

2012

Butterfly Inventories

Within Boulder County Open Space Properties



By Janet Chu

September 12, 2012

Cover photo: Draco Skipper (*Polites draco*) dorsal and ventral, June 5, 2012, Reynold's Ranch, Magnolia Road, Boulder County. by Janet Chu

The Draco is a tiny orange charmer found at Reynold's and Caribou Ranches. Its give away mark is the dagger which penetrates the chevron on the hind wing.

It would be advantageous to the reader to refer to the published Lepidoptera of North America. Series 12. Butterflies of Boulder County, Colorado. A Continuing Study of Species and Populations in County Open Space Properties – with 2011 Inventory and 2007-2011 Analyses. By Chu, Janet. 2012. Published by C.P. Gillette Museum Colorado State University, Fort Collins, CO 80523. Butterfly lists with common and scientific names, blossoming plants, and maps of survey areas are included with great detail. This paper is also available on line at: <http://www.bouldercounty.org/os/culture/posresearch/2011chu.pdf>

2012 Inventories

Butterfly inventories continued for the eleventh year, but at a reduced number of field days. Twenty-eight days and about sixty-four Research Hours of field work were conducted on sites mainly in six Boulder County Open Space properties, including the Southeast Buffer; Anne U. White; Heil Valley – Geer Watershed, Plumely Canyon, and North; Walker Ranch – Meyer’s Homestead Trail and the new BLM property; Reynold’s Ranch – Giggey Pond and North Bog; and Caribou Ranch-Mud Lake. The research team was composed of the author, Larry Crowley, Jean Morgan, Venice Kelly, John Barr, Joe Krieg, and Amy Chu.

Two butterflies were photographed that had not been seen during the previous ten years of inventories in the Boulder County Open Spaces. The Question Mark (*Polygonia interrogationis*) and the Delaware Skipper (*Anatrytone logan*) were newly sighted this year. The Question Mark was in the mouth of Plumely Canyon on May 27, basking on a flat rock when temperature was a cool 16 °C when it is typically too cold for flight. The Delaware Skipper rested on a dry weed momentarily at the gate of the Southeast Buffer near Hwy 128. Both are common in the eastern United States. (Refer to photos on page 5)

There was generous snowfall and rain in February which set the spring and early summer flower crop to be spectacular. An early season appeared for butterflies, as well as birds and blossoms. The warmth of early summer and the numerous blossoms provided for butterflies to disperse more widely. We anticipated a fine season with many migrants arriving, and this was so until early July. We noted that twenty-nine species were observed in Open Spaces, outside of their predictable habitats. However when the ten-day blistering heat wave began June 22 through July 2 it was enough to stop much flower production in the foothills. Drought came in July and caused blossoms to cease, and butterflies to emerge much less from then on.

Even though July was the third wettest in Boulder, the temperatures were so high (about 74 days above 90 degrees); the summer butterfly populations didn’t recover. By mid-August the late summer butterflies had emerged, but populations were smaller than seen in the past.

Early migrants appearing annually are the Painted Ladies (*Vanessa cardui*) and Variegated Fritillaries (*Euptoieta claudia*) which showed up on April 22 at Heil North, April 28 Heil –Plumely, and May 5 at Meyer’s Gulch along with a Dainty Sulfur (*Nathalis iole*), which usually resides in the extreme southwest, but can be found in Boulder County during the entire summer.

Alba forms of the female Clouded Sulphur (*Colias philodice*) were noted in five of the study areas in greater numbers than previous years. The alba (‘albino’) may be either *philodice* or *eurytheme* as they “Too difficult to separate,” according to Opler’s Western Butterflies. In our records these are counted as *philodice*, even though the *eurytheme* were more numerous than *philodice* at Caribou on July 12 and August 10, 2012.

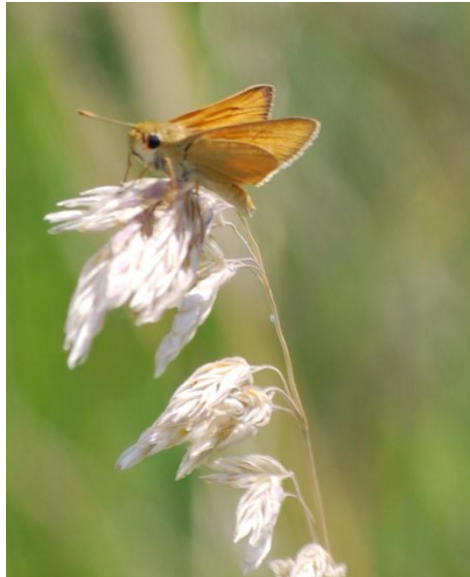
Butterflies were more dispersed and were found in Open Space areas where they had not been observed during the previous ten years. On Anne U. White Fourmile Canyon Trail the Siva Juniper Hairstreak (*Callophrys gyrneus siva*) and Juba Skipper (*Hesperia juba*) were new in 2012 on this trail. In Heil - Plumely Canyon the Greenish Blue (*Plebejus saepiolus*) was at an unusually low elevation, and at Heil - North Point the Gray Copper (*Lycaena dione*) and Milbert's Tortoiseshell (*Aglaia milberti*) were found. At Meyer's Gulch both the Siva Juniper Hairstreak and Thicket Hairstreak, (*Callophrys spinetorum*) were seen as well as the biennially-appearing Chryxus Arctic (*Oeneis chryxus*). At Caribou Ranch, the Mormon Fritillary (*Speyeria mormonia*) showed for the first time in the meadow inside the locked gate.

A newly sighted species at the Reynold's Ranch, a Rocky Mountain Parnassian (*Parnassius smintheus*) was seen on three days. Eighteen additional species were sighted for the first time at Reynold's: Pale Swallowtail (*Papilio eurymedon*), Two-tailed swallowtail (*P. multicaudata*), Pine White (*Neophasia menapia*), Cabbage White (*Pieris rapae*), Clouded Sulphur (*Colias philodice*), Purplish Copper (*Lycaena helloides*), Thicket Hairstreak (*Callophrys spinetorum*), Reakirt's Blue (*Echinargus isola*), Arrowhead Blue (*Glaucopsyche piasus*), Monarch (*Danaus plexippus*), Weidemeyer's Admiral (*Limenitis weidemeyerii*), Northern Checkerspot (*Chlosyne palla*), Pearl Crescent (*Phyciodes tharos*), American Lady (*Vanessa virginiensis*), Mourning Cloak (*Nymphalis antiopa*), Chryxus Arctic (*Oeneis chryxus*), Garita Skipperling (*Oarisma garita*), and the Woodland Skipper (*Ochlodes sylvanoides*).

Rare butterflies of special concern listed by the Colorado Natural Heritage Watch List are found in some Open Spaces. Single individuals of the Dusted Skipper (*Atrytonopsis hianna*) were found in Anne U. White, Heil - Plumely Canyon and Geer Watershed. The Hops Azure (*Celastrina humulus*), Moss' Elfin (*Callophrys mossii schryveri*), Arogos Skipper (*Atrytone arogos*) and Ottoo Skipper (*Hesperia ottoo*) were not observed in 2012. Likely we did not go into their habitats at their emergent time.

One trip with Michelle Durant to southeast Walker Ranch – BLM access property on May 29, 2012, showed good potential habitat for butterflies. The hills were very steep, but the meadows were good for butterflies with their numerous blossoming plants. Seventeen species were located in the meadows within an hour. (Refer to Walker Ranch chart)

Moisture was so scarce at Heil Ranch that we found the small Frog Pond on the Heil Ranch (private property) attracting many butterflies. These were recorded separately on the Heil Valley – Geer Watershed charts, but totaled into the final numbers. Twenty-seven species were seen close-up puddling among the cow's hoof-prints in the mud and grazed forbs. During the same two weeks, thirty-five species were seen in the Open Space.



A Delaware Skipper (*Anatrytone logan*) sighted for the first time on our eleven-year inventories in the Southeast Buffer and again several times in 2012. These typically live east of the Rockies and seldom visit our area.



The Question Mark (*Polygonia interrogationis*) is known for the silvery question mark which appears on the ventral hind wing, and is common in the eastern United States. Photos by Jan Chu

Summary for 2012

This was the summer for good dispersal of butterflies. Many were seen visiting habitats they had not been observed in before. Two species were newly photographed on the inventories.

The drought affected the available blossoms and therefore the populations. Although as one looks at the summary charts for each Open Space it seems that there were greater numbers of species. One reason is the success that we had in the early summer. The numbers of field observations were fewer when the drought so severely affected the counts.

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Appendix A. Charts of Field Data

Southeast Buffer	2012	3/16	4/14	5/9	6/10	6/24
<i>Papilio polyxenes</i>	Black Swallowtail			1ph		
<i>P. zelicaon</i>	Anise Swallowtail			1		
<i>P. rutulus</i>	W. Tiger Swallowtail					
<i>P. multicaudata</i>	Two-tailed Swallowtail					
black swallowtail sp.						
<i>Pontia protodice</i>	Checkered White	1		13	12	14
<i>P. occidentalis</i>	Western White					
<i>Pieris rapae</i>	Cabbage White		3			
<i>Euchloe olympia</i>	Olympia Marble					
white sp.				2	7	
<i>Colias philodice</i>	Clouded Sulphur		21	5+1alb	15	20
<i>C. eurytheme</i>	Orange Sulphur			2	6	6
<i>Zerene cesonia</i>	Southern Dogface					
<i>Abaeis nicippe</i>	Sleepy Orange					
<i>Kricogonia lyside</i>	Lyside Sulphur					
<i>Nathalis iole</i>	Dainty Sulphur					2
sulphur sp.				1		
<i>Lycaena dione</i>	Gray Copper					
<i>Strymon melinus</i>	Gray Hairstreak				1	1
<i>Glaucopsyche lygdamus</i>	Silvery Blue			3		
<i>Euphilotes ancilla</i>	Rocky Mtn. Dotted-Blue					
<i>Echinargus isola</i>	Reakirt's Blue					
<i>Plebejus melissa</i>	Melissa Blue			3		
blue sp.				7		1
<i>Danaus plexippus</i>	Monarch					
<i>Agraulis vanilla</i>	Gulf Fritillary					
<i>Euptoieta claudia</i>	Variegated Fritillary			11	21	14
<i>Speyeria aphrodite</i>	Aphrodite Fritillary			2		
<i>S. edwardsii</i>	Edwards' Fritillary					
fritillary sp.	(silvered)					
<i>Chlosyne fulvia</i>	Fulvia Checkerspot					
<i>C. gorgone</i>	Gorgone Checkerspot			5		
<i>Phyciodes tharos</i>	Pearl Crescent					
<i>P. pulchella</i>	Field Crescent		1			
crescent				5		
<i>Aglais milberti</i>	Milbert's Tortoiseshell	1				
<i>Nymphalis antiopa</i>	Mourning Cloak					
<i>Vanessa cardui</i>	Painted Lady			1		
<i>Limenitis weidemeyerii</i>	Weidemeyer's Admiral					
<i>Coenonympha tullia ochracea</i>	Common (Ochre) Ringlet					
<i>Cercyonis pegala</i>	Common Wood Nymph					
<i>Erynnis afranius</i>	Afranius Duskywing					
<i>E. persius</i>	Persius Duskywing		9			
duskywing sp.						
<i>Pyrgus communis</i>	Common Checkered-skipper		3	11	2	1
<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					1ph

*first time noted during inventories in Southeast Buffer alb=alba form ph=photograph

SE Buffer	2007	2008	2009	2010	2011	2012
# of Species identified during the year in SE Buffer	25	20	21	24	19	18
# Species 2007-2011 sighted in Southeast Buffer	21	23	33	37	41	44
Research Hours on Site	5	21	9	7.7	11.5	9
# Individual Butterflies Counted	256	373	353	443	160	227
# Individuals / Research Hour	51	18	39	40	14	25

Date, Conditions	Location within Open Space	Butterfly Activity	Blossoming Plants	Animals	GPS , elevation, or round trip mileage	Researchers
3/16/2012 12:15 -1:15 p.m. 21 °C wind 0-5 mph			Salt and pepper, Easter daisy	Horned lark, meadowlark	5,924 ft. N 39.91261 W 105.18247	Jan Chu, Larry Crowley
4/3/16/2012 12:15 – 1:15 p.m. 20 °C wind 5 mph, sunny.	Gate, off hwy 128 to Swallowtail Hill		Salt & pepper Easter daisy	Horned lark, meadow lark	Gate 2012 N 39.9126 W 105.1824 2011 N 39.53455 W 105.10569	Jan Chu, Larry Crowley
4/14/2012 1:00 – 2:00 p.m. 15 °C 90% cloud cover, 5-20 mph wind	Coalton Trail, west of McCaslin and into meadow north, then into gulley south	Persius nectaring on musineon and dandelion	Musineon Dandelion	Meadow lark, robin, crow, golden eagle		Jan Chu, Larry Crowley
5/9/2012 10:30-12:30 p.m. 20 -23 °C, clear sky, wind 5-15 mph.	Car to Swallowtail Hill	P. polyxenes nectaring on penstemon & Lambert's loco; claudia nectaring on mustard	Mustard, yellow, 2' tall, Cowboy's delight, sand lily, paintbrush (greenish), Lambert's loco, bindweed, Erigeron, Musineon, salsify, flax, toadflax, evening primrose- yellow. Penstemon-one-sided, milk vetch, Mertensia, wall flower, Geyer's onion, night-shade low purple, prairie penstemon-blue, cactus-yellow ball	Meadowlark, horned lark, song sparrow, vesper sparrow	22 mi r.t.	Jan Chu, Larry Crowley
6/10/2012 10:30-12:30 p.m. 16 °C, sky clear; wind 10-30 mph	Gate to Swallowtail Hill	Continuous wind so strong butterflies are staying low and not showing at all. melinus nectaring on St. John's wort		Many Meadowlarks, horned lark,		Jan Chu, Larry Crowley
6/24/2012 9:00-11:00 a.m. 29-31 °C, Clear sky, hazy from fires, 0-5 mph	Gate to Swallowtail Hill, return down by the shallow 'wallows' to the west side of the hill.	Several tiny claudia measuring 1 ¼" wingspan- nectaring on 'yellow composites, rough, tough leaves; sulphurs nectaring on bindweed	Sunflower species			Jan Chu, Jean Morgan

Anne U. White Trail, Fourmile Canyon Creek	2012	4/8 2012	5/10 2012	5/21 2012	6/11 2012	8/30 2012
<i>Parnassius smintheus</i>	Rocky Mountain Parnassian					
<i>Papilio polyxenes</i>	Black Swallowtail		2			
<i>P. zelicaon</i>	Anise Swallowtail		5	1		
<i>P. indra</i>	Short-tailed Swallowtail		5			
<i>P. rutulus</i>	W. Tiger Swallowtail	2	3	5	2	
<i>P. eurymedon</i>	Pale Swallowtail		2	6	10	
<i>P. multicaudata</i>	Two-tailed Swallowtail		3	1	9	1
swallowtail, yellow sp.			1			
<i>Pontia protodice</i>	Checkered White				2	
<i>P. sisymbrii</i>	Spring White	2				
<i>Pieris rapae</i>	Cabbage White	2	2	8	8	3
<i>Euchloe ausonides</i>	Large Marble	2		7	3	
<i>E. olympia</i>	Olympia Marble	1				
white sp.		5	5	7	5	
<i>Anthocharis sara julia</i>	Julia Orangetip		3			
<i>Colias philodice</i>	Clouded Sulphur	1	2	2		
<i>C. eurytheme</i>	Orange Sulphur		1	2		3
<i>Nathalis iole</i>	Dainty Sulphur		1			
<i>Callophrys affinis homoperplexa</i>	Canyon Bramble Hairstreak	1		2	1	
<i>C. sheridanii</i>	White-lined Green Hairstreak					
* <i>C. gyrneus siva</i>	Siva Juniper Hairstreak				1	
<i>C. mossii schryveri</i>	Moss' Elfin					
<i>C. polios</i>	Hoary Elfin					
<i>C. eryphon</i>	Western Pine Elfin	16	25	8		
<i>Satyrium titus</i>	Coral Hairstreak					
<i>Strymon melinus</i>	Gray Hairstreak					
<i>Cupido amyntula</i>	Western Tailed-Blue		2	1		
<i>Celastrina ladon sidara</i>	Echo Azure		2	1		
<i>Glycopsyche piasus</i>	Arrowhead Blue					
<i>G. lygdamus</i>	Silvery Blue			1		
<i>Euphilotes ancilla</i>	Rocky Mountain Dotted-Blue			1	2	
<i>Echinargus isola</i>	Reakirt's Blue				1	
* <i>P. saepiolus</i>	Greenish Blue				2	
<i>Plebejus melissa</i>	Melissa Blue		2	8	1	
<i>P. icarioides</i>	Boisduval's Blue					
<i>P. lupini lutzi</i>	Lupine Blue					
<i>P. glandon rustica</i>	Arctic Blue					
blue sp.		1	5		1	
<i>Apodemia nais</i>	Nais Metalmark					
<i>Danaus plexippus</i>	Monarch					

Anne U. White Trail,	2012					
<i>Euptoieta claudia</i>	Variegated Fritillary		5	8	1	
<i>Speyeria aphrodite</i>	Aphrodite Fritillary		1	3	20	15
<i>S. edwardsii</i>	Edwards' Fritillary					
<i>S. coronis</i>	Coronis Fritillary					1
<i>S. callippe</i>	Callippe Fritillary					2
<i>S. hesperis</i>	Northwestern Fritillary					
<i>S. mormonia</i>	Mormon Fritillary					
fritillary sp.				4	3	10
<i>Chlosyne gorgone</i>	Gorgone Checkerspot					
<i>C. palla</i>	Northern Checkerspot					
<i>Phyciodes pallida</i>	Pale Crescent		5	8	12	
<i>P. tharos</i>	Pearl Crescent					
<i>P. cocyta</i>	Northern Crescent				2	
<i>P. pulchella</i>	Field Crescent		2	3	3	
<i>Polygonia satyrus</i>	Satyr Comma		1			
<i>P. gracilis</i>	Hoary Comma	7	1	3	1	
<i>Junonia coenia</i>	Common Buckeye					
<i>Aglais milberti</i>	Milbert's Tortoiseshell					
<i>Nymphalis californica</i>	California Tortoiseshell					
<i>N. antiopa</i>	Mourning Cloak	5	1	3	4	1
<i>Vanessa atalanta</i>	Red Admiral			1	1	
<i>V. cardui</i>	Painted Lady		12	15	2	
<i>V. virginiensis</i>	American Lady					
<i>Limenitis weidemeyerii</i>	Weidemeyer's Admiral			3	11	4
<i>Coenonympha tullia ochracea</i>	Common (Ochre) Ringlet		2	8	4	
<i>Cercyonis pegala</i>	Common Wood-Nymph					
<i>C. oetus</i>	Small Wood-Nymph					
<i>Oeneis uhleri</i>	Uhler's Arctic		8	6		
<i>Epargyreus clarus</i>	Silver-spotted Skipper		1	1	8	
<i>Pholisora catullus</i>	Common Sootywing				1	
<i>Erynnis pacuvius</i>	Pacuvius Duskywing					
<i>E. persius</i>	Persius Duskywing			1	1	
<i>Pyrgus communis</i>	Common Checkered-Skipper				1	
<i>Piruna pirus</i>	Russet Skipperling					
* <i>Hesperia juba</i>	*Juba Skipper				1	
<i>H. colorado</i>	W. Branded Skipper					10 ph
<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					26
<i>Poanes taxiles</i>	Taxiles Skipper				9	
<i>Euphyes vestris</i>	Dun Skipper				16	
<i>Atrytonopsis hianna</i>	Dusted Skipper			1		

*First time seen in this location ph=photo

Anne U. White Fourmile Canyon	2007	2008	2009	2010	2011	2012
# of Species identified annually in Anne U. White	44	45	35	31	47	50
Cumulative # Species sighted in Anne U. White 2007-2012	47	66	69	69	75	82
Research Hours on Site	9.5	16	10	10.5	19.5	13.5
# Individual Butterflies Counted	366	536	217	112	773	509
# Individuals / Research Hour (I/RH)	38.5	33.5	21.7	10.7	40	38
# Species / Research Hour	4.6	2.8	3.5	3.0	2.4	3.7

Anne U. White

Date, Conditions	Location within Anne U. White	Butterfly Activity	Blossoming Plants	Animals	GPS , elevation, or round trip mileage	Researchers
4/8/2012 11:30 – 2:30 p.m. 24°C 5% clouds 5-15 mph with gusts	2 nd stream crossing to top of steep hill					Jan Chu, Larry Crowley
5/10/2012 10:30-12:30 p.m. 22 °C 10% clouds No wind	Trail to first stream crossing	Pale and tiger swallowtails, old mourning cloak, frit sp. nectaring on lilac; pale swallowtail nectaring on wallflower. Swallowtails flying.	Boulder raspberry, Canada violet, Cardaria sp. white mustard, dandelion Erigeron, golden banner, Geyer's onion, larkspur, lilac Mertensia, mouse-ear, rose, Senecio sp. wallflower	Steller's jay, raven. Sceloporus E. fence lizard.. 2 rock squirrels		Jan Chu, Jean Morgan
5/21/2012 10:15 – 2:00 p.m. 20-23 °C clear to patchy clouds. wind 0-10 mph	Trail to first stream crossing			Turkey vulture Hummingbird br.tailed, Steller's jay, raven, chickadee. Pine squirrel		Jan Chu, Jean Morgan, Larry Crowley, Venice Kelly; BCNA class
6/11/2012 10:00-1:00 p.m. 17-22 °C; blue sky, wind 0-20 mph.	Trail to first stream crossing	Taxiles skipper nectaring on Fremont geranium; juniper and bramble hairstreaks nectaring on C. fendleri		Prairie dog		Jan Chu, Larry Crowley, Venice Kelly, Ron Butler
8/30/2012 10-12:noon Hot,dry						Venice Kelly

Heil Valley– Geer Watershed	2012	4/17/ 2012	5/15/2 012 pond	5/15/ 2012	5/18 2012 pond	5/18 2012	5/27 2012 pond	5/28
<i>Papilio polyxenes</i>	Black Swallowtail							
<i>P. zelicaon</i>	Anise Swallowtail		2	1	2	1	1	1
<i>P. indra</i>	Short-tailed Swallowtail		10	4		1	8	5
<i>P. rutulus</i>	Western Tiger Swallowtail		4		1			2
<i>P. eurymedon</i>	Pale Swallowtail		6	5	7	3	10	12
<i>P. multicaudata</i>	Two-tailed Swallowtail		2		3	2		2
<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>Pieris rapae</i>	Cabbage White	5	1	2		5	1	6
<i>P. marginalis</i>	Mustard White							
<i>Euchloe ausonides</i>	Large Marble			5	1	1		1
<i>E. olympia</i>	Olympia Marble							
<i>Anthocharis sara julia</i>	Julia Orangetip			2		3		
white sp.		13	2	6				
<i>Colias philodice</i>	Clouded Sulphur	2	1	2	2	3		2
<i>C. eurytheme</i>	Orange Sulphur	2		1	1	1		3
<i>C. alexandra</i>	Queen Alexandra's Sulphur							
<i>Eurema mexicana</i>	Mexican Sulphur							
<i>Nathalis iole</i>	Dainty Sulphur			1				3
sulphur sp.				1				
<i>Lycaena dione</i>	Gray Copper							
<i>L. heteronea</i>	Blue Copper							
<i>Callophrys affinis homoperplexa</i>	Canyon Bramble Hairstreak			1				8
<i>C. gryneus</i>	Siva Juniper Hairstreak							3
<i>C. augustinus</i>	Brown Elfin							
<i>C. eryphon</i>	Western Pine Elfin	3		2				2
<i>Satyrium titus</i>	Coral Hairstreak							
<i>S. liparops</i>	Striped Hairstreak							
<i>S. saepium</i>	Hedgerow Hairstreak							
<i>Strymon melinus</i>	Gray Hairstreak							
<i>Leptotes marina</i>	Marine Blue							
<i>Cupido amyntula</i>	Western Tailed-Blue		1	1		2		3
<i>Celastrina ladon sidara</i>	Echo Azure			1	1	2		1
<i>Glaucopsyche piasus</i>	Arrowhead Blue				1			3
<i>G. lygdamus</i>	Silvery Blue		2	2	6	2		14
<i>Euphilotes ancilla</i>	Rocky Mountain Dotted-Blue							3
<i>Echinargus isola</i>	Reakirt's Blue							
<i>Plebejus melissa</i>	Melissa Blue		2	2				2
<i>P. saepiolus</i>	Greenish Blue							
<i>P. icarioides</i>	Boisduval's Blue							5
<i>P. lupini lutzi</i>	Lupine Blue							
<i>P. glandon rustica</i>	Arctic Blue							
blue sp.				11		1		
<i>Danaus plexippus</i>	Monarch							
<i>Apodemia nais</i>	Nais Metalmark							

Heil Valley– Geer Watershed	2012	4/17 2012	5/15 2012 pond	5/15 2012	5/18 pond	5/18 2012	5/27 2012 pond	5/28 2012
<i>Euptoieta claudia</i>	Variiegated Fritillary		2	6	1	3		
<i>Speyeria aphrodite</i>	Aphrodite Fritillary		1	7	1		8	17
<i>S. edwardsii</i>	Edwards' Fritillary							
<i>S. coronis</i>	Coronis Fritillary							
<i>S. callippe</i>	Callippe Fritillary							
<i>S. hesperis</i>	Northwestern Fritillary							
<i>S. mormonia</i>	Mormon Fritillary							
<i>Chlosyne gorgone</i>	Gorgone Checkerspot				1	2		4
<i>C. nycteis</i>	Silvery Checkerspot							
<i>C. palla</i>	Northern Checkerspot							
<i>Phyciodes pallida</i>	Pale Crescent							
<i>P. tharos</i>	Pearl Crescent		1					
<i>P. cocyta</i>	Northern Crescent							
<i>P. pulchella</i>	Field Crescent		2	3			5	7
<i>Polygonia satyrus</i>	Satyr Comma							
<i>P. gracilis</i>	Hoary Comma							
<i>Aglais milberti</i>	Milbert's Tortoiseshell							
<i>Nymphalis antiopa</i>	Mourning Cloak	1			3			1
<i>N. californica</i>	California Tortoiseshell							
<i>Vanessa atalanta</i>	Red Admiral							
<i>V. cardui</i>	Painted Lady		4	2	4	6	5	4
<i>V. virginiensis</i>	American Lady							
<i>Limnitis weidemeyerii</i>	Weidemeyer's Admiral					2	6	5
<i>Asterocampa celtis</i>	Hackberry Emperor							
<i>Coenonympha tullia ochracea</i>	Ochre (Common) Ringlet		2	21	2	15	32	21
<i>Cercyonis pegala</i>	Common Wood-Nymph							
<i>C. oetus</i>	Small Wood-Nymph							
<i>Erebia epipsodea</i>	Common Alpine							1
<i>Oeneis chryxus</i>	Chryxus Arctic							
<i>O. uhleri</i>	Uhler's Arctic							
<i>Epargyreus clarus</i>	Silver-spotted Skipper		1	2		1	3	3
<i>Thorybes pylades</i>	N. Cloudywing	1				1		1
<i>Erynnis icelus</i>	Dreamy Duskywing							
<i>E. pacuvius</i>	Pacuvius Duskywing				1	3	2	3
<i>E. afranius</i>	Afranius Duskywing							
<i>E. persius</i>	Persius Duskywing		2	3	3	10	4	8
<i>Pyrgus communis</i>	Common Checkered-skipper						1	2
<i>Pholisora catullus</i>	Common Sootywing							
<i>Piruna pirus</i>	Russet Skipperling							
<i>Oarisma garita</i>	Garita Skipperling							
<i>Hesperia juba</i>	Juba Skipper		1					1
<i>H. colorado</i>	Western Branded Skipper							
<i>H. nevada</i>	Nevada skipper							
<i>Polites themistocles</i>	Tawny-edged Skipper							1
<i>Ochlodes sylvanoides</i>	Woodland Skipper							
<i>Poanes taxiles</i>	Taxiles Skipper							
<i>Euphyes vestries</i>	Dun Skipper							
<i>Atrytonopsis hianna</i>	Dusted Skipper							1

Heil-Geer Watershed	2007	2008	2009	2010	2011	2012
# of Species Identified Annually	42	56	44	49	36	38
Cumulative # of Species Sighted in Heil-Geer Watershed	81	87	90	91	91	91
Research Hours at Site	15.5	21	12.5	14	14	10
# Individual Butterflies Counted	569	1225	492	419	436	530
# Individuals / Research Hour	37	58	39	30	31	53
# Species / Research Hour	2.7	2.7	3.5	3.5	2.6	3.8

Heil Valley – Geer Watershed 2012

Date, Conditions	Location within Heil - Geer	Butterfly Activity	Blossoming Plants	Animals	GPS , elevation, or round trip mileage	Researchers
4/17/2012 11:00-12:00 p.m. 14 ° C Overcast, wind 10 mph	Near barn along Geer watershed stream			Garter snake (green), Turkey tom, turkey vultures		Jan Chu, Bea Butler
5/15/2012 10:00 – 10:50 a.m. 17° C sunny	Frog Pond on Heil Ranch (private)	All puddling in cattle hoof prints, mud		Crow, house wren		Jan Chu, Larry Crowley, Jean Morgan
5/15/2012 11:00 a.m.-1:00 p.m. 18° C sunny	Heil open Space, Geer Watershed, manager's gate toward barn		Mouse ears, Boulder raspberry, golden banner, yellow mustard, white lupines, Townsendia daisy, Penstemon virens.	Mourning dove, w. tanager, crow, robin, spotted towhee, house wren, b.t. hummingbird, green-tailed towhee		Jan Chu, Larry Crowley, Jean Morgan (continued from the line above)
5/18/2012 9:35-12:00 p.m. 19° C overcast with smoke, cloudy from 10:00. no wind	Heil Ranch (private Frog Pond); 10-12:00 Heil Open Space Geer Watershed					Jan Chu, Venice Kelly, Bea Butler

5/27/2012 9:30-10:00 a.m. 16 ° C, blue sky, wind 5-10 mph	Frog Pond on Heil Ranch (private)	Puddling and flying around the Frog Pond. The mud is an attraction.				Jan Chu, Larry Crowley
Heil Valley, Geer Watershed						
5/28/2012 10:00 a.m. – 2:00 p.m. 15-21 °C , blue sky, wind 0-15 mph	Barn to stream to culvert across north tip of meadow	Active flying. Aphrodite Fritillaries circling each other. Nectaring. Persius 1 st instar in silk tent within golden banner leaf.		Turkey hen, 11 eggs in nest within choke cherry shrub		Jan Chu, Larry Crowley, Venice Kelly, Amy Chu, John Barr, Diane Carter, Cathy Comstock, Pat Cullen, Elaine Hill, Richard Holmes, Shirley Jin, Ellen Orleans, Pam Piombino, Anne Robinson

Heil – Plumely Canyon	2012	4/28/ 2012	5/27 2012
<i>Papilio polyxenes</i>	Black Swallowtail		
<i>P. zelicaon</i>	Anise Swallowtail	3	1
<i>P. indra</i>	Short-tailed Black Swallowtail	2	8
<i>P. rutulus</i>	Western Tiger Swallowtail		2
<i>P. eurymedon</i>	Pale Swallowtail		10
<i>P. multicaudata</i>	Two-tailed Swallowtail		
yellow swallowtail sp.		1	
<i>Neophasia menapia</i>	Pine White		
<i>Pontia protodice</i>	Checkered White		
<i>P. sisymbrii</i>	Spring White	5	
<i>Pieris rapae</i>	Cabbage White	7	1
<i>P. marginalis</i>	Mustard White		
white sp.		10	
<i>Euchloe ausonides</i>	Large Marble	2	
<i>E. olympia</i>	Olympia Marble	1	
<i>Anthocharis sara julia</i>	Julia Orangetip		
white sp.			1
<i>Colias philodice</i>	Clouded Sulphur	11	1
<i>C. eurytheme</i>	Orange Sulphur	4	
<i>C. alexandra</i>	Queen Alexandra's Sulphur		
<i>Phoebis sennae eubule</i>	Cloudless Sulphur (Eastern)		
<i>Eurema mexicana</i>	Mexican Sulphur		
<i>Nathalis iole</i>	Dainty Sulphur		
sulphur sp.			
<i>Lycaena dione</i>	Gray Copper		
<i>Callophrys affinis</i>		2	
<i>homoperplexa</i>	Canyon Bramble Hairstreak		
<i>C. sheridani</i>	White-lined Green Hairstreak		
<i>C. gryneus</i>	Siva Juniper Hairstreak		1
<i>C. mossii schryveri</i>	Moss' Elfin		
<i>C. polios</i>	Hoary Elfin		
<i>C. eryphon</i>	Western Pine Elfin	22	
elfin sp.			
<i>Satyrrium titus</i>	Coral Hairstreak		
<i>Strymon melinus</i>	Gray Hairstreak		
<i>Leptotes marina</i>	Marine Blue		
<i>Cupido amyntula</i>	Western Tailed-Blue	2	4
<i>Celastrina ladon sidara</i>	Echo Azure	8	3
<i>C. humulus</i>	Hops Azure		
<i>Glaucopsyche piasus</i>	Arrowhead Blue		
<i>G. lydamus</i>	Silvery Blue	21	10
<i>Euphilotes ancilla</i>	Rocky Mountain Dotted-Blue		1
<i>Echinargus isola</i>	Reakirt's Blue		1
<i>Plebejus melissa</i>	Melissa Blue	1	3
* <i>P. saepiolus</i>	*Greenish Blue		1ph
<i>P. icarioides</i>	Boisduval's Blue		3
<i>P. lupini lutzi</i>	Lupine Blue		
<i>P. glandon rustica</i>	Arctic Blue		
blue sp.		22	8

Heil – Plumely Canyon	2012	4/28/ 2012	5/27 2012
<i>Danaus plexippus</i>	Monarch		
<i>Euptoieta claudia</i>	Variiegated Fritillary	9	
<i>Speyeria aphrodite</i>	Aphrodite Fritillary		8
<i>S. edwardsii</i>	Edwards' Fritillary		
<i>S. coronis</i>	Coronis Fritillary		
<i>S. callippe</i>	Callippe Fritillary		
<i>S. atlantis</i>	Atlantis Fritillary		
<i>S. hesperis</i>	Northwestern Fritillary		
<i>Polydryas arachne</i>	Arachne Checkerspot		
<i>Chlosyne gorgone</i>	Gorgone Checkerspot		5
<i>Phyciodes pallida</i>	Pale Crescent		2
<i>P. tharos</i>	Pearl Crescent		2
<i>P. cocyta</i>	Northern Crescent		
<i>P. pulchella</i>	Field Crescent	5	5
<i>*Polygonia interrogationis</i>	*Question Mark		1 ph
<i>P. gracilis</i>	Hoary Comma	7	3
<i>Aglais milberti</i>	Milbert's Tortoiseshell		
<i>Nymphalis antiopa</i>	Mourning Cloak	1	1
<i>N. californica</i>	California Tortoiseshell		
<i>Vanessa atalanta</i>	Red Admiral		
<i>V. cardui</i>	Painted Lady	25	5
<i>V. virginiensis</i>	American Lady		
<i>Limenitis weidemeyerii</i>	Weidemeyer's Admiral		6
<i>Asterocampa celtis</i>	Hackberry Emperor		
<i>Coenonympha tullia ochracea</i>	Ochre (Common) Ringlet	1	32
<i>Cercyonis pegala</i>	Common Wood-Nymph		
<i>C. oetus</i>	Small Wood-Nymph		
<i>Erebia epipsodea</i>	Common Alpine		
<i>Epargyreus clarus</i>	Silver-spotted Skipper		3
<i>Thorybes pylades</i>	N. Cloudywing	2	7
<i>Erynnis pacuvius</i>	Pacuvius Duskywing		2
<i>E. afranius</i>	Afranius Duskywing		
<i>E. persius</i>	Persius Duskywing	9	4
duskywing sp.		3	1
<i>Pyrgus communis</i>	Common Checkered-skipper	1	1
<i>Pholisora catullus</i>	Common Sootywing		
<i>Piruna pirus</i>	Russet Skipperling		1
<i>Oarisma garita</i>	Garita Skipperling		
<i>Hesperia juba</i>	Juba Skipper		
<i>H. colorado</i>	Western Branded Skipper		
<i>Polites draco</i>	Draco Skipper		
<i>P. themistocles</i>	Tawny-edged Skipper		
<i>P. mystic</i>	Long Dash		1
<i>Ochlodes sylvanoides</i>	Woodland Skipper		
<i>Poanes taxiles</i>	Taxiles Skipper		
<i>Euphyes vestris</i>	Dun Skipper		
<i>Atrytonopsis hianna</i>	Dusted skipper	1	2
skipper sp.			

*First sighting at this location ph= photograph

Heil Valley-Plumely Canyon	2007	2008	2009	2010	2011	2012
# of Species Identified Each Year in Plumely Canyon	45	37	44	36	44	41
Cumulative # Species 2007-2012 sighted in Plumely Canyon	81	81	82	84	86	88
Research Hours on Site	8	13	17	6.5	18	7.5
# Individual Butterflies Counted	365	480	401	196	526	342
# Individuals / Research Hour	45	36	24	30	29	46
# Species / Research Hour	5.6	2.8	2.6	5.5	2.4	5.4

Heil Ranch Open Space, Plumely Canyon

Date, Conditions	Location within Heil-Plumely	Butterfly Activity	Blossoming Plants	Animals	GPS , elevation, round trip mileage	Researchers
4/28/2012 10:45 – 3:20 p.m. 15 – 16 °C, clear sky, wind 5-20 mph.		Indra swallowtail nectaring on wallflower	Wall flower, plum, penstemon, chokecherry, golden banner, milk vetch, Filary, Erigeron, mouse-ear, Mahonia, larkspur, bluebell, pussytoes, cinquefoil	Mourning dove, spotted towhee, turkey, robin, crow, mallard; fence lizard, milk snake.		Larry Crowley, Venice Kelly, John Barr
5/27/2012 10:00 a.m.- 1:15 p.m. 16-17 °C, wind 5-10 mph, clear sky – 90% cloudy	Plumely Canyon to meadow	P. interrogationis was basking flat on a single rock. T. pylades nectaring on Gaura and Fr. geranium; amyntula nectaring on Erigeron.				Jan Chu, Larry Crowley

Heil Valley – North – Red Hill, Red Gulch, North Point	2012	4/22 2012	6/29 2012
<i>Papilio polyxenes</i>	Black Swallowtail		
<i>P. zelicaon</i>	Anise Swallowtail	2	
<i>P. indra</i>	Indra Swallowtail	5	
<i>P. rutulus</i>	Western Tiger Swallowtail		
<i>P. eurymedon</i>	Pale Swallowtail		
<i>P. multicaudata</i>	Two-tailed Swallowtail	1	2
<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	1	
white sp.		13	
<i>Euchloe ausonides</i>	Large Marble	4	
<i>E. olympia</i>	Olympia Marble	2	
<i>Anthocharis sara julia</i>	Julia Orangetip		
<i>Colias philodice</i>	Clouded Sulphur	23+1 alba	6
<i>C. eurytheme</i>	Orange Sulphur	4	1
<i>C. alexandra</i>	Queen Alexandra's Sulphur		
<i>Nathalis iole</i>	Dainty Sulphur		5
sulphur sp.			4
* <i>Lycaena dione</i>	*Gray Copper		1
<i>Lycaena heteronea</i>	Blue Copper		
<i>Callophrys affinis</i>	Canyon Bramble Hairstreak		
<i>C. gryneus</i>	Siva Juniper Hairstreak		
<i>C. eryphon</i>	Western Pine Elfin	7	
<i>Satyrium behrii</i>	Behr's Hairstreak		
<i>S. titus</i>	Coral Hairstreak		
<i>Strymon melinus</i>	Gray Hairstreak		
<i>Leptotes marina</i>	Marine Blue		
<i>Cupido amyntula</i>	Western Tailed-blue		
<i>Celastrina ladon sidara</i>	Echo (Spring) Azure	1	
<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 melissa</i>	Melissa Blue		12
<i>P. icarioides</i>	Boisduval's Blue		
<i>P. lupini lutzi</i>	Lupine Blue		1
<i>P. glandon rustica</i>	Arctic Blue		
blue sp.		5	1
*first time observed at this location			

Heil Valley – North – Red Hill, Red Gulch, North Point	2012	4/22 2012	6/29 2012
<i>Danaus plexippus</i>	Monarch		
<i>Libytheana carinenta</i>	American Snout		
<i>Euptoieta claudia</i>	Variegated Fritillary	21	13
<i>Speyeria aphrodite</i>	Aphrodite Fritillary		10
<i>S. edwardsii</i>	Edwards' Fritillary		
<i>S. coronis</i>	Coronis Fritillary		
<i>S. callippe</i>	Callippe Fritillary		
<i>S. mormonia</i>	Mormon Fritillary		
<i>Chlosyne gorgone</i>	Gorgone Checkerspot		
<i>C. nycteis</i>	Silvery Checkerspot		
<i>C. palla</i>	Northern Checkerspot		
<i>Phyciodes pallida</i>	Pale Crescent		
<i>P. tharos</i>	Pearl Crescent		
<i>P. cocyta</i>	Northern Crescent		
<i>P. pulchella</i>	Field Crescent		
<i>Polygonia satyrus</i>	Satyr Comma		
<i>P. gracilis</i>	Hoary Comma	2	
<i>Nymphalis antiopa</i>	Mourning Cloak		
<i>N. californica</i>	California Tortoiseshell		
<i>Vanessa atalanta</i>	Red Admiral		
<i>*Aglais milberti</i>	*Milbert's Tortoiseshell	1	
<i>V. cardui</i>	Painted Lady	22	
<i>V. virginiensis</i>	American Lady		
<i>Limenitis weidemeyerii</i>	Weidemeyer's Admiral		
<i>Asterocampa celtis</i>	Hackberry Emperor		2
<i>Coenonympha tullia ochracea</i>	Ochre (Common) Ringlet		
<i>Cercyonis pegala</i>	Common Wood-Nymph		5
<i>C. oetus</i>	Small Wood-nymph		
<i>Epargyreus clarus</i>	Silver-spotted Skipper		1
<i>Erynnis afranius</i>	Afranius Duskywing		
<i>E. persius</i>	Persius Duskywing	1	
<i>Pyrgus communis</i>	Common Checkered-skipper	1	4
<i>Pholisora catullus</i>	Common Sootywing	2	2
<i>Piruna pirus</i>	Russet Skipperling		
<i>Oarisma garita</i>	Garita Skipperling		
<i>Hesperia juba</i>	Juba Skipper		
<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		
<i>P. mystic</i>	Long Dash		
<i>Atrytone arogos</i>	Arogos Skipper		
<i>Ochlodes sylvanoides</i>	Woodland Skipper		
<i>Poanes taxiles</i>	Taxiles Skipper		
<i>Euphyes vestries</i>	Dun Skipper		
<i>Atrytonopsis hianna</i>	Dusted Skipper		
skipper sp.			

Heil Valley-North Point, Red Hill, Red Gulch	2007	2008	2009	2010	2011	2012
# of Species Identified During Each Year in Heil-North	34	45	41	40	33	24
Cumulative # Species 2008-2011 Sighted in Heil-North	53	67	77	81	83	85
Research Hours on Site	11	17	12.5	11.5	12	6.5
# Individual Butterflies Counted	579	654	488	539	260	188
# Individuals / Research Hour	52	38	39	47	21.5	29
# Species / Research Hour	4.3	2.6	3.3	3.5	2.8	3.6

Heil Valley - North

Date, Conditions	Location	Butterfly Behavior	Blossoming Plants	Animals	GPS, elevation, or round trip mileage	Researchers
4/22/2012 10:30 – 3:00 p.m. Warm, Sky blue, no clouds, wind 0-5 mph	Geer, Red Hill		Physaria belli in full bloom	Pigmy nuthatch, crow, turkey, Cooper's hawk, blue-gray gnatcatcher, raven. Elk, mule deerbuck.		Larry Crowley, Venice Kelly, John Barr
6/29/ 2012 10:30 – 12:30 p.m. 30 °C ,50-60 % cloudy, no wind	Red Gulch, beginning at the base behind private property	Melissa blues nectaring on gumweed, Heterotheca, and mating				Jan Chu, Jeremy Hurst

Walker Ranch, Meyer's Gulch	2012	5/5/ 2012	6/12 2012		5/29 2012
<i>Parnassius smintheus</i>	Rocky Mountain Parnassian		11		1
<i>Papilio polyxenes</i>	Black Swallowtail				
<i>P. zelicaon</i>	Anise Swallowtail	1			
<i>P. indra</i>	Short-tail Swallowtail		1		
<i>P. rutulus</i>	Western Tiger Swallowtail		4		
<i>P. eurymedon</i>	Pale Swallowtail	1	5		2
<i>P. multicaudata</i>	Two-tailed Swallowtail		1		1
<i>Neophasia menapia</i>	Pine White				
<i>Pontia protodice</i>	Checkered White		4		
<i>P. sisymbrii</i>	Spring White	2			
<i>Pieris rapae</i>	Cabbage White	2	4		
white sp.		11	6		
<i>Euchloe ausonides</i>	Large Marble	1			
<i>Anthocharis sara julia</i>	Julia Orangetip	1			
<i>Colias philodice</i>	Clouded Sulphur	16 +1 alb	3		4
<i>C. eurytheme</i>	Orange Sulphur	7	5		
<i>C. alexandra</i>	Queen Alexandra's Sulphur				
<i>Nathalis iole</i>	Dainty Sulphur	3	7		
<i>Lycaena heteronea</i>	Blue Copper				
<i>Satyrium saepium</i>	Hedgerow Hairstreak		1		
<i>Callophrys affinis</i>	Canyon Bramble Hairstreak	8	7		
<i>C. sheridanii</i>	White-line Green Hairstreak				
* <i>C. gyrneus siva</i>	*Siva Juniper Hairstreak		4		
* <i>C. spinetorum</i>	*Thicket Hairstreak		1		
<i>C. augustinus</i>	Brown Elfin				
<i>C. polios</i>	Hoary Elfin	10			
<i>C. eryphon</i>	Western Pine Elfin	2			
elfin sp.		7			
<i>Strymon melinus</i>	Gray Hairstreak	1	1		
<i>Cupido amyntula</i>	Western Tailed-Blue				
<i>Celestrina ladon sidara</i>	Echo Azure	6			2
<i>Glaucopsyche piasus</i>	Arrowhead Blue				
<i>G. lygdamus</i>	Silvery Blue	6			
<i>Euphilotes ancilla</i>	Rocky Mountain Dotted-Blue		34		
<i>Echinargus isola</i>	Reakirt's Blue				
<i>Plebejus melissa</i>	Melissa Blue		1		
<i>P. saepiolus</i>	Greenish Blue				
<i>P. icarioides</i>	Boisduval's Blue		12		
<i>P. lupini lutzii</i>	Lupine Blue				
blue sp.		11	45		4
<i>Danaus plexippus</i>	Monarch				
<i>Apodemia nais</i>	Nais Metalmark				
<i>Euptoieta claudia</i>	Variegated Fritillary	6	2		
<i>Speyeria aphrodite</i>	Aphrodite Fritillary				
<i>S. edwardsii</i>	Edwards' Fritillary				4
<i>S. callippe</i>	Callippe Fritillary				
<i>S. hesperis</i>	Northwestern Fritillary				
<i>S. mormonia</i>	Mormon Fritillary				
fritillary sp.			6		
<i>Chlosyne gorgone</i>	Gorgone Checkerspot				
<i>C. nycteis</i>	Silvery Checkerspot		9		
<i>C. palla</i>	Northern Checkerspot				3
<i>Phyciodes cocyta</i>	Northern Crescent		4		
<i>P. pulchella</i>	Field Crescent	2	2		2

Walker Ranch, Meyer's Gulch		5/5/ 2012	6/12 2012		5/29 2012
	2012				
<i>Euphydryas anicia</i>	Variable Checkerspot		10		
<i>Polygonia gracilis</i>	Hoary Comma	1	1		3
<i>Aglais milberti</i>	Milbert's Tortoiseshell		cat		
<i>Nymphalis antiopa</i>	Mourning Cloak	5	2		
<i>N. californica</i>	California Tortoiseshell				
<i>Vanessa atalanta</i>	Red Admiral		2		
<i>V. cardui</i>	Painted Lady	3	2		3
<i>V. virginensis</i>	American Lady				
<i>Limenitis weidemeyerii</i>	Weidemeyer's Admiral				
<i>Coenonympha tullia ochracea</i>	Ochre (Common) Ringlet	2	17		9
<i>Cercyonis pegala</i>	Common Wood Nymph				
<i>C. oetus</i>	Small Wood Nymph				
<i>Erebia epipsodea</i>	Common Alpine		10		
* <i>Oeneis chryxus</i>	Chryxus Arctic		4		3
<i>O. uhleri</i>	Uhler's Arctic		14		2
<i>Erynnis icelus</i>	Dreamy Duskywing				
<i>E. pacuvius</i>	Pacuvius Duskywing	5	2		1
<i>E. persius</i>	Persius Duskywing	5	8		1
duskywing sp.		3			
<i>Pyrgus communis</i>	Common Checkered-skipper	2	2		
<i>Piruna pirus</i>	Russet Skipperling		1		
<i>Oarisma garita</i>	Garita Skipperling		3		
<i>Hesperia juba</i>	Juba Skipper				
<i>H. colorado</i>	Western Branded Skipper				
<i>Polites themistocles</i>	Tawny-edged Skipper				
<i>P. mystic</i>	Long Dash		1		
<i>Ochlodes sylvanoides</i>	Woodland Skipper		8		
<i>Poanes taxiles</i>	Taxiles Skipper				
<i>Euphyes vestris</i>	Dun Skipper				
skipper sp.			1		

*new for this location cat= caterpillars

Walker Ranch, Meyer's Gulch	2007	2008	2009	2010	2011	2012
# Species Identified during 2011 in Meyer's Gulch	30	35	45	35	50	47
# Species Sighted in Meyer's Gulch 2007-2011	33*	38	60	70	72	75
# Research Hours on Site	5	4	18	16	16.5	7
# Individual Butterflies Counted	160	203	1144	437	472	399
# Individuals / Research Hour	32	54	64	27	29	57
# Species / Research Hour	6.0	8.8	2.5	2.2	3.0	6.7

Walker Ranch, Meyer's Homestead Trail

Date Conditions	Location Walker	Butterfly Behavior	Blooming Plants	Animals	GPS, elevation or mileage	Researchers
5/5/2012 10:00 – 1:40 p.m. 20 °C Wind 0-5 mph,85% cloudy	Meyer's Gulch		Mouse-ear, sand lily, larkspur, currant, Lambert's loco bluebell, dandelion, mtn. parsley, death camus, pussytoes, pasque flower, wall flower, blue flag, iris	maggie, sharpshin hawk, red-tailed hawk, robin, ruby cr. kinglet, chipping sparrow, mtn. bluebird, junco, spotted towhee, house wren, Steller's jay, vulture, wh. br. nuthatch, flicker, raven, song sparrow.		Larry Crowley, Venice Kelly, Joe Kreig
6/12/2012 10:10 a.m.- 1:45 p.m. 21-25 °C Wind 0-25 mph, 30- 65% clouds	Meyer's Gulch to n. end of willows. Walked near streamlet and willows.	Butterflies were numerous in the mud- bottom of the streamlet. Boisduval nectaring on sulfur- flower. Milbert's tortoiseshell 1 st instar caterpillar on nettles.				Jan Chu, Larry Crowley, Venice Kelly, John Barr
Walker/ BLM access						
5/29,/2012 14-17 °C Sunny, clear sky, warming		Pale swallowtail nectaring on wallflower.				Michelle Durant, Jan Chu, John Barr

Reynold's Ranch	2012	6/5 2012	6/8 2012	7/15 2012	8/3 2012
<i>*Parnassius smintheus</i>	Parnassian, Rocky Mtn.	1	12	1	
<i>Papilio polyxenes</i>	Black Swallowtail				
<i>P. zelicaon</i>	Anise Swallowtail		2		
<i>P. rutulus</i>	W. Tiger Swallowtail	4	4		
<i>*P. eurymedon</i>	Pale Swallowtail		1		
<i>*P. multicaudata</i>	Two-tailed Swallowtail		1		
<i>*Neophasia menapia</i>	Pine White				7
<i>*Pieris rapae</i>	Cabbage White			1	
<i>Pontia protodice</i>	Checkered White	1	5		
white sp.		7	9	1	1
<i>Euchloe ausonides</i>	Large Marble	6	8		
<i>*Colias philodice</i>	Clouded Sulphur	4	3+1alba	12+4alba	
<i>C. eurytheme</i>	Orange Sulphur	2	2	56	13
<i>C. alexandra</i>	Queen Alexandra's Sulphur		5	20	5
sulphur sp.					4
<i>Lycaena rubidus</i>	Ruddy Copper			4	6
<i>*L. helloides</i>	Purplish Copper				1
<i>*Callophrys spinetorum</i>	*Thicket Hairstreak	1			
<i>Celastrina ladon sidara</i>	Echo (Spring) Azure				
<i>Glaucopsyche lygdamus</i>	Silvery Blue	6			
<i>*Echinargus isola</i>	Reakirt's Blue			1	
<i>Plebejus melissa</i>	Melissa Blue		1		
<i>Euphilotes ancilla</i>	R Mtn Dotted Blue		1		
<i>Plebejus saepiolus</i>	Greenish Blue	1	38	15	
<i>*Glaucopsyche piasus</i>	Arrowhead Blue	1			
<i>P. icarioides</i>	Boisduval's Blue				
<i>P. glandon rustica</i>	Arctic Blue	1			
<i>*Danaus plexippus</i>	Monarch			1	
<i>*Limenitis weidemeyerii</i>	Weidemeyer's Admiral			1	
blue sp.		6	5	13	
<i>Euptoieta claudia</i>	Variegated Fritillary			4	
<i>Speyeria aphrodite</i>	Aphrodite Fritillary			16	12
<i>S. edwardsii</i>	Edwards' Fritillary		2		
<i>S. coronis</i>	Coronis Fritillary			23	1
<i>S. callippe</i>	Callippe Fritillary				18
<i>S. hesperis</i>	Northwestern Fritillary				
<i>S. mormonia</i>	Mormon Fritillary				
<i>Boloria selene</i>	Silver-bordered Fritillary			19	1
fritillary sp.			3	9	2
<i>*Chlosyne palla</i>	Northern Checkerspot			1	
<i>Phyciodes pallida</i>	Pale Crescent				
<i>*P. tharos</i>	Pearl Crescent			1	
<i>P. cocyta</i>	Northern Crescent				
<i>P. pulchella</i>	Field Crescent	2	1	1	
checkerspot sp.					
<i>Polygonia gracilis</i>	Hoary Comma			1	
<i>*Vanessa virginiensis</i>	American Lady			1	
<i>Vanessa cardui</i>	Painted Lady	1	4	7	2
<i>*Nymphalis antiopa</i>	Mourning Cloak		1		2
<i>Coenonympha tullia ochracea</i>	Common (Ochre) Ringlet	18	44		
<i>Cercyonis oetus</i>	Small Wood Nymph			12	13
<i>Erebia epipsodea</i>	Common Alpine	24	34		
<i>*Oeneis chryxus</i>	Chryxus Arctic	1	5		
<i>Erynnis persius</i>	Persius Duskywing	11	20	1	
<i>*Oarisma garita</i>	Garita Skipperling			1	

Reynold's Ranch	2012	6/5 2012	6/8 2012	7/15 2012	8/3 2012
<i>Hesperia colorado</i>	W. Branded Skipper				
<i>Polites draco</i>	Draco Skipper	5	5		
* <i>Ochlodes sylvanoides</i>	Woodland Skipper			1	
<i>Pyrgus communis</i>	Common Checkered- Skipper	2	1	2	
<i>Euphyes vestris</i>	Dun Skipper				
skipper sp.			3		

Date, Conditions	Location within Reynold's Ranch	Butterfly Behavior	Blossoming Plants	Animals	GPS, elevation r.t.mi.	Researchers
6/5/2012 10:20-12:30 p.m. 18° C 40% clouds, haze, 0-20 mph wind	Giggey Pond			Mtn bluebirds, red-tail hawks scolding us from their nest site west of the pond; black/copper-green beetle eating iris.	58 mi r.t.	Jan Chu, Larry Crowley, Venice Kelly
6/8/2012 10:15-12:30 p.m. 20-23° C, sky clear, 0-20 mph wind	Reynold's Ranch north	Ringlet nectaring on <i>Physaria</i> sp. Tiger swallowtail nectaring on iris; Parnassian on bistort; persius ovipositing on golden banner;			43 mi. r.t.	Jan Chu, Larry Crowley, Amy Chu, Venice Kelly
7/15/2012 8:30 a.m. – 12:00 p.m. 20° C, 60% overcast, wind 5-10 mph	Reynold's Ranch north	Silver-bordered fritillary nectaring on Geier onion and potentilla, coronis fritillary nectaring on Geier's onion. N. checkerspot on black-eyed Susan, killed by crab spider.			N 39.95240 W 105.46894 8,588'	Jan Chu Larry Crowley, Jean Morgan, John Barr, Venice Kelly, Barbara Bartell, and Jon, Paula, Thomas and Cole Chu
8/3/2012 9:00 a.m. – 12:30 p.m. 18° C, thin clouds overcast, wind 0-25 mph.	Reynold's Ranch north	Ruddy copper nectaring on cinquefoil	few	2 voles, Mtn. bluebirds		Jan Chu, Larry Crowley, Jean Morgan, BCNA class – Leslie Larson, Nancy Loving, Wynne Whyman, Richard Holmes, Charles Lowrie, Shirley Jin

Caribou, Mud Lake	2012	6/1 2012	7/12 2012	8/10 2012
<i>Parnassius smintheus</i>	Rocky Mountain Parnassian		1	1
<i>Papilio polyxenes</i>	Black Swallowtail			
<i>P. zelicaon</i>	Anise Swallowtail			
<i>P. rutulus</i>	W. Tiger Swallowtail			
<i>P. eurymedon</i>	Pale Swallowtail			
swallowtail sp.			1	
<i>Neophasia menapia</i>	Pine White			24
<i>Pontia protodice</i>	Checkered White			
<i>P. occidentalis</i>	Western White			
<i>Pieris rapae</i>	Cabbage White			
<i>P. marginalis</i>	Mustard White			
<i>Euchloe ausonides</i>	Large Marble	2		
<i>Anthocharis sara julia</i>	Julia Orangetip			
<i>Colias philodice</i>	Clouded Sulphur		6+1 alba	1+4 alba
<i>C. eurytheme</i>	Orange Sulphur		28	17
<i>C. alexandra</i>	Queen Alexandra's Sulphur	1	38	15
<i>Eurema mexicana</i>	Mexican Sulphur			
<i>Abaeis nicippe</i>	Sleepy Orange			
<i>Nathalis iole</i>	Dainty Sulphur			1
<i>Lycaena rubidus</i>	Ruddy Copper			
<i>L. heteronea</i>	Blue Copper			
<i>L. helloides</i>	Purplish Copper			1
<i>Callophrys affinis homoperplexa</i>	Canyon Bramble Hairstreak			
<i>C. sheridanii</i>	White-lined Green Hairstreak			
<i>C. spinetorum</i>	Thicket Hairstreak			
<i>C. augustinus</i>	Brown Elfin			
<i>C. polios</i>	Hoary Elfin			
<i>C. eryphon</i>	Western Pine Elfin	1		
<i>Satyrrium saepium</i>	Hedgerow Hairstreak			
<i>Strymon melinus</i>	Gray Hairstreak			
<i>Cupido amyntula</i>	Western Tailed-Blue	1		
<i>Celastrina ladon sidara</i>	Echo (Spring) Azure			
<i>Glaucopsyche piasus</i>	Arrowhead Blue			
<i>G. lygdamus</i>	Silvery Blue			
<i>Euphilotes ancilla</i>	Rocky Mountain Dotted-Blue		1	
<i>Echinargus isola</i>	Reakirt's Blue			
<i>Plebejus melissa</i>	Melissa Blue			
<i>P. saepiolus</i>	Greenish Blue			1
<i>P. icarioides</i>	Boisduval's Blue		2	
<i>P. lupini lutzii</i>	Lupine Blue			
<i>P. glandon rustica</i>	Arctic Blue			
<i>Euptoieta claudia</i>	Variiegated Fritillary		2	
<i>Speyeria aphrodite</i>	Aphrodite Fritillary		2	
<i>S. edwardsii</i>	Edwards' Fritillary			
<i>S. coronis</i>	Coronis Fritillary			
<i>S. hesperis</i>	Northwestern Fritillary			11
* <i>S. mormonia</i>	Mormon Fritillary			1
fritillary sp.				9
<i>Poladryas arachne</i>	Arachne Checkerspot			
<i>Chlosyne gorgone</i>	Gorgone Checkerspot			
<i>C. nycteis</i>	Silvery Checkerspot			
<i>C. palla</i>	Northern Checkerspot			
<i>Phyciodes pallida</i>	Pale Crescent			
<i>P. tharos</i>	Pearl Crescent			
<i>P. cocyta</i>	Northern Crescent		1	

Caribou, Mud Lake	2012	6/1 2012	7/12 2012	8/10 2012
<i>P. pulchella</i>	Field Crescent		1	
<i>Euphydryas anicia</i>	Variable Checkerspot			
<i>Polygonia faunus</i>	Green Comma			1
<i>P. gracilis</i>	Hoary Comma			
<i>Nymphalis antiopa</i>	Mourning Cloak			4
<i>Vanessa atalanta</i>	Red Admiral			
<i>V. cardui</i>	Painted Lady		2	2
<i>V. virginiensis</i>	American Lady			
<i>Limenitis weidemeyerii</i>	Weidemeyer's Admiral			2
<i>Coenonympha tullia ochracea</i>	Common (Ochre) Ringlet	2		
<i>Cercyonis pegala</i>	Common Wood-Nymph			
<i>C. oetus</i>	Small Wood-Nymph		9	101
<i>Erebia epipsodea</i>	Common Alpine			
<i>Oeneis chryxus</i>	Chryxus Arctic			
<i>Thorybes pylades</i>	Northern Cloudywing			
<i>Erynnis icelus</i>	Dreamy Duskywing			
<i>E. pacuvius</i>	Pacuvius Duskywing			
<i>E. persius</i>	Persius Duskywing		1	
<i>Pyrgus communis</i>	Common Checkered-skipper		1	2
<i>Piruna pirus</i>	Russet Skipperling			
<i>Oarisma garita</i>	Garita Skipperling			
<i>Hesperia juba</i>	Juba Skipper			
<i>H. colorado</i>	Western Branded Skipper			2
<i>H. pahaska</i>	Pahaska Skipper			
<i>H. viridis</i>	Green Skipper			
<i>H. nevada</i>	Nevada Skipper			
<i>Polites draco</i>	Draco Skipper			
<i>Poanes taxiles</i>	Taxiles Skipper			
<i>Euphyes vestries</i>	Dun Skipper			
skipper sp.				

*First observation of this species at Mud Lake/ Caribou Ranch

Caribou Ranch, Mud Lake	2007	2008	2009	2010	2011	2012
# of Species Identified during July and August, annually in Caribou Ranch and Mud Lake	48	48	40	20	46	28
# of Species Sighted in Caribou/Mud 2007-2012	75	75	80	80	81	82
# of Research Hours on Site	10	12	8.5	6	12.5	8
# of Individual Butterflies Counted	358	647	278	145	488	304
# Individuals / Research Hour	36	54	33	24	39	38
# Species / Research Hour	4.8	4.0	4.7	3.3	3.7	3.5

Caribou Ranch, Mud Lake

Date, Conditions	Location Caribou, Mud Lake	Butterfly Behavior	Blossoming Plants	Animals	GPS, elevation or r.t. mileage	Researchers
6/1/2012 10:15-12:45 p.m. 17 ° C, 50% cloudy, no wind	Mud Lake	Few flying, too cool	VERY few			Jan Chu, Larry Crowley, John Barr, Holly, Josh, and Zach Klaus
7/12/2012 9:30-11:30 a.m.	Willow Meadow left on gravel entrance road And Caribou main trail.	Seeps were better with few butterflying	Almost no flowers			Venice Kelly and Jeff
8/10/2012 9:20 a.m.-1:00 p.m. 20 ° C 0-20 mph wind, clouds 5% to 30%;	NW meadow inside locked gate, Bluebird mine area		Few, gumweed, Heterotheca sp.			Jan Chu, Larry Crowley, Jean Morgan, Amy Chu, Venice Kelly, BCNA class – Leslie Larson, Nancy Loving, Wynne Whyman, Richard Holmes, Charles Lowrie