC data and iNaturalist observations. This means that **90 per cent** of the iNaturalist observations have an associated status category. The other **10 per cent** is because of the mismatch of scientific names when running the comparison between both data sets.

For example, the [purplish copper](#), although flagged as “Yellow,” or not at risk, has a scientific name of “*Lycaena helloides*” in the B.C. list of conservation data, whereas it is known as “*Tharsalea helloides*” in iNaturalist. Further manual cleanup of the data will eventually get us to a 100 per cent match for all observations.

ROW LABELS	COUNT OF OBS	% OF OBS
Yellow	12444	79%
>> no match <<	1582	10%
Exotic	1382	9%
Red	159	1%
Blue	125	1%
No Status	19	0%
<b>GRAND TOTAL</b>	<b>15711</b>	<b>100%</b>

TABLE 5: OBSERVATIONS CATEGORIZED BY B.C.’S CDC DATA

## ENDANGERED “RED” CATEGORY

From a total of **15,711** “research grade” observations, **159** are categorized as “Red,” making up 10 species. See table below.

RED' BUTTERFLIES	COUNT OF OBS
Behr’s Hairstreak	60
Mormon Metalmark	40
Monarch	19
Propertius Duskywing	10
Sandhill Skipper	10
Sagebrush Sooty Hairstreak	8
Hoffmann’s Checkerspot	8
Johnson’s Hairstreak	2
Pike’s Old World Swallowtail	1
Oregon Branded Skipper	1
<b>GRAND TOTAL</b>	<b>159</b>

TABLE 6: OBSERVATIONS OF “RED” BUTTERFLIES

The Behr’s hairstreak featured predominantly, with 60 observations, all from within the Okanagan-Similkameen area, and more than half were submitted by user kj250, Katharyn Poole.



PHOTO: STEPHEN DEEDES-VINCKE

In addition, and thanks to Kathryn, we have extra data points such as temperature, cloud cover and butterfly activity for each observation and, more importantly, the plant association for each observation. Eight of kj250's Behr's hairstreaks have an accurate plant association as per the table below. More detail is available in the section "Butterfly to Plant Associations" further down in this document.

BUTTERFLY / PLANT	COUNT OF OBS
<b>Anicia checkerspot</b>	<b>1</b>
Douglas' bladderpod	1
<b>Becker's white</b>	<b>3</b>
Alfalfa	1
Hoary alyssum	1
Diffuse knapweed	1
<b>Behr's hairstreak</b>	<b>8</b>
White sweet-clover	3
Baby's-breath	3
Western white clematis	1
Showy milkweed	1
<b>Cabbage white</b>	<b>1</b>
Oregon grape	1
<b>Callippe fritillary</b>	<b>2</b>
Nettle-leaf giant hyssop	1
Aspen fleabane	1
<b>Common sootywing</b>	<b>7</b>
Douglas' bladderpod	6
False london-rocket	1

TABLE 7: OBSERVATIONS OF BEHR'S BUTTERFLY AND ASSOCIATED PLANTS

### EXOTIC AND ACCIDENTAL

Of the **15,711** observations, **1,382 (9%)** were classified as "Exotic" or "Species that have been moved beyond their natural range because of human activity. Exotic species are also known as alien species, foreign species, introduced species, non-indigenous species and non-native species. Exotic species are excluded from the Red, Blue and Yellow Lists as a Provincial Conservation Status Rank is not applicable." These **1,382** observations include only two species, the cabbage white (1,008) and the European skipper (**374**).

### MONARCHS

The monarchs have always captured the public's imagination, and have a very low occurrence of observations in B.C. and are flagged as "Red." Compared to last year, which only had two observations, 2023 had **19** monarch observations that were "research grade." As Steve Ansell commented, "Nice! Looks to be a good movement of them into the province this year."



MONARCH CATERPILLAR © CORI DIXON

## Butterfly to Plant Associations

In 2023, we encouraged BIMBY Seekers to take photographs of the butterflies and the plants they were observed on, and to note the activity, such as feeding, resting and activities including puddling. This information will clarify the importance of native plants and which plants attract which butterflies, as host plants and as nectar plants, and hopefully reverse the trend of at-risk butterflies by providing the right kind of plants and making informed decisions on land use and planning.

There are various ways to record plant associations in iNaturalist depending on whether the app is being used or observations are being uploaded via the web browser on a laptop or a tablet. This year was more of a hybrid exercise to better understand what works best for the BIMBY Seekers. We have had tremendous success already this year and would like to thank all the BIMBY Seekers who managed to upload not only their butterfly observations but the

associated plant observations too. Data in the following section are based on the following criteria:

- Observations are by the same user
- Observations are taken within a few minutes of each other
- Sequence is of a butterfly followed by plant

NOTE: In future, we will be recommending that the same photograph is uploaded twice, once as a butterfly observation, and once as a plant observation. This will provide an identical time stamp for the same user and will eliminate any potential for errors.

This was an amazing effort for the first year with over **4,198** butterfly/plant associations. If we filter the association to butterflies for “research grade” only (both the plant and the butterfly) we are down to **2,363** observations, which is still an incredibly successful number of observations for analysis purposes. This also means both the butterfly and the plant were of “research” quality too. If neither the plant nor the butterfly is of research quality, they would not be included in the statistics of the **2,363**. A total of 49 BIMBY Seekers contributed to the **2,363** butterfly/plant associations.

The total number of associated plant species observed was **224**. The most common species included alfalfa, Canada thistle, scentless mayweed, spreading dogbane and rubber rabbitbrush, all having more than **100** associations with butterfly observations.

PLANT	COUNT OF OBS
Alfalfa	256
Canada thistle	213
Scentless mayweed	172
Spreading dogbane	147
Rubber rabbitbrush	132
Pearly everlasting	86
Showy milkweed	76
Curlycup gumweed	74
Oxeye daisy	67
Lesser burdock	65
Bull thistle	59
Spotted knapweed	59
False london-rocket	57
Red clover	54
Snowbrush ceanothus	54

TABLE 8: TOP PLANT OBSERVATIONS WITH ASSOCIATED BUTTERFLIES

We can drill down further and demonstrate that alfalfa was the most associated plant, with **256** butterfly observations, but we can also share that of those **256** butterfly observations, **39** different species were associated with the alfalfa plant, the most common being the woodland skipper, with **77** observations.

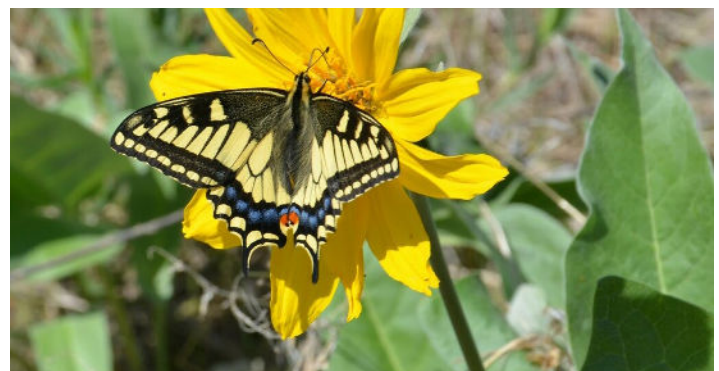
PLANT / BUTTERFLY	COUNT OF OBS
Alfalfa	256
Woodland Skipper	77
Cabbage White	28
Clouded Sulphur	25
Grey Hairstreak	21
Common Checkered-Skipper	14
Western Branded Skipper	10

TABLE 9: TOP BUTTERFLY OBSERVATIONS ASSOCIATED WITH ALFALFA

The reverse association can also be calculated. For example, we can now associate which plants most B.C. butterflies tend to be attracted to, especially if we add a further cross-reference of butterfly behaviour that we are now collecting, that of butterfly activity — feeding. This is clearly seen in BIMBY Seeker coridxn’s observations of the Oregon swallowtail and tarragon, which in this case is the host plant.

BUTTERFLY / PLANT	COUNT OF OBS
Oregon Swallowtail	15
Tarragon	9
Alfalfa	2
wavyleaf thistle	1
arrowleaf balsamroot	1
Red Clover	1
Longleaf Phlox	1
GRAND TOTAL	15

TABLE 10: ASSOCIATION OF THE OREGON SWALLOWTAIL AND TARRAGON



OREGON SWALLOWTAIL © KJ POOLE

## INATURALIST OBSERVATION FIELDS

In addition to the butterfly/plant relationship work in 2023, the BIMBY project included additional observation fields for the seekers to fill in. Unfortunately, these observation fields are only available when using the web interface and not the app; however, for this year, there were over 20,000 observations that had some or all of the extra observation fields filled out. These fields are:

- Transect names
- Cloud cover
- Temperature
- Pesticide use
- Butterfly activity

These additional observations fields will hopefully provide more information on the state of butterflies in B.C. and how we can protect them from becoming endangered or disappearing altogether. A sample of the data is shown below.

BUTTERFLY ACTIVITY	COUNT OF OBS
Feeding	4,120
Resting	1,413
Puddling	921
Just flying around	508
Unsure	265
Mating	24
Licking leaf	17
Hill Topping	16
Ovipositioning(laying eggs)	16
Patrolling	5
Ovipositing(laying eggs)	3
Licking	1
<b>GRAND TOTAL</b>	<b>7,309</b>

## Transect Findings Summary

### What are transects and why are they used?

Transects are routes of set distances. When biologists want to know how many of a certain plant or animal are found in a certain area, they mark out a transect and walk this route at a leisurely pace. In our case, Seekers walk transects at least once a month and document any butterflies they see.

### How will BIMBY transects help with butterfly conservation?

Transects are important because they allow us to standardize our observations by the time spent looking. If we see an

increase in butterfly numbers year-over-year on a transect, we know that this increase is due to there being more butterflies in the area and not due to us spending more time looking. BIMBY started the transect program in 2022 and expanded it in 2023.

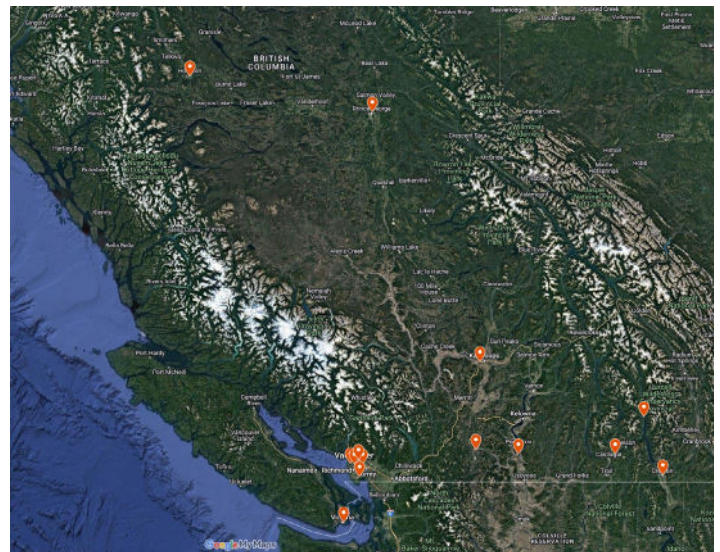
### Two types of BIMBY transects

BIMBY B.C. includes two types of transects: set transects and personal transects. Set transects are those that we have placed in public areas. Anyone can walk these and record butterfly observations. Personal transects are routes chosen by volunteers. These are often close to people’s homes or are a regular route they walk.

### 2023 key findings

In 2023, 30 BIMBY transect walkers observed 5,000 butterflies across 460 transects, from Victoria to Houston. The general feeling is that people saw more butterflies this year than last and this was likely related to the few butterflies observed in the cool, wet spring of 2022.

### Transect locations map:



### COMPARISONS BETWEEN 2022 AND 2023

#### Kamloops Set Transect – Petersen Creek Park – Cori D.

**Cori:** Discounting all the swallowtail caterpillars I logged, I think I might have observed only a few more adult butterflies at Peterson this season than last but the species composition was way different! Last year I saw a ton of woodland skippers and hardly any blues, whereas this year there seemed to be fewer of skippers and orders of magnitude more blues. There also seemed to be fewer sulphurs this year... last year there



were several orange sulphurs later in the season and this year not a one. As for the physical environment, this summer was relentlessly dry, hot and smoky, but at Peterson flowers seemed to be only slightly less abundant than last year and in bloom for about the same time periods. Other pollinators (bees, etc.) seemed far less abundant than last year, but so were the grasshoppers, which was a welcome relief.



PHOTO: MICHELLE TSENG  
PETERSEN CREEK PARK AT DUSK



PHOTO OF CORI DIXON TAKING A VIDEO OF A BUTTERFLY

### North Vancouver Set Transect, Powerline Trail — Marti and Jenifer

Marti and Jennifer have walked the set transect in North Vancouver for two years. In 2022 they walked this transect 14 times and observed around 48 butterflies. In 2023 they walked the transect 11 times and saw 104 butterflies.

Here are Jennifer and Marti's comments on how 2023 compared with 2022:

**Jennifer:** I thought we saw more butterflies esp. at the beginning of the season. I think there were three weeks in a row when we saw 20 or 30 at a time. Lots of swallowtails and Lorquin's admiral early in the year. The weather was clear and sunny, which helped, and it is beneficial to have more than one person. As you may have noticed the butterflies tend to zoom around and if you are trying to get your camera ready you can lose sight of the butterfly, so having a spotter is great from a photography standpoint. And more people mean more chances of seeing a slight movement!

**Marti:** We seem to have seen more azures and woodland skippers this year (not verifying this — just an impression); a third difference was the hot sunny weather, which more than balanced out some of the grimmer, cloudier days we had. Toward the end of the season, we did see fewer butterflies but overall, there seemed to be better variety toward the end than in previous years.



PHOTO: ANN BARTLEY  
JENNIFER (LEFT) AND MARTI (RIGHT) BUTTERFLY HUNTING  
ALONG THE NORTH VANCOUVER SET TRANSECT

	A	B	C	D	E	F	G
57	14 July at 11:35 PDT	Inc	23°C	Mostly cloudy, with smoke descending from higher elevations. AQHI: 4 (moderate health risk). RH: 53% Dew Pt: 13°C Wind: NNW 6 kph	Pale Swallowtail	1	Incidental observation. Butterfly on dogbane.
58	16 July at 15:44 PDT	Inc	36°C	Mostly cloudy - Altostratus coverage at about 75%. Oppressively hot outside, but I'm very thankful for our straw bale house, which stays a comfortable 18° to 22°C — even on the hottest days. RH: 15% Dew Pt: 5°C Wind: SW 15 kph.	Fritillary	1	This was a spectacular event! I had just finished shocking a large batch of blanched broccoli in an ice-bath for freezing, so my hand and lower arms were cold and damp. A fritillary must have been drawn to this, because she alighted on my hand and stayed there full minute. I kept my head and caught her visit on on iPhone vide and posted an edited clip to the BIMBY Facebook Group Page. (I guessing it was a female, but I'm not sure.) Anyway, I think I've fallen in love with these lovely feather-light creatures.
59	18 July 12:55 to 1:10 PM PDT	PT	28°C	Sunny. RH: 28%. Dew Pt: 8°C Wind: North to VR 12 kph.	Dozens of Cabbage Whites and Wood-Nymphs. At least 1	5	Personal Transect Walk. Countless Cabbage Whites were on and above our garden brassicas. Further afield, I observed mostly Common Wood-Nymphs and Fritillaries. Also captured a single Northern Crescent on spreading dogbane. The most rewarding part of the transect was capturing at least 3, maybe 4, Fritillaries playi

**Thoughts from transect walker Anne Mowat, multi-year BIMBY participant – Glade B.C.:**

The striking thing I noticed this year was the dramatic decline in butterflies from late July onward. This was disappointing. It wasn't even that the butterflies were around, but I just failed to capture them in photos. After mid-summer, I just didn't see any on my walks, either my Personal Transect Walks or my daily walks with my dog. In 2022, many more fritillaries were visiting our village well into August, as well as common wood nymphs and skippers. The swallowtails seemed to diminish rapidly from mid-July onward this year, whereas in 2022, I was still seeing them, albeit in diminishing numbers, as late as mid-August.

Anne wonders if the low butterfly numbers after July could be due to scorching hot temperatures in her region pretty much all summer.

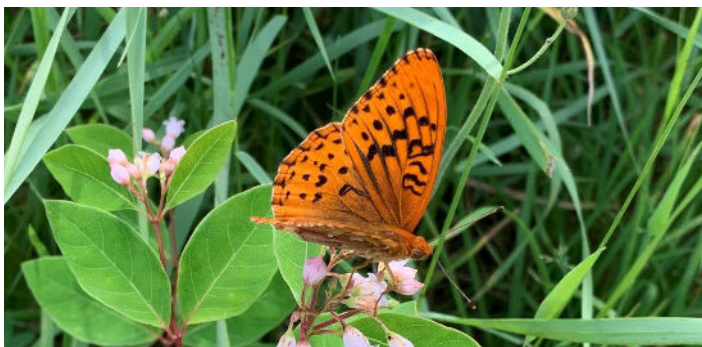


PHOTO BY ANNE MOWAT OF A GREAT SPANGLED FRITILLARY

**Thoughts from a first-time transect walker: Puru Shrestha of Surrey, B.C.:**

Puru provided BIMBY with a detailed year-end report of all his butterfly and plant observations. Thank you, Puru! Puru would love to see more awareness of butterfly host plants (food plants for caterpillars) and a ban or phasing out of harmful butterfly pesticides and plant herbicides such as glyphosate (Roundup). Also from Puru: "My objective of participation in BIMBY project was mostly fulfilled in terms of increase in more frequency of my nature walks, refreshing



of my biological knowledge/skill plus interest generation of whole family members (three generations, including me, my daughter (Polly) and grandkid Vivi) on observation/ appreciation of butterfly, its affinity to food/ornamental plants and nature conservation, as a whole."



## BIMBY School BioBlitz

### OVERVIEW

The BIMBY School Bioblitz is an educational piece of the BIMBY project aimed at engaging students and teachers throughout the province in nature-based education. We aim to inspire the younger generation by empowering them with observation skills to appreciate the nature around them.

The school Bioblitz consists of two parts: in-class work and an outdoor Bioblitz of the nature around the school community. We provide access to a toolkit with printable activities to help teachers incorporate citizen science skills into their curriculum (now including a French version!).

In previous years, during a two-week period in May we encouraged students and teachers around B.C. to hold a Bioblitz of their community. However, we received feedback from teachers that many rural communities were still too cold to observe any butterflies. Thus, teachers this year had the opportunity to choose a time to hold their Bioblitz from May to October. We had over 500 students participate from all over the province, with many schools from rural areas represented!

Here are some examples of feedback from teachers and parents for BIMBY School Bioblitz 2023.

### BIMBY SCHOOL BIOBLITZ 2023 RESULTS

The BIMBY School Bioblitz 2023 was a success! With more than 10 schools participating, over 550 students were able to accomplish a lot over the summer.

#### In total, students had on iNaturalist:

- 158 observations
- 89 species observed
- 78 identifiers
- 10 observers



PHOTO: ANNE MARIE FENN | ANDERSON ELEMENTARY

**ANNE MARIE FENN**  
**TEACHER**  
**HENRY ANDERSON ELEMENTARY SCHOOL**  
**RICHMOND, B.C.**

**Statistics:**

GRADE LEVELS OF STUDENTS PARTICIPATING:  
 KINDERGARTEN THROUGH GRADE 5

NUMBER OF DIVISIONS (CLASSES) PARTICIPATING: 13

NUMBER OF STUDENTS PARTICIPATING: 275

DATES OF PARTICIPATION: MAY 23 – JUNE 6, 2023

**Benefits of participating:**

- Students developed an understanding of the role of Community Science in contributing to scientific research.
- Students observed closely and discovered some of the insect biodiversity in the school garden and local park.
- Students learned how to take clear photos and upload photos to iNaturalist.
- Students learned about the importance of pollinators and their role in our food system.
- Students experienced how to reduce. Instead of photocopying a tally sheet for each person, students worked in pairs and recorded their observations on whiteboards. After each class, the whiteboards were photographed and erased and then utilized by the next class. Thus, no paper was consumed to participate in this project!



PHOTO: VICTORIA R.W

**MARLEE ST. PIERRE**  
**OUTDOOR K TEACHER,**  
**FORT LANGLEY ELEMENTARY**

Our school did complete a Bioblitz event on June 6 at Campbell Valley Park. We uploaded our photos to iNaturalist but I thought you might like to see a photo or two of the activity itself. The iNaturalist photos were taken on iPads by Gr. K and 2 students. I think they did a fantastic job. Although they didn't capture any butterflies on camera this year, they did see them - tiger swallowtails, morning cloaks, and cabbage whites. This is a great program and I hope to be a part of it next year also. Telling the students all about the DSF work and the community of citizen scientists that we are joining is highly motivating for them. They feel a part of something so important in real life! The photos show a caterpillar "Peaches" that students found on the playground in its mini playground, our poster of bioblitz finds recorded by Grade 2 students, and our follow up activity of *The Very Hungry Caterpillar* retold with clay.

Thank you so much for your work in organizing the BIMBY project for schools.



Don't turn  
around! The  
paparazzi are  
here!

PHOTO: SUE ELWELL

## Conclusion

### WHY DOES BIMBY CITIZEN SCIENCE PROJECT MATTER?

BIMBY is about photographing and documenting butterflies throughout British Columbia, but it is just as much about people. BIMBY brings together people who have a shared passion in making a small but meaningful contribution to nature.

In one sense we photograph butterflies, but in another sense, we gather to share tips and tricks about taking pictures and about using the sometimes-tricky iNaturalist.

In one sense we learn about, engage with and protect butterflies, but in another sense, we gather to share stories about the butterfly that got away, the smokiness of the sky (again), the pros and cons of non-native plants and the cabbage white caterpillars that keep eating our garden veggies.

BIMBY 2023 surpassed all expectations for the number of butterfly observations made but perhaps more importantly it demonstrated the importance and value of working together as a community. Without BIMBY participants old and young, near and far, none of this would be possible. BIMBY members gave input to the project every step of the way, and their insights feature prominently in this final report.

The success of BIMBY is as much due to the 200-plus participants who managed to upload one butterfly photo as it is to the high flyers who once again smashed through the ceiling of what we thought was impossible. We are a diverse and vibrant community of people dedicated to the wellbeing of B.C.'s unique and charismatic community of butterflies. BIMBY Seekers clearly believe solutions are in our nature, and together we support each other to reach the goal,

**We are already excited for BIMBY 2024, and we hope you are too.**