

# **2024 Inventory of Butterflies**

## **in the Open Spaces of Boulder County, Colorado**



**by Janet Chu**

**With Venice Kelly**

**Photo: Draco skipper (Polites draco) female**

**June 6, 2024. Draco lives in high dry mountain meadows often found in Caribou Ranch.**

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## **I. Abstract**

### **Yes, We Are Losing Butterflies**

For twenty years 2004-2024 our research team has monitored seven Boulder County Open Space properties to answer the questions: What species of butterflies inhabit the Open Spaces? What is the trend of their populations?

Most of these surveys use a meandering technique. However, one survey on the Sherwood Road near Caribou Ranch changed to use a transect method. Surveys were conducted from April to September. Each site was visited from two to thirteen times except for Sherwood transect which was visited twenty-one times; researchers numbered from one to seven, usually two. A total of 86 species were seen in the 2024 surveys; with 69 sighted at Sherwood; in addition, some of those species and a further 17 species at the lower elevation open spaces.

The calculation Individual butterflies per Research Hour (I/RH) establishes a method of comparison of populations across years. The number fluctuates yearly, ranging from 19.1 to 54.3. In 2024, 28 I/RH were documented. A trend line was calculated covering the 2004-2024 field data, which seems to be continuing as predicted. In the 2023 “the population of butterflies was determined to be declining by approximately 1.3% per year or about five sightings per hour each decade. (Chu et al. 2023) A researcher in 2004 may have seen about 39 butterflies in an hour of observation. In 2024, two decades later a researcher may expect to see about 27 butterflies in an hour.” Numerous variables may be involved in the trend, including the year’s weather (consistently high temperatures and low precipitation rates), which may indicate climate change.

## **II. Introduction**

Butterfly surveys have been continuous each year since 2003 when it was a walk by a small group of Naturalist Volunteers namely Donn and Cathy Cook and this author. We began keeping records in 2004 and submitting reports to the Boulder County Parks and Open Space offices. Historically, collating of specimens had occurred with collections being stored in Colorado State University, the University of Colorado, and the Denver Museum of Nature and Science. No one had kept records of butterfly species in the Boulder County Open Spaces. We began an inventory of populations and species in 2007, primarily in Anne U. White Trail, Southeast Buffer, Heil Ranch (Geer Meadow, Main Entrance Parking Lot to Plumely Crossing, and Red Gulch), Walker Ranch and Caribou Ranch. Survey reports have been submitted to the county every year. An overall trend of the these butterfly populations in the county was calculated for 2004-2024.

### **III. Acknowledgments**

We thank the Boulder County employees for maintaining a close relationship with the team, especially Susan Spaulding, Environmental Resources Specialist, Resident Park Rangers Kevin Grady at Heil Ranch and Sarah Andrew at Caribou Ranch. We appreciate their professional interaction, sharing of knowledge and timely updates. The research permits given by Boulder County have allowed us to go deep into the Open Spaces.

Christian Nunes, Boulder City Naturalist, and Mike Fisher, author, have been our mentors when it comes to identification of species. Paul Opler, international authority on butterflies, was our mentor for many years, always willing to answer our questions and keeping us from going astray. His encouragement will never be forgotten. Daniel Ziskin, scientist at the National Center for Atmospheric Research, designed the computer program that determines the trends of butterfly populations.

### **IV. Methodology**

This year the butterfly Research Team volunteered 221 hours for Boulder County and 99 Research Hours. The County Volunteer Hours are found by multiplying the number of people in the field times the Research Hours. This compares to the field work in 2023 which was 274 Boulder County Volunteers Hours and 143 Research Hours.

The surveys continue to be meandering, that is, retracing nearly the same path each survey, moving momentarily to 'hot spots' with many butterflies, and choosing the day of each survey relating to promising weather. An exception is the transect by Venice Kelly at Sherwood Trail. The transect survey follows a prescribed pathway, repeated date, time in the field, and the area observed. This area is the same year after year. (Pollard, 1993) Data for each outing are recorded for the Open Space areas walked, the date, weather pattern and time completing the survey. The twelve researchers carrying the permit in 2024 were John Barr, Amy Chu, Ann Cooper, Dan Fosco, Chris Freidman, Linda Hardesty, Sue Hirschfeld, Richard Holmes, Venice Kelly, Joe Krieg, Pam Piombino, and this author. Cathy Cook, Larry Crowley, Jeff MacLachlan, Jean Morgan, Connie Redak, and Wynne Whyman joined us when their schedules allowed. Many photographs were shared, especially when we were seeking help for identification of butterflies. Surveys were conducted from April to September. Each site was visited from two to thirteen times except for Sherwood Trail transect which was visited twenty-one times.

The unit I/RH (Individual butterflies per Research Hour) was devised to allow comparisons of populations of butterfly individuals from one date to another, one location to another and one season to another. This became

necessary because the meander method was the most common. The trend of the populations was calculated for the entire population in the Open Spaces that we explored.

## V. Trends

Overall, about 102 species have been identified in the Open Spaces 2004-2024. Below is a list of the recent

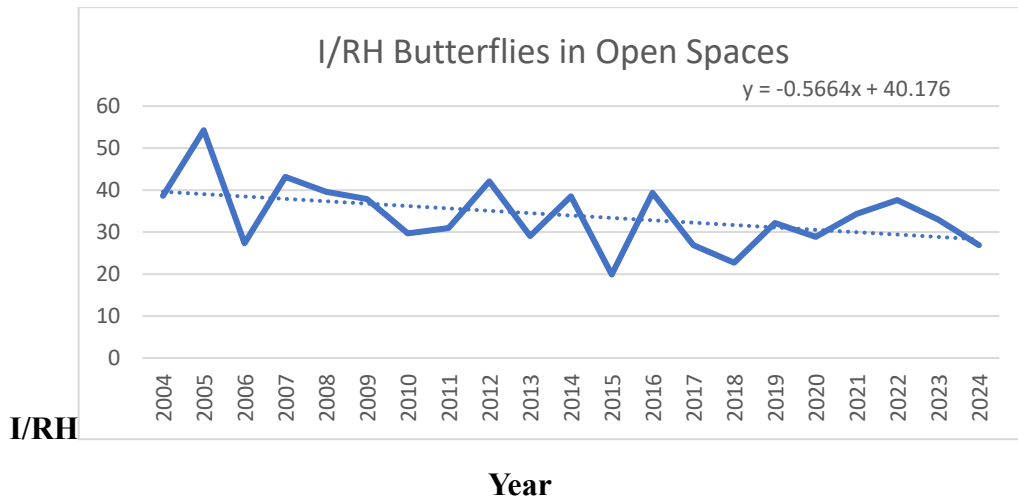
a) numbers of species identified during the year and b) the first-time observed species:

| <u>Year</u> | <u>No. of species</u> | <u>First time Observed:</u>   |
|-------------|-----------------------|---|
| 2020        | 84                    | Large Marble  |
| 2021        | 96                    | Purplish Copper<br>Bronze Copper<br>Viceroy<br>American Snout<br>Lupine Blue<br>Leonard's Skipper<br>Mystic Skipper |
| 2022        | 122                   | Arachne Checkerspot<br>Southern Dogface<br>Western Pygmy Blue<br>Peck's Skipper                                     |
| 2023        | 92                    | Mexican Yellow<br>Question Mark   |
| 2024        | 86                    | Jutta Arctic  |

On the other hand, some species are not recorded and are often present. There was a lack of Gossamer-wing species generally this summer. Melissa Blue (*Plebejus melissa*) was the only species of blue found in each of the Open Spaces, and numbers of these individuals were low.

The count of all-county all-species butterfly populations, as measured by Individual/Research Hour (I/RH), has large interannual variation. Seasonal effects such as temperature, moisture and natural disasters (e.g. fire or flood) impact both the butterfly populations and the data collection protocols. Despite the interannual variability, a clear trend emerges. If we focus on the over-all trend, we can describe the county-wide butterfly abundance. Neglecting interannual variation, the population is declining by approximately 1.3% per year or about 5 individual sightings per hour each decade. For example, “a researcher in 2004 may have seen about 40 butterflies in an hour of observation. A prediction was made that in 2024, two decades later, a researcher may expect to see about 30 butterflies in an hour.” (Chu et al. 2023) Actually the I/RH was, in fact only about 27 this 2024.

## Individual Butterflies per Research Hour in Seven Boulder County Open Spaces 2004-2024



|      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
| 38.6 | 54.3 | 27.4 | 43.1 | 39.6 | 37.9 | 29.7 | 31   | 42.1 | 29.1 | 38.5 | 19.9 | 39.4 | 26.9 | 22.7 | 32.2 | 28.9 | 34.3 | 37.6 | 33   | 26.9 |

I/RH

### VI. Narrative Discussion for 2024

The species inventory is recorded continuously from one season to the next, to answer the question of which species are found in the Open Spaces in Boulder County. This means that many species have no numbers listed for 2024.

#### A. Anne U. White Trail

The Research team made one notable observation in 2024, and it was a pleasure to see five Julia Orangetips (*Anthocharis julia*) on May 16.

#### B. Southeast Buffer

This Open Space was extremely dry from the beginning of the summer. Only a few moist spots were in the beginning terminus of Rock Creek. On April 14, the earliest observation in the Open Spaces, only two Anise Swallowtails (*Papilio zelicaon*) and seven Cabbage Whites (*Pieris rapae*) were found on these moist spots. On June 16 ten Silver-spotted Skippers (*Epargyreus clarus*) appeared for the first time during this 20<sup>th</sup> annual count.

## **C. Heil Ranch Open Space**

### **1. Heil North – Red Gulch, Picture Rock Trail**

One of our favorite areas to visit has been Red Gulch, which is in the northwest portion of Heil below the Picture Rock Trail. It is accessed through Ron LaFollette's property, with his permission. In 2024 the Red Gulch Stream was dry all summer, which meant the numbers of butterflies were lower. During the four research visits Cabbage Whites, Common Ringlets (*Coenonympha californica ochracea*), and Common Checkered-skippers (*Burnsius communis*) were the most abundant. Nine species and 29 individuals of blues were found. The Melissa Blue (*Plebejus melissa*) was the only species of blue found in each of the Open Spaces, and numbers of these individuals were low. This compared to the lack of Gossamer-wing species found generally this summer. Red Admirals (*Vanessa atalanta*) were in the Red Gulch during three of the field days. The drainage tiles from LaFollette's home provided moisture for the butterflies and wasps. However, by August 24 no butterflies were present, likely because of the extreme heat.

### **2. Geer Watershed**

The Geer Meadow was visited only twice. The team separated into five groups going in many different directions to get a good representation of the local butterflies. On May 23, all six swallowtails were found: Black (*Papilio polyxenes*), Anise (*P. zelicaon*), Indra (*P. indra*), Western Tiger (*Pterorus rutulus*), Pale (*Pt. eurymedon*), and Two-tailed (*Pt. multicaudata*). Fifty-seven Pale Swallowtails were puddling in groups of eight to ten on moist sandbars. As expected, Cabbage Whites were the most numerous. Silvery Blues (*Glycopsyche lygdamus*) had outstanding numbers of individuals (81) on May 23, and these were coursing actively in the air. Twenty Gorgone Checkerspots (*Chlosyne gorgone*) were near the moisture in the shallow stream. The early Milbert's Tortoiseshells (*Aglais milberti*) and Mourning Cloaks (*Nymphalis antiopa*) were nearby. Flowers were already poor, so the research team left Geer Watershed to seek more water-rich sites. We checked one more time on August 10 in the same area when only 95 individuals were sighted compared to 350 individuals in May.

### **3. Main Entrance Parking Lot to Plumely Crossing**

The Plumely Crossing is where the service road crosses the streamlet from Plumely Canyon. Since Geer Meadow plants were so desiccated, we chose to walk from the entrance parking lot to this stream and spend time where the butterflies had found sufficient moisture. These butterflies were males coming for liquid following their 10–12-week metamorphosis within each chrysalis.

We noticed the Gossamer-winged Butterflies (Lycaenidae) i.e. coppers, hairstreaks and blues, were severely affected by factors occurring in climate change, especially extreme, long-lasting heat. Only Western Tailed-Blue (*Cupido amyntula*), and Melissa Blue (*Plebejus melissa*) each had five individuals during the summer, while the Silvery Blue numbered fifteen individuals. The more successful species were 140 Pale Swallowtails during May 16 to June 28: Two-tailed Swallowtails and Common Ringlets (*Coenonympha californica tullia*) at 18 each. By July 17 the entire Plumely Crossing was dry. Therefore, August 15 was the final observation, following a downpour, which also dried quickly.

#### **D. Walker Ranch**

Walker Ranch was visited five times in 2024. The first survey was on April 2 on the Lower Walker Loop. It was early in butterfly season, thus only several Hoary Commas (*Polygonia gracilis*), Mourning Cloaks, and Painted Ladies (*Vanessa cardui*) were noted. One White-Lined Hairstreak (*Callophrys sheridanii*) was nectaring on Spring Beauty flowers. The additional observations in Walker were on the Homestead Trail. Hoary Elfins (*Callophrys polios*) were the most common butterfly May 17- June 12 with nine Rocky Mountain Parnassians (*Parnassius smintheus*), six Large Marbles (*Euchloe ausonides*) and thirteen Julia Orangetips (*Anthocharis Julius*). Only thirteen I/RH (Individual Butterflies per Research Hour) were seen in Walker which was one of the two lowest findings between 2007-2024.

#### **E. Caribou - Sherwood Transect**

There were 69 species identified on the Sherwood Transect in both 2023 and 2024. During the previous two years there were 70 and 71 species meaning a loss of 2 species that were not seen. There were 1,103 individuals sighted in 2024, compared with an average during the last seven years of 1,174 individual butterflies. Fortunately, three new species were sighted on the Sherwood Transect in 2024: Jutta Artic (*Oeneis jutta*), Viceroy (*Limenitis archippus*), and Snow's Skipper (*Paratrytone snowi*). The average number of Research Hours over seven years on the restrictive transect was 60, but this year only 49.5 I/RH. Reasons for this were extremely high temperatures.

### **Sherwood Transect**

#### **By Venice Kelly**

The 2024 butterfly season began April 4 with many snow drifts across the road. A lone Mourning Cloak (*Nymphalis antiopa*) was sunning itself at the seep. The seep is near the mine entrance where water moves through the gravel slowly into a ditch which is accessed by many creatures. On April 14 a White-lined Green Hairstreak (*Callophrys sheridanii*), two Hoary Commas (*Polygonia gracilis*) and two Mourning Cloaks were flying.

On May 3 there were two Mourning Cloaks and a Painted lady (*Vanessa cardui*) flying at the seep. Two Hoary Comma's were seen along the road. On May 14 five Hoary Elfins (*Callophrys polios*) emerged with a Western Pine Elfin (*C. eryphon*), Hoary Comma, Painted Lady and two Mourning Cloaks. Spring Beauties, Pasque Flowers and Chickweed were blooming. During May 17th, eight species were seen; a California Tortoiseshell (*Nymphalis californica*), Julia Orangetip (*Anthocharis julia*), and a Two-banded Checkered-skipper (*Pyrgus ruralis*). On May 19th seven species were found. Our first Silvery Blue (*Glaucopsyche lygdamus*) of the season, a Dreamy Duskywing (*Erynnis icelus*) and twelve Hoary Elfins (*Callophrys polios*). On May 27 Western Pine Elfins had the highest numbers at eighteen individuals. Ten Hoary Elfins, seven Julia Orangetips, an Anise Swallowtail (*Papilio zelicaon*), a Large Marble (*Euchloe ausonides*) and an Orange Sulphur (*Colias eurytheme*). Tower mustard was starting to bloom attracting female Orangetips. During May 30 the temperature reached 22 ° C. and sixteen species were found. The first Echo Azure (*Celastrina echo sidara*) of the season, a Green Comma (*Polygonia faunus*) and the first Common Ringlet (*Coenonympha californica ochracea*) were flying. Many of the resident butterflies were present with seven Persius Duskywings (*Erynnis persius*), three Dreamy Duskywings, eighteen Hoary Elfins, and thirteen Western Pine Elfins.

On June 5, Wynne Whyman and I went to Sherwood. We found 17 species; four Chryxus Arctics (*Oeneis chryxus*), that only fly on even number years. Five Western Green Hairstreaks (*Callophrys affinis homoperplexa*), a Western Tailed-blue (*Cupido amyntula*), a Checkered White (*Pontia protodice*), and an Arrowhead Blue (*Glaucopsyche piasus*). I have only seen one other Arrowhead Blue on the transect. Still present was a Two-banded Checkered-skipper. I went to Sherwood on June 11 to find Rocky Mountain Parnassian (*Parnassius smintheus*) flying, with Pale Swallowtails (*Papilio eurymedon*), Western Tiger Swallowtails (*P. rutulus*), Northern Crescents (*Phyciodes cocyta*) and Northern Checkerspots (*Chlosyne palla*). There was one Nevada Skipper (*Hesperia nevada*), the only one I saw all summer. The seep usually attracts several Nevada skippers. Two Pacuvius Duskywings (*Erynnis pacuvius*) were puddling, along with a Boisduval's Blue (*Plebejus icarioides*). The Penstemon, Blue-eyed Grass, Fremont Geranium and Potentilla were now starting to bloom.

During June 22 I found twenty-nine species; however, the individual numbers were lower than usual. A Black Swallowtail (*Papilio polyxenes*) was puddling in the seep. Queen Alexandra's Sulphurs (*Colias alexandra*) were flying. One Dainty Sulphur (*Nathalis iole*) showed up with twelve Rocky Mountain Dotted-blues (*Euphilotes ancilla*), Silvery Checkerspots (*Chlosyne nycteis*) and a Lupine Blue (*Plebejus lupini lutzi*). A Margined White (*Pontia marginalis*) was flying in the Bridge meadow next to Sherwood Road. One Variegated Fritillary

(*Euptoieta claudia*) was flying low to the ground near flowers blooming in the meadow attracting butterflies to nectar. In Caribou Ranch Open Space on June 25 the meadow was quite dry without many flower varieties. There is a small creek near the bottom of the big meadow that was nearly dry. Still, we found sixteen species including sixteen Rocky Mountain Parnassians, twelve Queen Alexandra's Sulphurs, seventeen Chryxus Arctics, nine Common Ringlets and twelve Persius Duskywings. There were a few blues including an Arrowhead Blue, female ovipositing. Two Lupine Blues, five Rocky Mountain Dotted-blues and seven Boisduval's Blues were also recorded.

Jeff and I went to Sherwood on July 5 when the temperature was 17 °C. In this cool air, the butterflies were slow to begin fluttering. We saw twenty-nine species, two of which were new to the transect. One was a Snow's Skipper (*Paratrytone snowi*), at the seep. The second was a Jutta Arctic (*Oeneis jutta*)! To be clear, there have only been four Jutta Arctics seen anywhere in Boulder County. Mike Fisher, a lepidopterist, saw the first one in Boulder County in the 1990's. I found two Jutta Arctic's in Boulder County, one in 2012 and one in 2016. They only fly on even number years. I am thrilled that this uncommon butterfly showed up on Sherwood transect. Also flying, were ten Rocky Mountain Parnassians, twenty-eight Queen Alexandra's Sulphurs, nineteen Rocky Mountain Dotted-blues, nine Northern Checkerspots, and three Silvery Checkerspots. A Purplish Copper (*Lycaena helloides*) and an Edith's Copper (*Tharsalea editha*) were in the Bridge meadow, along with two Garita Skipperlings (*Oarisma garita*) and four Weidemeyer's Admirals (*Limenitis weidemeyerii*), Three Dainty Sulphurs, and a Western Green Hairstreak among many others that day. On July 23 the air was hazy due to Canadian fires, and it felt hot at 24 °C. I found twenty-one species including a Black Swallowtail, twenty-one Small Wood-nymphs (*Cercyonis oetus*), three Clouded Sulphurs (*Colias philodice*), three Purplish Coppers, two Ruddy Coppers (*Lycaena rubidus*) and four Blue Coppers (*Tharsalea heteronea*). I also saw a Russet Skipperling (*Piruna pirus*), a Mormon Fritillary (*Argynnis mormonia*) and two Margined Whites (*Pieris marginalis*). The ground was dry and crunchy under my feet. On July 30 there was an unexpected sighting of a Viceroy (*Limenitis archippus*), a new species for the transect.

August 3 was sunny and 23-26 °C. We found fifteen species. Small Wood-nymphs had the highest number of individuals at 23; Four Woodland Skippers (*Ochlodes sylvanoides*) plus two Reakirt's Blues (*Echinargus isola*), and an Aphrodite Fritillary (*Arginnis aphrodite*). Two Hedgerow Hairstreaks (*Satyrium saepium*), A Green Comma., Two Ruddy Coppers and an Arctic Blue (*Agriades glandon rustica*) were still flying, even though the flowers and grasses were dry. We had several days of rain however, many of the flowers that usually bloom along the Sherwood Road hadn't blossomed. On August 16, I went to Sherwood for a short survey. It was

26 °C. A Western Branded Skipper (*Hesperia colorado*) and a Northwestern Fritillary (*Arginnis hesperis*) were flying with Small Wood-nymphs, and a Gray Hairstreak (*Strymon melinus*). On Aug.30 with Wynne Whyman, we counted ten species; one a Satyr Comma (*Polygonia satyrus*), the first one I have seen on the transect. Nine Pine Whites and eight Orange Sulphurs were flying with five Woodland Skippers and a Common Checkered-skipper (*Burnsius communis*).

September grasses and flowers were dry and going to seed. On September 13 eight species were evident: Pine Whites along with twenty-one Orange Sulphurs, an American Lady (*Vanessa virginiensis*), one Hoary Comma, a Dainty Sulphur, and ten Field Crescents. On September 20 we found four species; on September 24 only five were flying including one Mourning Cloak which was the only fall Mourning Cloak I found. A lovely Painted Lady (*Vanessa cardui*), and three Common Checkered-skippers completed our last survey for the season.

In conclusion there were fewer days in 2024 that I did surveys. I made observations that are causing concern. The Purplish Coppers, ordinarily an abundant species, were low in numbers and stopped flying by the end of July, about a month early. Russet Skipperlings were low in numbers, as were Hoary Commas, Mourning Cloaks, and Nevada Skippers. Fritillaries were low in numbers as well. Conditions were not optimal. Even with the rain, the vegetation was extremely dry. The spring flowers had been slow to blossom, and the fall flowers were blooming too early, making fall nectar sources hard to find.

There were three new species that came to the Sherwood transect. The Snow's Skipper was at the seep puddling. The Jutta Arctic was on Sherwood Road in the shadows making it difficult for me to identify until I looked at the photograph on my computer. These are rare butterflies on our side of the continental divide. The third new species was a Viceroy, found in the Bridge meadow by my husband Jeff Maclachlan.

I am grateful to the kind people of Boulder County Open Space who keep giving us permits so we can continue to collect this all-important information. Many thanks go to Jan Chu who works tirelessly and with a smile to keep track of all our data.

## **F. Braly and Western Mobile**

These are adjoining lands that the County owns east of Hwy 36 and south of Hwy 34. Two exploratory visits were made into these two areas. There were many weeds, thus with natives being mostly absent, there were not many host plants for butterflies. Invasive Cabbage Whites were the most common. Notably these can live on a multitude of host and nectar plants. The Common Sootywings (*Pholisora catullus*) which live on Pigweed or

Lamb's Quarters were found there. The Sootywing is found only in one other site in the Open Spaces, so it is rather uncommon. On July 23, we found more species: Two-tailed Swallowtails, Orange Sulphurs (*Colias eurytheme*) and Clouded Sulphurs (*C. philodice*).

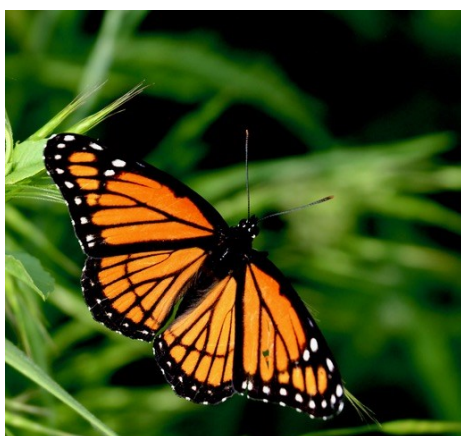
## G. Conclusion

Regarding our two research questions, the species that inhabit Boulder County Open Spaces are declining. In 2024 a total of 86 species were seen in the surveys. Each year there are a few species entering that have not been seen before, however these usually are momentary visitors dispersed from another location. Seldom do the butterflies establish residency except for the Large Marble and perhaps the Pygmy Blue. In 2024 the copper, hairstreaks and blues, were severely affected by weather factors especially extreme, long-lasting heat and severe drought in the foothills. The total number of butterflies, as measured by I/RH indicates that a 20-year downward trend is continuing. While Individuals per Research Hours (I/RH) was calculated at 38.6 in 2004, the 2024 figure is 26.9.

As mentioned in previous reports, pesticides, dogs, auto traffic and fires my have contributed to the trend. The County Open Spaces have been seriously affected by the higher temperatures and lack of water. Fortunately, the historical look at the species of butterflies and their populations has been recorded for nearly twenty years.

- (1) 2023 Chu. J and V. Kelly. 2023 Inventory of Butterflies of Boulder County Open Spaces. Self-published.
- (2) 1993. Pollard, E., and T.J. Yates. Beverly Hills, California.

## VII. Data Tables



Viceroy, by John Barr

## A. Anne U. White Trail

| Anne U. White Trail                    | 2024                          | 5/15 |
|--|-------------------------------|------|
| <i>Parnassius smintheus</i>            | Rocky Mountain Parnassian     |      |
| <i>Papilio polyxenes</i>               | Black Swallowtail             |      |
| <i>P. zelicaon</i>                     | Anise Swallowtail             |      |
| <i>P. indra</i>                        | Indra Swallowtail             |      |
| <i>P. rutulus</i>                      | W. Tiger Swallowtail          |      |
| <i>P. eurymedon</i>                    | Pale Swallowtail              |      |
| <i>P. multicaudata</i>                 | Two-tailed Swallowtail        |      |
| yellow swallowtail sp.                 |                               |      |
| <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    |
| <i>Euchloe ausonides</i>               | Large Marble                  |      |
| <i>E. olympia</i>                      | Olympia Marble                |      |
| white sp.                              |                               |      |
| <i>Anthocharis julia</i>               | Julia Orangetip               | 5    |
| <i>Colias philodice</i>                | Clouded Sulphur               |      |
| <i>C. eurytheme</i>                    | Orange Sulphur                |      |
| <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' Elfin                   |      |
| <i>C. polios</i>                       | Hoary Elfin                   |      |
| <i>C. eryphon</i>                      | Western Pine Elfin            |      |
| <i>Satyrium titus</i>                  | Coral Hairstreak              |      |
| <i>Strymon melinus</i>                 | Gray Hairstreak               |      |
| <i>Cupido amyntula</i>                 | Western Tailed-Blue           |      |
| <i>Celastrina ladon sidara</i>         | Echo Azure                    |      |
| <i>C. l. lucia</i>                     | Lucia form - Echo Azure       |      |
| <i>Glaucopsyche piasus</i>             | Arrowhead Blue                |      |
| <i>G. lygdamus</i>                     | Silvery Blue                  |      |
| <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                  |      |
| <i>P. icarioides</i>                   | Boisduval's Blue              |      |
| <i>P. lupini lutzi</i>                 | Lupine Blue                   |      |
| <i>P. glandon rustica</i>              | Arctic Blue                   |      |
| blue sp.                               |                               |      |
| <i>Apodemia nais</i>                   | Nais Metalmark                |      |
| <i>Danaus plexippus</i>                | Monarch                       |      |
| <i>Libytheana carinenta</i>            | American Snout                |      |
| <i>Euptoieta claudia</i>               | Variiegated Fritillary        |      |
| <i>Argynnis aphrodite</i>              | Aphrodite Fritillary          |      |
| <i>A. edwardsii</i>                    | Edwards' Fritillary           |      |
| <i>A. coronis</i>                      | Coronis Fritillary            |      |
| <i>A. callippe</i>                     | Callippe Fritillary           |      |
| <i>A. hesperis</i>                     | Northwestern Fritillary       |      |
| <i>A. mormonia</i>                     | Mormon Fritillary             |      |
| fritillary sp.                         |                               |      |
| <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                |      |
| <i>P. cocyta</i>                       | Northern Crescent             |      |
| <i>P. pulchella</i>                    | Field Crescent                |      |
| <i>Polygonia interrogationis</i>       | Question Mark                 |      |

|   |                          |      |
|---|--------------------------|------|
| <i>Polygonia gracilis</i>               | Hoary Comma              |      |
| <i>Polygonia satyrus</i>                | Satyr Comma              |      |
| comma sp.                               |                          |      |
| <b>Anne U. White Trail</b>              | <b>2024</b>              | 5/15 |
| <i>Junonia coenia</i>                   | Common Buckeye           |      |
| <i>N. antiopa</i>                       | Mourning Cloak           |      |
| <i>Vanessa atalanta</i>                 | Red Admiral              |      |
| <i>V. cardui</i>                        | Painted Lady             |      |
| <i>V. virginiensis</i>                  | American Lady            |      |
| <i>Limenitis weidemeyerii</i>           | Weidemeyer's Admiral     |      |
| <i>Coenonympha californica ochracea</i> | Common Ringlet           |      |
| <i>Cercyonis pegala</i>                 | Common Wood-Nymph        |      |
| <i>C. oetus</i>                         | Small Wood-Nymph         |      |
| <i>Oeneis uhleri</i>                    | Uhler's Arctic           |      |
| <i>Epargyreus clarus</i>                | Silver-spotted Skipper   |      |
| <i>Pholisora catullus</i>               | Common Sootywing         |      |
| <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            |      |
| <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           |      |
| <i>Poanes taxiles</i>                   | Taxiles Skipper          |      |
| <i>Euphyes vestris</i>                  | Dun Skipper              |      |
| <i>Atrytonopsis hianna</i>              | Dusted Skipper           |      |
| skipper sp.                             |                          |      |

| Anne U. White Trail                       | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016              | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|------|------|------|------|------|------|------|------|------|-------------------|------|------|------|------|------|------|------|------|
| # Species Identified during the year 2024 | 44   | 45   | 35   | 31   | 47   | 50   | 29   | 17   | 10   | fl<br>o<br>o<br>d | 24   | 32   | 23   | 4    | 33   | 28   | 20   | 2    |
| 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  | 4.5  | 2    |
| Individual Butterflies Counted            | 366  | 536  | 217  | 112  | 773  | 509  | 334  | 105  | 33   |                   | 96   | 319  | 216  | 22   | 215  | 240  | 123  | 8    |
| 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   | 27   | 4    |
| # 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  | 4.4  | 2    |
| Total # species 2021-2024                 |      |      |      |      |      |      |      |      |      |                   |      |      |      |      | 83   | 83   | 84   | 84   |

## B. Southeast Buffer

| Southeast Buffer                   | 2024                     | 4/14 | 6/16 | 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   |      |      |       |
| <i>Pontia protodice</i>            | Checkered White          |      |      |       |
| <i>P. occidentalis</i>             | Western White            |      | 3    | 3     |
| <i>Pieris rapae</i>                | Cabbage White            | 7    | 7    | 14    |
| <i>Euchloe olympia</i>             | Olympia Marble           |      |      |       |
| <i>E. ausonides</i>                | Large Marble             |      |      |       |
| white sp.                          |                          |      | 2    | 2     |
| <i>Colias philodice</i>            | Clouded Sulphur          |      |      |       |
| <i>C. eurytheme</i>                | Orange Sulphur           |      | 4    | 4     |
| sulphur sp.                        |                          | 1    |      | 1     |
| <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          |      |      |       |
| <i>Cupido amyntula</i>             | W. Tailed-blue           |      |      |       |
| <i>Glaucopsyche lygdamus</i>       | Silvery Blue             |      |      |       |
| <i>Euphilotes ancilla</i>          | Rocky Mtn. Dotted-Blue   |      |      |       |
| <i>Echinargus isola</i>            | Reakirt's Blue           |      |      |       |
| <i>Plebejus melissa</i>            | Melissa Blue             |      |      |       |
| blue sp.                           |                          |      |      |       |
| <i>Danaus plexippus</i>            | Monarch                  |      |      |       |
| <i>Agraulis vanilla</i>            | Gulf Fritillary          |      |      |       |
| <i>Euptoieta claudia</i>           | Variegated Fritillary    |      |      |       |
| <i>Argynnis aphrodite</i>          | Aphrodite Fritillary     |      |      |       |
| <i>A. edwardsii</i>                | Edwards' Fritillary      |      |      |       |
| fritillary sp.                     |                          |      | 1    | 1     |
| <i>Chlosyne fulvia</i>             | Fulvia Checkerspot       |      |      |       |
| <i>C. gorgone</i>                  | Gorgone Checkerspot      |      |      |       |
| <i>Phyciodes tharos</i>            | Pearl Crescent           |      |      |       |
| <i>P. pulchella</i>                | Field Crescent           |      |      |       |
| <i>Aglais milberti</i>             | Milbert's Tortoiseshell  |      |      |       |
| <i>Nymphalis antiopa</i>           | Mourning Cloak           |      |      |       |
| <i>Vanessa atalanta</i>            | Red Admiral              |      |      |       |
| <i>Vanessa cardui</i>              | Painted Lady             |      |      |       |
| <i>Junonia coenia</i>              | Common Buckeye           |      |      |       |
| <i>Limenitis weidemeyerii</i>      | Weidemeyer's Admiral     |      |      |       |
| <i>Coenonympha tullia ochracea</i> | Common Ringlet           |      |      |       |
| <i>Cercyonis pegala</i>            | Common Wood Nymph        |      |      |       |
| ** <i>Epargyreus clarus</i>        | Silver Spotted Skipper   |      | 10   | 10    |
| <i>Erynnis afranius</i>            | Afranius Duskywing       |      |      |       |
| <i>E. persius</i>                  | Persius Duskywing        |      |      |       |
| <i>Burnsius communis</i>           | Common Checkered-skipper |      | 1    | 1     |
| <i>Pyrgus scriptura</i>            | Small Checkered-skipper  |      |      |       |
| <i>Pholisora catullus</i>          | Common Sootywing         |      |      |       |
| <i>Hesperia uncas</i>              | Uncas Skipper            |      |      |       |
| <i>H. ottoe</i>                    | Ottoe Skipper            |      |      |       |
| <i>H. leonardus</i>                | Leonard's Skipper        |      |      |       |
| <i>Atrytone arogos</i>             | Arogos Skipper           |      |      |       |
| <i>Anatrytone logan</i>            | Delaware Skipper         |      |      |       |
| skipper sp.                        |                          |      |      |       |
| Total                              |                          |      |      | 38    |

**B. Southeast Buffer (continued)**

|  |  |  |   |  |
|--|--|--|---|--|
| 4/14/2024<br>10:15-12 noon<br>23-26°C,<br>Clear,<br>5-10 mph | Coalton Trail, then<br>south toward water<br>tank, Rock Creek;<br>Hwy 128 to<br>Swallowtail Hill | Whites<br>carried<br>away by<br>wind, only<br>2 by Rock<br>Creek | Extreme drought.<br>Flowers scattered,<br>not more than 2 cm tall | Chris Friedman<br>Jean Morgan<br>Jan Chu<br>Linda Hardesty<br>Sue Hirschfeld<br>Carol Cushman<br>Larry Crowley |
| 6/16/2024  | South from gate  |  |   | Jan Chu<br>Amy Chu   |

**3 Research Hours 16 Research Hours by Volunteers for Boulder County**

| <b>Southeast Buffer</b>                                    | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| # Species identified during the year in Southeast Buffer   | 25   | 20   | 21   | 24   | 19   | 18   | 20   | 15   | 23   | 13   | 16   | 18   | 12   | 17   | 16   | 17   | 13   | 6    |
| Cumulative # Species 2007-2024 sighted in Southeast Buffer | 21   | 23   | 33   | 37   | 41   | 44   | 44   | 44   | 46   | 46   | 47   | 47   | 47   | 47   | 47   | 48   | 48   | 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  | 3.5  | 3    |
| # Individual Butterflies Counted                           | 256  | 373  | 353  | 443  | 160  | 227  | 169  | 178  | 294  | 121  | 119  | 271  | 39   | 57   | 478  | 175  | 115  | 38   |
| # Individuals / Research Hour                              | 51   | 18   | 39   | 40   | 14   | 25   | 14   | 22   | 24.5 | 27   | 15   | 30   | 7    | 8.8  | 139  | 18   | 33   | 13   |
| # Species / Research Hour                                  | 5    | 0.9  | 2    | 3    | 2    | 2    | 1.6  | 2    | 2    | 3    | 2    | 2    | 2    | 2.6  | 4.2  | 1.8  | 3.7  | 2    |

**C . Heil Ranch – Geer Watershed**

| Heil Valley Ranch -<br>Geer Watershed  |                              | 5/23/<br>2024 | 8/10/<br>2024 | Total |
|--|------------------------------|---------------|---------------|-------|
|  | 2024                         |               |               |       |
| <i>Papilio polyxenes</i>               | Black Swallowtail            | 2             |               | 2     |
| <i>P. zelicaon</i>                     | Anise Swallowtail            | 2             |               | 2     |
| <i>P. indra</i>                        | Indra Swallowtail            | 5             |               | 5     |
| <i>P. rutulus</i>                      | Western Tiger Swallowtail    | 2             |               | 2     |
| <i>P. eurymedon</i>                    | Pale Swallowtail             | 57            |               | 57    |
| <i>P. multicaudata</i>                 | Two-tailed Swallowtail       | 2             | 1             | 3     |
| swallowtail yel sp.                    |                              | 7             |               | 7     |
| <i>Neophasia menapia</i>               | Pine White                   |               |               |       |
| <i>Pontia sisymbrii</i>                | Spring White                 |               |               |       |
| <i>P. protodice</i>                    | Checkered White              |               |               |       |
| <i>P. occidentalis</i>                 | Western White                | 1             |               | 1     |
| <i>Pieri rapae</i>                     | Cabbage White                | 27            | 41            | 68    |
| <i>P. marginalis</i>                   | Margined White               |               |               |       |
| <i>Euchloe ausonides</i>               | Large Marble                 | 4             |               | 4     |
| <i>E. olympia</i>                      | Olympia Marble               |               |               |       |
| <i>Anthocharis julia</i>               | Julia Orangetip              | 1             |               | 1     |
| white sp.                              |                              | 30            | 20            | 50    |
| <i>Colias philodice</i>                | Clouded Sulphur              | 1             | 1             | 2     |
| <i>C. eurytheme</i>                    | Orange Sulphur               | 2             | 8             | 10    |
| <i>C. alexandra</i>                    | Queen Alexandra's Sulphur    |               |               |       |
| <i>C. cesonia</i>                      | Southern Dogface             |               |               |       |
| <i>Eurema mexicana</i>                 | Mexican Sulphur              |               |               |       |
| <i>Nathalis iole</i>                   | Dainty Sulphur               |               |               |       |
| sulphur sp.                            |                              | 5             |               | 5     |
| <i>Lycaena dione</i>                   | Gray Copper                  |               |               |       |
| <i>L. heteronea</i>                    | Blue Copper                  |               |               |       |
| <i>Tharsalea hyllus</i>                | Bronze Copper                |               |               |       |
| <i>Lycaena helloides</i>               | Purplish Copper              |               |               |       |
| <i>Callophrys affinis homoperplexa</i> | Western Green Hairstreak     | 1             |               | 1     |
| <i>C. gryneus</i>                      | Siva Juniper Hairstreak      |               |               |       |
| <i>C. sheridanii</i>                   | White-lined Green Hairstreak |               |               |       |
| <i>C. augustinus</i>                   | Brown Elfin                  |               |               |       |
| <i>C. eryphon</i>                      | Western Pine Elfin           |               |               |       |
| elfin sp.                              |                              |               |               |       |
| <i>Satyrium titus</i>                  | Coral Hairstreak             |               |               |       |
| <i>S. liparops</i>                     | Striped Hairstreak           |               |               |       |
| <i>S. saepium</i>                      | Hedgerow Hairstreak          |               |               |       |
| <i>Strymon melinus</i>                 | Gray Hairstreak              |               | 1             | 1     |
| <i>Leptotes marina</i>                 | Marine Blue                  |               |               |       |
| <i>Brephidium exile</i>                | Western Pygmy-Blue           |               |               |       |
| <i>Cupido amyntula</i>                 | Western Tailed-Blue          |               |               |       |
| <i>Celastrina echo sidara</i>          | Echo Azure                   |               |               |       |
| <i>C. echo lucia</i>                   | " Lucia type                 |               |               |       |
| <i>C. humulus</i>                      | Hops Azure                   |               |               |       |

| Heil Valley Ranch -<br>Geer Watershed |                               | 5/23/<br>2024 | 8/10/<br>2024 | Total |
|---------------------------------------|-------------------------------|---------------|---------------|-------|
|                                       | 2024                          |               |               |       |
| <i>Glaucopsyche piasus</i>            | Arrowhead Blue                |               |               |       |
| <i>G. lygdamus</i>                    | Silvery Blue                  | 81            |               | 81    |
| <i>Euphilotes ancilla</i>             | Rocky Mountain<br>Dotted-Blue |               |               |       |
| <i>Echinargus isola</i>               | Reakirt's Blue                |               | 2             | 2     |
| <i>Plebejus melissa</i>               | Melissa Blue                  |               | 1             | 1     |
| <i>P. saepiolus</i>                   | Greenish Blue                 |               |               |       |
| <i>P. icarioides</i>                  | Boisduval's Blue              |               |               |       |
| <i>P. lupini luzzi</i>                | Lupine Blue                   |               |               |       |
| <i>P. glandon rustica</i>             | Arctic Blue                   | 9             |               | 9     |
| blue sp.                              |                               | 10            |               | 10    |
| <i>Danaus plexippus</i>               | Monarch                       |               | 1             | 1     |
| <i>Apodemia nais</i>                  | Nais Metalmark                |               |               |       |
| <i>Euptoieta claudia</i>              | Variegated Fritillary         |               | 2             | 2     |
| <i>Argynnis aphrodite</i>             | Aphrodite Fritillary          |               |               |       |
| <i>A. edwardsii</i>                   | Edwards' Fritillary           |               |               |       |
| <i>A. coronis</i>                     | Coronis Fritillary            |               |               |       |
| <i>A. callippe</i>                    | Callippe Fritillary           |               |               |       |
| <i>A. hesperis</i>                    | Northwestern Fritillary       |               |               |       |
| <i>A. mormonia</i>                    | Mormon Fritillary             |               |               |       |
| fritillary sp.                        |                               | 2             | 2             | 4     |
| <i>Chlosyne gorgone</i>               | Gorgone Checkerspot           | 20            |               | 20    |
| <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             |               | 1     |
| <i>P. cocyta</i>                      | Northern Crescent             | 1             |               | 1     |
| <i>P. pulchella</i>                   | Field Crescent                | 12            | 1             | 13    |
| <i>Polygonia satyrus</i>              | Satyr Comma                   |               |               |       |
| <i>P. gracilis</i>                    | Hoary Comma                   |               |               |       |
| <i>Junonia coenia</i>                 | Common Buckeye                |               |               |       |
| <i>Aglais milberti</i>                | Milbert's Tortoiseshell       | 2             |               | 2     |
| <i>Nymphalis antiopa</i>              | Mourning Cloak                | 4             |               | 4     |
| <i>N. californica</i>                 | California<br>Tortoiseshell   |               |               |       |
| <i>Vanessa atalanta</i>               | Red Admiral                   | 1             |               | 1     |
| <i>V. cardui</i>                      | Painted Lady                  | 3             |               | 3     |
| <i>V. virginiensis</i>                | American Lady                 |               | 2             | 2     |
| <i>Limenitis<br/>weidemeyerii</i>     | Weidemeyer's Admiral          |               |               |       |
| <i>L. archippus</i>                   | Viceroy                       |               |               |       |
| <i>Asterocampa celtis</i>             | Hackberry Emperor             |               |               |       |
| <i>Cercyonis pegala</i>               | Common Wood-<br>Nymph         |               | 8             | 8     |
| <i>C. oetus</i>                       | Small Wood-Nymph              |               |               |       |
| <i>Erebia epipsodea</i>               | Common Alpine                 |               |               |       |
| <i>Oeneis chryxus</i>                 | Chryxus Arctic                |               |               |       |
| <i>O. uhleri</i>                      | Uhler's Arctic                |               |               |       |
| <i>Epargyreus clarus</i>              | Silver-spotted Skipper        |               |               |       |

| Heil Valley Ranch - Geer Watershed |                          | 5/23/2024 | 8/10/2024 | Total |
|------------------------------------|--------------------------|-----------|-----------|-------|
|                                    | 2024                     |           |           |       |
| <i>Cecropterus pylades</i>         | Northern Cloudywing      |           |           |       |
| <i>Erynnis icelus</i>              | Dreamy Duskywing         | 1         |           | 1     |
| <i>E. pacuvius</i>                 | Pacuvius Duskywing       | 24        |           | 24    |
| <i>E. afranius</i>                 | Afranius Duskywing       |           |           |       |
| <i>E. persius</i>                  | Persius Duskywing        | 14        |           | 14    |
| duskywing sp.                      |                          | 11        |           | 11    |
| <i>Burnsius communis</i>           | Common Checkered-skipper |           | 3         | 3     |
| <i>Pholisora catullus</i>          | Common Sootywing         |           | 1         | 1     |
| <i>Piruna pirus</i>                | Russet Skipperling       |           |           |       |
| <i>Oarisma garita</i>              | Garita Skipperling       |           |           |       |
| <i>Hesperia leonardus pawnee</i>   | Leonard's Skipper        |           |           |       |
| <i>Hesperia juba</i>               | Juba Skipper             |           |           |       |
| <i>H. colorado</i>                 | Western Branded Skipper  |           |           |       |
| <i>H. nevada</i>                   | Nevada skipper           |           |           |       |
| <i>Polites themistocles</i>        | Tawny-edged Skipper      | 2         |           | 2     |
| <i>P. peckius</i>                  | Peck's Slipper           |           |           |       |
| <i>Ochlodes sylvanoides</i>        | Woodland Skipper         |           |           |       |
| <i>Poanes taxiles</i>              | Taxiles Skipper          |           |           |       |
| <i>Euphyes vestries</i>            | Dun Skipper              |           |           |       |
| <i>Atrytonopsis hianna</i>         | Dusted Skipper           |           |           |       |
| <i>Polites mystic</i>              | Long Dash skipper        |           |           |       |
| Total                              |                          |           |           | 442   |
|                                    |                          |           |           |       |

#### 4.5 Research Hours 35.5 Volunteer Hours for Boulder County

| Date Conditions   | Location                     | Butterfly Activity   | Animals                           | Researchers   |
|---|------------------------------|--|-----------------------------------|---|
| 5/23/2024<br>10:15-12:15 pm<br>22 °C<br>Clear, passing clouds,<br>wind,<br>0-10 mph | Heil Ranch<br>Geer Watershed | Puddling on sand bars,<br>marbles on yellow<br>mustard, tiger sw. on lilac,<br>many flying silvery blues | Yellow racer<br>Golden brown bear | Amy Chu<br>Chris Friedman<br>Dan Fosco<br>Jan Chu<br>Linda Hardesty<br>Richard Holmes<br>Venice Kelly<br>Sue Hirschfeld |
| 8/10/2024<br>9:30- 12:00<br>17-23 °C. 50% low<br>fog, no wind.<br>Little sun.       | Heil Ranch<br>Geer Meadow    | Very little. Only Cabbage<br>Whites were successful.<br>Others found were<br>singletons.                 |                                   | Amy Chu<br>Barbara Fahey<br>Chris Friedman<br>Jan Chu<br>Linda Hardesty<br>Pam Piombino<br>Sue Hirschfeld               |

**C. Heil Ranch – Geer Watershed (continued)**

| <b>Heil-Geer Water-shed</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> | <b>2023</b> | <b>2024</b> |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| # Species Identified Annually Geer plus  | 42          | 56          | 44          | 49          | 36          | 38          | 38          | 42          | 22          | 43          | 30          | 40          | 44          | 40          | 46          | 55          | 50          | 36          |
| Cumulative # Species Geer plus 2007-2024 | 81          | 87          | 90          | 91          | 91          | 91          | 91          | 92          | 92          | 92          | 93          | 93          | 94          | 94          | 100         | 102         | 102         | 102         |
| Research Hours at Sites                  | 15.5        | 21          | 12.5        | 14          | 14          | 10          | 11          | 18          | 11          | 10          | 21          | 20          | 13.5        | 16.5        | 20          | 29          | 29          | 5           |
| # Individual Butterflies Counted         | 569         | 1225        | 492         | 419         | 436         | 530         | 264         | 738         | 200         | 488         | 628         | 665         | 584         | 346         | 2375        | 1847        | 1880        | 442         |
| # Individuals / Research Hour            | 37          | 58          | 39          | 30          | 31          | 53          | 24          | 41          | 18          | 29          | 39          | 33          | 43          | 21          | 119         | 64          | 65          | 88          |
| # 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         | 1.7         | 8           |

**D. Heil Ranch – Plumely Crossing**

**14 Research Hours**

**20 Volunteer Hours for Boulder County**

| Heil Valley Ranch - Plumely Crossing |                           | 4/30 | 4/16 | 4/23 | 5/20 | 5/16 | 5/23 | 5/24 | 5/29 | 6/3 | 6/13 | 6/17 | 6/28 | 8/15 | Total |
|--------------------------------------|---------------------------|------|------|------|------|------|------|------|------|-----|------|------|------|------|-------|
|                                      | 2024                      |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Papilio polyxenes</i>             | Black Swallowtail         |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>P. zelicaon</i>                   | Anise Swallowtail         |      |      |      |      | 6    |      |      |      |     |      |      |      |      | 6     |
| <i>P. indra</i>                      | Indra Swallowtail         |      |      |      |      | 3    |      |      |      |     |      | 1    |      |      | 4     |
| <i>P. rutulus</i>                    | Western Tiger Swallowtail |      |      |      |      |      |      | 9    |      |     |      |      |      |      | 9     |
| <i>P. eurymedon</i>                  | Pale Swallowtail          |      |      |      |      | 2    | 40 + |      | 39   | 37  | 16   | 4    | 2    |      | 140   |
| <i>P. multicaudata</i>               | Two-tailed Swallowtail    |      |      |      |      |      | 7    |      | 1    | 2   | 2    | 2    | 4    |      | 18    |
| Swallowtail yel sp.                  |                           |      |      |      |      | 3    |      | 18   |      |     |      | 1    | 2    |      | 24    |
| <i>Neophasia menapia</i>             | Pine White                |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Pontia sisymbrii</i>              | Spring White              |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>P. protodice</i>                  | Checkered White           |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>P. occidentalis</i>               | Western White             |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Pieri rapae</i>                   | Cabbage White             | 14   |      |      | 1    | 2    |      |      |      |     | 1    |      |      | 3    | 21    |
| <i>P. marginalis</i>                 | Margined White            |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Euchloe ausonides</i>             | Large Marble              |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>E. olympia</i>                    | Olympia Marble            |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Anthocharis sara julia</i>        | Julia Orangetip           |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| white sp.                            |                           |      |      |      | 4    | 12   | 8    |      | 4    | 4   | 4    |      | 4    |      | 40    |
| <i>Colias philodice</i>              | Clouded Sulphur           |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>C. eurytheme</i>                  | Orange Sulphur            | 1    |      |      |      |      |      |      |      |     | 3    |      | 1    |      | 5     |
| <i>C. alexandra</i>                  | Queen Alexandra's Sulphur |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>C. cesonia</i>                    | Southern Dogface          |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Nathalis iole</i>                 | Dainty Sulphur            |      |      |      |      |      |      |      |      |     |      |      | 1    |      | 1     |
| sulphur sp.                          |                           | 3    |      |      |      |      | 2    |      |      |     | 2    | 2    | 7    |      | 16    |
| <i>Lycaena dione</i>                 | Gray Copper               |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>L. heteronea</i>                  | Blue Copper               |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Tharsalea hyllus</i>              | Bronze Copper             |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Lycaena helloides</i>             | Purplish Copper           |      |      |      |      |      |      |      |      |     |      |      |      |      |       |

| Heil Valley Ranch - Plumely Crossing   |                           | 4/30 | 4/16 | 4/23 | 5/20 | 5/16 | 5/23 | 5/24 | 5/29 | 6/3 | 6/13 | 6/17 | 6/28 | 8/15 | Total |
|--|---------------------------|------|------|------|------|------|------|------|------|-----|------|------|------|------|-------|
|  | 2024                      |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Papilio polyxenes</i>               | Black Swallowtail         |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>P. zelicaon</i>                     | Anise Swallowtail         |      |      |      |      | 6    |      |      |      |     |      |      |      |      | 6     |
| <i>P. indra</i>                        | Indra Swallowtail         |      |      |      |      | 3    |      |      |      |     |      | 1    |      |      | 4     |
| <i>P. rutulus</i>                      | Western Tiger Swallowtail |      |      |      |      |      |      | 9    |      |     |      |      |      |      | 9     |
| <i>P. eurymedon</i>                    | Pale Swallowtail          |      |      |      |      | 2    | 40+  |      | 39   | 37  | 16   | 4    | 2    |      | 140   |
| <i>P. multicaudata</i>                 | Two-tailed Swallowtail    |      |      |      |      |      | 7    |      | 1    | 2   | 2    | 2    | 4    |      | 18    |
| Swallowtail yel sp.                    |                           |      |      |      |      | 3    |      | 18   |      |     |      | 1    | 2    |      | 24    |
| <i>Neophasia menapia</i>               | Pine White                |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Pontia sisymbrii</i>                | Spring White              |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>P. protodice</i>                    | Checkered White           |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>P. occidentalis</i>                 | Western White             |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Pieri rapae</i>                     | Cabbage White             | 14   |      |      | 1    | 2    |      |      |      |     | 1    |      |      | 3    | 21    |
| <i>P. marginalis</i>                   | Margined White            |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Euchloe ausonides</i>               | Large Marble              |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>E. olympia</i>                      | Olympia Marble            |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Anthocharis sara julia</i>          | Julia Orangetip           |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| white sp.                              |                           |      |      |      | 4    | 12   | 8    |      | 4    | 4   | 4    |      | 4    |      | 40    |
| <i>Colias philodice</i>                | Clouded Sulphur           |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>C. eurytheme</i>                    | Orange Sulphur            | 1    |      |      |      |      |      |      |      |     | 3    |      | 1    |      | 5     |
| <i>C. alexandra</i>                    | Queen Alexandra's Sulphur |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>C. cesonia</i>                      | Southern Dogface          |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Nathalis iole</i>                   | Dainty Sulphur            |      |      |      |      |      |      |      |      |     |      |      | 1    |      | 1     |
| sulphur sp.                            |                           | 3    |      |      |      |      | 2    |      |      |     | 2    | 2    | 7    |      | 16    |
| <i>Lycaena dione</i>                   | Gray Copper               |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>L. heteronea</i>                    | Blue Copper               |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Tharsalea hyllus</i>                | Bronze Copper             |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Lycaena helloides</i>               | Purplish Copper           |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Callophrys affinis homoperplexa</i> | Western Green Hairstreak  |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>C. gryneus</i>                      | Siva Juniper Hairstreak   |      |      |      |      |      |      |      |      |     |      |      |      |      |       |

| Heil Valley Ranch - Plumely Crossing | 2024                         | 4/30 | 4/16 | 4/23 | 5/20 | 5/16 | 5/23 | 5/24 | 5/29 | 6/3 | 6/13 | 6/17 | 6/28 | 8/15 | Total |
|--------------------------------------|------------------------------|------|------|------|------|------|------|------|------|-----|------|------|------|------|-------|
| <i>C. sheridanii</i>                 | White-lined Green Hairstreak |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>C. augustinus</i>                 | Brown Elfin                  |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>C. eryphon</i>                    | Western Pine Elfin           |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| elfin sp.                            |                              |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Satyrium titus</i>                | Coral Hairstreak             |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>S. liparops</i>                   | Striped Hairstreak           |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>S. saepium</i>                    | Hedgerow Hairstreak          |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Strymon melinus</i>               | Gray Hairstreak              |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| hairstreak sp.                       | hairstreak sp.               |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Leptotes marina</i>               | Marine Blue                  |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Brephidium exile</i>              | Western Pygmy-Blue           |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Cupido amyntula</i>               | Western Tailed-Blue          |      |      |      |      |      |      | 2    | 1    | 1   |      |      |      |      | 4     |
| <i>Celastrina echo sidara</i>        | Echo Azure                   |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>C. echo lucia</i>                 | “ Lucia type                 |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>C. humulus</i>                    | Hops Azure                   |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Glaucopsyche piasus</i>           | Arrowhead Blue               |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>G. lygdamus</i>                   | Silvery Blue                 |      |      |      | 1    | 7    | 2    | 3    | 1    |     | 1    |      |      |      | 15    |
| <i>Euphilotes ancilla</i>            | Rocky Mountain Dotted-Blue   |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Echinargus isola</i>              | Reakirt's Blue               |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Plebejus melissa</i>              | Melissa Blue                 |      |      |      |      |      | 4    |      | 1    |     |      |      |      |      | 5     |
| <i>P. saepiolus</i>                  | Greenish Blue                |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>P. icarioides</i>                 | Boisduval's Blue             |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>P. lupini lutzi</i>               | Lupine Blue                  |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>P. glandon rustica</i>            | Arctic Blue                  |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| blue sp.                             |                              |      |      |      | 2    | 3    | 3    |      | 6    | 2   | 2    | 1    |      |      | 19    |
| <i>Danaus plexippus</i>              | Monarch                      |      |      |      |      |      |      |      |      |     |      | 1    |      |      | 1     |
| <i>Apodemia nais</i>                 | Nais Metalmark               |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Euptoieta claudia</i>             | Variegated Fritillary        |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Argynnis aphrodite</i>            | Aphrodite Fritillary         |      |      |      |      |      |      |      |      |     | 7    |      |      |      | 7     |
| <i>A. edwardsii</i>                  | Edwards' Fritillary          |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>A. coronis</i>                    | Coronis Fritillary           |      |      |      |      |      |      |      |      | 2   |      |      |      |      | 2     |

| Heil Valley Ranch - Plumely Crossing    | 2024                     | 4/30 | 4/16 | 4/23 | 5/20 | 5/16 | 5/23 | 5/24 | 5/29 | 6/3 | 6/13 | 6/17 | 6/28 | 8/15 | Total |
|---|--------------------------|------|------|------|------|------|------|------|------|-----|------|------|------|------|-------|
| <i>A. hesperis</i>                      | Northwestern Fritillary  |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Ax. mormonia</i>                     | Mormon Fritillary        |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| fritillary sp.                          |                          |      |      |      |      |      |      |      | 1    |     | 18   | 3    | 1    |      | 23    |
| <i>Chlosyne gorgone</i>                 | Gorgone Checkerspot      |      |      |      |      |      |      |      | 3    |     | 2    |      |      |      | 5     |
| <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           |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>P. cocyta</i>                        | Northern Crescent        |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>P. pulchella</i>                     | Field Crescent           |      |      |      |      | 2    |      |      | 1    |     |      |      |      |      | 3     |
| <i>Polygonia satyrus</i>                | Satyr Comma              |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>P. gracilis</i>                      | Hoary Comma              | 2    |      |      |      |      |      |      |      |     |      |      |      |      | 2     |
| Polygonia sp.                           |                          |      |      |      | 2    |      |      |      |      |     |      |      |      |      | 2     |
| <i>Junonia coenia</i>                   | Common Buckeye           |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Aglais milberti</i>                  | Milbert's Tortoiseshell  |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Nymphalis antiopa</i>                | Mourning Cloak           |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>N. californica</i>                   | California Tortoiseshell |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Vanessa atalanta</i>                 | Red Admiral              |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>V. cardui</i>                        | Painted Lady             |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>V. virginiensis</i>                  | American Lady            |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Limenitis weidemeyerii</i>           | Weidemeyer's Admiral     |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>L. archippus</i>                     | Viceroy                  |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Asterocampa celtis</i>               | Hackberry Emperor        |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Coenonympha californica ochracea</i> | Common Ringlet           |      |      |      |      |      | 5    |      | 5    | 2   |      | 6    |      |      | 18    |
| <i>Cercyonis pegala</i>                 | Common Wood-Nymph        |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>C. oetus</i>                         | Small Wood-Nymph         |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Erebia epipsodea</i>                 | Common Alpine            |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>Oeneis chryxus</i>                   | Chryxus Arctic           |      |      |      |      |      |      |      |      |     |      |      |      |      |       |
| <i>O. uhleri</i>                        | Uhler's Arctic           |      |      |      |      |      |      |      |      |     |      |      |      |      |       |

| Heil Valley Ranch - Plumely Crossing |                          | 4/3<br>0 | 4/1<br>6 | 4/2<br>3 | 5/2<br>0 | 5/1<br>6 | 5/2<br>3 | 5/2<br>4 | 5/2<br>9 | 6/3 | 6/1<br>3 | 6/1<br>7 | 6/2<br>8 | 8/1<br>5 | To<br>tal |
|--------------------------------------|--------------------------|----------|----------|----------|----------|----------|----------|----------|----------|-----|----------|----------|----------|----------|-----------|
|                                      | 2024                     |          |          |          |          |          |          |          |          |     |          |          |          |          |           |
| <i>Epargyreus clarus</i>             | Silver-spotted Skipper   |          |          |          |          |          |          |          |          |     |          |          |          |          |           |
| <i>Thorybes pylades</i>              | N. Cloudywing            |          |          |          |          |          |          |          |          |     |          |          |          |          |           |
| <i>Erynnis icelus</i>                | Dreamy Duskywing         |          |          |          |          |          |          |          |          |     |          |          |          |          |           |
| <i>E. pacuvius</i>                   | Pacuvius Duskywing       |          |          |          |          | 2        |          |          | 5        | 1   |          |          |          |          | 8         |
|                                      |                          |          |          |          |          |          |          |          |          |     |          |          |          |          |           |
| <i>E. persius</i>                    | Persius Duskywing        |          |          |          |          |          |          | 5        |          |     |          |          |          |          | 5         |
| <i>duskywing sp.</i>                 |                          |          |          |          |          |          |          |          |          | 3   |          |          |          |          | 3         |
| <i>Burnsius communis</i>             | Common Checkered-skipper | 2        |          |          |          |          |          |          |          |     |          |          |          | 1        | 3         |
| <i>Pholisora catullus</i>            | Common Sootywing         |          |          |          |          | 1        |          |          | 3        |     |          |          |          | 2        | 6         |
| <i>Piruna pirus</i>                  | Russet Skipperling       |          |          |          |          |          |          |          |          |     |          |          |          | 1        | 1         |
| <i>Oarisma garita</i>                | Garita Skipperling       |          |          |          |          |          |          |          |          |     |          |          |          |          |           |
| <i>Hesperia leonardus pawnee</i>     | Leonard's Skipper        |          |          |          |          |          |          |          |          |     |          |          |          |          |           |
| <i>Hesperia juba</i>                 | Juba Skipper             |          |          |          |          |          |          |          | 3        |     |          |          |          |          | 3         |
|                                      |                          |          |          |          |          |          |          |          |          |     |          |          |          |          |           |
| <i>H. colorado</i>                   | Western Branded Skipper  |          |          |          |          |          |          |          |          |     |          |          |          |          |           |
| <i>H. nevada</i>                     | Nevada Skipper           |          |          |          |          |          |          |          |          |     |          |          |          |          |           |
| <i>Polites themistocles</i>          | Tawny-edged Skipper      |          |          |          |          |          |          |          |          |     |          |          |          |          |           |
| <i>P. peckius</i>                    | Peck's Slipper           |          |          |          |          |          |          |          |          |     |          |          |          |          |           |
| <i>Ochlodes sylvanoides</i>          | Woodland Skipper         |          |          |          |          |          |          |          |          |     |          |          |          |          |           |
| <i>Poanes taxiles</i>                | Taxiles Skipper          |          |          |          |          |          |          |          |          |     |          |          |          |          |           |
| <i>Euphyes vestries</i>              | Dun Skipper              |          |          |          |          |          |          |          |          |     |          |          |          |          |           |
| <i>Atrytonopsis hianna</i>           | Dusted Skipper           |          |          |          |          |          |          |          |          |     |          |          |          |          |           |
| <i>Polites mystic</i>                | Long Dash skipper        |          |          |          |          |          |          |          |          |     |          |          |          |          |           |
| <i>skipper sp.</i>                   |                          |          |          |          |          |          |          |          | 1        |     |          |          |          |          | 1         |

## E. Heil Ranch – Red Gulch

| Heil Valley Ranch (North)<br>Red Gulch<br>Picture Rock Trail | 2024                          | 5/2 | 6/4 | 6/6 | 8/24 | Total |
|--|-------------------------------|-----|-----|-----|------|-------|
| <i>Parnassius smintheus</i>                                  | Rocky Mountain Parnassian     |     |     |     |      |       |
| <i>Papilio polyxenes</i>                                     | Black Swallowtail             |     | 1   |     |      | 1     |
| <i>P. zelicaon</i>   | Anise Swallowtail             |     |     |     |      |       |
| <i>P. indra</i>  | Indra Swallowtail             |     |     |     |      |       |
| <i>P. rutulus</i>  | Western Tiger Swallowtail     | 3   |     | 2   |      | 5     |
| <i>P. eurymedon</i>  | Pale Swallowtail              |     | 1   | 2   |      | 3     |
| <i>P. multicaudata</i>                                       | Two-tailed Swallowtail        |     | 1   | 4   |      | 5     |
| <i>Neophasia menapia</i>                                     | Pine White                    |     |     |     |      |       |
| <i>Pontia protodice</i>                                      | Checkered White               |     |     |     |      |       |
| <i>P. occidentalis</i>                                       | Western White                 |     |     |     |      |       |
| <i>P. sisymbrii</i>  | Spring White                  |     |     |     |      |       |
| <i>Pieris rapae</i>  | Cabbage White                 | 4   | 4   | 10  | 20   | 38    |
| white sp.  |                               | 5   |     |     |      | 5     |
| <i>Euchloe ausonides</i>                                     | Large Marble                  |     |     |     |      |       |
| <i>E. olympia</i>  | Olympia Marble                |     |     |     |      |       |
| <i>Anthocharis julia</i>                                     | Julia Orangetip               |     |     |     |      |       |
| <i>Colias philodice</i>                                      | Clouded Sulphur               |     |     | 3   |      | 3     |
| <i>C. eurytheme</i>  | Orange Sulphur                |     | 4   | 1   | 2    | 7     |
| <i>C. alexandra</i>  | Queen Alexandra's Sulphur     |     |     |     |      |       |
| <i>Nathalis iole</i>   | Dainty Sulphur                |     |     |     |      |       |
| <i>Zerene cesonia</i>  | Southern Dogface              |     |     |     |      |       |
| sulphur sp.  |                               |     |     |     |      |       |
| <i>Lycaena dione</i>   | Gray Copper                   |     |     |     |      |       |
| <i>Lycaena heteronea</i>                                     | Blue Copper                   |     |     |     |      |       |
| <i>L. helloides</i>  | Purplish Copper               |     |     |     |      |       |
| <i>Callophrys affinis</i>                                    | Western Green Hairstreak      |     |     |     |      |       |
| <i>C. gryneus</i>  | Siva Juniper Hairstreak       |     |     |     |      |       |
| <i>C. sheridani</i>  | White-lined Green Hairstreak  |     |     |     |      |       |
| <i>C. eryphon</i>  | Western Pine Elfin            |     |     |     |      |       |
| <i>Satyrium 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           | 3   |     |     |      | 3     |
| <i>Celastrina echo sidara</i>                                | Echo Azure                    |     |     |     |      |       |
| <i>C. humulus</i>  | Hops Azure                    |     |     |     |      |       |
| <i>Glaucopsyche piasus</i>                                   | Arrowhead Blue                |     |     | 4   |      | 4     |
| <i>G. lygdamus</i>   | Silvery Blue                  |     | 1   |     |      | 1     |
| <i>Euphilotes ancilla</i>                                    | Rocky Mountain Dotted-blue    |     |     | 1   | 1    | 2     |
| <i>Euphilotes ancilla barnesi</i>                            | ssp. RM Dotted-blue ID -Opler |     |     |     |      |       |
| <i>Echinargus isola</i>                                      | Reakirt's Blue                | 1   |     |     |      | 1     |
| <i>Plebejus melissa</i>                                      | Melissa Blue                  |     | 1   | 13  | 3    | 17    |
| ** <i>Plebejus saepiolus</i>                                 | Greenish Blue                 |     |     | 1   |      | 1     |
| <i>P. icarioides</i>   | Boisduval's Blue              |     |     | 2   |      | 2     |
| <i>P. lupini lutzi</i>                                       | Lupine Blue                   |     | 2   |     |      | 2     |
| <i>P. glandon rustica</i>                                    | Arctic Blue                   |     |     |     |      |       |
| blue sp.   |                               | 7   | 19  | 7   |      | 33    |
| <i>Libytheana carinenta</i>                                  | American Snout                |     |     |     |      |       |
| <i>Danaus plexippus</i>                                      | Monarch                       |     |     |     |      |       |
| <i>Limenitis archippus</i>                                   | Viceroy                       |     |     |     |      |       |
| <i>Euptoieta claudia</i>                                     | Variegated Fritillary         |     | 5   | 8   |      | 13    |
| <i>Argynnis aphrodite</i>                                    | Aphrodite Fritillary          |     | 2   |     | 16   | 18    |
| <i>A. edwardsii</i>  | Edwards' Fritillary           |     |     |     | 4    | 4     |
| <i>A. coronis</i>  | Coronis Fritillary            |     |     |     |      |       |

|  |                          |   |     |     |      |       |
|--|--------------------------|---|-----|-----|------|-------|
| <i>A. callippe</i>   | Callippe Fritillary      |   |     |     |      |       |
| <b>Heil Valley Ranch<br/>North Pointe,<br/>Red Gulch, Wapiti Trail</b> |                          |   | 6/4 | 6/6 | 8/24 | Total |
| <i>A. hesperis</i>   | Northwestern Fritillary  |   |     |     |      |       |
| <i>A. mormonia</i>   | Mormon Fritillary        |   |     |     |      |       |
| fritillary sp.   |                          |   | 5   | 3   | 10   | 18    |
| <i>Euphydryas anicia</i>   | Variable Checkerspot     |   |     |     |      |       |
| <i>Chlosyne gorgone</i>  | Gorgone Checkerspot      |   |     |     |      |       |
| crescent/checkerspot   |                          |   | 9   |     |      | 9     |
| <i>C. nycteis</i>  | Silvery Checkerspot      |   |     |     |      |       |
| <i>C. palla</i>  | Northern Checkerspot     |   |     |     |      |       |
| <i>Phyciodes pallida</i>   | Pallid (Pale) Crescent   |   |     |     | 3    | 3     |
| <i>P. tharos</i>   | Pearl Crescent           |   |     |     |      |       |
| <i>P. cocyta</i>   | Northern Crescent        |   |     |     |      |       |
| <i>P. pulchella</i>  | Field Crescent           | 2 | 2   |     |      | 4     |
| crescent sp.   |                          | 2 | 1   |     | 3    | 6     |
| <i>Polygonia satyrus</i>   | Satyr Comma              |   |     |     |      |       |
|  | Green Comma              |   |     |     |      |       |
| <i>P. gracilis</i>   | Hoary Comma              |   | 3   |     |      | 3     |
| <i>Nymphalis antiopa</i>   | Mourning Cloak           | 4 |     |     |      | 4     |
| <i>Junonia coenia</i>  | Buckeye, Common          |   |     |     |      |       |
| <i>N. californica</i>  | California Tortoiseshell |   | 2   |     |      | 2     |
| <i>Vanessa atalanta</i>  | Red Admiral              |   | 2   | 2   | 2    | 6     |
| <i>Aglais milberti</i>   | Milbert's Tortoiseshell  |   |     |     |      |       |
| <i>V. cardui</i>   | Painted Lady             |   |     |     | 1    | 1     |
| <i>V. virginienis</i>  | American Lady            |   |     |     |      |       |
| <i>Limenitis weidemeyerii</i>  | Weidemeyer's Admiral     |   |     | 1   | 1    | 2     |
| <i>Limenitis archippus</i>   | Viceroy                  |   |     |     |      |       |
| <i>Asterocampa celtis</i>  | Hackberry Emperor        |   |     |     |      |       |
| <i>Coenonympha californica</i>   | Ochre (Common) Ringlet   |   | 23  | 17  | 27   | 67    |
| <i>Cercyonis pegala</i>  | Common Wood-Nymph        |   |     |     | 1    | 1     |
| <i>C. oetus</i>  | Small Wood-Nymph         |   |     |     |      |       |
| wood nymph sp.   |                          |   |     |     |      |       |
| <i>Erebia epipsodea</i>  | Common Alpine            |   |     |     |      |       |
| <i>Epargyreus clarus</i>   | Silver-spotted Skipper   |   |     |     | 1    | 1     |
| <i>E. pacuvius</i>   | Pacuvius Duskywing       |   |     |     |      |       |
| <i>E. persius</i>  | Persius Duskywing        |   |     |     |      |       |
| <i>E. icelus</i>   | Dreamy Duskywing         |   |     |     |      |       |
| duskywing sp   |                          | 4 | 1   |     |      | 5     |
| <i>Burnsius communis</i>   | Common Checkered-skipper |   | 5   | 1   | 35   | 41    |
| <i>Pholisora catullus</i>  | Common Sootywing         |   |     |     | 2    | 2     |
| <i>Piruna pirus</i>  | Russet Skipperling       |   |     |     | 1    | 1     |
| <i>Oarisma garita</i>  | Garita Skipperling       |   |     |     |      |       |
| <i>Hesperia juba</i>   | Juba Skipper             |   | 2   |     |      | 2     |
| <i>H. colorado</i>   | W. Branded Skipper       |   |     |     | 1    | 1     |
| <i>H. pahaska</i>  | Pahaska Skipper          |   |     |     |      |       |
| <i>H. viridis</i>  | Green Skipper            |   |     |     |      |       |
| <i>H. nevada</i>   | Nevada Skipper           |   |     |     |      |       |
| <i>Polites themistocles</i>  | Tawny-Edged Skipper      |   |     |     | 1    | 1     |
| <i>P. mystic</i>   | Long Dash                |   |     |     |      |       |
| <i>Atrytone arogos</i>   | Arogos Skipper           |   |     |     |      |       |
| <i>Ochlodes sylvanoides</i>  | Woodland Skipper         |   |     |     | 13   | 13    |
| <i>Poanes taxiles</i>  | Taxiles Skipper          |   |     |     |      |       |
| <i>Euphyes vestries</i>  | Dun Skipper              |   |     | 2   | 5    | 7     |
| <i>Atrytonopsis hianna</i>   | Dusted Skipper           | 4 |     |     |      | 4     |
| Skipper sp   |                          | 3 | 1   | 2   | 5    | 11    |
| Total  |                          |   |     |     |      | 390   |

**8 Research Hours      34 Volunteer Hours for Boulder County**

| <b>Heil Valley Ranch (North)<br/>Red Gulch<br/>Picture Rock Trail</b> | Location   | Blossoming Plants   | Animals   | Researchers  |
|---|--|---|---|--|
| 5/2/2024<br>11:15-13:30<br>15 °C<br>Winds 0- gust 30,<br>Clear sky    | North Pointe Road to pond.   | Nectaring on yellow composites.<br>Blue Nightshade,<br>Willows,               | Gnatcatcher, Blue-gray<br>Rock Wren<br>TV, Chat<br>snake, dragonflies<br>Frogs, | Chris Friedman<br>Jan Chu<br>Linda Hardesty  |
| 6/4/2024<br>9:00-11:00 am<br>22 °C<br>Sunny                           | Picture Rock Trail<br><br>Above Red Gulch                              |   | Spotted Towhee<br><br>Western Fence Lizard                                      | Chris Friedman<br>Linda Hardesty   |
| 6/6/2024<br>9-11:30 am<br>19 °C sunny                                 | Picture Rock Trail<br>above Red Gulch<br><br>(Ron LaFollette's)        | Butterflies at tile<br>drainage for<br>moisture.                              |   | Chris Hardesty<br>Amy Chu<br>Richard Holmes<br>Pam Piombino<br>Connie Redak<br>Jan Chu   |
| 8/24/2024<br>9:30-10:45 am<br>21- 28°C<br>Overcast, 0-5 mph<br>wind   | Red Gulch<br><br>Also at the junction<br>Jasper and Red Gulch<br>roads | Golden rod<br>Gumweed<br>Stressed, short.<br>At the junction<br>Rabbit Bushes |   | Chris Friedman<br>Linda Hardesty<br>Sue Hardesty<br>Amy Chu<br>Jean Morgan<br>Dan Fosco<br>John Barr<br>Barbara Fahey<br>Jan Chu |

| <b>Heil Valley Ranch (North)<br/>Red Gulch</b>       | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| # of Species Identified During season in Heil-North  | 34   | 45   | 41   | 40   | 33   | 24   | 30   | 50   | 38   | 31   | 33   | 50   | 35   | 32   | 31   | 48   | 29   | 25   |
| Cumulative # Species 2007-2024 Sighted in Heil-North | 50   | 62   | 77   | 81   | 81   | 85   | 86   | 89   | 90   | 91   | 91   | 92   | 93   | 93   | 93   | 95   | 95   | 96   |
| 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 | 15   | 8    |
| # Individual Butterflies Counted 2024                | 579  | 654  | 488  | 429  | 272  | 188  | 402  | 1077 | 508  | 246  | 204  | 442  | 359  | 298  | 675  | 940  | 259  |      |
| # Individuals / Research Hour                        | 72   | 38   | 39   | 37   | 24   | 29   | 36   | 40   | 16   | 19   | 27   | 33   | 29   | 37   | 84   | 75   | 20   | 42   |
| # 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  | 2    | 4.5  |

## F. Walker Ranch

| Walker Ranch-Meyer's Homestead Trail | 2024                        | 4/23 | 5/17 | 5/28 | 5/29 | 6/12 | Total |
|--------------------------------------|-----------------------------|------|------|------|------|------|-------|
| <i>Parnassius smintheus</i>          | Rocky Mountain Parnassian   |      |      |      | 2    | 7    | 9     |
| <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   |      |      |      |      |      |       |
| <i>P. eurymedon</i>                  | Pale Swallowtail            |      |      |      |      | 1    | 1     |
| <i>P. multicaudata</i>               | Two-tailed Swallowtail      |      |      |      |      |      |       |
| swallowtail sp.                      | swallowtail sp.             |      |      |      |      | 3    | 3     |
| <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               |      |      |      |      |      |       |
| white sp.                            | white sp.                   |      |      | 1    | 5    | 5    | 11    |
| <i>Euchloe ausonides</i>             | Large Marble                |      | 2    |      | 1    | 3    | 6     |
| <i>Anthocharis julia</i>             | Julia Orangetip             |      | 5    |      | 3    | 5    | 13    |
| <i>Colias philodice</i>              | Clouded Sulphur             |      |      |      |      |      |       |
| <i>C. eurytheme</i>                  | Orange Sulphur              |      | 2    |      |      | 3    | 5     |
| <i>C. alexandra</i>                  | Queen Alexandra's Sulphur   |      |      |      |      |      |       |
| <i>Nathalis iole</i>                 | Dainty Sulphur              |      |      |      |      |      |       |
| sulphur sp.                          | sulphur                     |      |      |      |      |      |       |
| <i>Lycaena heteronea</i>             | Blue Copper                 |      |      |      |      |      |       |
| <i>Satyrrium saepium</i>             | Hedgerow Hairstreak         |      |      |      |      |      |       |
| <i>Callophrys affinis</i>            | W. Green Hairstreak         |      |      |      |      |      |       |
| <i>C. sheridanii</i>                 | White-line Green Hairstreak | 1    | 2    | 2    | 3    | 3    | 11    |
| <i>C. gyrneus siva</i>               | Siva Juniper Hairstreak     |      |      |      |      |      |       |
| <i>C. spinetorum</i>                 | Thicket Hairstreak          |      |      |      | 1    | 1    | 2     |
| hairstreak sp                        |                             |      |      | 1    |      |      | 1     |
| <i>C. augustinus</i>                 | Brown Elfin                 |      |      |      |      | 1    | 1     |
| <i>C. polios</i>                     | Hoary Elfin                 |      | 30   | 1    | 10   | 5    | 46    |
| <i>C. eryphon</i>                    | Western Pine Elfin          |      | 2    | 1    | 4    | 4    | 11    |
| elfin sp.                            | elfin sp.                   | 1    |      |      |      |      | 1     |
| <i>Strymon melinus</i>               | Gray Hairstreak             |      |      |      |      |      |       |
| <i>Cupido amyntula</i>               | Western Tailed-Blue         |      |      |      | 1    |      | 1     |
| <i>Celestrina echo</i>               | Echo Azure                  |      | 2    |      |      |      | 2     |
| <i>Glaucopsyche piasus</i>           | Arrowhead Blue              |      |      |      | 1    | 1    | 2     |
| <i>G. lygdamus</i>                   | Silvery Blue                |      | 3    |      | 5    | 2    | 10    |
| <i>Euphilotes ancilla</i>            | Rocky Mountain Dotted-Blue  |      |      |      |      | 8    | 8     |
| <i>Echinargus isola</i>              | Reakirt's Blue              |      |      |      |      |      |       |
| <i>Plebejus melissa</i>              | Melissa Blue                |      |      |      |      | 1    | 1     |
| <i>P. saepiolus</i>                  | Greenish Blue               |      |      |      |      |      |       |
| <i>P. icarioides</i>                 | Boisduval's Blue            |      |      |      |      | 1    | 1     |

| <b>Walker Ranch-<br/>Meyer's Homestead Trail</b> | <b>2024</b>              | <b>4/23</b> | <b>5/17</b> | <b>5/28</b> | <b>5/29</b> | <b>6/12</b> | <b>Total</b> |
|--|--------------------------|-------------|-------------|-------------|-------------|-------------|--------------|
| <i>P. lupini lutzi</i>                           | Lupine Blue              |             |             |             |             |             |              |
| <i>Agriades glandon rustica</i>                  | Arctic Blue              |             |             |             |             |             |              |
| blue sp.   | blue sp.                 |             |             | 3           |             |             | 3            |
| <i>Danaus plexippus</i>                          | Monarch                  |             |             |             |             |             |              |
| <i>Apodemia nais</i>                             | Nais Metalmark           |             |             |             |             |             |              |
| <i>Euptoieta claudia</i>                         | Variegated Fritillary    |             |             |             |             |             |              |
| <i>Speyeria aphrodite</i>                        | Aphrodite Fritillary     |             |             |             |             |             |              |
| <i>S. edwardsii</i>                              | Edwards' Fritillary      |             |             |             |             |             |              |
| <i>S. callippe</i>                               | Callippe Fritillary      |             |             |             |             |             |              |
| <i>S. hesperis</i>                               | Northwestern Fritillary  |             |             |             |             |             |              |
| <i>S. mormonia</i>                               | Mormon Fritillary        |             |             |             |             |             |              |
| fritillary sp.                                   |                          |             |             |             |             | 1           | 1            |
| <i>Chlosyne gorgone</i>                          | Gorgone Checkerspot      |             |             |             |             | 1           | 1            |
| <i>C. nycteis</i>                                | Silvery Checkerspot      |             |             |             |             |             |              |
| <i>C. palla</i>                                  | Northern Checkerspot     |             |             |             |             |             |              |
| <i>Phyciodes cocyta</i>                          | Northern Crescent        |             |             |             |             | 3           | 3            |
| <i>P. pulchella</i>                              | Field Crescent           |             |             |             |             |             |              |
| <i>Phyciodes pallida</i>                         | Pallid (Pale) Crescent   |             |             |             |             |             |              |
| <i>Polydrias arachne</i>                         | Arachne Checkerspot      |             |             |             |             |             |              |
| <i>Euphydryas anicia</i>                         | Variable Checkerspot     |             |             |             |             | 5           | 5            |
| <i>Polygonia faunus</i>                          | Green Comma              |             |             |             |             |             |              |
| <i>Polygonia satyrus</i>                         | Satyr Comma              |             |             |             |             |             |              |
| <i>Polygonia gracilis</i>                        | Hoary Comma              | 3           | 5           |             |             |             | 8            |
| Comma sp.  | comma                    |             |             |             |             |             |              |
| <i>Aglais milberti</i>                           | Milbert's Tortoiseshell  |             |             |             |             |             |              |
| <i>Nymphalis antiopa</i>                         | Mourning Cloak           | 3           | 2           |             |             | 1           | 6            |
| <i>N. californica</i>                            | California Tortoiseshell |             |             |             |             |             |              |
| <i>Vanessa atalanta</i>                          | Red Admiral              |             |             | 1           |             | 2           | 3            |
| <i>V. cardui</i>                                 | Painted Lady             | 2           |             |             |             |             | 2            |
| <i>V. virginiensis</i>                           | American Lady            |             |             |             |             |             |              |
| <i>Limenitis weidemeyerii</i>                    | Weidemeyer's Admiral     |             |             |             |             |             |              |
| <i>Coenonympha californica ochracea</i>          | Common Ringlet           |             |             |             |             | 1           | 1            |
| <i>Cercyonis pegala</i>                          | Common Wood Nymph        |             |             |             |             |             |              |
| <i>C. oetus</i>                                  | Small Wood Nymph         |             |             |             |             |             |              |
| <i>Erebia epipsodea</i>                          | Common Alpine            |             |             |             |             |             |              |
| <i>Oeneis chryxus</i>                            | Chryxus Arctic           |             |             |             |             |             |              |
| <i>O. uhleri</i>                                 | Uhler's Arctic           |             |             |             | 1           | 5           | 6            |
| <i>Erynnis icelus</i>                            | Dreamy Duskywing         |             |             |             |             |             |              |
| <i>E. pacuvius</i>                               | Pacuvius Duskywing       |             |             |             |             | 1           | 1            |
| <i>E. persius</i>                                | Persius Duskywing        |             |             | 3           | 1           | 1           | 5            |
| duskywing sp.                                    | duskywing                |             | 5           |             | 3           | 6           | 14           |

| Walker Ranch-Meyer's Homestead | 2024                     | 4/23 | 5/17 | 5/28 | 5/29 | 6/12 | Total |
|--------------------------------|--------------------------|------|------|------|------|------|-------|
| <i>Burnsius communis</i>       | Common Checkered-skipper |      |      |      | 1    |      | 1     |
| <i>Pholisora catullus</i>      | Common Sootywing         |      |      |      | 1    |      | 1     |
| <i>Piruna pirus</i>            | Russet Skipperling       |      |      |      |      |      |       |
| <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  |      |      |      |      |      |       |
| <i>Polites themistocles</i>    | Tawny-edged Skipper      |      |      |      |      |      |       |
| <i>P. mystic</i>               | Long Dash                |      |      |      |      |      |       |
| <i>Ochlodes sylvanoides</i>    | Woodland Skipper         |      |      |      |      |      |       |
| <i>Poanes taxiles</i>          | Taxiles Skipper          |      |      |      |      |      |       |
| <i>Euphyes vestris</i>         | Dun Skipper              |      |      |      |      |      |       |
| skipper sp.                    |                          |      |      |      |      | 1    |       |
| Total                          |                          |      |      |      |      |      | 201   |

### F. Walker Ranch

| Conditions  | Location  | Blooming Plants   | Animals                          | Researchers            |
|---|---|---|----------------------------------|------------------------|
| 4-23-2024<br>10:30 am – 2pm<br>Temp 15-18 °C<br>Mostly sunny thru smoky haze, slight breeze | Lower Walker Loop- South Boulder Trail              | Snow on the Mountain<br>Kinnikinnick<br>Cactus, Pin Cushion | Fence Lizard                     | Dan Fosco              |
| 5/17/2024<br>10 am-1:00pm<br>15-18 °C mostly sunny, breezy                                  | Homestead Trail                                     |   | Western garter<br>Pine squirrel  | Dan Fosco<br>John Barr |
| 5/28/2024<br>10:30-12:00 pm<br>17 °C, Clear<br>0-5 mph wind                                 | Walker Ranch – upper trail parallel to public trail | Wax currant,<br>beginning Kinnikinnick,<br>Few blossoms     | Young buck,<br>bluebirds, robins | Amy Chu<br>Jan Chu     |
| 5/29/2024<br>10 am-2 pm<br>20-22 deg F, cloudy  | Homestead Trail                                     |   |                                  | Dan Fosco<br>John Barr |
| 6/12/2024<br>10 am-2 pm<br>21-24 °C, partly cloudy, breezy                                  | Homestead Trail                                     |   |                                  | Dan Fosco<br>John Barr |

**15 Research Hours 27.5 Research Volunteer Hours for Boulder County**

## F. Walker Ranch – Homestead Trail

| Walker Ranch, Meyer's Homestead Trail        | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|--|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| # Species Identified during season in Walker | 30   | 35   | 45   | 35   | 50   | 47   | 62   | 43   | 45   | 43   | 31   | 58   | 47   | 37   | 55   | 52   | 38   | 30   |
| # Species Sighted in Walker Ranch 2007-2024  | 33   | 38   | 60   | 70   | 75*  | 78*  | 79*  | 80*  | 81*  | 81*  | 83*  | 84*  | 84*  | 84*  | 85   | 86   | 86   | 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 | 17.5 | 15   |
| # Individual Butterflies Counted             | 160  | 203  | 1144 | 437  | 472  | 399  | 394  | 322  | 351  | 549  | 299  | 759  | 449  | 305  | 905  | 561  | 443  | 201  |
| # Individual Butterflies / Research Hour     | 32   | 54   | 64   | 27   | 29   | 57   | 27   | 29   | 12   | 32   | 22   | 14   | 16   | 51   | 32   | 22   | 25   | 13   |
| # 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  | 2.2  | 2    |

## G. BRALY AND WESTERN MOBILE

### Braly and Western Mobile 2024

Braly - 10:30 - 11:00 am

Partly cloudy with light wind.

Mobile - 11:15 - 13:00 pm

Partly cloudy, light wind.

Researchers: Ann Cooper, Chris Friedman, John Barr Jan Chu, Linda Hardesty, Pam Piombino

Ranger: Dave Hoerath, Rachel Gouldsberry

39 Cabbage White

*Pieris rapae*

1 Clouded or Orange Sulfur (white female)

*Colias eurytheme*

16 – Sulphur species

1 Boisduval's Blue

*Plebejus icarioides* on host Lupine

1 Painted Lady

*Vanessa cardui*

1 Hoary comma

*Polygonia gracilis*

1 Morning Cloak

*Nymphalis antiopa*

1 Common Sootywing

*Pholisora catullus*

2 Persius Duskywing

*Erynnis persius* ( host plant Golden Banner containing larvae in curled leaves)

Northern Cloudywing

*Cecropterus phylades*

**7/23/2024 Braly** 9:30-11:15 am **Western Mobile** 11:40 – 1:00 pm

73-79 degrees F. heavy smoke from Canada and Western US fires, Ozone reading 103

Researchers: Ann Cooper, Pam Piombino, Jean Morgan, Linda Hardesty, Chris Friedman, Jan Chu

Ranger: Rachel Gouldsberry,

|                          |                              |
|--------------------------|------------------------------|
| 2 Two-tailed Swallowtail | <i>Pterorus multicaudata</i> |
| 35 Cabbage White         | <i>Pieris rapae</i>          |
| 1 Western White          | <i>Pontia occidentalis</i>   |
| 3 white sp.              |                              |
| 11 Orange Sulphur        | <i>Colias eurytheme</i>      |
| 3 Clouded Sulphur        | <i>Colias philodice</i>      |
| 1 fritillary sp.         |                              |
| 1 Wood Nymph sp.         | <i>Cercyonis</i> sp.         |
| 1 Buckeye                | <i>Junonia coenia</i>        |



CHRYXUS ARCTIC BY VENICE KELLY

## **H. SHERWOOD TRANSECT – CARIBOU RANCH**

**49.5 Research Hours 80 Volunteer Hours for Boulder County**

| Sherwood                     | 2024                      | 4/14                        | 5/3                       | 5/14 | 5/17 | 5/19 | 5/27 | 5/30 | 6/5    | 6/11 | 6/22   | 6/25   | 7/5    | 7/23   | 7/30   | 8/3 | 8/16 | 8/20 | 8/30 | 9/13   | 9/20 | 9/24 | Total |    |
|------------------------------|---------------------------|-----------------------------|---------------------------|------|------|------|------|------|--------|------|--------|--------|--------|--------|--------|-----|------|------|------|--------|------|------|-------|----|
|                              |                           | <i>Parnassius smintheus</i> | Rocky Mountain Parnassian |      |      |      |      |      |        |      |        | 9      | 1<br>2 | 1<br>6 | 1<br>0 | 5   | 4    | 4    |      |        |      |      |       |    |
| <i>Battus philenor</i>       | Pipevine Swallowtail      |                             |                           |      |      |      |      |      |        |      |        |        |        |        |        |     |      |      |      |        |      |      |       | 0  |
| <i>Papilio polyxenes</i>     | Black Swallowtail         |                             |                           |      |      |      |      |      |        |      | 1      |        |        | 1      |        |     |      |      |      |        |      |      |       | 2  |
| <i>P. zelicaon</i>           | Anise Swallowtail         |                             |                           |      |      |      | 1    | 1    | 2      | 1    | 2      |        |        |        |        |     |      |      |      |        |      |      |       | 7  |
| <i>P. rutulus</i>            | W. Tiger Swallowtail      |                             |                           |      |      |      |      |      |        | 2    | 1      | 1      | 4      |        |        |     |      |      |      |        |      |      |       | 8  |
| <i>P. eurymedon</i>          | Pale Swallowtail          |                             |                           |      |      |      |      |      |        | 2    |        |        | 3      |        |        |     |      |      |      |        |      |      |       | 5  |
| <i>P. multi-caudata</i>      | Two-tailed Swallowtail    |                             |                           |      |      |      |      |      |        |      |        |        |        |        |        |     |      |      |      |        |      |      |       |    |
| <i>Neophasia menapia</i>     | Pine White                |                             |                           |      |      |      |      |      |        |      |        |        |        |        |        |     |      | 6    | 5    |        |      |      |       | 11 |
| <i>Pontia sisymbrii</i>      | Spring White              |                             |                           |      |      |      |      |      |        |      |        |        |        |        |        |     |      |      |      |        |      |      |       |    |
| <i>Pontia protodice</i>      | Checkered White           |                             |                           |      |      |      |      |      | 1      |      | 1      | 3      |        |        |        |     | 2    |      |      |        |      |      |       | 7  |
| <i>P. occidentalis</i>       | Western White             |                             |                           |      |      |      |      |      |        |      |        |        |        |        |        |     |      |      |      |        |      |      |       |    |
| <i>Pieris rapae</i>          | Cabbage White             |                             |                           | 1    |      |      |      |      |        |      |        |        |        |        |        |     | 1    |      |      |        |      |      |       | 2  |
| <i>P. marginalis</i>         | Margined White            |                             |                           |      |      |      |      |      |        |      | 1      |        |        | 2      |        |     |      |      |      |        |      |      |       | 3  |
| <i>Euchloe ausonides</i>     | Large Marble              |                             |                           |      |      |      | 1    | 6    | 4      | 3    | 2      | 1      |        |        |        |     |      |      |      |        |      |      |       | 17 |
| <i>Anthocharis julia</i>     | Julia Orangetip           |                             |                           |      | 1    | 1    | 7    | 8    | 1<br>0 | 6    | 3      | 1      |        |        |        |     |      |      |      |        |      |      |       | 37 |
| white sp.                    |                           |                             |                           |      | 1    |      |      |      | 2      |      |        |        |        |        | 1      | 1   | 1    |      |      |        |      |      |       | 6  |
| <i>Colias philodice</i>      | Clouded Sulphur           |                             |                           |      |      |      |      | 1    |        | 1    |        |        |        | 3      |        | 2   |      | 1    |      |        |      |      |       | 9  |
| <i>C. eurytheme</i>          | Orange Sulphur            |                             |                           |      |      |      | 1    | 1    | 1      | 2    | 3      | 2      | 4      | 1<br>0 | 1      | 6   | 4    | 10   | 8    | 2<br>1 | 5    | 16   |       | 95 |
| <i>C. alexandra</i>          | Queen Alexandra's Sulphur |                             |                           |      |      |      |      |      |        |      | 1<br>3 | 1<br>2 | 2<br>0 | 1<br>0 | 1      | 7   | 1    |      | 1    |        |      |      |       | 66 |
| <i>Phoebis sennae eubule</i> | Cloudless Sulphur         |                             |                           |      |      |      |      |      |        |      |        |        |        |        |        |     |      |      |      |        |      |      |       |    |
| <i>Eurema mexicana</i>       | Mexican Yellow            |                             |                           |      |      |      |      |      |        |      |        |        |        |        |        |     |      |      |      |        |      |      |       |    |
| <i>Abaeis nicippe</i>        | Sleepy Orange             |                             |                           |      |      |      |      |      |        |      |        |        |        |        |        |     |      |      |      |        |      |      |       |    |
| <i>Nathalis iole</i>         | Dainty Sulphur            |                             |                           |      |      |      |      |      |        |      | 1      |        | 3      | 1      |        |     | 1    |      |      |        | 1    |      |       | 7  |
| <i>Tharsalea editha</i>      | Edith's Copper            |                             |                           |      |      |      |      |      |        |      |        |        | 1      |        |        |     |      |      |      |        |      |      |       | 1  |
| <i>Lycaena rubidus</i>       | Ruddy Copper              |                             |                           |      |      |      |      |      |        |      |        |        |        | 2      |        | 2   | 2    |      |      |        |      |      |       | 6  |
| <i>Tharsalea heteronea</i>   | Blue Copper               |                             |                           |      |      |      |      |      |        |      |        |        |        | 4      |        | 1   |      |      |      |        |      |      |       | 5  |
| <i>Lycaena helloides</i>     | Purplish Copper           |                             |                           |      |      |      |      |      |        |      |        |        | 1      | 3      | 7      |     |      |      |      |        |      |      |       | 11 |







## G. Sherwood Transect - Caribou Ranch

| Date, time, temp. sky, wind  | Location           | Butterfly Behavior   | Animals  | Researcher                      |
|--|--------------------|--|--|---------------------------------|
| 4/14/2024,<br>11:30 –1:30 pm<br>16 °C<br>Sunny breezy  | Sherwood Transect  | Tiny bee nectaring on kinnikinnick blossom.<br>most snow melted  |  | Venice Kelly                    |
| 5/3/2024,<br>10:15-noon<br>10 °C, 20% clouds,<br>very windy                                    | Sherwood Transect  | Red-tailed hawk  |  | Venice Kelly                    |
| 5/14/2024<br>10:15-11:40 am<br>12 °C,<br>5/17/2024sunny,<br>windy.                             | Sherwood Transect  | None at seep/ present along the road.  |  | Venice Kelly                    |
| 5/17/2024<br>10:35am-1:00 pm<br>14-18 °C, blue<br>sky,10% clouds                               | Sherwood Transect  | Pine elfins chasing one another  |  | Venice Kelly                    |
| 5/19/2024<br>11:30-1:30 pm<br>15 °C, very<br>windy,70% cloud<br>cover                          | Sherwood Transect  |  |  | Venice Kelly<br>Jeff Maclachlan |
| 5/27/2024<br>10:30-1:15pm<br>13-15 °C, sunny, 0-15<br>mph wind                                 | Sherwood Transect  | Silvery blues at seep, Elfins flying close to ground because of wind   |  | Venice Kelly                    |
| 5/30/2024<br>10:00-1:00 pm<br>14-22 °C, sun, blue<br>sky<br>Breezy.                            | Sherwood Transect  | Orangetips nectaring on strawberry, chasing. Skippers puddling.  | Coyote<br>Muskrat                              | Venice Kelly                    |
| 6/5/2024<br>10:30-1:45 pm<br>16-23 °C, mostly<br>blue, windy                                   | Sherwood Transect  | Butterflies hanging on tightly as wind bent flowers, first Chryxus today flying around each other. Arrowhead first time at seep. |  | Venice Kelly<br>Wynne Whyman    |
| 6/11/2024<br>9:45am-12:45pm<br>15-24 °C, sky blue,<br>quite windy at times                     | Sherwood Transect  | First Boisduval's this season, orange sulphur ovipositing. First checkerspots, northern crescents this season                    | Blue-eyed grass,<br>potentilla, penstemon      | Venice Kelly                    |
| 6/22/2024<br>9:30- 12:30 pm<br>21-24 °C, blue sky,<br>breezy                                   | Sherwood Transect  | Chryxus mating behavior, Julia hunting for host mustard, Many puddlers   | More flowers in Bridge Meadow.                 | Venice Kelly<br>Jeff Maclachlan |
| 6/25/2024<br>9-11:45 am 21-25 °C,<br>Windy, blue sky   | Caribou Open Space | Chryxus were chasing each other; females ovipositing. Arrowhead blue ovipositing on lupines.                                     |  | Venice Kelly<br>Monica Tymcio   |
| 7/5/2024<br>10:45am-1:20pm<br>14-17 °C, blue sky,<br>windy to breezy                           | Sherwood Transect  | **New species for transect - Jutta, Snow's. Edith's and Purplish Copper showing  |  | Venice Kelly<br>Jeff Maclachlan |
| 7/23/2024<br>10:45 am-2:00 pm<br>60-75 °C, no clouds,<br>very hazy due to<br>smoke from Canada | Sherwood Transect  | Margined White new in meadow. 2 alba forms Q.A. Ruddy Coppers returned.  | Flowers in meadow beyond mine and near bridge. | Venice Kelly                    |

|  |  |   |                     |                                 |
|--|--|---|---------------------|---------------------------------|
| 7/30/2024<br>3:15-3:40 pm<br>25 °C, mostly blue sky, breezy. | Sherwood Transect – Bridge Meadow        | Small Wood-nymph a plenty. Purplish coppers chasing each other                                    |                     | Jeff Maclachlan                 |
| 8/3/2024<br>10:15-noon 22-27°C, bright sun                   | Sherwood Transect- Seep to Bridge Meadow | Ruddy Copers, woodland skippers. Small Wood-nymphs are hardy through all of this heat.            |                     | Venice Kelly<br>Jeff Maclachlan |
| 8/16/2024<br>11:15-noon 21-26°C, Windy, 10-14 mph 10%        | Sherwood transect/Bridge meadow          | Two male Ruddy Coppers were patrolling their neighboring territories, spinning around each other. |                     | Venice Kelly                    |
| 8/20/24.<br>10:30am—12:30pm<br>Breezy, few clouds            | Bluebird Mine at Caribou                 | Brandeds flying around each other. Wing fluttering  | Yellow asters with  | Venice Kelly<br>Jeff Maclachlan |
| 8/30/2024<br>10:30-1:10 pm<br>20-25 °C, blue sky.            | Sherwood to Pine White meadow            | Few flowers did attract some butterflies. Seep – commas puddling.                                 | Most gone to seed.  | Venice Kelly<br>Wynne Whyman    |
| 9/13/2024<br>17-19 °C, full sun<br>Gentle breeze             | Sherwood                                 | Orange sulphurs mating, Field crescents in amorous mood   |                     | Venice Kelly<br>Jeff Maclachlan |
| 9/20/2024<br>1:30-3:00 16 °C,<br>Cloud cover                 | Sherwood                                 |   | Outstanding foliage | Venice Kelly<br>Jeff Maclachlan |
| 9/24/2024<br>1:40-3:15 pm 18 °C,<br>Sunny, 10% clouds        | Sherwood                                 | Orange Sulphurs and Field Crescents seem most prevalent this fall. Mourning cloak showed.         |                     | Venice Kelly<br>Jeff Maclachlan |

| <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> | <b>2023</b> | <b>2024</b> |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| # Species Identified in Sherwood                 | 48          | 48          | 40          | 20          | 46          | 28          | 38          | 47          | 55          | 50          | 59          | 61          | 65          | 64          | 71          | 70          | 68          | 69          |
| Cumulative # Species Sighted in Caribou-Sherwood | 75          | 75          | 80          | 80          | 81          | 82          | 83          | 83          | 84          | 85          | 86          | 88          | 88          | 95          | 97          | 98          | 98          | 100         |
| 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        | 70.5        | 49.5        |
| Individual Butterflies Counted                   | 358         | 647         | 278         | 145         | 488         | 304         | 361         | 752         | 587         | 657         | 770         | 1071        | 2336        | 1692        | 2080        | 2092        | 2043        | 1103        |
| Individuals /Research Hour                       | 36          | 54          | 33          | 24          | 39          | 38          | 45          | 54          | 39          | 65          | 28          | 25          | 44          | 29          | 29          | 28.5        | 29          | 22.3        |
| Species/ Research 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         | 1.0         | 1.4         |