

# **2022 Butterfly Inventories in Boulder County Open Spaces**

**By Janet Chu**

**with Venice Kelly and Sue Hirschfeld**



**Front Page Photos:**

**The smallest and the largest butterflies found  
in the Boulder County Open Spaces,  
Boulder County, Colorado.**

**Western Pygmy-Blue *Brephidium exile* ½-¾” across. by Chris Friedman**

**Two-tailed Swallowtail *Papilio multicaudata* 2 ¾-5” across. by John Barr**

**by Janet Chu    [2chuhouse2@gmail.com](mailto:2chuhouse2@gmail.com)    [ph. 303-494-1108](tel:3034941108)**

**October 2022**

## Table of Contents

I. Acknowledgments .....	4
II. Abstract .....	5
III. Objectives .....	5
IV. Research Methods .....	5
V. Introduction .....	6
VI. Trends .....	8
VII. Narration for Each Open Space .....	9
A. Southeast Buffer – Rock Creek .....	9
B. Anne U. White Trail .....	9
C. Heil Valley Ranch – North Pointe, Red Gulch .....	10
D. Heil Valley Ranch – Geer Watershed ... ..	10
E. Walker Ranch – Meyers Homestead Trail ... ..	13
F. Reynold’s Ranch – Giggey Lake .....	13
G. Caribou Ranch – Sherwood Transect, Meadows, Mud Lake .....	15
VIII. Conclusion .....	16
IX. References .....	18
X. Data Tables .....	19
A. Southeast Buffer – Rock Creek .....	20
B. Anne U. White Trail .....	22
C. Heil Valley Ranch – North Pointe, Red Gulch .....	25
D. Heil Valley Ranch – Geer Watershed .....	29
E. Walker Ranch – Meyers Homestead Trail.....	35
F. Reynold’s Ranch – Giggey Lake, West Trail .....	39
G. Caribou Ranch – Sherwood Transect, Meadows, Mud Lake .....	41
Appendix I. Changes to Geer Drainage Systems .....	53

## **I. Acknowledgments**

We sincerely thank the Boulder County Parks and Open Space (BCPOS) for supporting the inventorying of butterflies within these spacious lands. Susan Spaulding, Senior Wildlife Specialist provided close contact and a warm friendship with the researchers. Kevin Grady, Resource Protection Ranger has been generous offering timely suggestions and helpful supervision which enhanced field work. The Research Permits were valued and gave us the opportunities to work closely with the staff. We enjoy and hold dear the occasions to cooperate with staff members.

Mentors continue to provide professional support and encouragement. We thank Dr. Paul A. Opler, C.P. Gillette Museum of Arthropod Diversity, Colorado State University, Ft. Collins for his patience and respected information on changes in Lepidoptery. Mike Fisher and Christian Nunes have been very helpful in verifying identification of species of butterflies. Sue Hirschfeld had special permission to perform a fourth-year survey in the Calwood burn area in the Heil Ranch, Geer Watershed, from the barn into the meadows and streamlets. Venice Kelly completed an intense and the 16<sup>th</sup> year survey within Caribou Ranch, specializing on the Sherwood Transect but including field work at the Bluebird Mine, and further including the Mud Lake Trail.

Daniel Ziskin, an NCAR programmer, designed the computer program which is accessed at the end of each season to compile data. His program determines the Individuals per Research Hour (I/RH) toward the statistical compilation for all Open Spaces surveyed. His design has profiled a different view of the butterfly inventory. It is comprehensive and all-inclusive preparing this report to answer the question, asked by many, “What is the trend of our butterfly population?” Note the graphs and interpretations for the Trends for the Open Spaces surveyed in Section VI, page 8. He additionally interpreted the data from the Geer Watershed Section VII D, page 11.

## **II. Abstract**

The inventory of Butterflies in seven of the Boulder County Open Space properties has taken place for the nineteenth year. The trend shows an annual loss of 1.3 % per year which is fewer I/RH annual loss than was determined in 2021. Geer Watershed, Heil Ranch, showed a marked increase in the trend in that area because of the increase in Cabbage Whites. Common Wood-Nymphs, Common Checkered-skipppers had increased in 2021 following the fire but have since gained a usual population. Eleven regular volunteers carried on this project for the 19<sup>th</sup> year with 164 Research Hours in the Open Space properties. Volunteer hours for the County totaled 411.

## **III. Objectives**

- 1) Continue Butterfly Inventories for the 19<sup>th</sup> consecutive year within Boulder County Open Space properties with special attention following the Calwood Fire in Geer Watershed, Heil Ranch.
- 2) Record both numbers of individuals and species of butterflies within the following areas: Southeast Buffer (Coalton Trail), Heil Valley Ranch (Geer, Red Gulch, North Pointe), Walker Ranch (Meyers Homestead Trail), Reynold's Ranch (Giggey Lake), Caribou Ranch (Sherwood Transect, Bluebird Mine, Caribou Meadows), Mud Lake, and Anne U. White Trail.
- 3) Determine trends using Individuals/Research Hour (I/RH) for the Open Spaces surveyed.
- 4) Calculate the final Summary Trend (I/RH) of butterfly populations for Boulder County Open Spaces surveyed.
- 5) Follow Sherwood Transect recording numbers and species of butterflies, establishing references for further studies, within Caribou Ranch.

#### **IV. Research Methods**

Active research volunteers in 2022 include: John Barr, Amy Chu, Cathy Comstock, Larry Crowley, Chris Friedman, Linda Hardesty, Sue Hirschfeld, Richard Holmes, Venice Kelly, Ethan Stoner, and Wynne Whyman with others helping as time allowed: Bev Postmus, Cathy Cook, Ann Cooper, Carol Cushman, Dan Fosco, Joe Krieg, Steve Jones, Linda Andes-George, Jeff MacLachlan, Jean Morgan, Eric Olson, Pam Piombino, and Susan Spaulding.

The 2022 butterfly inventories followed two methods for surveying populations and species through a six-month season April through September. The most used involved meandering, our standard method of surveying. On every field day the research team hiked for about three hours following trails, roads, and streams. This inventory method is necessarily circuitous, as compared with restricted limitations defined by transects. We observed butterflies on the wing and used the net and release-live technique when needed, recording species and numbers. For the last several years digital photos have been used in place of curating specimens for identification. Researchers Venice Kelly, Chris Friedman, and John Barr have catalogs of photos.

The modified Pollard method was used for Sherwood Road, nestled between Mud Lake and Caribou Ranch, allowing for repeated sampling using a static transect over time. That is, a researcher follows a preplanned path, observing butterflies within 6 meters in all directions within the time frame 10 am to 4 pm. Venice Kelly follows Sherwood Road to the Conger Mine and returns into the Bridge Meadow. This transect was surveyed 32 times between April 19 and September 30, 2022. Venice has excellent photographic records; therefore, no specimens were taken.

The area affected by the Calwood Fire in the Heil Ranch, Geer Watershed, had previously been a transect studied by Sue Hirschfeld. But this the second year after the meadows had burned, the transect was not followed. Because of this special condition it was determined more important to use the meandering method to survey the meadows more completely from the Barn, along all streamlets and beside the Ponderosa Pines. Chris Friedman and Ethan Stoner were also researchers.

Data from all survey areas, including numbers of individual butterflies and number of species observed during each field day was recorded by each team leader on spreadsheets and analyzed

for patterns occurring during the field season. For each location, the unit ‘Individuals per Research Hour’ (I/RH) was calculated using the number of individual butterflies observed (I) divided by the research hours (RH) of the team in the field. The ‘RH’ unit was the total of a group’s time not the total individual summation of times contributed. These are units which this author developed for comparison, season to season and year to year. The study areas were chosen by team members because of varied habitats and elevations.

## **V. Introduction**

During the past nineteen years, inventories of butterfly species have been conducted under the leadership of Janet Chu resulting in records of the species which live in and occur incidentally, within the various Open Space areas. Inventories were conducted during 2022 in the Southeast Grassland Buffer (Swallowtail Hill, Rock Creek headwaters), Heil Valley Ranch (Geer Watershed, North Pointe, Red Gulch), Walker Ranch (Meyers Homestead Trail), Reynold’s Ranch (North Bog, West Hill), Caribou Ranch (Sherwood Road, Bridge Meadow, Bluebird Mine), Mud Lake and Anne U. White Trail. During the 2022 season, within Heil Ranch the Plumely Canyon, was inaccessible because of the fire damage but the service road and the entrance became available for study.

In addition, there are several active lists of butterflies maintained by Steve R. Jones, personally; Christian Nunes for the City of Boulder Mountain Parks and Open Space; and the Butterfly Pavilion. Paul A. Opler actively observes butterflies statewide as well as west to California. Since the creation of Boulder County Parks and Open Space in 1975, this is the first and only review of Open Space butterflies.

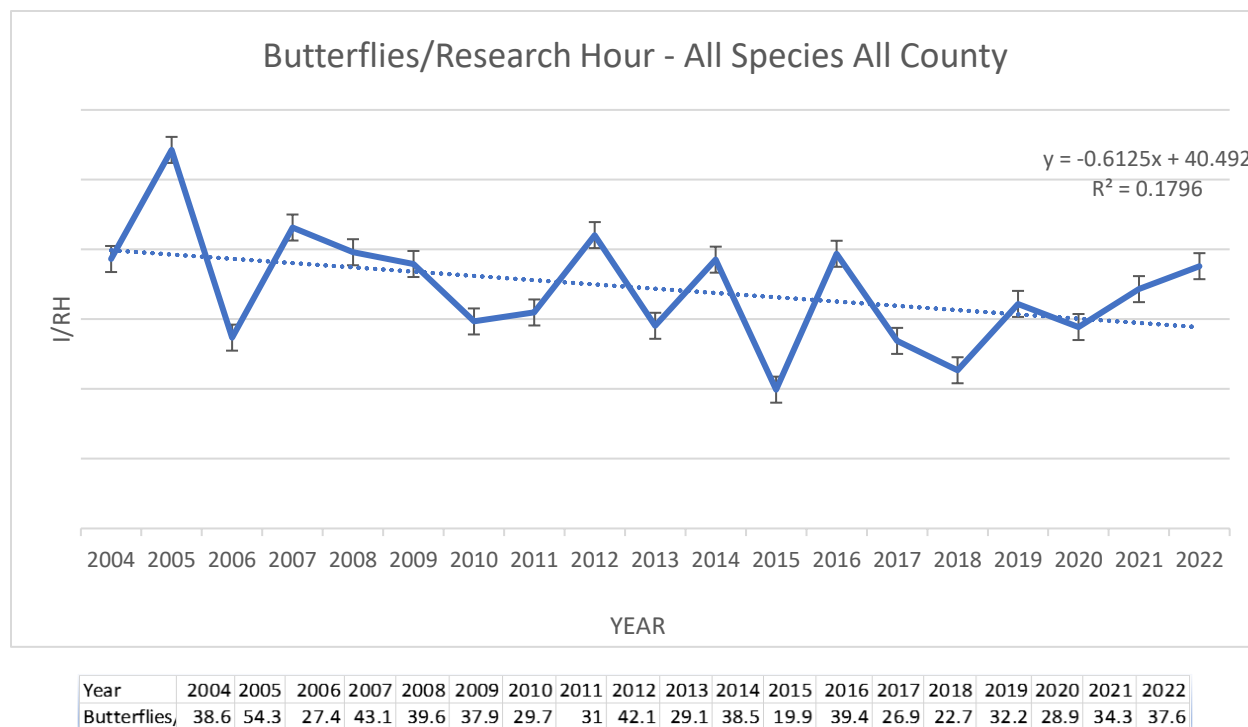
This is data produced by committed citizen scientists who have become knowledgeable lepidopterists. There is now data for the Boulder County to which we can proudly refer.

Descriptive narrative for each area noting butterflies, flight dates and special occurrences are in Section VII. Data for each area, including Caribou transect and meanderings are combined and follow in Section X.

## VI. Trends

When considering all the Individual Butterflies per Research Hour (I/RH) counted in seven of the Open Space areas in 2004-2022 there is a continuing trend downward. Daniel Ziskin has analyzed collectively all the information for each species and within each surveyed Open Space. The following is the resulting chart:

**All Species in All Open Spaces – Butterflies per Research Hour**



In 2004 if 42 I/RH were noted, then the trend by 2022 we expect to see 29 I/RH. The trend shows an annual loss is 1.3 % per year. Last year 2021 the trend was downward at about 2% per year. Some reasons are that the numbers of Individual butterflies (I) counted in the Sherwood Transect were many times higher than other years and the RH were half again as high as any other year. i.e., 2021 I/RH equaled 72 and 2022 the I/RH reached 74.5. Geer Watershed had about ½ of the I/RH recorded for 2021 following the fire, even though the RH were 29 in 2022 and 18 in 2021. Also, the I/RH were higher readings in Reynold's Ranch and Anne U. White than 2021. This trend is evident despite a high degree of interannual variability. The slope suggests that the Boulder County butterfly population is steadily declining by about 1.3%/year overall.



## VII. Narration for Each Open Space

### A. Southeast Grassland – Rock Creek

This area was visited only three times as the drought was taking a toll on the vegetation causing plants to be stunted and few flowers at the tip of plants. Cabbage Whites *Pieris rapae* were most numerous. On May 7 the Olympia Marbles *Euchloe olympia*, Clouded Sulphurs *Colias philodice*, Gorgone Checkerspots *Chlosyne gorgone*, and Field Crescents *Phyciodes pulchella* flew in small numbers. Two Anise Swallowtails *Papilio zelicaon* greeted us on the ridgetop of Swallowtail Hill. On July 14 the Common Wood-Nymphs *Cercyonis pegala* were flying among the dry grasses.

### B. Anne U. White Trail

The trail is heavily used by hikers and dogs, which despite heavy traffic is good habitat for butterflies. Fourteen species were seen on May 27: Four Papilio - Black Swallowtails *Papilio polyxenes*, one Anise Swallowtail, Western Tiger Swallowtails *P. rutulus* and Pale Swallowtails *P. eurymedon*. Black Swallowtails were seen in no other Open Space study areas. Echo Azure *Celastrina ladon sidara* and Silvery Blue *Glaucopsyche lygdamus* flew early this season, as expected, but with low numbers.

On July 27 ten species were flying, but with large numbers of Aphrodite Fritillaries *Speyeria aphrodite* and Uhler's Arctics *Oeneis uhleri*. Skippers were well represented by Peck's Skipper *Polites peckius*, Dun Skipper *Euphyes vestris* and the uncommon visitor Dusted Skipper *Atrytonopsis hianna*. On August 30 eleven species were noted even though there was a noticeable lack of blossoms.

### **C. Heil Valley Ranch – North Pointe, Red Gulch**

North Pointe was visited only once on May 16. A hike to the large pond basin showed no sign of water, but the Western Tailed-blues *Cupido amyntula* were numerous as were Mourning Cloaks *Nymphalis antiopa* and Common Ringlets *Coenonympha tullia ochracea*. Dusted Skippers and Juba Skippers *Hesperia juba* were noted. Large Marbles *Euchloe ausonides* were nectaring on the tall early mustards.

At the Red Gulch site on May 26, many Silvery Blues *Glaucopsyche lygdamus* and Melissa Blues *Plebejus melissa* were gathered at moist earth patches. The drought was obvious here because the plants were crisp under the feet and there was very little moisture in the creek bottom. Common Sootywings *Pholisora catullus*, Persius Duskywings *Epargyreus persius* and Dreamy Duskywings *E. icelus* flew among the ragweed and pigweed. By July 20 Hackberry Emperors *Asterocampa celtis* had freshly emerged and flew around our shoulders, landing on sleeves. Many were taking sap from the young ash tree nodes in the dry gulch. Common Wood-Nymphs were numerous and added their chocolate velvet to the drying grasses.

Plumely Canyon was not accessed because of fire damage, but on June 20, at least 22 Two-tailed Swallowtails, more than ever seen together, were observed by Richard Holmes. This occurred at the streamlet-service road crossing. Russet Skipperlings *Piruna pirus*, Painted Ladies *Vanessa cardui* and Weidemeyer's Admirals *Limenitis weidemeyerii* also came in for sips of water.

### **D. Heil Valley Ranch – Geer Watershed**

The Geer Watershed was visited thirteen times in 2022. Five species of *Papilio* made a good showing in May 29-July 10, Anise Swallowtails, Indra Swallowtails *P. indra*, Western Tiger Swallowtails, Pale Swallowtails, and the Two-tailed Swallowtails *P. multicaudata*. As has been found other years, the Cabbage Whites greatly outnumbered any other species. The Variegated Fritillaries *Euptoieta claudia* and Aphrodite Fritillaries were present all season and are known to fly into this area during summer months. Common Wood-Nymphs *Cercyonis pegala* and the Small Wood-Nymphs flew July 10 - August 9 second in numbers only to the Cabbage Whites. Field Crescents had two broods, one in May-June and the second emerging in August-September. Some Painted Ladies *Vanessa cardui* appeared all season, while the Common Checkered-skipper *Burnsius communis* were common in August and September. There were

few skippers identified except for the Taxiles Skippers *Poanes taxiles* and the Dun Skippers *Euphyes vestries* which appeared in small numbers.

The Calwood Fire blew across 600 acres of the Heil Ranch completely burning the Geer Watershed on October 17, 2020. Comparisons are being made about the butterfly populations and the residual effects because of the fire and meadow regrowth. Of the 102 species sighted by this team during 16 years of observations the following butterflies were chosen because of their large populations overall.

#### A. Individuals per Research Hour (I/RH) 2016-2022 Geer Watershed

Geer Watershed I/RH	2016	2017	2018	2019	2020	2021	2022	Mean Pre-fire	STDEV Pre -Fire	2021 Anomaly	2022 Anomaly
Cabbage White	7.4	2.8	5.3	0.5	0.7	40.0	25.6	3.34	2.99	12.28	7.46
Orange Sulphur	3.4	0.1	0.7	0.7	1.1	5.6	0.4	1.2	1.28	3.44	-0.62
Common Wood-Nymph	3.1	8.6	2.7	0.4	0.3	11.7	4.1	3.02	3.37	2.57	0.32
Common Checkered-skipper	0.7	0	0.3	0	0.1	10.8	1.2	0.22	0.29	35.87	3.32
Small Wood-Nymph	0	0	0.5	0.1	0	0	5.0	0.12	0.22	-0.55	22.51
Field Crescent	0	0	0.2	0.1	0.1	1.2	1.8	0.08	0.08	13.39	20.56
Variegated Fritillary	0.5	0	0.4	0.2	0.5	25.2	1.5	0.32	0.22	114.76	5.44

In this table, which is the subset of observed species, we define the years 2016 through 2020 as Pre-Fire and 2021 and 2022 as Post-Fire years. We calculate the mean and standard deviation of each species for the Pre-Fire years. We calculate the significance of the Post-Fire population relative to its Pre-Fire occurrences. See Table A.

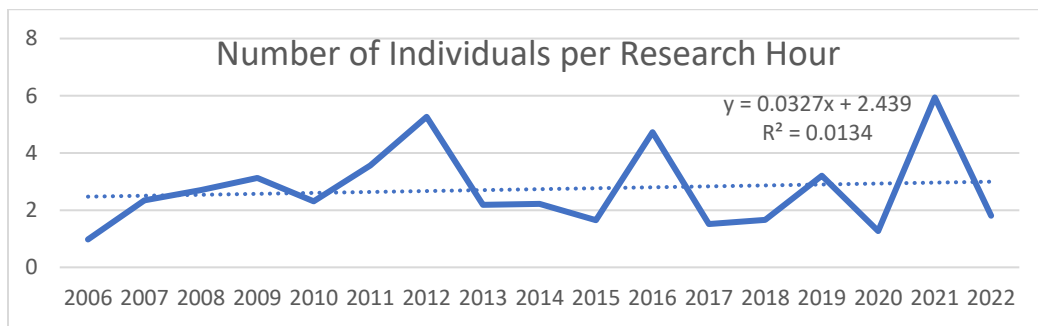
Based on these calculations, three patterns of response emerge. One pattern shows a peak in abundance in 2021, followed in 2022 by fewer butterflies than in 2021 but still significantly larger than the Pre-Fire population. This pattern includes the species Cabbage White, Common Checkered-skipper and Variegated Fritillary, color-coded yellow in the table. The second pattern shows either no-effect or modestly elevated population in 2021 and an even higher population in 2022. This pattern is seen in Small Wood Nymph and Field Crescent and are color coded pale green in the table. The third pattern shows a significant but smaller population boost in 2021 but

essentially no-effect in 2022. This pattern includes Orange Sulfur and Common Wood-Nymph and is colored pink in the table.

In the second year after the fire, none of these species included in this subset have shown a significant decline relative to their Pre-Fire abundance. One explanation is that fires have a beneficial impact on butterfly habitat by stimulating new plant growth or discouraging predators. Another explanation is that it is easier to see and identify butterflies in Post-Fire terrain. A third explanation is that the fire diminished the extent of available habitat and so we are seeing a concentration of the surviving population. Unfortunately, our survey is unable to discern between these or other possible explanations.

The trend of Individuals per Research hours is gradually increasing in the Geer Watershed, likely influenced by the large numbers of individuals in 2021. The trend of Individual Butterflies per Research Hour in the Geer Watershed shows a 1.4% increase annually over 17 years.

### B. Trend of Number of Individuals per Research Hour (I/RH) in Geer



Butterfly Individuals per Research Hour 2006-2022

### C. Species Richness in Geer Watershed

Heil-Geer Watershed	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
# Species each year	42	56	44	49	36	38	38	42	22	43	30	40	44	40	46	55

Numbers of species noted in Geer Watershed from 2007-2022

Species richness or the number of different species noted each year shows an increase in richness during 2022, only one-year 2008 had a similar number of species. All other years had a low of

30-49 species; in 2015 two years after the catastrophic flood of 2013 numbers of individuals remained low.

### **E. Walker Ranch – Meyers Homestead Trail**

During eleven visits May through August, Cabbage Whites were the most common flying through the entire area. Field Crescents and Common Ringlets were consistently seen. Pale Swallowtails flew throughout the season from early June into early August. California Tortoiseshells *Nymphalis californica* were welcome visitors in May. In June Western Green Hairstreaks *Callophrys affinis* were noticed, and in July Rocky Mountain Dotted-Blue *Euphilotes ancilla* flew near their host plants the sulfur flowers. Uhler's Arctics *Oeneis uhleri* were seen, but the expected biennial Chryxus Arctic *O. chryxus* was not observed this season at Walker.

On July 7 Rocky Mountain Parnassians *Parnassius smintheus* were observed. In late July a few blues, low in their usual numbers, flew beside the trail, namely Melissa Blues *Plebejus melissa* and Boisduval's Blues *P. icarioides*. Later in July and August, Small Wood-Nymphs *Cercyonis oetus* were as abundant as Cabbage Whites along the Homestead Trail. The activity of puddling usually obvious was seldom seen, generally because of the high temperatures and lack of rainfall.

### **Reynold's Ranch – Giggey Lake**

The area was visited only twice therefore there is not a good seasonal representation of butterflies. The area was dry, so we did not go into the North Bog. On June 22 the Common Ringlets and Common Alpines *Erebia epipsodea* were flying as were some unidentified blues. On August 11, the West Trail (hill west of the North Bog) supported many Small Wood-Nymphs *Cercyonis oetus*.

## **G. Caribou Ranch – Sherwood Transect, Bridge Meadow, Mud Lake**

**by Venice Kelly**

The first Sherwood Transect walk for 2022 was on April 19. The day was 11° C, sunny and windy. Very early tiny flowers were beginning to bloom, and butterflies had begun to fly. The usual Mourning Cloaks and Commas were seen along with a Brown Elfin.

April and May were mostly cloudy and chilly. Butterflies still flew but there were fewer individuals. A few Spring Whites were a first for the transect. Most days it took a while for the sun to get past the cloud cover to warm the air enough for butterflies to show themselves, then the activity would pick up with lots of territorial chasing.

There were few blooming flowers for nectaring because of the snowstorm on June 1, with temperatures in the teens affecting the butterflies and the plants. Most of the feeding and puddling activity was at the seep near the Conger Mine. One was a first-time visitor, the Mexican Cloudywing.

I walked Sherwood transect two days in a row (6/10 & 6/11) to see the difference between a sunny day with a temperature of 22 °C and little wind and the mostly cloudy days that followed with lots of wind and cooler temperatures that had become usual. Not surprisingly, there were more individuals flying and about the same number of species. Still not as many flowers as there had been other seasons but plenty of water at the seep for puddling. The Julia Orangetips were in good numbers, with fewer Large Marbles, and fewer blue butterflies.

The first Chryxus Arctic was seen on Sherwood transect, 6/16. This butterfly has a two-year life cycle, so it only flies every other year. The number of species did continue to increase as June progressed. Rocky Mountain Parnassians were plentiful in 2022 and seemed to have a longer flight period. Two Banded Checkered-skippers also had a good showing, along with Reakirt's Blues. Northern Checkerspots flew in great numbers towards the end of June and into July.

July had warmer temperatures during the mornings and more sun, but the clouds would roll in. The flowers were blooming abundantly due to the almost daily afternoon storms. Many butterfly species were flying in greater numbers. They had plenty of nectar sources. However, certain species that are usually present in fair numbers, were few or absent as were the Ruddy Coppers and Edith Coppers.

I saw the usual number of species during August but much lower numbers of individuals.

That said, Pine Whites were plentiful all along the Sherwood Road, the Bridge Meadow and some at Mud Lake. On August 11, the day was hot and dry with clouds moving in. Two Arachne Checkerspots were seen at Reynolds West (the hill west of North Bog), the first on this property. Two fresh Hedgerow Hairstreaks were also seen. In general, August numbers were about normal with high numbers of the Small Wood-Nymphs, and fair numbers of Hesperis fritillaries.

Butterfly numbers dropped off in September, however a few still made an appearance. The usual fall butterflies, such as Hoary and Green Commas, were hard to find. Woodland Skippers were flying and a few Western Branded Skippers as well. September 26 was supposedly my last Sherwood transect walk. There were eight Hoary Commas and one newly sighted California Tortoiseshell puddling at the seep. One final walk on October 9 three Marine Blues *Leptotes marina*, were found for a second year on the transect. It is unusual for this species to be found at this elevation.

Overall, 2022 was a good year for butterflies at Caribou Ranch. Some species were very abundant, others not so much. I was surprised that Orange Sulphur numbers were very low. Dainty Sulphurs, American Ladies, and Two-tailed Swallowtails were not seen. The weather, especially the intense hailstorms and the June first snowstorm, influenced the numbers. Every year is different and that's what makes butterflying fun. **By Venice Kelly**

## **VIII. Conclusion**

The Butterfly Inventory was completed by the following research volunteers in 2022: John Barr, Amy Chu, Janet Chu, Larry Crowley, Chris Friedman, Linda Hardesty, Sue Hirschfeld, Richard Holmes, Venice Kelly, Ethan Stoner, and Wynne Whyman for the 19<sup>th</sup> consecutive year within Boulder County Open Space properties. 164 Research Hours were spent on the land while 411 Volunteer Hours were performed by the team members for the County.

The numbers of individuals and species of butterflies were recorded within the following areas: Southeast Grassland Buffer, Anne U. White Trail, Heil Valley Ranch, Walker Ranch, Reynolds Ranch, Caribou Ranch, and Mud Lake. Of the 202 registered butterfly species in Boulder County, the Open Space inventory records 130 species from 2004 through 2022. Noted for the

first time in the Open Spaces were the Mexican Cloudywing *Thorybes mexicana* and Marine Blue in Caribou, and the Western Pygmy-Blue *Brephidium exile* in Heil Ranch Geer Watershed (See V. D).

Special attention was paid to the meadow and streamlets in the Geer Watershed, Heil Ranch by Sue Hirschfeld, Chris Friedman, and Ethan Stoner because this followed the October 2020 Calwood Fire. A greater number of individuals was counted in 2021-2022 than in the previous 10 years in the Geer Watershed.

The Sherwood Transect in the Caribou Ranch area was surveyed 31 times between April 19 and September 26, 2021, by Venice Kelly. This transect was completed for the fourth consecutive year. Venice has excellent photographic records which will add to archive of references for further studies.

Of special note in 2022 was the numerous emergences of certain species. The Western Pygmy-Blue was noted in Heil for the first time and found commonly in several other Boulder County areas which seem to have many host saltbushes and Russian thistles. Red Gulch had about 47 Hackberry Emperors emerge on July 20. In the Caribou area it was large numbers of Julia Orangetips, Northern Checkerspots, Purple Coppers, Hoary Elfins.

The biennial Chryxus Arctics and Parnassians made the usual showing in Caribou as did the Common Wood Nymphs in Heil and the Southeast Grassland. Small Wood Nymphs were numerous in Walker. Both species flew together in Geer Watershed which had a good number of Pale Swallowtails, Boisduval's Blues and Silvery Blues. Field Crescents were numerous in Geer and Walker. Anne U. White had many Aphrodite Fritillaries, Uhler's Arctics. Peck's Skippers, Dun Skippers, and Dusted Skippers.

There was a late, wet, and cold spring, which may have moved the emergence of certain species, especially the blues to later or an absence as adults. On the other hand, August was extremely dry and hot.

Photos and locations of rare butterflies as noted by the Colorado Natural Heritage Program Watch List were sought: Arogos Skippers *Atrytone arogos* seen June 23 and July 20, 2022, in Heil Ranch. A dozen Dusted Skippers *Atrytonopsis hianna* were seen July 27 in Anne U. White. Neither the Hops Azure *Celastrina humulus*, Moss' Elfin *Callophrys mossii schryveri*, or Ottoo



Skipper *Hesperia ottoe* were seen in the Open Spaces this season but were reported previous years.

Butterfly inventories should continue as they have been shown to consistently provide valuable data used for education, conservation, recreation, and land resource management.

## IX. References

2021. Chu, Janet R, and S. Hirschfeld and V. Kelly. Lepidoptera of North America 18-  
Butterfly Inventories within Boulder County Open Spaces, Boulder, Colorado.  
C.P. Gillette Museum of Arthropod Diversity, Department of Agricultural  
Biology, Colorado State University, Fort Collins, Colorado. ISSN 1084-8819
2020. Chu, Janet R., and Stephen R. Jones. Butterflies of the Colorado Front Range – A  
Photographic Guide to 100 Species. Second Edition. Boulder County Nature  
Association, Boulder, Colorado.
2020. Chu, Janet. Butterflies of Boulder County Open Spaces, Boulder, CO. 17 years of  
Inventories. Self-published.
2017. Chu, Janet, and Ziskin D. 2017. Inventories Producing Trends of Butterfly Populations  
Within Communities in Certain Boulder County Open Spaces. Boulder, Colorado. Self-  
Published
2021. Pelham, Jonathan P. A Catalogue of the Butterflies of the United States and Canada.  
The Lepidoptera Research Foundation.
1993. Pollard, E., and T. J. Yates. Beverly Hills, California.

## On-line References

Butterflies of America < [www.butterfliesofamerica.com/US-Can-Cat](http://www.butterfliesofamerica.com/US-Can-Cat)>

Butterflies of the Colorado Front Range < [www.coloradofrontrangebutterflies.com](http://www.coloradofrontrangebutterflies.com)>

Boulder County Open Space

< [www.bouldercounty.gov/open-space/education/research/](http://www.bouldercounty.gov/open-space/education/research/)

Butterflies and Moths of North America. < [www.butterfliesandmoths.org](http://www.butterfliesandmoths.org)>

North American Butterfly Association <[www.naba.org](http://www.naba.org)>

## **X. Data Tables**

Every table continues to preserve the name of each species that has been found in that Open Space area. It is important to carry the species sightings from one year to the next, even if the individuals had not been observed in 2022 because they might be observed again. These Data Tables contain a compilation of information from both the Inventory Method and Transect Method. In the narrative details following each data set the Transect method in Sherwood is described since there were no other transects visited in 2022.

## A. Southeast Buffer – Grassland – Rock Creek

Southeast Buffer	2022	5/7	5/7	6/27	7/14	Total
<i>Papilio polyxenes</i>	Black Swallowtail					
<i>P. zelicaon</i>	Anise Swallowtail	2				2
<i>P. rutulus</i>	W. Tiger Swallowtail					
<i>P. multicaudata</i>	Two-tailed Swallowtail					
yellow swallowtail sp.				3	1	4
<i>Pontia protodice</i>	Checkered White			1	1	2
<i>P. occidentalis</i>	Western White					
<i>Pieris rapae</i>	Cabbage White	4	1	1	30	36
<i>Euchloe olympia</i>	Olympia Marble	6	1			7
<i>E. ausonides</i>	Large Marble					
white sp.			3	11		14
<i>Colias philodice</i>	Clouded Sulphur	7		3	8	18
<i>C. eurytheme</i>	Orange Sulphur	2		1		3
sulphur sp.			4	1	6	11
<i>Zerene cesonia</i>	Southern Dogface					
<i>Abaeis nicippe</i>	Sleepy Orange					
<i>Kricogonia lyside</i>	Lyside Sulphur					
<i>Nathalis iole</i>	Dainty Sulphur					
<i>Lycaena dione</i>	Gray Copper					
<i>Strymon melinus</i>	Gray Hairstreak	2				2
<i>Cupido amyntula</i>	W. Tailed-blue					
<i>Glaucopsyche lygdamus</i>	Silvery Blue	4	1			5
<i>Euphilotes ancilla</i>	Rocky Mtn. Dotted-Blue					
<i>Echinargus isola</i>	Reakirt's Blue					
<i>Plebejus melissa</i>	Melissa Blue					
blue sp.		6				6
<i>Danaus plexippus</i>	Monarch					
<i>Agraulis vanilla</i>	Gulf Fritillary					
<i>Euptoieta claudia</i>	Variegated Fritillary			3		3
<i>Argynnis aphrodite</i>	Aphrodite Fritillary			1		1
<i>A. edwardsii</i>	Edwards' Fritillary					
<i>Chlosyne fulvia</i>	Fulvia Checkerspot					
<i>C. gorgone</i>	Gorgone Checkerspot	8				8
<i>Phyciodes tharos</i>	Pearl Crescent					
<i>P. pulchella</i>	Field Crescent	7	1		1	9
checkersp/crescent sp.			14		2	16
<i>Aglais milberti</i>	Milbert's Tortoiseshell					
<i>Nymphalis antiopa</i>	Mourning Cloak					
* <i>Vanessa atalanta</i>	Red Admiral				1	1
<i>Vanessa cardui</i>	Painted Lady					
<i>Limenitis weidemeyerii</i>	Weidemeyer's Admiral					
<i>Coenonympha tullia ochracea</i>	Common Ringlet					
<i>Cercyonis pegala</i>	Common Wood Nymph				18	18
<i>Erynnis afranius</i>	Afranius Duskywing					
<i>E. persius</i>	Persius Duskywing					
duskywing sp.		1				1
<i>Burnsius communis</i>	Common Checkered-skipper			3		3
<i>Pyrgus scriptura</i>	Small Checkered-skipper					
<i>Pholisora catullus</i>	Common Sootywing					
<i>Hesperia uncas</i>	Uncas Skipper			4		4
<i>H. leonardus</i>	Ottoe Skipper					

## Southeast Buffer

Date, Conditions	Location within	Butterfly Activity	Blossoming Plants	Researcher
5/7/2022 9:30-11:40 am 25 °C, Clear, variable wind	Southeast Buffer Eric walked perimeter of Swallowtail Ridge, Wynne and Jan on top - Chris, Linda -Rock Creek	Nectaring on Mnium, flying	Many species but few plants. All stunted	Chris Friedman Eric Olson Jan Chu Linda Hardesty Wynne Whyman
5/7/2022 9:30-11:40 am	Lower Colton Trail			Chris Friedman Linda Hardesty
6/27/2022 8:00-12:00 pm 18-26°C	Coalton Trail west, then south to water tank 3.5 miles			Bev Baker Wynne Whyman
7/14/2022 8:00 -9:30 a.m. 23-25°C 90% clear, slight breeze	Rock Creek, West from Coalton Trail	Few scattered flying	Very dry grasses, few shortened blossoms, Found an oxbow in the creek with water.	Bev Postmus Chris Friedman Jan Chu Jean Morgan Linda Hardesty

9.5 Research hours

29.5 Volunteer Hours Total for Boulder County

Southeast Buffer	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
# Species identified during the year	25	20	21	24	19	18	20	15	23	13	16	18	12	17	16	17
Cumulative # Species 2007-2022	21	23	33	37	41	44	44	44	46	46	47	47	47	47	47	48
Research Hours on Site	5	21	9	7.7	11.5	9	12	8	12	4.5	8	9	5.5	6.5	3.5	9.5
# Individual Butterflies Counted	256	373	353	443	160	227	169	178	294	121	119	271	39	57	478	175
# Individuals / Research Hour	51	18	39	40	14	25	14	22	24.5	27	15	30	7	8.8	139	18
# Species / Research Hour	5	0.9	2	3	2	2	1.6	2	2	3	2	2	2	2.6	4.2	1.8

## B. Anne U. White Trail

Anne U. White Trail	2022	5/27	7/27	8/30	Total
<i>Parnassius smintheus</i>	Rocky Mountain Parnassian				
<i>Papilio polyxenes</i>	Black Swallowtail	2			2
<i>P. zelicaon</i>	Anise Swallowtail	1			1
<i>P. indra</i>	Indra Swallowtail				
<i>P. rutulus</i>	W. Tiger Swallowtail	4		1	5
<i>P. eurymedon</i>	Pale Swallowtail	4			4
<i>P. multicaudata</i>	Two-tailed Swallowtail		7		7
yellow swallowtail sp.			8	2	10
<i>Pontia protodice</i>	Checkered White				
<i>P. occidentalis</i>	Western White				
<i>P. sisymbrii</i>	Spring White				
<i>Pieris rapae</i>	Cabbage White	3	7	7	17
<i>Euchloe ausonides</i>	Large Marble	2			2
<i>E. olympia</i>	Olympia Marble				
white sp.		14		7	21
<i>Anthocharis sara julia</i>	Julia Orangetip	3			3
<i>Colias philodice</i>	Clouded Sulphur				
<i>C. eurytheme</i>	Orange Sulphur		1		1
<i>Nathalis iole</i>	Dainty Sulphur				
<i>Callophrys affinis homoperplexa</i>	W. Green (Bramble) Hairstreak				
<i>C. sheridanii</i>	White-lined Green Hairstreak				
<i>C. gryneus</i>	Siva Juniper Hairstreak				
<i>C. mossii</i>	Moss's Elfin				
<i>C. polios</i>	Hoary Elfin				
<i>C. eryphon</i>	Western Pine Elfin				
<i>Satyrrium titus</i>	Coral Hairstreak				
<i>Strymon melinus</i>	Gray Hairstreak			1	1
<i>Cupido amyntula</i>	Western Tailed-Blue		1		1
<i>Celastrina ladon sidara</i>	Echo Azure	1			1
<i>C. l. lucia</i>	Lucia form - Echo Azure				
<i>Glaucopsyche piasus</i>	Arrowhead Blue				
<i>G. lygdamus</i>	Silvery Blue	2			2
<i>Euphilotes ancilla</i>	Rocky Mountain Dotted-Blue				
<i>Echinargus isola</i>	Reakirt's Blue				
<i>Plebejus saepiolus</i>	Greenish Blue				
<i>P. melissa</i>	Melissa Blue	1		2	3
<i>P. icarioides</i>	Boisduval's Blue				
<i>P. lupini lutzi</i>	Lupine Blue				
<i>P. glandon rustica</i>	Arctic Blue				
blue sp.		8	3		11
<i>Apodemia nais</i>	Nais Metalmark				
<i>Danaus plexippus</i>	Monarch				
<i>Libytheana carinenta</i>	American Snout				
<i>Euptoieta claudia</i>	Variegated Fritillary				
<i>Speyeria aphrodite</i>	Aphrodite Fritillary		78	16	94
<i>S. edwardsii</i>	Edwards' Fritillary				
<i>S. coronis</i>	Coronis Fritillary				
<i>S. callippe</i>	Callippe Fritillary				
<i>S. hesperis</i>	Northwestern Fritillary				
<i>S. mormonia</i>	Mormon Fritillary				
fritillary sp.		2	16	36	54

Anne U. White Trail	2022	5/27	7/27	8/30	Total
<i>Chlosyne gorgone</i>	Gorgone Checkerspot				
<i>C. palla</i>	Northern Checkerspot				
<i>Phyciodes pallida</i>	Pallid (Pale) Crescent				
<i>P. tharos</i>	Pearl Crescent	1			1
<i>P. cocyta</i>	Northern Crescent				
<i>P. pulchella</i>	Field Crescent	3			3
<i>Polygonia gracilis</i>	Hoary Comma	1		2	3
<i>Polygonia satyrus</i>	Satyr Comma				
comma sp.					
<i>Junonia coenia</i>	Common Buckeye				
<i>Nymphalis antiopa</i>	Milbert's Tortoiseshell				
<i>N. californica</i>	California Tortoiseshell				
<i>N. antiopa</i>	Mourning Cloak				
<i>Vanessa atalanta</i>	Red Admiral				
<i>V. cardui</i>	Painted Lady		1		1
<i>V. virginiensis</i>	American Lady				
<i>Limenitis weidemeyerii</i>	Weidemeyer's Admiral				
<i>Coenonympha tullia ochracea</i>	Common Ringlet		4	2	6
<i>Cercyonis pegala</i>	Common Wood-Nymph	1			1
<i>C. oetus</i>	Small Wood-Nymph		2		2
<i>Oeneis uhleri</i>	Uhler's Arctic		38	4	42
<i>Epargyreus clarus</i>	Silver-spotted Skipper				
<i>Pholisora catullus</i>	Common Sootywing		3		3
<i>Erynnis persius</i>	Pacuvius Duskywing				
<i>E. persius</i>	Persius Duskywing				
<i>E. icelus</i>	Dreamy Duskywing				
<i>Burnsius communis</i>	Common Checkered-Skipper				
<i>Piruna pirus</i>	Russet Skipperling				
<i>Hesperia juba</i>	Juba Skipper				
<i>H. colorado</i>	W. Branded Skipper				
<i>H. viridis</i>	Green Skipper			5	5
<i>Polites themistocles</i>	Tawny-edged Skipper				
<i>P. mystic</i>	Long Dash				
<i>Ochlodes sylvanoides</i>	Woodland Skipper				
<i>Polites peckius</i>	Peck's Skipper		11	13	24
<i>Poanes taxiles</i>	Taxiles Skipper				
<i>Euphyes vestris</i>	Dun Skipper		10		10
<i>Atrytonopsis hianna</i>	Dusted Skipper		12		12
skipper sp.					
			17	66	83

Date, Conditions	Location	Butterfly Activity	Blossoming Plants	Researcher
5/27/2022 9:30-11:30 am High overcast – partly sunny – to 28 °C	Parking lot to 3 <sup>rd</sup> stream crossing		Boulder Raspberry RM milkvetch Canada violet Candytuft Chiming bells Geranium Nuttall's violet Oregon grape Penstemon puccoon Purple Erigeron Shooting stars Spring beauty	Cathy Cook

7/27/2022 8:00-12:30 pm 18-27 °C clear, none to slight wind	<b>Anne U. White</b> Parking lot to upper trail	Frits flying early in day because of overall heat		Jean Morgan Chris Feldman Sue Hirschfeld Jan Chu Linda Hardesty Cathy Comstock
8/30/2022 9:25-12:10 pm 22-24 °C Sunny, clear, little wind	Parking lot to beginning of upper trail	One white flying in tops of pines?		Chris Friedman Linda Hardesty Jean Morgan Jan Chu

9.5 Research hours    32 Volunteer hours for the County

### B. Anne U. White Trail (Concluded)

<b>Anne U. White Trail</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>*</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
# Species Identified during the year 2022	44	45	35	31	47	50	29	17	10		24	32	23	4	33	28
# Research Hours on Site	9.5	16	10	10.5	19.5	13.5	11	6	3		3.5	18.5	10	1	15	9.5
# Individual Butterflies Counted	366	536	217	112	773	509	334	105	33		96	319	216	22	215	240
# Individuals / Research Hour	38.5	33.5	21.7	10.7	39.6	37.7	30	17.5	11		27.4	24	21.6	22	14	25
# Species / Research Hour	4.6	2.8	3.5	3	2.4	3.7	2.6	2.8	3.3		6.8	1.7	2.2	4	2.7	2.9
Total # species 2007-2022															83	83

**\*2016** No count was made because of after flood conditions.

### C. Heil Valley Ranch - North Pointe, Red Gulch

North Pointe, Red Gulch, Heil Valley Ranch	2022	5/16	5/26	6/20	6/23	7/20	7/30	Total
<i>Parnassius smintheus</i>	Rocky Mountain Parnassian							
<i>Papilio polyxenes</i>	Black Swallowtail							
<i>P. zelicaon</i>	Anise Swallowtail	1	1					2
<i>P. indra</i>	Indra Swallowtail			3	2			5
<i>P. rutulus</i>	Western Tiger Swallowtail				5	2		7
<i>P. eurymedon</i>	Pale Swallowtail			6	4			10
<i>P. multicaudata</i>	Two-tailed Swallowtail	4		22+	6			32
swallowtail yel.		6	5			2		13
swallowtail black			4				1	5
<i>Neophasia menapia</i>	Pine White							
<i>Pontia protodice</i>	Checkered White							
<i>P. occidentalis</i>	Western White						1	1
<i>P. sisymbrii</i>	Spring White							
<i>Pieris rapae</i>	Cabbage White		1	30	12	5	6	54
white sp.		41	11					52
<i>Euchloe ausonides</i>	Large Marble	15	4					19
<i>E. olympia</i>	Olympia Marble							
<i>Anthocharis sara julia</i>	Julia Orangetip							
<i>Colias philodice</i>	Clouded Sulphur							
Alba form								
sulphur sp.		5			3			8
<i>C. eurytheme</i>	Orange Sulphur							
<i>C. alexandra</i>	Queen Alexandra's Sulphur				1			1
<i>Nathalis iole</i>	Dainty Sulphur						2	2
<i>*Zerene cesonia</i>	Southern Dogface						2ph	2
sulphur sp.						3		3
<i>Lycaena dione</i>	Gray Copper					6		6
<i>Lycaena heteronea</i>	Blue Copper							
<i>L. helloides</i>	Purplish Copper		2					2
<i>Callophrys affinis</i>	Western Green Hairstreak							
<i>C. gryneus</i>	Siva Juniper Hairstreak							
<i>C. sheridanii</i>	White-lined Green Hairstreak							
<i>C. eryphon</i>	Western Pine Elfin							
elfin sp.								
<i>Satyrrium behrii</i>	Behr's Hairstreak							
<i>S. titus</i>	Coral Hairstreak							
<i>Strymon melinus</i>	Gray Hairstreak					1		1
<i>Leptotes marina</i>	Marine Blue							
<i>Cupido amyntula</i>	Western Tailed-blue	18		1				19
<i>Celastrina echo sidara</i>	Echo Azure							
<i>Glaucopsyche piasus</i>	Arrowhead Blue		1	4	1			6
<i>G. lygdamus</i>	Silvery Blue	4	18					22
<i>Euphilotes ancilla</i>	Rocky Mountain Dotted-blue		5	1				6
<i>Euphilotes ancilla barnesi</i>	ssp. RM Dotted-blue ID -Opler							
<i>Echinargus isola</i>	Reakirt's Blue			2	1		2	5
<i>Plebejus melissa</i>	Melissa Blue	3	48	3		27	3	84
<i>P. icarioides</i>	Boisduval's Blue		4	2				6
<i>P. lupini lutzi</i>	Lupine Blue							
<i>P. glandon rustica</i>	Arctic Blue							
blue sp.		52	85	3		13		153
<i>Libytheana carinenta</i>	American Snout							
<i>Danaus plexippus</i>	Monarch							



North Pointe, Red Gulch, Heil Valley Ranch		5/16	5/26	6/20	6/23	7/20	7/30	Total
<i>Limenitis archippus</i>	Viceroy			3				3
<i>Euptoieta claudia</i>	Variegated Fritillary			1		3	2	6
<i>Speyeria aphrodite</i>	Aphrodite Fritillary		2			3		5
<i>S. edwardsii</i>	Edwards' Fritillary							
<i>S. coronis</i>	Coronis Fritillary		10					10
<i>S. callippe</i>	Callippe Fritillary							
<i>S. hesperis</i>	Northwestern Fritillary							
<i>S. mormonia</i>	Mormon Fritillary							
fritillary sp.		2	12	4	3	11	1	33
<i>Euphydryas anicia</i>	Variable Checkerspot							
<i>Chlosyne gorgone</i>	Gorgone Checkerspot	2	1					3
crescent/checkerspot		10						10
<i>C. nycteis</i>	Silvery Checkerspot							
<i>C. palla</i>	Northern Checkerspot							
<i>Phyciodes pallida</i>	Pallid (Pale) Crescent							
<i>P. tharos</i>	Pearl Crescent	1	1ph					2
<i>P. cocyta</i>	Northern Crescent							
<i>P. pulchella</i>	Field Crescent	3	5					8
	crescent sp.		7					7
	comma sp.		1					1
<i>Polygonia satyrus</i>	Satyr Comma							
	Green Comma			1				1
<i>P. gracilis</i>	Hoary Comma			2	2			4
<i>Nymphalis antiopa</i>	Mourning Cloak	14	3					17
<i>Junonia coenia</i>	Buckeye, Common							
<i>N. californica</i>	California Tortoiseshell							
<i>Vanessa atalanta</i>	Red Admiral				1			1
<i>Aglaia milberti</i>	Milbert's Tortoiseshell							
<i>V. cardui</i>	Painted Lady			3	1			4
<i>V. virginiensis</i>	American Lady							
<i>Limenitis weidemeyerii</i>	Weidemeyer's Admiral			2				2
* <i>Limenitis archippus</i>	Viceroy				1			1
<i>Asterocampa celtis</i>	Hackberry Emperor					47		47
<i>Coenonympha tullia ochracea</i>	Ochre (Common) Ringlet	15	33					48
<i>Cercyonis pegala</i>	Common Wood-Nymph					164		164
<i>C. oetus</i>	Small Wood-Nymph							
wood nymph sp.								
<i>Erebia epipsodea</i>	Common Alpine							
<i>Epargyreus clarus</i>	Silver-spotted Skipper		3					4
<i>E. pacuvius</i>	Pacuvius Duskywing			1				1
<i>E. persius</i>	Persius Duskywing	2	3				1	6
<i>E. icelus</i>	Dreamy Duskywing		3					3
duskywing sp			2				2	4
<i>Burnsius communis</i>	Common Checkered-skipper				1	5	5	11
<i>Pholisora catullus</i>	Common Sootywing		3	1			1	5
<i>Piruna pirus</i>	Russet Skipperling			2	2			4
<i>Oarisma garita</i>	Garita Skipperling							
<i>Hesperia juba</i>	Juba Skipper	1	3					4
<i>H. colorado</i>	W. Branded Skipper							
<i>H. pahaska</i>	Pahaska Skipper							
<i>H. viridis</i>	Green Skipper							
<i>H. nevada</i>	Nevada Skipper							

<b>North Pointe, Red Gulch, Heil Valley Ranch</b>		<b>5/16</b>	<b>5/26</b>	<b>6/20</b>	<b>6/23</b>	<b>7/20</b>	<b>7/30</b>	<b>Total</b>
<i>Polites themistocles</i>	Tawny-Edged Skipper							
<i>P. mystic</i>	Long Dash							
<i>Atrytone arogos</i>	Arogos Skipper				2ph	4		6
<i>Ochlodes sylvanoides</i>	Woodland Skipper							
<i>Poanes taxiles</i>	Taxiles Skipper							
<i>Euphyes vestries</i>	Dun Skipper			3	1	3		7
<i>Atrytonopsis hianna</i>	Dusted Skipper	4						4
skipper sp.		4	3					7

Date, Conditions	Location	Butterfly Behavior	Blossoming Plants	Researchers
5/16/2022 9:30-12:15 pm 20° - 25 °C, Sunny sky, 0-5mph wind  3 hours	<b>North Pointe:</b> Researchers just uphill to hairpin turn, Chris, Linda to pond.	Surprise blues and others flying. Very dry. Pond empty.	FEW blossoms- Penstemon, one- sided Wild plums	Cathy Comstock Cathy Cook Chris Friedman Dan Fosco Jan Chu Jean McPherson Jean Morgan Joe Krieg Joe Krieg John Barr Linda Hardesty
5/26/2022 9:00-12:00 pm 20-25 °C, clear, no wind	<b>Red Gulch</b> (Through Ron LaFollette's)	Many flying. Blues at any moist earth patch.	Very few	Amy Chu Chris Friedman Ethan Stoner Jan Chu John Barr Linda Hardesty Richard Holmes Sue Hirschfeld
6/20/2022	Outflow from Plumely, couth end of parking lot			Joe Krieg
6/20/2022 10:00-12:00 pm 22-24°C, no wind	Water crossing roadway	Many constantly flitting		Richard Holmes
7/20/2022 7:45-10:15 am 22-27 °C, Clear no wind to light breeze	<b>Red Gulch</b> Very early morning to avoid extreme heat.	Hackberries repeatedly landed on sleeves, hat; clustered on ash sapling trunk. Nymphs everywhere.		Chris Friedman Jan Chu Jean Morgan Sue Hirschfeld
7/30/2022 10:40-11:50 am 26 °C, Clear, sunny	<b>Wapiti Trail</b>			Chris Friedman

12.5 Research Hours on site 25 Volunteer Hours for Boulder County

### C. Heil Valley Ranch- North Pointe, Red Gulch (Concluded)

Years of Counts in Heil North	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
# of Species Identified During 2021 in Heil-North	34	45	41	40	33	24	30	50	38	31	33	50	35	32	31	48
Cumulative # Species 2007-2021 Sighted in Heil-North	50	62	77	81	81	85	86	89	90	91	91	92	93	93	93	95
Research Hours on Site	8	17	12.5	11.5	11.5	6.5	12	27	32	13	7.5	13.5	12	8	8	12.5
# Individual Butterflies Counted 2021	579	654	488	429	272	188	402	1077	508	246	204	442	359	298	675	940
# Individuals / Research Hour	72	38	39	37	24	29	36	40	16	19	27	33	29	37	84	75
# Species / Research Hour	4	2.6	3.3	3.4	2.9	3.6	2.5	1.9	1.2	2.4	4.4	3.7	2.9	4.7	3.9	3.8

## D. Heil Valley-Geer Watershed

Heil Valley Geer Watershed		2022	5/29	6/11	6/12	7/10	7/22	7/24	7/25	7/30	7/31	8/1	8/5	8/9	8/16	Total
<i>Papilio polyxenes</i>	Black Swallowtail															0
<i>P. zelicaon</i>	Anise Swallowtail			2	2	1										5
<i>P. indra</i>	Indra Swallowtail		3	3	2											8
<i>P. rutulus</i>	Western Tiger Swallowtail		1?		3		4		4	3		1	1			16
<i>P. eurymedon</i>	Pale Swallowtail		6	7	6	9										28
<i>P. multicaudata</i>	Two-tailed Swallowtail				1	8										9
swallowtail yel sp.			4	6		5		3			1			1		20
swallowtail dark sp.			1											1		2
<i>Neophasia menapia</i>	Pine White															0
<i>Pontia sisymbrii</i>	Spring White															0
<i>P. protodice</i>	Checkered White					4								1	2	7
<i>P. occidentalis</i>	Western White															0
<i>Pieris rapae</i>	Cabbage White		20	4	7	34 0	22	17	42	38	43	3 1	3 7	1 3	28	74 2
<i>P. marginalis</i>	Margined White															0
<i>Euchloe ausonides</i>	Large Marble			2	1		2									5
<i>E. olympia</i>	Olympia Marble															0
<i>Anthocharis sara julia</i>	Julia Orangetip															0
white sp.			11	17	12		4		6	6		2	3		6	67
<i>Colias philodice</i>	Clouded Sulphur					5				1				3		9
<i>C. eurytheme</i>	Orange Sulphur					7		2			1			1	2	13
<i>C. alexandra</i>	Queen Alexandra's Sulphur						3									3
<i>C. cesonia</i>	Southern Dogface															0
<i>Eurema mexicana</i>	Mexican Sulphur															0
<i>Nathalis iole</i>	Dainty Sulphur									1			1			2
sulphur sp.			1	1		7					1			2	1	13
<i>Lycaena dione</i>	Gray Copper															0
<i>L. heteronea</i>	Blue Copper						1		1							2
<i>Tharsalea hyllus</i>	Bronze Copper															0

<b>Heil Valley Geer Watershed</b>	<b>2022</b>	<b>5/ 29</b>	<b>6/ 11</b>	<b>6/ 12</b>	<b>7/ 10</b>	<b>7/ 22</b>	<b>7/ 24</b>	<b>7/ 25</b>	<b>7/ 30</b>	<b>7/ 31</b>	<b>8 / 1</b>	<b>8 / 5</b>	<b>8/ 9</b>	<b>8/ 16</b>	<b>To tal</b>
<i>Lycaena. helloides</i>	Purplish Copper	3	4				1						1		9
<i>Callophrys affinis homoperplexa</i>	Western Green Hairstreak														0
<i>C. gryneus</i>	Siva Juniper Hairstreak														0
<i>C. sheridanii</i>	White-lined Green Hairstreak														0
<i>C. augustinus</i>	Brown Elfin														0
<i>C. eryphon</i>	Western Pine Elfin														0
elfin sp.															0
<i>Satyrium titus</i>	Coral Hairstreak														0
<i>S. liparops</i>	Striped Hairstreak														0
<i>S. saepium</i>	Hedgerow Hairstreak														0
<i>Strymon melinus</i>	Gray Hairstreak				1									2	3
hairstreak sp.	hairstreak sp.												1		1
<i>Leptotes marina</i>	Marine Blue														
<i>*Brephidium exile</i>	Western Pygmy- Blue													7	7
<i>Cupido amyntula</i>	Western Tailed- Blue	11	3												14
<i>Celastrina echo sidara</i>	Echo Azure														0
<i>C. echo lucia</i>	“ Lucia type														0
<i>Glaucopsyche piasus</i>	Arrowhead Blue	1			1										2
<i>G. lygdamus</i>	Silvery Blue	12	5		1										18
<i>Euphilotes ancilla</i>	Rocky Mountain Dotted-Blue			1	4										5
<i>Echinargus isola</i>	Reakirt's Blue				2		1						3		6
<i>Plebejus melissa</i>	Melissa Blue	3	2	1	1	1									8
<i>P. saepiolus</i>	Greenish Blue	2													2
<i>P. icarioides</i>	Boisduval's Blue	1	6	7		4		3	1		1				23
<i>P. lupini lutzi</i>	Lupine Blue														0
<i>P. glandon rustica</i>	Arctic Blue														0
blue sp.		25	23	18	5	7		2	4		2	3	3	3	95
<i>Danaus plexippus</i>	Monarch		3		1										4
<i>Apodemia nais</i>	Nais Metalmark														0
<i>Euptoieta claudia</i>	Variegated Fritillary				16	4	1	9	6	1		3		2	42
<i>Speyeria aphrodite</i>	Aphrodite Fritillary		2		2	2	1	1	1					11	20
<i>S. edwardsii</i>	Edward's Fritillary														0

<b>Heil Valley Geer Watershed</b>	<b>2022</b>	<b>5/ 29</b>	<b>6/ 11</b>	<b>6/ 12</b>	<b>7/ 10</b>	<b>7/ 22</b>	<b>7/ 24</b>	<b>7/ 25</b>	<b>7/ 30</b>	<b>7/ 31</b>	<b>8 / 1</b>	<b>8 / 5</b>	<b>8/ 9</b>	<b>8/ 16</b>	<b>To tal</b>
<i>S. coronis</i>	Coronis Fritillary				2										2
<i>S. callippe</i>	Callippe Fritillary														0
<i>S. hesperis</i>	Northwestern Fritillary				3										3
<i>S. mormonia</i>	Mormon Fritillary														0
fritillary sp.			13	11	53	5		2	7	2		1	6	1	101
<i>Chlosyne gorgone</i>	Gorgone Checkerspot	3											1		4
<i>C. nycteis</i>	Silvery Checkerspot														0
<i>C. palla</i>	Northern Checkerspot														0
<i>Phyciodes pallida</i>	Pallid (Pale) Crescent			1											1
<i>P. tharos</i>	Pearl Crescent			1											1
<i>P. cocyta</i>	Northern Crescent			1		1									2
<i>P. pulchella</i>	Field Crescent	15	22	7	1			1					2	3	51
Crescent/checkerspot		5		1	1	2			3						12
<i>Polygonia satyrus</i>	Satyr Comma														0
<i>P. gracilis</i>	Hoary Comma				1										1
<i>Junonia coenia</i>	Common Buckeye														0
<i>Aglais milberti</i>	Milbert's Tortoiseshell														0
<i>Nymphalis antiopa</i>	Mourning Cloak							2							2
<i>N. californica</i>	California Tortoiseshell														0
<i>Vanessa atalanta</i>	Red Admiral														0
<i>V. cardui</i>	Painted Lady	1	2	2	14	4		4	1				7	1	36
<i>V. virginiensis</i>	American Lady				1										1
<i>Limenitis weidemeyerii</i>	Weidemeyer's Admiral		3	5	6	3			5	1			1		25
<i>L. archippus</i>	Viceroy				1		1	1							3
<i>Asterocampa celtis</i>	Hackberry Emperor														0
<i>Coenonympha tullia ochracea</i>	Common Ringlet	25	5	7	3										40
<i>Cercyonis pegala</i>	Common Wood- Nymph				4	5		20	21	33		1 4	2 2		11 9
<i>C. oetus</i>	Small Wood- Nymph				10 7	7	17	7	1			1	4		14 4
wood nymph sp.													5		5

<b>Heil Valley Geer Watershed</b>	<b>2022</b>	<b>5/ 29</b>	<b>6/ 11</b>	<b>6/ 12</b>	<b>7/ 10</b>	<b>7/ 22</b>	<b>7/ 24</b>	<b>7/ 25</b>	<b>7/ 30</b>	<b>7/ 31</b>	<b>8 / 1</b>	<b>8 / 5</b>	<b>8/ 9</b>	<b>8/ 16</b>	<b>To tal</b>
<i>Oeneis chryxus</i>	Chryxus Arctic														0
<i>O. uhleri</i>	Uhler's Arctic														0
<i>Epargyreus clarus</i>	Silver-spotted Skipper			2	1										3
<i>Thorybes pylades</i>	N. Cloudywing														0
<i>Erynnis icelus</i>	Dreamy Duskywing	1													1
<i>E. pacuvius</i>	Pacuvius Duskywing														0
<i>E. afranius</i>	Afranius Duskywing														0
<i>E. persius</i>	Persius Duskywing	2	2	4	2	1									11
<i>dukywing sp.</i>		1	1												2
<i>Burnsius communis</i>	Common Checkered- skipper	1			3							5	1 0	15	34
<i>Pholisora catullus</i>	Common Sootywing	4	1												5
<i>Piruna pirus</i>	Russet Skipperling	2													2
<i>Oarisma garita</i>	Garita Skipperling				1										1
<i>Hesperia leonardus pawnee</i>	Leonard's Skipper														0
<i>Hesperia juba</i>	Juba Skipper													5	5
<i>H. colorado</i>	Western Branded Skipper														0
<i>H. nevada</i>	Nevada skipper														0
<i>Polites themistocles</i>	Tawny-edged Skipper														0
<i>*P. peckius</i>	Peck's Slipper				1										1
<i>Ochlodes sylvanoides</i>	Woodland Skipper													4	4
<i>Poanes taxiles</i>	Taxiles Skipper				1			1	3				1		6
<i>Euphyes vestries</i>	Dun Skipper			1	6										7
<i>Atrytonopsis hianna</i>	Dusted Skipper														0
<i>Polites mystic</i>	Long Dash skipper														0
<i>skipper sp.</i>					1										1
															18 47

\*Newly sighted in Geer Watershed

<b>Heil Valley – Geer Watershed 2022</b>			
Date, Conditions	Location within Heil - Geer	Butterfly Activity	Researchers
<b>5/29/2022</b>	Kevin's home up canyon near Transect.	Some flying during intermittent sunlight	Chris Friedman
9:00-11:00 am	downstream a short distance		Dan Fosco
22-24 °C			Jan Chu
Sun to cloudy;			Linda Hardesty
0-30 mph wind			Richard Holmes
			Sue Hirschfeld
<b>6/11/2022</b>	Kevin's home, up canyon near Transect, across meadow, crest of hill to north	Many flying	Cathy Comstock
8:15-11:45 am			Chris Friedman
22-25 °C,			Dan Fosco
Clear, slight breeze			Jan Chu
			Linda Hardesty
			Pam Piombino
<b>6/12/2022</b>	Past Grady's, past large culvert, west,	Weidemeyer's followed	Ethan Stoner
9:15-11:31 am	meadow	us	Steve Armstead
28 °C, 10% clouds, no wind			
<b>Heil Valley</b>	<b>Geer Watershed 2022</b>		
<b>7/10/2022</b>	Kevin's home across meadow,	Common Wood-nymphs mating	Bev Postmus
	streamlet to cliff		Cathy Comstock
	stream banks, downhill south		Chris Friedman
7:30-11:45 am			Jan Chu
23-34 °C, clear to clouds			Sue Hirschfeld
<b>7/22/2022</b>	Past Grady's, past large culvert, west,		Ethan Stoner
8:07-9:40 am	meadow		
28 °C, 60% clouds,			
5-10 mph wind			
<b>7/24/2022</b>	Meadow above drainage		Sue Hirschfeld
8:30-10:30 am			
to 24 °C,			
Filtered high clouds			
<b>7/25/2022</b>			Ethan Stoner
8:10-10:03 am			
24 °C, 5% cloud cover, 0-5 wind			
<b>7/30/2022</b>	Past Grady's, past large culvert, west,		Ethan Stoner
9:50-11:53 am	meadow		
25 °C, few clouds, 0-5 wind			
<b>7/31/2022</b>	Meadow above drainage		Sue Hirschfeld
8:15-9:45 am			



23-34 °C, bright sky to high clouds to overcast			
<b>8/1/2022</b>	Past Grady's, past large culvert, west,		Ethan Stoner
8:15-10:11 am	meadow		Burton Stoner
24 °C, 10% clouds			
0-5 wind			
<b>8/5/2022</b>	Past Grady's, past large culvert, west,		Ethan Stoner
8:02-9:40 am	meadow		
26 °C, 12% clouds			
5-10 wind			
<b>8/9/2022</b>	Meadow above culvert, south along pines, lower streamside	Tiny blues, checkered skipper, new Painted Lady	Chris Friedman
8:45-10:45 am			Jan Chu
21-26 °C, clear, no wind			Jean Morgan
			Linda Hardesty
			Sue Hirschfeld
<b>9/16/2022</b>	Streamside, meadow west,		Chris Friedman
10:00-11:30 am			Linda Hardesty
22-23 °C, clear, slight breeze			Sue Hirschfeld
<b>9/16/2022</b>	Parking Schoolhouse, Overland Loop Trailheads		Chris Friedman
11:55-12:40 pm			Linda Hardesty
<b>32 Research Hours</b>	<b>93 Volunteer Hours for the County</b>		

### D. Heil – Geer Watershed

Heil-Geer Watershed	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
# Species Identified Annually	42	56	44	49	36	38	38	42	22	43	30	40	44	40	46	55
Cumulative #Species 2007-2022	81	87	90	91	91	91	91	92	92	92	93	93	94	94	100	102
Research Hours at Site	15.5	21	12.5	14	14	10	11	18	11	10	21	20	13.5	16.5	20	29
# Individual Butterflies	569	1225	492	419	436	530	264	738	200	488	628	665	584	346	2375	1847
Individuals / Research Hour	37	58	39	30	31	53	24	41	18	29	39	33	43	21	119	64
# Species / Research Hour	2.7	2.7	3.5	3.5	2.6	3.8	3.5	2.3	2	4.3	1.4	2	3.3	2.5	2.3	1.9

## E. Walker Ranch – Meyers Homestead Trail

Walker Ranch-Meyer's Homestead Trail	2022	5/10 JB	5/10 CC	6/4/ SH	6/5 DF	6/7 CC	6/22 CC	7/7 CC	7/10 CC	7/21 RH	8/3 CC	8/11 CF	Total
<i>Parnassius smintheus</i>	Rocky Mountain Parnassian					1	2	14					17
<i>Papilio polyxenes</i>	Black Swallowtail												
<i>P. zelicaon</i>	Anise Swallowtail				1								1
<i>P. indra</i>	Indra Swallowtail												
<i>P. rutulus</i>	Western Tiger Swallowtail							1					1
<i>P. eurymedon</i>	Pale Swallowtail			3	1		4	1	4	1	1		15
<i>P. multicaudata</i>	Two-tailed Swallowtail						4	1	3		3		11
swallowtail sp.	swallowtail sp.				2								2
<i>Neophasia menapia</i>	Pine White												
<i>Pontia protodice</i>	Checkered White												
<i>P. sisymbrii</i>	Spring White												
<i>P. occidentalis</i>	Western White												
<i>Pieris rapae</i>	Cabbage White						10	1	55		8	6	80
white sp.	white sp.			1	17			1				2	21
<i>Euchloe ausonides</i>	Large Marble				2								2
<i>Anthocharis julia</i>	Julia Orangetip	1			3								4
<i>Colias philodice</i>	Clouded Sulphur						2	1			1		4
<i>Alba form female</i>	alba form												
<i>C. eurytheme</i>	Orange Sulphur							1	2		1	2	6
<i>C. alexandra</i>	Queen Alexandra's Sulphur												
<i>Nathalis iole</i>	Dainty Sulphur												
sulphur sp.	sulphur				1					3		1	5
<i>Lycaena heteronea</i>	Blue Copper	2											2
<i>Satyrrium saepium</i>	Hedgerow Hairstreak											2	2
<i>Callophrys affinis</i>	W. Green Hairstreak	1		3	9					1			14
<i>C. sheridanii</i>	White-line Green Hairstreak												
<i>C. gyneus siva</i>	Siva Juniper Hairstreak												
<i>C. spinetorum</i>	Thicket Hairstreak	1											1
<i>C. augustinus</i>	Brown Elfin	1	2		3								6
<i>C. polios</i>	Hoary Elfin	1			1								2
<i>C. eryphon</i>	Western Pine Elfin	1			1								2
elfin sp.	elfin sp.				4								4
<i>Strymon melinus</i>	Gray Hairstreak											1	1
<i>Cupido amyntula</i>	Western Tailed-Blue			3ph	1						7		11
<i>Celestrina echo</i>	Echo Azure		2	1	2								5
<i>Glaucopsyche piasus</i>	Arrowhead Blue												
<i>G. lygdamus</i>	Silvery Blue				2								2
<i>Euphilotes ancilla</i>	Rocky Mountain Dotted-Blue						5	6		2			13

Walker Ranch- Meyers Homestead	2022	5/10	5/10	6/4/	6/5	6/7	6/22	7/7	7/10	7/21	8/3	8/11	
<i>Echinargus isola</i>	Reakirt's Blue											3	3
<i>Plebejus melissa</i>	Melissa Blue									1		2	3
<i>P. saepiolus</i>	Greenish Blue												
<i>P. icarioides</i>	Boisduval's Blue						1	1		7			9
<i>P. lupini lutzi</i>	Lupine Blue												
<i>Agriades glandon rustica</i>	Arctic Blue												
blue sp.	blue sp.				11		8	1		3	3	4	30
<i>Danaus plexippus</i>	Monarch												
<i>Apodemia nais</i>	Nais Metalmark												
<i>Euptoieta claudia</i>	Variegated Fritillary												
<i>Speyeria aphrodite</i>	Aphrodite Fritillary						5	1			2	5	13
<i>S. edwardsii</i>	Edwards' Fritillary						1	1					2
<i>S. callippe</i>	Callippe Fritillary												
<i>S. hesperis</i>	Northwestern Fritillary						4	1	3		1		9
<i>S. mormonia</i>	Mormon Fritillary												
fritillary sp.							1	2		1		30	34
<i>Chlosyne gorgone</i>	Gorgone Checkerspot			4									4
<i>C. nycteis</i>	Silvery Checkerspot												
<i>C. palla</i>	Northern Checkerspot						2	1			1		4
<i>Phyciodes cocyta</i>	Northern Crescent						3	1			2		6
<i>P. pulchella</i>	Field Crescent		1	1	2	1	9	1	1		7	2	25
<i>Phyciodes pallida</i>	Pallid (Pale) Crescent							1					1
<i>Polydryas arachne</i>	Arachne Checkerspot												
<i>Euphydryas anicia</i>	Variable Checkerspot							1					1
Checkerspot sp.	checkerspot sp.												
* <i>Polygonia faunus</i>	Green Comma							1					1
<i>Polygonia satyrus</i>	Satyr Comma												
<i>Polygonia gracilis</i>	Hoary Comma				1			1		3			5
Comma sp.	comma			1									1
<i>Aglais milberti</i>	Milbert's Tortoiseshell												
<i>Nymphalis antiopa</i>	Mourning Cloak			1									1
<i>N. californica</i>	California Tortoiseshell	1	2										3
<i>Vanessa atalanta</i>	Red Admiral												
<i>V. cardui</i>	Painted Lady				1		1	1		2			5
<i>V. virginienensis</i>	American Lady								1				1
<i>Limenitis weidemeyerii</i>	Weidemeyer's Admiral							1	1				2
<i>Coenonympha tullia ochracea</i>	Common Ringlet				15	7	5	1	2		3		33
<i>Cercyonis pegala</i>	Common Wood Nymph						3	1	1		8		13
<i>C. oetus</i>	Small Wood Nymph							1	4	18		51	74
<i>Erebia epipsodea</i>	Common Alpine				1								1

Walker Ranch-Meyers Homestead	2022	5/10	5/10	6/4/	6/5	6/7	6/22	7/7	7/10	7/21	8/3	8/11	
<i>Oeneis chryxus</i>	Chryxus Arctic												
<i>O. uhleri</i>	Uhler's Arctic				7								7
<i>Erynnis icelus</i>	Dreamy Duskywing												
<i>E. pacuvius</i>	Pacuvius Duskywing				1								1
<i>E. persius</i>	Persius Duskywing			3	3		2	1					9
duskywing sp.	duskywing				3								3
<i>Burnsius communis</i>	Common Checkered-skipper												
<i>Pholisora catullus</i>	Common Sootywing												
<i>Piruna pirus</i>	Russet Skipperling									2			2
<i>Oarisma garita</i>	Garita Skipperling												
<i>Hesperia uncas</i>	Uncas Skipper												
<i>H. juba</i>	Juba Skipper												
<i>H. colorado</i>	Western Branded Skipper											2	2
<i>Polites themistocles</i>	Tawny-edged Skipper												
<i>P. mystic</i>	Long Dash												
<i>Ochlodes sylvanoides</i>	Woodland Skipper											6	6
<i>Poanes taxiles</i>	Taxiles Skipper												
<i>Euphyes vestris</i>	Dun Skipper							1				1	2
skippers												21	21

\*Newly sighted in this area

ph=photo available

Date Conditions	Location Walker	Butterfly Behavior	Blooming Plants	Researchers
5/10/2022 11:30-3:00 pm 9 -18 °C	Meyer's Gulch			John Barr
5/10/2022 9:30-11:30 am 18-23°C, Calm, mostly clear	Meyer's Gulch			Cathy Comstock
6/4/2022 11:30-2:30 pm 22 °C, Sunny drifting clouds, breeze	Meyer's Gulch, to the barn			Sue Hirschfield Sue Olmsted
6/5/2022 10:40am –1:10 pm Mostly Cloudy w- intermittent sun – 20-22 °C, Breezy at times	Went beyond the power lines all the way to the stand of Aspens	No puddling areas- Sparse flowers and butterflies –	Antennaria Bluebells- stunted Boulder Raspberry Chickweed Few Geranium Locoweed sp. Mountain Parsley Penstemon sp Senecio sp. Sulphur Flower- Wall flower	Dan Fosco and BoCo Ranger Jose Barrientos

6/7/2022 11-1:30 pm 15-22 °C, Calm, partly to mostly cloudy	<b>Walker Ranch</b> Meyer's Gulch			Cathy Comstock
6/22/2022 8-10:30 am 18-23°C, mostly clear, calm	Meyer's Gulch			Cathy Comstock
7/7/2022 7:30-10 a.m. 20-23 C Sunny, 5-15 mph wind	Meyer's Gulch			Cathy Comstock Steve Jones Linda Andes- George
7/21/2022 9:40-12:20 pm 26-32 °C, breezy Sunny to scattered clouds	Meyer's Gulch Past barn , 100 yds.	Some standing water	Ample yellow flowers	Richard Holmes
8/3/2022 9-10:30 am 22-25 °C calm Mostly clear	Meyer's Gulch			Cathy Comstock
8/11/2022 8:50-11:10 am 18-26 °C, clear, sunny, no wind	Meyers Homestead Trail			Chris Friedman Linda Hardesty

24.5 RH 33.5 Hours for Boulder County

<b>Walker Ranch, Meyer's Homestead Trail</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
# Species Identified during 2022 in Walker	30	35	45	35	50	47	62	43	45	43	31	58	47	37	55	52
# Species Sighted in Walker Ranch 2007-2022	33	38	60	70	75*	78*	79*	80*	81*	81*	83*	84*	84*	84*	<b>85</b>	86
# Research Hours on Site	5	4	18	16	16.5	7	14.5	11	29	17	13.5	53	27	6	28	25.5
# Individual Butterflies Counted	160	203	1144	437	472	399	394	322	351	549	299	759	449	305	905	561
# Individual Butterflies / Research Hour	32	54	64	27	29	57	27	29	12	32	22	14	16	51	32	22
# Species / Research Hour	6.0	8.8	2.5	2.2	3.0	6.7	4.3	3.9	1.5	2.5	2.3	1	1.7	6.1	2.0	2.0

\*2011-2020 Corrected

## F. Reynold's Ranch - Giggey Lake

Reynold's Ranch Giggey Lake, West Trail	2022	6/22	8/11	Total
Rocky Mountain Parnassian	<i>Parnassius smintheus</i>			
Black Swallowtail	<i>Papilio polyxenes</i>			
Anise Swallowtail	<i>P. zelicaon</i>		1	1
Western Tiger Swallowtail	<i>P. rutulus</i>	2		2
Pale Swallowtail	<i>P. eurymedon</i>			
Two-tailed Swallowtail	<i>P. multicaudata</i>	1		1
	yellow swallowtail sp			
Pine White	<i>Neophasia menapia</i>		1	1
Cabbage White	<i>Pieris rapae</i>	1	1	2
Checkered White	<i>Pontia protodice</i>		1	1
Western White	<i>P. occidentalis</i>			
	white sp.	1		1
Large Marble	<i>Euchloe ausonides</i>			
Julia Orangetip	<i>Anthocharis julia</i>			
Clouded Sulphur	<i>Colias philodice</i>	1		1
Orange Sulphur	<i>C. eurytheme</i>			
Queen Alexandra's Sulphur	<i>C. alexandra</i>		4	4
Dainty Sulphur	<i>Nathalis iole</i>			
	sulphur sp.	3		3
Ruddy Copper	<i>Lycaena rubidus</i>			
Blue Copper	<i>Tharsalea. heteronea</i>			
Purplish Copper	<i>Lycaena helloides</i>			
Green Hairstreak	<i>Callophrys affinis</i>			
Thicket Hairstreak	<i>C. spinetorum</i>			
Western Pine Elfin	<i>C. eryphon</i>			
Hoary Elfin	<i>C. polios</i>			
Brown Elfin	<i>C. augustinus</i>			
Hedgerow Hairstreak	<i>Satyrrium saepium</i>		2	2
Gray Hairstreak	<i>Strymon melinus</i>		1	1
Echo Azure	<i>Celastrina ladon sidara</i>			
Silvery Blue	<i>Glaucopsyche lygdamus</i>			1
Reakirt's Blue	<i>Echinargus isola</i>	1		
Melissa Blue	<i>Plebejus melissa</i>			
Rocky Mountain Dotted-Blue	<i>Euphilotes ancilla</i>			
Greenish Blue	<i>Plebejus saepiolus</i>	2		2
Lupine Blue	<i>Icaricia lupini lutzi</i>			
Arrowhead Blue	<i>Glaucopsyche piasus</i>			
Boisduval's Blue	<i>P. icarioides</i>	4		4
Arctic Blue	<i>P. glandon rustica</i>			
	blue sp.	31		31
Monarch	<i>Danaus plexippus</i>			
Weidemeyer's Admiral	<i>Limenitis weidemeyerii</i>			
Variegated Fritillary	<i>Euptoieta claudia</i>	1		1
Aphrodite Fritillary	<i>Speyeria aphrodite</i>			
Edward's Fritillary	<i>S. edwardsii</i>			
Coronis Fritillary	<i>S. coronis</i>			
Callippe Fritillary	<i>S. callippe</i>			
Northwestern Fritillary	<i>S. hesperis</i>			
Mormon Fritillary	<i>S. mormonia</i>			
Silver-bordered Fritillary	<i>Boloria selene</i>			
	fritillary sp.	1	2	3

<b>Reynold's Ranch Giggey Lake, West Trail</b>	<b>2022</b>	<b>6/22</b>	<b>8/11</b>	<b>Total</b>
Northern Checkerspot	<i>Chlosyne palla</i>			
**Arachne Checkerspot	** <i>Polydryas arachne</i>		2	2
Pallid Crescent	<i>Phyciodes pallida</i>			
Pearl Crescent	<i>P. tharos</i>			
Northern Crescent	<i>P. cocyta</i>			
	<i>crescent/checkerspot sp.</i>	4		4
Field Crescent	<i>P. pulchella</i>	2		2
Hoary Comma	<i>Polygonia gracilis</i>			
American Lady	<i>Vanessa virginiensis</i>			
Painted Lady	<i>Vanessa cardui</i>			
Milbert's Tortoiseshell	<i>Aglaia milberti</i>			
Mourning Cloak	<i>Nymphalis antiopa</i>			
Common Ringlet	<i>Coenonympha tullia ochracea</i>	29		29
Red Admiral	<i>Vanessa atalanta</i>			
Small Wood-nymph	<i>Cercyonis oetus</i>		26	26
Common Wood-nymph	<i>C. pegala</i>			
	wood nymph sp.			
Common Alpine	<i>Erebia epipsodea</i>	26		26
Chryxus Arctic	<i>Oeneis chryxus</i>	1		1
Dreamy Duskywing	<i>Erynnis icelus</i>			
Pacuvius Duskywing	<i>E. pacuvius</i>			
Persius Duskywing	<i>E. persius</i>			
	duskywing sp.			
Garita Skipperling	<i>Oarisma garita</i>			
Western Branded Skipper	<i>Hesperia colorado</i>		2	2
Draco Skipper	<i>Polites draco</i>			
Tawny-edged Skipper	<i>P. mystic</i>			
Woodland Skipper	<i>Ochlodes sylvanoides</i>			
Common Checkered-skipper	<i>Burnsius communis</i>			
Dun Skipper	<i>Euphyes vestris</i>			
	skipper sp.			

\* Newly found in this area p= photo available

## F. Reynold's Ranch – Giggey Lake, Western Trail

<b>Date, Conditions</b>	<b>Location within Reynold's</b>	<b>Butterfly Activity</b>	<b>Blossoming Plants</b>	<b>Researchers</b>
6/22/2022 22-24°C, 9:00-10:45 am clear to high clouds, no breeze	Giggey Lake	Blues flying fast. Few flying		Chris Feldman Jan Chu Jean Morgan Dan Fosco
8/11/2022 9:30-11:30 am 23-25 °C, sun to 50% cloud	West Trail			Venice Kelly

4 RH 10 Volunteer Hours for Boulder County

<b>Reynold's Ranch, Giggey Lake, Western Trail</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
# Species Identified during 2022 in Reynold's	32	46	36	9	26	32	26	29	25	12	19	21
# Species Sighted in Reynold's 2011-2022	35	55	55	55	57	57	63*	66*	67*	69*	72	73
# Research Hours on Site	13	11.5	10.5	4	6	11	10	10	5	3	6.5	4
# Individual Butterflies Counted	541	635	395	47	183	612	171	199	237	92	87	154
# Individuals / Research Hour	41.6	55	37.6	12	3	5.6	17	20	47	30	12.6	38.5
# Species / Research Hour	2.5	4	3.4	2.1	4	3	2.6	2.9	5	4	3	5

## G. Caribou Ranch - Sherwood Transect, Mud Lake

Caribou, Sherwood Road	2022	4 / 1 9	4 / 2 2	4 / 2 6	5 / 7	5 / 1 0	5 / 1 5	5 / 1 7	5 / 2 7	6 / 4	6 / 1 0	6 / 1 1	6 / 1 6	6 / 2 0	6 / 2 1	6 / 2 8	6 / 2 8	S u b t o t a l
<i>Parnassius smintheus</i>	Rocky Mountain Parnassian											3	5	3	9	20	2	42
<i>Battus philenor</i>	Pipevine Swallowtail																	0
<i>Papilio polyxenes</i>	Black Swallowtail										1							1
<i>P. zelicaon</i>	Anise Swallowtail									2		2		3	1	1		9
<i>P. rutulus</i>	W. Tiger Swallowtail												5			3		8
<i>P. eurymedon</i>	Pale Swallowtail									1		1	4		5	3		14
<i>P. multi- caudata</i>	Two-tailed Swallowtail																	0
<i>Neophasia menapia</i>	Pine White																	0
<i>*Pontia sisymbrii</i>	Spring White			1	2													3
<i>Pontia protodice</i>	Checkered White																	0
<i>P. occident- alis</i>	Western White																	0
<i>Pieris rapae</i>	Cabbage White																	0
<i>P. marginalis</i>	Margined White																	0
<i>Euchloe ausonides</i>	Large Marble						1		4	2	5	11	2	2	4	1	2	34
<i>Antho- charis julia</i>	Julia Orangetip					6	9	10	9	6	7	3	6	1	2		2	61
white sp.						2	2	1	3	4	0	4	2		7	5		30
<i>Colias philodice</i>	Clouded Sulphur								1		2							3
<i>C. eurytheme</i>	Orange Sulphur													1				1
alba																		0
<i>C. alexandra</i>	Queen Alexandra's Sulphur														1		2	3
<i>Phoebis sennae eubule</i>	Cloudless Sulphur																	0
sulphur sp.																		0
<i>Eurema mexicana</i>	Mexican Sulphur																	0
<i>Abaeis nicippe</i>	Sleepy Orange																	0



<i>Nathalis iole</i>	Dainty Sulphur																	0
<b>Caribou, Sherwood Road</b>	<b>2022</b>	4/19	4/22	4/26	5/7	5/10	5/15	5/17	5/27	6/4	6/10	6/11	6/16	6/20	6/21	6/28	6/28	Sub Total
<i>Tharsalea editha</i>	Edith's Copper																	0
<i>Lycaena rubidus</i>	Ruddy Copper																	0
<i>Tharsalea heteronea</i>	Blue Copper																	0
<i>Lycaena helloides</i>	Purplish Copper																	0
<i>Callophrys affinis homoperplexa</i>	Western Green Hairstreak						1					1			1			3
<i>C. sheridanii</i>	White-lined Green Hairstreak		1	2	1		1											5
<i>C. spinetorum</i>	Thicket Hairstreak												1					1
<i>C. augustinus</i>	Brown Elfin	1				1	2	2	2				2		2			12
<i>C. polios</i>	Hoary Elfin				3	7	18	19	1	3		2	2		4			59
<i>C. eryphon</i>	Western Pine Elfin							1		1	1	1	1		1	1		7
<i>elfin</i> sp.																		0
<i>Satyrrium saepium</i>	Hedgerow Hairstreak																	0
<i>Strymon melinus</i>	Gray Hairstreak																	0
<i>Cupido amyntula</i>	Western Tailed-Blue									1			2		3		3	9
<i>Celastrina echo sidara</i>	Echo Azure				1		1		2	3	3		1		1			12
<i>C.e. marginata</i>	Sub-species marginata									1								1
<i>C.e.lucia</i>	lucia form										1ph							1
<i>Glaucopsyche piasus</i>	Arrowhead Blue														1			1
<i>G. lygdamus</i>	Silvery Blue					1	6		6	2	4		1	1	3	1		24
<i>Euphilotes ancilla</i>	Rocky Mountain Dotted-Blue													1	4		1	6
<i>Echinargus isola</i>	Reakirt's Blue													8	5	2	2	17
<i>Plebejus melissa</i>	Melissa Blue																	0
<i>P. saepiolus</i>	Greenish Blue											2			1	1		4
<i>P. icarioides</i>	Boisduval's Blue															1		1
<i>P.lupini lutzi</i>	Lupine Blue												1		3	1		5
<i>P.glandon rustica</i>	Arctic Blue													1				1

blue sp.							5		1	7	4	10	6	1	8	15		57
Caribou, Sherwood Road	2022	4/19	4/22	4/26	5/7	5/10	5/15	5/17	5/27	6/4	6/10	6/11	6/16	6/20	6/21	6/28	6/28	Sub Total
Euptoieta claudia	Variegated Fritillary												1		1			2
Argynnis aphrodite	Aphrodite Fritillary																	0
A. atlantis	Atlantis Fritillary																	0
A. edwardsii	Edwards' Fritillary															1		1
A. coronis	Coronis Fritillary																	0
A. hesperis	Northwestern Fritillary																	0
A. mormonia	Mormon Fritillary																	0
Fritillary sp												2	2		2	2	2	10
Poladryas arachne	Arachne Checkerspot																	0
Chlosyne gorgone	Gorgone Checkerspot																	0
C. nycteis	Silvery Checkerspot														4			4
C. palla	Northern Checkerspot												5		13	23	9	50
Phyciodes pallida	Pallid Crescent																	0
P. tharos	Pearl Crescent																	0
P. cocyta	Northern Crescent											1		2	7	1		11
P. pulchella	Field Crescent									2	2	7	2	3	4		3	23
Euphydryas anicia	Variable Checkerspot																	0
Polygonia faunus	Green Comma	1	1						2									4
P. gracilis	Hoary Comma	4	1	8	7	2			2		1	2	2					29
P. satyrus	Satyr Comma																	0
comma sp.				1		2				2								5
Junonia coenia	Common Buckeye																	0
*Nymphalis californica	California Tortoiseshell																	0
Aglais milberti	Milbert's Tortoiseshell																	0
Nymphalis antiopa	Mourning Cloak	6	4	8	1	5		1	3	3	1				2			34
Vanessa atalanta	Red Admiral																	0
V. cardui	Painted Lady																	0
V. virgin- iensis	American Lady																	0

Caribou, Sherwood Road	2022	4/ 1 9	4/ 2 2	4 / 2 6	5 / 7	5 / 1 0	5 / 1 5	5 / 1 7	5 / 2 7	6 / 4	6 / 1 0	6 / 1 1	6 / 1 6	6 / 2 0	6 / 2 1	6 / 2 8	6 / 2 8	Su b To tal
<i>Danaus plexippus</i>	Monarch																	0
<i>Limenitis weidemeyeri</i>	Weidemeyer's Admiral																1	1
<i>Coenonympha tullia ochracea</i>	Common (Ochre) Ringlet									2	7	6	11	7	16	19	4	72
<i>Cercyonis pegala</i>	Common Wood-Nymph																	0
<i>C. oetus</i>	Small Wood-Nymph																	0
<i>Erebia epipsodea</i>	Common Alpine															2		2
<i>Oeneis chryxus</i>	Chryxus Arctic												4	4	11	16	6	37
Arctic sp.										2								2
<i>O. uhleri</i>	Uhler's Arctic																	0
<i>Cecropterus pylades</i>	Northern Cloudywing																	0
<i>Erynnis icelus</i>	Dreamy Duskywing									4	3	2	1	1	4		1	16
<i>E. pacuvius</i>	Pacuvius Duskywing												1		1			2
<i>E. persius</i>	Persius Duskywing								3	4	8	12	9	4	9	6	2	57
Duskywing sp												2						2
<i>*Thorybes mexicana</i>	Cloudywing Mexican									1								1
<i>Pyrgus ruralis</i>	Two-banded Checkered-Skipper				1	6	4		3	1	1	1			1		1	19
<i>Burnsius communis</i>	Common Checkered-Skipper																	0
<i>Piruna pirus</i>	Russet Skipperling																	0
<i>Oarisma garita</i>	Garita Skipperling																	0
<i>Hesperia juba</i>	Juba Skipper										1						1	2
<i>H. colorado</i>	Western Branded Skipper																	0
<i>H. colorado ochracea</i>	Ochre Branded Skipper																	0
<i>H. pahaska</i>	Pahaska Skipper																	0
<i>H. viridis</i>	Green Skipper																	0
<i>H. nevada</i>	Nevada Skipper											2	1	2	2			7

<i>Polites draco</i>	Draco Skipper																1		1
<i>P. mystic</i>	Long Dash																		0
<i>Lon taxiles</i>	Taxiles Skipper																		0
<i>Ochlodes sylvanoides</i>	Woodland Skipper																		0
<i>Euphyes vestries</i>	Dun Skipper																		0

\*Newly found in this area

### G. Caribou Ranch - Sherwood Transect, Mud Lake (Continued)

Caribou, Sherwood Road	2022	7 / 9	7 / 13	7 / 15	7 / 21	7 / 27	7 / 30	8 / 6	8 / 13	8 / 19	8 / 23	8 / 30	9 / 7	9 / 13	9 / 16	9 / 26	Sub Total	Total
<i>Parnassius smintheus</i>	Rocky Mountain Parnassian	9	9	7	12	10	7	5	1								60	102
<i>Battus philenor</i>	Pipevine Swallowtail																0	0
<i>Papilio polyxenes</i>	Black Swallowtail																0	1
<i>P. zelicaon</i>	Anise Swallowtail													1			1	10
<i>P. rutulus</i>	W. Tiger Swallowtail	2	2			3	1	1									9	17
<i>P. eurymedon</i>	Pale Swallowtail	2		1			3				1						7	21
<i>P. multi caudata</i>	Two-tailed Swallowtail																0	0
<i>Neophasia menapia</i>	Pine White								8	16	21	11	1				57	57
* <i>Pontia sisymbrii</i>	Spring White																0	3
<i>Pontia protodice</i>	Checkered White																0	0
<i>P. occidentalis</i>	Western White																0	0
<i>Pieris rapae</i>	Cabbage White		1	1	1	1	10	7	1			1	1			1	25	25
<i>P. marginalis</i>	Margined White																0	0
<i>Euchloe ausonides</i>	Large Marble																0	34
<i>Anthocharis julia</i>	Julia Orangetip																0	61
white sp.		1	2														3	33
<i>Colias philodice</i>	Clouded Sulphur				1			1							1		3	6
<i>C. eurytheme</i>	Orange Sulphur		2		1		2				1					2	8	9
alba																	0	0

Caribou, Sherwood Road	2022	7 / 9	7 / 13	7 / 15	7 / 21	7 / 27	7 / 30	8 / 6	8 / 13	8 / 19	8 / 23	8 / 30	9 / 7	9 / 13	9 / 16	9 / 26	Sub Total	T otal
<i>C. alexandra</i>	Queen Alexandra's Sulphur	16	7	8	9	22	5	8	4		1	2					82	85
<i>Phoebis sennae eubule</i>	Cloudless Sulphur																0	0
sulphur sp.								2		1		1					4	4
<i>Eurema mexicana</i>	Mexican Sulphur																0	0
<i>Abaeis nicippe</i>	Sleepy Orange																0	0
<i>Nathalis iole</i>	Dainty Sulphur																0	0
<i>Tharsalea editha</i>	Edith's Copper		2				2										4	4
<i>Lycaena rubidus</i>	Ruddy Copper							1	2								3	3
<i>Tharsalea heteronea</i>	Blue Copper					1	5		1								7	7
<i>Lycaena helloides</i>	Purplish Copper			4	11	15	24	8	1								63	63
<i>Callophrys affinis homo-perplexa</i>	Western Green Hairstreak				1												1	4
<i>C. sheridanii</i>	White-lined Green Hairstreak																0	5
<i>C. spinetorum</i>	Thicket Hairstreak																0	1
<i>C. augustinus</i>	Brown Elfin																0	12
<i>C. polios</i>	Hoary Elfin																0	59
<i>C. eryphon</i>	Western Pine Elfin																0	7
<i>Satyrium saepium</i>	Hedgerow Hairstreak					1											1	1
<i>Strymon melinus</i>	Gray Hairstreak		1				1										2	11
<i>Cupido amyntula</i>	Western Tailed-Blue	2		2		1	3	1	1								10	19
<i>Celastrina echo sidara</i>	Echo Azure																0	12
<i>"" marginata</i>	Echo Azure Marginata																0	1
	Celastrina echo lucia																0	1
<i>Glaucopsyche piasus</i>	Arrowhead Blue																0	1
<i>G. lygdamus</i>	Silvery Blue																0	24
<i>Euphilotes ancilla</i>	Rocky Mountain Dotted-Blue	29	3	8	10	5	7	3									65	72

Caribou, Sherwood Road	2022	7 / 9	7 / 13	7 / 15	7 / 21	7 / 27	7 / 30	8 / 6	8 / 13	8 / 19	8 / 23	8 / 30	9 / 7	9 / 13	9 / 16	9 / 26	Sub Total	T otal
<i>Echinargus isola</i>	Reakirt's Blue		1			1	3	2	4		3	1				1	16	33
<i>Plebejus melissa</i>	Melissa Blue	2															2	2
<i>P. saepiolus</i>	Greenish Blue		2			1	3	3									9	13
<i>P. icarioides</i>	Boisduval's Blue	7	2		5		3										17	18
<i>P. lupini lutzi</i>	Lupine Blue	3	6	7	5	5	4	2									32	37
<i>P. glandon rustica</i>	Arctic Blue		1			1		1									3	4
blue sp.		10	8	7	5	6	5	3	3		2						49	106
<i>Euptoieta claudia</i>	Variegated Fritillary				1		1	1	2	2	1		1		2		11	13
<i>Argynnis aphrodite</i>	Aphrodite Fritillary				1	3	3		1		1						9	9
<i>A. atlantis</i>	Atlantis Fritillary																0	0
<i>A. edwardsii</i>	Edward's Fritillary						1		1			1					3	4
<i>A. coronis</i>	Coronis Fritillary																0	0
<i>A. hesperis</i>	Northwestern Fritillary		2			2	5	2	4		3						18	18
<i>A. mormonia</i>	Mormon Fritillary										1						1	1
fritillary sp		3	3	5	3	5	6	4	4		4						37	47

Caribou Sherwood Road	2022	7 / 9	7 / 13	7 / 15	7 / 21	7 / 27	7 / 30	8 / 6	8 / 13	8 / 19	8 / 23	8 / 30	9 / 7	9 / 13	9 / 16	9 / 26	Sub Total	T otal
<i>Poladryas arachne</i>	Arachne Checkerspot			1													1	1
<i>Chlosyne gorgone</i>	Gorgone Checkerspot																0	0
<i>C. nycteis</i>	Silvery Checkerspot	4			1	1	1										7	11
<i>C. palla</i>	Northern Checkerspot	39	35	19	17	13	9	1									133	183
<i>Phyciodes pallida</i>	Pallid Crescent																0	0
<i>P. tharos</i>	Pearl Crescent																0	0
<i>P. cocyta</i>	Northern Crescent	17	1	5	6	8	8	4	1								51	62
<i>P. pulchella</i>	Field Crescent	2		6				2	1		3	2	4		3	2	25	48
<i>Euphydryas anicia</i>	Variable Checkerspot																0	0

Caribou, Sherwood Road	2022	7 / 9	7 / 13	7 / 15	7 / 21	7 / 27	7 / 30	8 / 6	8 / 13	8 / 19	8 / 23	8 / 30	9 / 7	9 / 13	9 / 16	9 / 26	Sub Total	T otal
<i>Polygonia faunus</i>	Green Comma							2									2	6
<i>P. gracilis</i>	Hoary Comma				1	1			1		1	2	2		4	8	20	49
<i>P. satyrus</i>	Satyr Comma																0	0
comma sp.																	0	5
<i>Junonia coenia</i>	Common Buckeye																0	0
<i>*Nymphalis californica</i>	California Tortoiseshell															1	1	1
<i>Aglais milberti</i>	Milbert's Tortoiseshell																0	0
<i>Nymphalis antiopa</i>	Mourning Cloak						2	4			2	8	1		1	3	21	55
<i>Vanessa atalanta</i>	Red Admiral																0	0
<i>V. cardui</i>	Painted Lady			1	1		1									2	5	5
<i>V. virginensis</i>	American Lady																0	0
<i>Danaus plexippus</i>	Monarch																0	0
<i>Limnitis weidemeyeri</i>	Weidemeyer's Admiral		3	1	1	2		2	3	1		1					14	15
<i>Coenonympha tullia ochracea</i>	Common (Ochre) Ringlet	6	8	2	2	1	1										20	92
<i>Cercyonis pegala</i>	Common Wood-Nymph																0	0
<i>C. oetus</i>	Small Wood-Nymph		1		18	23	51	50	62	11	19	10	1				246	246
<i>Erebia epipsodea</i>	Common Alpine																0	2
<i>Oeneis chryxus</i>	Chryxus Arctic	5	10	2	1	7	1										21	48
Arctic sp.	.																	2
<i>O. uhleri</i>	Uhler's Arctic																0	0
<i>Cecropterus pylades</i>	Northern Cloudywing																0	0
<i>Erynnis icelus</i>	Dreamy Duskywing																0	16
<i>E. pacuvius</i>	Pacuvius Duskywing																0	2
<i>E. persius</i>	Persius Duskywing	6	3	5													14	71
Duskywng		6															6	8
<i>*Thorybes mexicana</i>	Cloudywing Mexican																0	1

Caribou, Sherwood Road	2022	7 / 9	7 / 13	7 / 15	7 / 21	7 / 27	7 / 30	8 / 6	8 / 13	8 / 19	8 / 23	8 / 30	9 / 7	9 / 13	9 / 16	9 / 26	Sub Total	T otal
<i>Pyrgus ruralis</i>	Two-banded Checkered- Skipper																0	19
<i>Burnsius communis</i>	Common Checkered- Skipper										1						1	1
<i>Piruna pirus</i>	Russet Skipperling	1		2	1	1	1										6	6
<i>Oarisma garita</i>	Garita Skipperling	2		1	1												4	4
<i>Hesperia juba</i>	Juba Skipper																0	2
<i>H. colorado</i>	Western Branded Skipper							2			3		1				6	6
<i>H. colorado ochracea</i>	Ochre Branded Skipper																0	0
<i>H. pahaska</i>	Pahaska Skipper																0	0
<i>H. viridis</i>	Green Skipper																0	0
<i>H. nevada</i>	Nevada Skipper	3															3	10
<i>Polites draco</i>	Draco Skipper																0	1
<i>P. mystic</i>	Long Dash					1											1	1
<i>Lon taxiles</i>	Taxiles Skipper																0	0
<i>Ochlodes sylvanoides</i>	Woodland Skipper						1	9	3	7	5	6	1				32	32
<i>Euphyes vestries</i>	Dun Skipper																0	0
skipper sp.										1							1	1



## G. Caribou Ranch (Continued)

Date, time, temp. sky, wind	Location	Butterfly Behavior	Researcher
4/19/2022, 11:30 –1:10 pm 11-18 °C Sunny breezy 30 mph.	Sherwood Transect	Cloaks and Commas at the seep; Elfin on trail	Venice Kelly
4/22/2022 11:15-1:00 pm 20 °C, 30% clouds, windy	Sherwood Transect	1 <sup>st</sup> sheridanii	Venice Kelly
4/26/2022 11-1pm 18° C, Full sun, windy	Sherwood Transect	1 <sup>st</sup> spring white record	Venice Kelly Jeff MacLauchlan
5/7/2022 10:30-12:00 pm 19-21 °C, intermittent sun, 75% cloud cover	Sherwood Transect	1st hoary elfins this season, also first blue and earliest two-banded checkered-skipper. <u>Spring white showing</u>	Venice Kelly
5/10/2022 12:00-1:50 pm 12-15 °C, High clouds, sunny, breezy	Sherwood Transect	julia orange tips were nectaring on candy tufts. one was nectaring on a spring beauty. two of the hoary comma's were nectaring on kinnikinnick. hang upside down to access the flowers. a twobanded checkered skipper was chasing a hoary elfin	Venice Kelly Jeff MacLauchlan
5/15/2022 10:45-1:20 pm 13-18 °C, blue sky, breezy	Sherwood Transect	silvery blue ovipositing on golden banner. two banded skipper nectaring on candy tufts. Large marble and julia nectaring on strawberry flowers. they were very busy chasing each other away. but they kept coming back to the blossoms.	Venice Kelly
5/17/2022 9:30-11:00 am 16 °C, 45% high clouds	Mud Lake	lots of hoary elfins and julia Orangetips	Venice Kelly Jeff MacLauchlan
5/27/2022 10:00-12:00 pm 18-21°C, 75% cloud cover, windy			Venice Kelly Jeff MacLauchlan
6/4/2022 10:00-1:00 pm 18-22 °C, Blue sky, few clouds, windy	S Transect	orange tips were nectaring on strawberry blossoms. one female julia was ovipositing on a tower mustard. <u>mexican cloudywing</u>	Venice Kelly Richard Holmes
6/10/2022 9:40-12:00 pm 17 °C, 75% cloud cover, breezy-windy	Sherwood Transect Female moose	Butterflies at the seep	Venice Kelly
6/11/2022 9:30-12:00 pm Sunny, breezy-windy	Sherwood Transect	More flying on this sunny day than yesterday. Seep still important	Venice Kelly
6/16/2022 10:12:30 pm 22-25 °C, blue sky breezy	Sherwood Transect	Butterflies at seep or moist areas	Venice Kelly

6/20/2022 10:15-12:30 pm 18-24 °C, mostly sunny, breezy	Mud Lake	Anise ovipositing; reakt's on legume.	Venice Kelly
6/21/2022 9:30-2 pm 17 °C, some breeze	Sherwood Transect		Chris Friedman Linda Hardesty Richard Holmes Venice Kelly Wynne Whyman
6/28/2022 9:30-11:30 pm 24°C, blue sky gentle breeze	Caribou Open Space Big meadow	Parnassians ovipositing on lots of sedum	Venice Kelly Monica Tymcio
6/28/2022 11:40-1:30 pm	Blue Bird Mine	Dogbane in bloom. First time seeing two-banded sk. here.	Venice Kelly Monica Tymcio
7/9/2022 9:30-12:15 pm 22-26 °C, Blue sky, wispy clouds	Sherwood Transect	3 days of hail, Many with wing damage	Venice Kelly
7/13/2022 9:30 - 1:00 pm 24-27 °C, sun to 50% cloudy	Bluebird Mine		Venice Kelly Wynne Whyman Richard Holmes
7/15/2022 9:15-11:00 am 23°C, 50% clouds	Sherwood Transect		Venice Kelly
7/21/2022 10-12:00 pm 23°C, Breezy at times	Sherwood Transect	Courtship between Purplish Coppers.	Venice Kelly
7/27/2022 9:15-12:15 pm 18-22 °C, breezy, mostly sunny	Sherwood Transect	Wing damage hedgerow, sil Very checkerspot, long dash. Weather hard on wings	Venice Kelly
7/30/2022 8:45-2:00 pm 17-25°C, sunny to some clouds	Sherwood Transect	Woodland taking nutrients from the tip of its abdomen	Venice Kelly John Barr
8/6/2022 9:30-12:00 pm 22-°C, 30-50% clouds	Sherwood Transect	Much damage to wings from hail. New ones emerging.	Venice Kelly
8/11/2022 9:30-12:30 pm 24-°C, sun to cloudy	Sherwood Transect	Pine whites nectaring; wood nymphs courting and mating	Venice Kelly
8/19/2022 9:50-12:00 pm 16 °C, 60% clouds, no wind	Sherwood Transect	Pines high in the trees, except one on Thistle when cloudy	Amy Chu Bev Postmus Cathy Comstock Jan Chu Jean Morgan John Barr Richard Holmes Venice Kelly
8/23/2022 9:00-1:00 pm 17-23°C, sunny to 35% cloud cover	Sherwood Transect	Many pines, oetus, skippers	John Barr Venice Kelly
8/30/2022 10:00-12:30 p.m.	Sherwood Transect	Nectaring pine whites, some puddling and nectaring.	Venice Kelly

24°C, Blue sky, few clouds, some wind.			
9/7/2022 9:30-11:30 am 22-25 °C, hazy, blue sky	Sherwood Transect	Meager tally, seep still running	Venice Kelly
9/16/2022 9:15-11:30 am 17 °C, sunny, slight breeze	Sherwood Transect	Crescent and Commas very small	Venice Kelly Jan Chu
9/26/2022 11:00-12:30 pm	Sherwood Transect	Seep, muddy gravel tracts butterflies	Venice Kelly

73.5 Research Hours    104 Volunteer County Hours

### G. Caribou Ranch - Sherwood Transect, Mud Lake (Concluded)

<b>Caribou Ranch- Sherwood Road</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
# Species Identified in Caribou Ranch This 16th year	48	48	40	20	46	28	38	47	55	50	59	61	65	64	71	70
Cumulative # Species Sighted in Caribou 2007-2022	75	75	80	80	81	82	83	83	84	85	86	88	88	95	97	98
# Research Hours on Site	10	12	8.5	6	12. 5	8	8	14	15	10	27. 5	43	53	57.5	71.5	73.5
# Individual Butterflies Counted	35 8	64 7	27 8	14 5	488	30 4	36 1	75 2	58 7	65 7	770	107 1	233 6	169 2	208 0	209 2
# Individuals /Research Hour	36	54	33	24	39	38	45	54	39	65	28	25	44	29	29	28.5
#Species/Reser ch Hour	4.8	4.0	4.7	3.3	3.7	3.5	4.8	3.4	3.6	5.0	2.0	1.0	1.2	1.1	1.0	1.0

## **Appendix I. Changes to Geer Drainage Systems**

**by Sue Ellen Hirschfeld**

In 2021, when we were able to gain access to Geer after the Calwood Fire, I started taking photographs of the impacts of the fire. I was most interested in the main Geer stream and the smaller channel that runs from west to east across the meadow into a culvert under the road west of the Ranger's residence. I concentrated my butterfly counts where the smaller tributary met the main Geer flow and to the east.

In 2022, I did not realize that I would need to photograph the drainages repeatedly throughout the season in order to document changes in the vegetation as well as changes within the stream channels. As a result, I did not reoccupy the exact position where earlier photographs were taken.

In 2021, the changes within the drainages were largely the result of intense spring and summer rainfall that produced surges of flood water. These surges eroded and redistributed sediment, flattened vegetation along the drainages, and occasionally flowed over the road.

In 2022, a larger culvert was installed where the main Geer stream had overflowed the road west of the residence. Change noted within the channel is the formation of large deep pools except where the stream flows across bedrock opposite the residence. Smaller surges have modified sediment distribution downstream from the pools. There are a few places where silt and mud accumulate (if briefly) where butterflies can puddle.

I found the changes to the channels during spring/summer 2022 very dramatic. My impression is that changes were largely due to the growth of willows, expansion of thistles, and mullein infilling the sides and bottom of the channels, making access impassible. Water can be heard but not always seen flowing in the channel. With the new culvert, fewer surge impacts were observed. The summer was hot and dry compared to 2021. It will be interesting to see what change takes place over time.



2022 At culvert looking west



2021



2022

2022 Main Geer stream choked with vegetation that covers what had been relatively open floodplain before the fire.

by **Sue Ellen Hirschfeld**