

**Butterfly Inventories 2016**  
**for Boulder County Open Spaces**  
**by Janet Chu**

**I. Acknowledgments**

Boulder County Parks and Open Space (BCPOS) department has been supportive in allowing access to many properties for inventorying butterflies. In 2016, Susan Spaulding, Senior Wildlife Specialist; Dave Hoerath, Wildlife Specialist; and Kevin Grady, Resource Protection Ranger have provided close contact and advice for surveys. We enjoy and hold dear the opportunities to work with the Open Space staff members. We sincerely thank the department for providing Research Permits and access, which have been necessary for the conduction of this research for the past thirteen years. I wish to commend the staff members and Open Space Department for the fine planning and conservation methods they are performing.

Our mentors providing assistance in identification and professional suggestions continue to be Drs. Paul Opler, C.P. Gillette Museum of Arthropod Diversity, Colorado State University, Ft. Collins, and Robert Michael Pyle, naturalist author, Washington. My volunteer team is composed of John Barr, Amy Chu, Larry Crowley, Dan Fosco, Venice Kelly, Chuck Lowry, Jean Morgan, Pam Piombino and Wynne Whyman. John Barr, Dan Fosco greatly assist with digital photos.

**II. Objectives**

The overall objectives were:

1. To explore and garner data within the Open Space properties in Boulder County.
2. To add to the detailed butterfly inventories where the location and nature of habitats are known to support butterflies, other wildlife and blossoming plants.
3. To continue researching as in the past 10-12 years in Southeast Buffer; Heil Valley Ranch- Geer Watershed, Plumely Canyon and Red Gulch (North Pointe); Walker Ranch- Meyer's Homestead Trail and South Loop; Reynold's Ranch- Giggey Lake and North Bog; and Caribou Ranch- Mud Lake and Bridge Meadow. These BCPOS properties represent diverse habitats, and include prairie grasslands and mountain ecosystems.

### III. Research Methods

The methods continue to be consistent with past years. Survey through the five-month butterfly season and continue the long-term inventory by revisiting ten sites, including exploring the flood-ravaged areas Hall II, and Plumely Canyon. Each field day in Hall II we were required to be escorted by a Boulder County Ranger, because of dangerous wash-outs. However, the team entered Plumely Canyon by hiking from a service road in Heil Valley Ranch. The team did not survey in Anne U. White because it was not yet open to the public, nor to us, without a Ranger.

Team members were granted a Research Permit for the Open Space lands extending from March through September. On each field day weather permitting, we hiked for about three hours following, streams, trails and roads, and concentrated our survey efforts in areas containing adequate water, plentiful flower blossoms, and lush host plants which support significant numbers of butterflies. This inventory is necessarily meandering instead of a restricted transect. We observed butterflies on the wing and used a net and release-live technique, recording both species' identities and numbers observed. Butterflies are released live at the spot where they were caught. If a 'difficult to identify butterfly' is taken, it is given to the Gillette Museum, Colorado State University for identification. In 2016 we used many digital photos in place of capturing specimens. When possible, birds, other vertebrates, and blossoming plants were listed. Extensive use of digital photography verified field identification of butterflies, and GPS-derived coordinates recorded some pertinent locations. In BCPOS properties, previously noted rare butterflies were sought: Arogos (*Atrytone arogos*) and Ottoe (*Hesperia ottoe*) Skippers, Hops Azure (*Celastrina humulus*), Dusted Skipper (*Atrytonopsis hianna*), and Moss' Elfin (*Callophrys mossii schryveri*).

Total numbers of individual butterflies observed on each field day were recorded on spreadsheets and analyzed for patterns occurring during the field, seasons noting changes in populations and species. For each location, 'Individuals per Research Hour' (I/RH) were calculated using the number of individual butterflies observed (I) divided by the research hours (RH) in the field. 'Species per Research Hour' (S/RH) were also

determined. These are standard comparisons which this author has developed for comparison, season to season and year to year.

Significant variation from one year to the next requires diligent and continuous monitoring. This provides valuable data which can influence management decisions and register faunal changes. It can be available to correlate species, populations and changing climate patterns. Reports on butterfly inventories have been prepared for the County Open Space office 2006 through 2016. These data were consulted by the county in preparation of the Boulder County Comprehensive Plan Update, Environmental Resource Element – 2013. Reports have been presented to the High Country Lepidopterist meetings annually.

About 70 Research Hours were conducted. A research grant was not applied for, so mileage will not be included in this 2016 report.

**IV. Data Tables** follow:

## A. Southeast Buffer

Southeast Buffer	2016	5/21 2016	8/15 2016	Total 2016
<i>Papilio polyxenes</i>	Black Swallowtail			
<i>P. zelicaon</i>	Anise Swallowtail			
<i>P. rutulus</i>	W. Tiger Swallowtail			
<i>P. multicaudata</i>	Two-tailed Swallowtail			
yellow swallowtail sp				
<i>Pontia protodice</i>	Checkered White	1		
<i>P. occidentalis</i>	Western White			
<i>Pieris rapae</i>	Cabbage White	2	35	36
<i>Euchloe olympia</i>	Olympia Marble	5		5
white sp.		2		2
<i>Colias philodice</i>	Clouded Sulphur	5		5
<i>C. eurytheme</i>	Orange Sulphur	2	13	15
sulphur sp.		2		2
<i>Zerene cesonia</i>	Southern Dogface			
<i>Abaeis nicippe</i>	Sleepy Orange			
<i>Kricogonia lyside</i>	Lyside Sulphur			
<i>Nathalis iole</i>	Dainty Sulphur		1	1
<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	5		5
<i>Euphilotes ancilla</i>	Rocky Mtn. Dotted-Blue			
<i>Echinargus isola</i>	Reakirt's Blue		2	2
<i>Plebejus melissa</i>	Melissa Blue		1	1
blue sp.		4		4
<i>Danaus plexippus</i>	Monarch		1	1
<i>Agraulis vanilla</i>	Gulf Fritillary			
<i>Euptoieta claudia</i>	Variegated Fritillary	6	2	8
<i>Speyeria aphrodite</i>	Aphrodite Fritillary		1	1
<i>S. edwardsii</i>	Edwards' Fritillary			
fritillary sp.	(silvered)			
<i>Chlosyne fulvia</i>	Fulvia Checkerspot			
<i>C. gorgone</i>	Gorgone Checkerspot			
<i>Phyciodes tharos</i>	Pearl Crescent			
<i>P. pulchella</i>	Field Crescent	28	1	29
<i>Aglaia milberti</i>	Milbert's Tortoiseshell			
<i>Nymphalis antiopa</i>	Mourning Cloak			
<i>Vanessa cardui</i>	Painted Lady			
<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			
<i>Pyrgus communis</i>	Common Checkered-skipper	2	3	5
<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.				

## A. Southeast Buffer (Continued)

<b>Southeast Buffer</b>	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
# of Species identified during the year in SE Buffer	25	20	21	24	19	18	20	15	23	13
# Species 2007-2016 sighted in Southeast Buffer	21	23	33	37	41	44	44	44	46	46
Research Hours on Site	5	21	9	7.7	11.5	9	12	8	12	4.5
# Individual Butterflies Counted	256	373	353	443	160	227	169	178	294	126
# Individuals / Research Hour	51	18	39	40	14	25	14	22	24.5	27

Date, Conditions	Location in Open Space <b>SE Buffer</b>	Butterfly Activity	Blossoming Plants	Animals	Researchers
5/21/2016 10:30-12:00 19-20 °C, overcast 0-5 mph wind	Hwy 128, from gate to Swallowtail Hill	Few butterflies, Field crescents were numerous and flying low; marbles were flying past us	ball cactus – chartreus bastard toadflax dandelion wavy-leaf Erigeron-spreading daisy Filary , flax Lambert’s loco Mertensia Musineon Physaria Montana plum wild choke cherry Salsify sand lily wall flower	Meadowlark Cormorant overhead Vesper sparrow Red-tail hawk Red-wing blackbird	Larry Crowley, Dan Fosco, Jan Chu Wynne Wyman
8/15/2016 8:25 – 11:25 a.m. 24-26 °C, Clear sky, wind 0-5 mph	2 groups; Hwy 128 gate thru SE Buffer to Coalton Trail and locked gate	Few butterflies; dry; very poor, short flowers.	Black-eyed Susan Chickory Greasewood Gumweed Liatris Moth mullein Solidago	Barn swallow Harrier Horned lark Meadowlark Raven Red-tail Say’s phoebe Spotted towhee Tree swallow Vesper sparrow w. bluebird  Rattlesnake. Coyote Deer mouse	Chuck Lowry, Wynne Whyman, Dan Fosco, Sue Hirshfeld, Larry Crowley, Jan Chu

## B. Heil Valley Open Space, Geer Watershed

<b>Heil Valley Geer Watershed</b>	<b>2016</b>	<b>5/5 2016</b>	<b>5/30 2016</b>	<b>6/26 2016</b>	<b>8/17 2016</b>	<b>Total 2016</b>
<i>Papilio polyxenes</i>	Black Swallowtail					
<i>P. zelicaon</i>	Anise Swallowtail		2			2
<i>P. indra</i>	Indra Swallowtail					
<i>P. rutulus</i>	Western Tiger Swallowtail			3		3
<i>P. eurymedon</i>	Pale Swallowtail			10		10
<i>P. multicaudata</i>	Two-tailed Swallowtail	1		1		2
swallowtail sp.			2	12		14
<i>Neophasia menapia</i>	Pine White					
<i>Pontia sisymbrii</i>	Spring White					
<i>P. protodice</i>	Checkered White			2		2
<i>P. occidentalis</i>	Western White					
<i>Pieris rapae</i>	Cabbage White	3	3	18	50	74

Heil Valley Geer Watershed	2016	5/5 2016	5/30 2016	6/26 2016	8/17 2016	Total 2016
<i>Euchloe ausonides</i>	Large Marble	4	7			11
<i>E. olympia</i>	Olympia Marble					
<i>Anthocharis sara julia</i> white sp.	Julia Orangetip					
		23	13	32	13	81
<i>Colias philodice</i>	Clouded Sulphur		1	3		4
<i>C. eurytheme</i>	Orange Sulphur		3	6	25	34
<i>C. alexandra</i>	Queen Alexandra's Sulphur			1		1
<i>Eurema mexicana</i>	Mexican Sulphur					
<i>Nathalis iole</i>	Dainty Sulphur					
sulphur sp.			12	12		24
<i>Lycaena dione</i>	Gray Copper					
<i>L. heteronea</i>	Blue Copper					
<i>Callophrys affinis</i> <i>homoperplexa</i>	Canyon Bramble Hairstreak					
<i>C. gryneus</i>	Siva Juniper Hairstreak		2			2
<i>C. augustinus</i>	Brown Elfin					
<i>C. eryphon</i>	Western Pine Elfin					
elfin sp.		3				3
<i>Satyrrium titus</i>	Coral Hairstreak					
<i>S. liparops</i>	Striped Hairstreak					
<i>S. saepium</i>	Hedgerow Hairstreak					
<i>Strymon melinus</i>	Gray Hairstreak				13	13
<i>Leptotes marina</i>	Marine Blue					
<i>Cupido amyntula</i>	Western Tailed-Blue		3			3
<i>Celastrina ladon</i> <i>sidara</i>	Echo Azure	3	4			7
<i>Glaucopsyche piasus</i>	Arrowhead Blue		2	1		3
<i>G. lygdamus</i>	Silvery Blue	1	7			8
<i>Euphilotes ancilla</i>	Rocky Mountain Dotted- Blue			3		3
<i>Echinargus isola</i>	Reakirt's Blue			2	5	7
<i>Plebejus melissa</i>	Melissa Blue				1	1
<i>P. saepiolus</i>	Greenish Blue			1		1
<i>P. icarioides</i>	Boisduval's Blue			2		2
<i>P. lupini lutzi</i>	Lupine Blue					
<i>P. glandon rustica</i>	Arctic Blue					
blue sp.		6	11			17
<i>Danaus plexippus</i>	Monarch				1	1
<i>Apodemia nais</i>	Nais Metalmark					
<i>Euptoieta claudia</i>	Variegated Fritillary	1	1	2	1	5
<i>Speyeria aphrodite</i>	Aphrodite Fritillary			2	18	20
<i>S. edwardsii</i>	Edwards' Fritillary					
<i>S. coronis</i>	Coronis Fritillary					
<i>S. callippe</i>	Callippe Fritillary					
<i>S. hesperis</i>	Northwestern Fritillary				1	1
<i>S. mormonia</i>	Mormon Fritillary					
fritillary sp.		2			22	24
<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>Polygonia satyrus</i>	Satyr Comma					
<i>P. gracilis</i>	Hoary Comma	6	1			7

<b>Geer Watershed Heil Valley</b>	<b>2016</b>	<b>5/5 2016</b>	<b>5/30 2016</b>	<b>6/26 2016</b>	<b>8/17 2016</b>	<b>Total 2016</b>
<i>Aglais milberti</i>	Milbert's Tortoiseshell					
<i>Nymphalis antiopa</i>	Mourning Cloak	1	1			2
<i>N. californica</i>	California Tortoiseshell	2				2
<i>Vanessa atalanta</i>	Red Admiral			1		1
<i>V. cardui</i>	Painted Lady				4	4
<i>V. virginensis</i>	American Lady				6	6
<i>Limenitis weidemeyerii</i>	Weidemeyer's Admiral					
<i>Asterocampa celtis</i>	Hackberry Emperor					
<i>Coenonympha tullia ochracea</i>	Ochre (Common) Ringlet		2	4		6
<i>Cercyonis pegala</i>	Common Wood-Nymph				31	31
<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	2				2
<i>Epargyreus clarus</i>	Silver-spotted Skipper			4		4
<i>Thorybes pylades</i>	N. Cloudywing					
<i>Erynnis icelus</i>	Dreamy Duskywing					
<i>E. pacuvius</i>	Pacuvius Duskywing		9	2		11
<i>E. afranius</i>	Afranius Duskywing					
<i>E. persius</i>	Persius Duskywing	2				2
duskywing sp			2	4		6
<i>Pyrgus communis</i>	Common Checkered- skipper			5	2	7
<i>Pholisora catullus</i>	Common Sootywing					
<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				1	1
<i>H. nevada</i>	Nevada skipper					
<i>Polites themistocles</i>	Tawny-edged Skipper				3?	3
<i>Ochlodes sylvanoides</i>	Woodland Skipper					
<i>Poanes taxiles</i>	Taxiles Skipper					
<i>Euphyes vestries</i>	Dun Skipper			3		3
<i>Atrytonopsis hianna</i>	Dusted Skipper					
skipper sp.				1	3	4

<b>Heil-Geer Watershed</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>
# of Species Identified Annually in Geer Watershed	42	56	44	49	36	38	38	42	22	43
Cumulative # of Species Sighted in Geer Watershed - Heil- 2007-2016	81	87	90	91	91	91	91	92	92	92
Research Hours at Site	15.5	21	12.5	14	14	10	11	18	11	10
# Individual Butterflies Counted	569	1225	492	419	436	530	264	738	200	488
# Individuals / Research Hour	37	58	39	30	31	53	24	41	18	29
# Species / Research Hour	2.7	2.7	3.5	3.5	2.6	3.8	3.5	2.3	2	4.3

## B. Heil Valley – Geer Watershed (Continued)

Date, Conditions	Location within <b>Heil - Geer</b>	Butterfly Activity	Blossoming Plants	Animals	Researchers
5/5/2016 10:30 a.m.- 12:30 p.m. 24° C, wind 0 mph, 90% blue sky.	From public parking lot about ½ mile inside the gate toward Manager's home.	Many uncounted and unidentified whites flying fast. Swallowtail nectaring on plums.	Wild plum	Mourning dove Mallards.	Amy Chu Dan Fosco Jan Chu, Jean Morgan, John Barr Larry Crowley, Venice Kelly,
5/30 2016 10:40-1:05 p.m. 23-26 ° C, clear to mostly cloudy, wind 5-10 mph	Road to caretaker's home			2 Red-tailed Hawks 2 Turkeys 2 Common Crow 4 Steller's Jays 3 Broad-tailed Humming birds 2 Black-chinned Hummingbirds 4 Mourning Doves 3 American Robins 1 Rough-winged Swallow 4 Western Wood Peewees 1 Eastern Phoebe 1 Western Kingbird 4 Plumbeous Vireos 1 Eastern Bluebird 3 Cordilleran Flycatchers 1 Olive-sided Flycatcher 3 Spotted Towhees 1 Western Tanager 2 House Wren 2 American Goldfinch 3 Cedar Waxwings 2 Chipping Sparrow 1 Lazuli Bunting 2 Black-headed Grosbeaks	Pam Piombino
8/17/2016 8:35-11:40 A.M. 15-24 ° C. 40% High overcast. No wind.	Barn to stream, west to streamlet below cliffs, over ridge to stream in pines.	Nectaring on gay plume, vervain, thistle. Aphrodites mating	Vervain Thistles Gumweed Gay plume	2-turkey families Bluebird, W. Chickadee, bl-capped Dove, mourning Goldfinch lesser Goldfinch, Am. Steller's jay Towhee, spotted Wren, house with young	Sue Hershfeld Jean Morgan Chuck Lowry Amy Chu Dan Fosco Jan Chu Venice Kelly Jeff MacLachlan
7/27/2016 10:25-10:35 a.m. 23°C,	Frog Pond; 6-7ft cattails fill the wet area completely			Turkey family Bees (tube-making) Vesper sparrow	Dan Fosco



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

Heil Valley Ranch North Pointe, Red Gulch,	2016	4/9 2016	5/25 2016	6/2 2016	8/19 2016	8/21 2016	Total 2016
<i>Papilio polyxenes</i>	Black Swallowtail						
<i>P. zelicaon</i>	Anise Swallowtail			2			2
<i>P. indra</i>	Indra Swallowtail			2			2
<i>P. rutulus</i>	Western Tiger Swallowtail						
<i>P. eurymedon</i>	Pale Swallowtail			1			1
<i>P. multicaudata</i>	Two-tailed Swallowtail		1	3			4
<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	1	6	2	10
white sp.		2	6			9	17
<i>Euchloe ausonides</i>	Large Marble		3				3
<i>E. olympia</i>	Olympia Marble						
<i>Anthocharis sara julia</i>	Julia Orangetip						
<i>Colias philodice</i>	Clouded Sulphur		1				1
sulphur sp.			4	2			6
<i>C. eurytheme</i>	Orange Sulphur	1	5	1	11	3	21
<i>C. alexandra</i>	Queen Alexandra's Sulphur						
<i>Nathalis iole</i>	Dainty Sulphur			1?		3	4
<i>Lycaena dione</i>	Gray Copper						
<i>Lycaena heteronea</i>	Blue Copper						
<i>L. helloides</i>	Purplish Copper			6			6
<i>Callophrys affinis</i>	Canyon Green Hairstreak						
<i>C. gryneus</i>	Siva Juniper 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	1			4
<i>Celastrina ladon sidara</i>	Echo (Spring) Azure			7			7
<i>Glaucopsyche piasus</i>	Arrowhead Blue			1			1
<i>G. lygdamus</i>	Silvery Blue			9			9
<i>Euphilotes ancilla</i>	Rocky Mountain Dotted-blue						
<i>Euphilotes ancilla barnesi</i>	ssp. RM Dotted-blue ID P.A. Opler						
<i>Echinargus isola</i>	Reakirt's Blue				1	2	3
<i>Plebejus melissa</i>	Melissa Blue			18	3		21
<i>P. icarioides</i>	Boisduval's Blue						
<i>P. lupini lutzi</i>	Lupine Blue						
<i>P. glandon rustica</i>	Arctic Blue						
blue sp.						2	2
<i>Danaus plexippus</i>	Monarch						
<i>Limenitis archippus</i>	Viceroy						
<i>Libytheana carinenta</i>	American Snout						
<i>Euptoieta claudia</i>	Variegated Fritillary		3		1		4
<i>Speyeria aphrodite</i>	Aphrodite Fritillary				3	1	4
<i>S. edwardsii</i>	Edwards' Fritillary						
<i>S. coronis</i>	Coronis Fritillary						
<i>S. callippe</i>	Callippe Fritillary						
<i>S. hesperis</i>	Northwestern Frit						
<i>S. mormonia</i>	Mormon Fritillary						
fritillary sp.			2			13	15

Heil Valley Ranch North Pointe, Red Gulch,	2016	4/9 2016	5/25 2016	6/2 2016	8/19 2016	8/21 2016	Total 2016
<i>Euphydryas anicia</i>	Variable Checkerspot						
<i>Chlosyne gorgone</i>	Gorgone Checkerspot			6			6
<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			2		3	5
<i>Polygonia satyrus</i>	Satyr Comma						
<i>P. gracilis</i>	Hoary Comma	8	2	1			11
<i>Nymphalis antiopa</i>	Mourning Cloak	3	1	1			5
<i>Junonia coenia</i>	Buckeye, Common						
<i>N. californica</i>	California Tortoiseshell						
<i>Vanessa atalanta</i>	Red Admiral			2			2
<i>Aglais milberti</i>	Milbert's Tortoiseshell		1				1
<i>V. cardui</i>	Painted Lady						
<i>V. virginiensis</i>	American Lady					1	1
<i>Limenitis weidemeyerii</i>	Weidemeyer's Admiral			2	1		3
<i>Asterocampa celtis</i>	Hackberry Emperor						
<i>Coenonympha tullia ochracea</i>	Ochre (Common) Ringlet			2			2
<i>Cercyonis pegala</i>	Common Wood-Nymph				3		3
<i>C. oetus</i>	Small Wood-Nymph						
<i>Erebia epipsodea</i>	Common Alpine						
<i>Epargyreus clarus</i>	Silver-spotted Skipper						
<i>Erynnis afranius</i>	Afranius Duskywing						
<i>E. pacuvius</i>	Pacuvius Duskywing						
<i>E. persius</i>	Persius Duskywing						
<i>E. icelus</i>	Dreamy Duskywing						
<i>Pyrgus communis</i>	Common Checkered-skipper			3	46	7	56
<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>	W. Branded 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.						2	2

<b>Heil Valley Ranch North Pointe, Red Gulch, –</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>
# of Species Identified During Each Year in Heil-North	34	45	41	40	33	24	30	50	38	31
Cumulative # Species 2007-2016 Sighted in Heil-North	50	62	77	81	81	85	86	89	90	91
Research Hours on Site	8	17	12.5	11.5	11.5	6.5	12	27	32	13
# Individual Butterflies Counted	579	654	488	429	272	188	402	1077	508	246
# Individuals / Research Hour	72	38	39	37	24	29	36	40	16	19
# Species / Research Hour	4	2.6	3.3	3.4	2.9	3.6	2.5	1.9	1.2	2.4

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

Date, Conditions	Location	Butterfly Behavior	Blossoming Plants	Animals	Researchers
4/9/2016 1:30-4:00 p.m. 17 °C, Sunny to cloudy; breezy to windy on top	North Pointe to the saddle overlooking Red Gulch		Flowers were sparse. Nuttall's violet sand lily Townsendia sp. Spring beauties Mahonia white mustard	Turkey vulture Canyon wrens. W. chorus frogs in large pond	Dan Fosco Jim Scott
5/25/2016 11:30-2:30 p.m. 19-20 °C, 50-75% cloud cover, wind 10-20 mph	North Pointe gate 2.5 mi r.t.			2 mallards 2 red-tailed hawks Turkey vulture Flicker 2 scrub jay Magpie Swallow sp. canyon wren Rock wren w. kingbird 2 meadowlarks 2 mtn bluebirds 7 spotted towhee 4 W. wood peewee 4 blu-gr gnatcatchers Plumbeous vireo 2 W. tanagers 2 Virginia's warblers Yellow warbler 2 yel-br chat 4 bullock's orioles 3 lazuli buntings 5 lesser goldfinch 3 Am Goldfinch	Pam and Joe Piombino
6/2/2016 10:10-12:00 p.m 22-28°C, nearly clear 0-5 mph wind	Red Gulch through Ron LaFollette's yard	Butterflies were active.	globe mallow Mertensia mallow scarlet flax	chat, yel br raven robin house wren towhee spotted turkey vulture bunting, lazuli wren canyon w. chorus frog racer, western yellow bellied garter snake vole	Jan Chu John Barr Dan Fosco Venice Kelly Amy Chu Lynn and Gene Monroe

Date, Conditions	Location	Butterfly Behavior	Blossoming Plants	Animals	Researchers
8/21/2016 9:30-12:00 22-27 °C Sunny , slight breeze	North Pointe Almost to saddle overlooking Red Gulch. Main pond had some water,		Buffalo Bur Heterotheca Liatris Prickly Poppy White Asters Gumweed	Mourning Dove Canyon wrens – heard in canyon Shrub Jay Chipping Sparrows Chickadees Blue Gray Gnatcatchers. Woodhouse Toad	Dan Fosco Jim Scott

## D. Heil Ranch – Plumely Canyon

Heil Valley– Plumely Canyon	2016	5/29 2016	7/27 2016	7/27 2016	Totals 2016
<i>Papilio polyxenes</i>	Black Swallowtail				
<i>P. zelicaon</i>	Anise Swallowtail				
<i>P. indra</i>	Indra Black Swallowtail				
<i>P. rutulus</i>	Western Tiger Swallowtail				
<i>P. eurymedon</i>	Pale Swallowtail				
<i>P. multicaudata</i>	Two-tailed Swallowtail		2		2
swallowtail, yellow		2	2		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		6	4	10
<i>P. marginalis</i>	Mustard White				
<i>Euchloe ausonides</i>	Large Marble	1			
<i>E. olympia</i>	Olympia Marble				
<i>Anthocharis sara julia</i>	Julia Orangetip				
white sp.		19	15	1	16
<i>Colias philodice</i>	Clouded Sulphur				
<i>C. eurytheme</i>	Orange Sulphur	4	15	5	20
<i>C. alexandra</i>	Queen Alexandra's Sulphur				
<i>*Zerene cesonia</i>	Southern Dogface		1ph		1
<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>C. mossii schryveri</i>	Moss's Elfin				
<i>C. polios</i>	Hoary Elfin				
<i>C. eryphon</i>	Western Pine Elfin	2			2
<i>Callophrys affinis homoperplexa</i>	Canyon Bramble Hairstreak				
<i>C. sheridanii</i>	White-lined Green Hairstreak				
<i>C. gryneus</i>	Siva Juniper Hairstreak				
<i>Satyrium titus</i>	Coral Hairstreak				
<i>Strymon melinus</i>	Gray Hairstreak		2		2
<i>Leptotes marina</i>	Marine Blue				
<i>Cupido amyntula</i>	Western Tailed-Blue	1			1
<i>Celastrina ladon sidara</i>	Echo Azure				
<i>C. humulus</i>	Hops Azure				
<i>Glaucopsyche piasus</i>	Arrowhead Blue				
<i>G. lygdamus</i>	Silvery Blue	4			4
<i>Euphilotes ancilla</i>	Rocky Mountain Dotted-Blue				

<i>Echinargus isola</i>	Reakirt's Blue		12		12
<b>Heil Valley– Plumely Canyon</b>	<b>2016</b>	<b>5/29 2016</b>	<b>7/27 2016</b>	<b>7/27 2016</b>	<b>Totals 2016</b>
<i>P. icarioides</i>	Boisduval's Blue				
<i>P. lupini lutzi</i>	Lupine Blue				
<i>P. glandon rustica</i>	Arctic Blue				
blue sp.		18	14		14
<i>Danaus plexippus</i>	Monarch		2		2
<i>Euptoieta claudia</i>	Variegated Fritillary		1		1
<i>Speyeria aphrodite</i>	Aphrodite Fritillary		15		15
<i>S. edwardsii</i>	Edwards' Fritillary				
<i>S. callippe</i>	Callippe Fritillary				
<i>S. atlantis</i>	Atlantis Fritillary				
<i>S. hesperis</i>	Northwestern Fritillary		1		1
fritillary sp.			15	1	16
<i>Polydryas arachne</i>	Arachne Checkerspot				
<i>Chlosyne gorgone</i>	Gorgone 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 interrogationis</i>	Question Mark				
<i>P. gracilis</i>	Hoary Comma	2			2
<i>Aglaia milberti</i>	Milbert's Tortoiseshell				
<i>Nymphalis antiopa</i>	Mourning Cloak				
<i>N. californica</i>	California Tortoiseshell				
<i>Vanessa atalanta</i>	Red Admiral	2			
<i>V. cardui</i>	Painted Lady		2		2
<i>V. virginiensis</i>	American Lady		3		3
<i>Limenitis weidemeyerii</i>	Weidemeyer's Admiral				
<i>L. archippus</i>	Viceroy		1		1
<i>Asterocampa celtis</i>	Hackberry Emperor		1		1
<i>Coenonympha tullia ochracea</i>	Ochre (Common) Ringlet	8			8
<i>Cercyonis pegala</i>	Common Wood-Nymph		6		6
<i>C. oetus</i>	Small Wood-Nymph				
wood nymph			6		6
<i>Erebia epipsodea</i>	Common Alpine				
<i>Epargyreus clarus</i>	Silver-spotted Skipper				
<i>Thorybes pylades</i>	N. Cloudywing	1			1
<i>Erynnis pacuvius</i>	Pacuvius Duskywing				
<i>E. afranius</i>	Afranius Duskywing				
<i>E. persius</i>	Persius Duskywing	2			2
<i>Pyrgus communis</i>	Common Checkered-skipper				
<i>Pholisora catullus</i>	Common Sootywing				
<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				
<i>H. pahaska</i>	Pahaska Skipper				
<i>Polites draco</i>	Draco Skipper				
<i>P. themistocles</i>	Tawny-edged Skipper				
<i>P. mystic</i>	Long Dash				
<i>Ochlodes sylvanoides</i>	Woodland Skipper		1		1
<i>Poanes taxiles</i>	Taxiles Skipper				
<i>Euphyes vestris</i>	Dun Skipper		2		2
<i>Atrytonopsis hianna</i>	Dusted skipper				
skipper sp.			1		1

ph=photo

<b>Heil Valley-Plumely Canyon</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>
# of Species Identified Each Year in Plumely Canyon	45	37	44	36	44	41	48	33	38	18
Cumulative # Species 2007-2016 sighted in Plumely Canyon	81	81	82	84	86	88	89	89	89	90
Research Hours on Site	8	13	17	6.5	18	7.5	16	8	16	7
# Individual Butterflies Counted	365	480	401	196	526	342	470	479	310	162
# Individuals / Research Hour	45	36	24	30	29	46	29	60	19	23
# Species / Research Hour	5.6	2.8	2.6	5.5	2.4	5.4	3.0	4.1	2.3	2.6

flood related – only two visits

### Heil Ranch Open Space, Plumely Canyon

Date, Conditions	Location within Heil-Plumely	Butterfly Activity	Blossoming Plants	Animals	Researchers
5/29/2016 11:30-3:30 p.m. 18-21°C high clouds, ending in clouds and rain. No wind	From upper parking, locked gate to stone cottage.	Lots of activity.		Broad-tailed hummingbirds, Canyon wren	Dan Fosco Jim Scott, met Ranger Justin
7/27/2016 10:40-1:15 pm 23-28 °C, sunny, 0-5 mph	Lower Plumely along creek bed to Quarry	Frits, monarchs, ladies nectaring on bull thistles	Milkweed, bull and Canada thistle, Soapwort Goldenrod Monarda Heterotheca Forget me not sp. Gumweed Geranium Gaillardia Harebell Hops Prickly poppy Rutibida Prairie clover yarrow		Dan Fosco

### E. Walker Ranch – Meyer's Homestead and South Lower Trails

<b>Walker Ranch-Meyer's Homestead and Loop Trails</b>	<b>2016</b>	<b>4/8 2016</b>	<b>4/14 2016</b>	<b>4/22 2016</b>	<b>6/3 2016</b>	<b>6/17 2016</b>	<b>7/24 2016</b>	<b>Total</b>
<i>Parnassius smintheus</i>	Rocky Mountain Parnassian					4		4
<i>Papilio polyxenes</i>	Black Swallowtail				1			1
<i>P. zelicaon</i>	Anise Swallowtail					2		2
<i>P. indra</i>	Indra Swallowtail							
<i>P. rutulus</i>	Western Tiger Swallowtail					1	5	6
<i>P. eurymedon</i>	Pale Swallowtail				1	2		3
<i>P. multicaudata</i>	Two-tailed Swallowtail							
<i>Neophasia menapia</i>	Pine White						1?	
<i>Pontia protodice</i>	Checkered White						6	6

<b>Walker Ranch Meyer's Trail</b>	<b>2016</b>	<b>4/8 2016</b>			<b>6/3 2016</b>	<b>6/17 2016</b>	<b>7/24 2016</b>	<b>Total</b>
<i>P. sisymbrii</i>	Spring White							
white sp.			2		30	12	11	55
<i>Euchloe ausonides</i>	Large Marble							
<i>Anthocharis sara julia</i>	Julia Orangetip				1	1		2
<i>Colias philodice</i>	Clouded Sulphur				1	1		2
alba form							1	1
<i>C. eurytheme</i>	Orange Sulphur				3	5	27	35
<i>C. alexandra</i>	Queen Alexandra's Sulphur					2		2
<i>Nathalis iole</i>	Dainty Sulphur				4		2	6
<i>Lycaena heteronea</i>	Blue Copper							
<i>Satyrium saepium</i>	Hedgerow Hairstreak							
<i>Callophrys affinis</i>	Canyon Bramble Hairstreak		1	2	9	7		19
<i>C. sheridanii</i>	White-line Green Hairstreak	20	22	1				43
<i>C. gyrneus siva</i>	Siva Juniper Hairstreak							
<i>C. spinetorum</i>	Thicket Hairstreak							
<i>C. augustinus</i>	Brown Elfin		1		3			4
<i>C. polios</i>	Hoary Elfin	2	5		30			37
<i>C. eryphon</i>	Western Pine Elfin				2	2		4
<i>Strymon melinus</i>	Gray Hairstreak						1	1
<i>Cupido amyntula</i>	Western Tailed-Blue				1	2	2	5
<i>Celestrina ladon sidara</i>	Echo Azure	1		1	42	1		45
<i>Glaucopsyche piasus</i>	Arrowhead Blue					8		8
<i>G. lygdamus</i>	Silvery Blue				12	1		13
<i>Euphilotes ancilla</i>	Rocky Mountain Dotted- Blue			1		30	2	33
<i>Echinargus isola</i>	Reakirt's Blue					1	2	3
<i>Plebejus melissa</i>	Melissa Blue							
<i>P. saepiolus</i>	Greenish Blue							
<i>P. icarioides</i>	Boisduval's Blue					4	1	5
<i>P. lupini lutzi</i>	Lupine Blue				3			3
<i>Agriades glandon rustica</i>	Arctic Blue							
blue sp.			1		35	25	3	64
<i>Danaus plexippus</i>	Monarch							
<i>Apodemia nais</i>	Nais Metalmark			1ph				1
<i>Euptoieta claudia</i>	Variegated Fritillary						1	1
<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.							6	6
<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					1		1
<i>P. pulchella</i>	Field Crescent							
<i>Phyciodes pallida</i>	Pale Crescent							
<i>Polydryas arachne</i>	Arachne Checkerspot			1ph				1
<i>Euphydryas anicia</i>	Variable Checkerspot							
<i>Polygonia satyrus</i>	Satyr Comma							
<i>Polygonia gracilis</i>	Hoary Comma	4	8	1	14	4	1	32
<i>Aglais milberti</i>	Milbert's Tortoiseshell				2			2
<i>Nymphalis antiopa</i>	Mourning Cloak		2		10	1		13

<i>N. californica</i>	California Tortoiseshell		1	1	1			3
<i>Vanessa atalanta</i>	Red Admiral							
<i>V. cardui</i>	Painted Lady						4	4
<i>V. virginensis</i>	American Lady						3	3
<i>Limenitis weidemeyerii</i>	Weidemeyer's Admiral							
<i>Coenonympha tullia ochracea</i>	Ochre (Common) Ringlet				3	12		15
<i>Cercyonis pegala</i>	Common Wood Nymph							
<i>C. oetus</i>	Small Wood Nymph						27	27
<i>Erebia epipsodea</i>	Common Alpine							
<i>Oeneis chryxus</i>	Chryxus Arctic							
<i>O. uhleri</i>	Uhler's Arctic							
<i>Erynnis icelus</i>	Dreamy Duskywing				1			1
<i>E. pacuvius</i>	Pacuvius Duskywing				4			4
<i>E. persius</i>	Persius Duskywing				3	5		8
duskywing sp.					4	5		9
<i>Pyrgus communis</i>	Common Checkered-skipper						1	1
<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							
<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							

<b>Meyer's Homestead Trail and Loop – Walker Ranch,</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>
# Species Identified during 2016 in 'Meyer's	30	35	45	35	50	47	62	43	45	43
# Species Sighted in 'Meyer's Trail' 2007-2016	33	38	60	70	72	75	75	75	76	76
# Research Hours on Site	5	4	18	16	16.5	7	14.5	11	29	17
# Individual Butterflies Counted	160	203	1144	437	472	399	394	322	351	549
# Individual Butterflies / Research Hour	32	54	64	27	29	57	27	29	12	32
# Species / Research Hour	6.0	8.8	2.5	2.2	3.0	6.7	4.3	3.9	1.5	2.5

Date Conditions	Location Walker	Butterfly Behavior	Blooming Plants	Animals	Researchers
4/8/2016 10:45-1:45 p.m. 55-60 °C Hazy sunny	Lower Walker Ranch – South Boulder Creek		Spring Beauties Unidentified Pea – Kinnikinnick –with Beefly feeding Sand Lily Physaria sp.	Mountain Blue Birds – 4-6 Western Bluebirds - 2 Townsend's Solitaire - 1 Pygmy Nuthatches – 1 White Breasted Nuthatch – 2 Kestrel Cedar Waxwings – 12	Dan Fosco Jean Morgan John Barr Greg Muench
4/14/2016 10:15 A.M. – 2:30 P.M. Mostly cloudy. 17-19 °C light winds	Lower Walker Ranch, South Boulder Creek	Brown elfin nestled in undergrowth	Spring Beauties Ball cactus Physaria sp. Nuttall's Violet Kinnikinnick Pea sp. Candy Tufts Sedum Fairy trumpet, white	Mtn Bluebirds Townsend's solitaire Pygmy nuthatches White-breasted Nuthatch Red Tailed Hawk Kestrel Turkey Vulture Chipmunk	Dan Fosco John Barr Jean Morgan



4/22/2016 10:30-1:30 PM Follows 15-20" snow, partly sunny	Lower Walker Ranch, South Boulder Creek			Mtn Bluebirds Turkey Vulture  Mule deer	Dan Fosco Greg Muench John Barr
6/3/2016 10-2:30 p.m. 19-24 ° mostly sunny	Meyer's Homestead Trail to powerlines and barn area	Good puddling	Mountain parsley Physaria sp. Miner's candle Britons skullcap Wall flowers Blue-eyed grass		Dan Fosco John Barr
6/17/2016 1-3:30 p.m. 25-27 °C mostly sunny	Meyer's Homestead Trail to powerlines	Limited puddling areas. Found new species not seen 2 weeks earlier.	Mountain parsley Physaria sp. Miner's candle Britons skullcap Wall flowers Blue-eyed grass Stonecrop Locoweed Sulfur flowers		Dan Fosco Greg Muench
7/24/2016 8:30-12:30 p.m. 23°-26° C 95% overcast to clear open sky, 0-5 mph wind	Meyer's Homestead trail to barn, cross streamlet, to stream depression crossing trail	Nectaring on Rudbeckia; tailed blue, painted tady, Am lady. Gray hairstreak nectaring on yarrow	Rudbeckia, black-eyed Susan, harebells,	Robin, t.v. House wren, Vesper sparrow, raven, Steller's jay, b.t. hummingbird, Am goldfinch, pygmy nuthatch, kestrel, w.wood peewee, chipping sparrow	BoCo Hike Paul Shultz Annemarie Shultz, Dan Fosco, Jean Morgan, Jan Chu, Larry Crowley, Chuck Lowry

## F. Reynold's Ranch- Giggey Lake, North Bog

Reynold's Ranch Giggey Lake, North Bog	2016	6/21 2016	6/24 2016	7/20 2016	7/20 2016	8/22 2016	Total 2016
<i>Parnassius smintheus</i>	Parnassian, Rocky Mtn.						
<i>Papilio polyxenes</i>	Black Swallowtail						
<i>P. zelicaon</i>	Anise Swallowtail	2					2
<i>P. rutulus</i>	W. Tiger Swallowtail	3	18				21
<i>P. eurymedon</i>	Pale Swallowtail	1	4				5
<i>P. multicaudata</i>	Two-tailed Swallowtail						
<i>Neophasia menapia</i>	Pine White					6	6
<i>Pieris rapae</i>	Cabbage White						
<i>Pontia protodice</i>	Checkered White	4	6		2		12
white sp.		4	11				15
<i>Euchloe ausonides</i>	Large Marble	8	1				9
<i>Anthocharis julia</i>	Julia Orangetip	4	2				6
<i>Colias philodice</i>	Clouded Sulphur	5	1				6
<i>C. eurytheme</i>	Orange Sulphur	16	19	12	10 <sub>1alb</sub>	22	80
<i>C. alexandra</i>	Queen Alexandra's Sulphur		6	9+ 1alb	6		22
sulphur sp.				5	5		10
<i>Lycaena rubidus</i>	Ruddy Copper						
<i>L. helloides</i>	Purplish Copper						
<i>Callophrys affinis</i>	Canyon Green Hairstreak		1				1
<i>C. spinetorum</i>	Thicket Hairstreak		1				1
<i>C. eryphon</i>	W. Pine Elfin						
<i>Strymon melinus</i>	Gray Hairstreak						

<b>Reynold's Ranch Giggey Lake, North Bog</b>	<b>2016</b>	<b>6/21 2016</b>	<b>6/24 2016</b>	<b>7/20 2016</b>	<b>7/20 2016</b>	<b>8/22 2016</b>	<b>Total 2016</b>
<i>Glaucopsyche lygdamus</i>	Silvery Blue	3					3
<i>Echinargus isola</i>	Reakirt's Blue		2		1	1	4
<i>Plebejus melissa</i>	Melissa Blue				1		1
<i>Euphilotes ancilla</i>	R Mtn Dotted Blue				2		2
<i>Plebejus saepiolus</i>	Greenish Blue	29	70	4	1		104
<i>Glaucopsyche piasus</i>	Arrowhead Blue	1					1
<i>P. icarioides</i>	Boisduval's Blue						
<i>P. glandon rustica</i>	Arctic Blue						
blue sp.		6	32	4	4		46
<i>Danaus plexippus</i>	Monarch					3	3
<i>Limenitis weidemeyerii</i>	Weidemeyer's Admiral						
<i>Euptoieta claudia</i>	Variegated Fritillary	7	2	3			12
<i>Speyeria aphrodite</i>	Aphrodite Fritillary						
<i>S. edwardsii</i>	Edwards' Fritillary					2	2
<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>Boloria selene</i>	Silver-bordered Fritillary						
fritillary sp.		2	1			7	10
<i>Chlosyne palla</i>	Northern Checkerspot						
<i>Phyciodes pallida</i>	Pale Crescent						
<i>P. tharos</i>	Pearl Crescent						
<i>P. cocyta</i>	Northern Crescent	4					4
<i>P. pulchella</i>	Field Crescent	3	3				6
<i>Polygonia gracilis</i>	Hoary Comma						
<i>Vanessa virginiensis</i>	American Lady						
<i>Vanessa cardui</i>	Painted Lady			1		1	2
<i>Aglaia milberti</i>	Milbert's Tortoiseshell						
<i>Nymphalis antiopa</i>	Mourning Cloak					1	1
<i>Coenonympha tullia ochracea</i>	Common (Ochre) Ringlet	34	54	1			89
<i>Vanessa atalanta</i>	Red Admiral						
<i>Cercyonis oetus</i>	Small Wood Nymph			1		5	6
<i>Erebia epipsodea</i>	Common Alpine	51	19				70
<i>Oeneis chryxus</i>	Chryxus Arctic		3				3
<i>Erynnis icelus</i>	Dreamy Duskywing		2				
<i>E. persius</i>	Persius Duskywing	7	19				26
<i>Oarisma garita</i>	Garita Skipperling						
<i>Hesperia colorado</i>	W. Branded Skipper						
<i>Polites draco</i>	Draco Skipper	13	4				17
<i>Ochlodes sylvanoides</i>	Woodland Skipper						
<i>Pyrgus communis</i>	Common Checkered-Skipper	1	1			2	4
<i>Euphyes vestris</i>	Dun Skipper						

<b>Reynold's Ranch, Giggey Lake and North Bog</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
# Species Identified during 2016 in Reynold's	32	46	36	9	26	32
# Species Sighted in Reynold's 2011-2016	35	55	55	55	57	57
# Research Hours on Site	13	11.5	10.5	4	6	11
# Individual Butterflies Counted	541	635	395	47	183	612
# Individuals / Research Hour	41.6	55	37.6	12	3	5.6
# Species / Research Hour	2.5	4	3.4	2.1	4	3

F. Reynold's Ranch- Giggey Lake, North Bog (Continued)

Date, Conditions	Location within <b>Reynold's Ranch</b>	Butterfly Behavior	Blossoming Plants	Animals	Researchers
6/21/2016 10:30-1:00 p.m. 29-32° C no clouds, 0-5 mph wind	North Bog was quite saturated fence to fence. Viola sororia found and identified by Barb Bartell.	Many flying	Bistort, blue-eyed grass, buttercup, clover, red golden banner, Mertensia, iris, little elephant, mouse ear, mtn. parsley, onion paint brush sulphur flower pussy toes Penstemon virens Senecio shooting star, wall flower	hairy woodpecker , mtn. bluebird, violet-green swallow, raven ruby-crowned kinglet hummingbird plumbeous vireo savannah sparrow robin warbling vireo Townsend's solitaire Steller's jay Red-tail	Jan Chu, Pam Piombino Cathy Cook Amy Chu Venice Kelly
6/24/2015 10:00-12:13 p.m. 27 -29°C 80% clear sky, 3-10 wind	Giggey Lake	Tiger swallowtail, thicket hairstreak and arctic chryxus nectaring on bistort	Arnica Bistort buttercup clover. red columbine, Corydalis, Elephantella Erigeron, Gaillardia grass, blue-eyed iris Lambert loco Mertensia Mouse-ear onion, Geier's Penstemon virens, shooting star skull cap paintbrush, red parsley, whiskbroom Potentilla bushes Pussy toes golden banner, rock jasmine, Sedum, sulfur flower tower mustard, wall flower yarrow	chipping sparrow flicker hairy woodpecker, house wren mtn bluebird mtn bluebird, redwing blackbird ring-neck duck snipe tree swallow violet-green swallow	Jan Chu, Venice Kelly Larry Crowley, Chuck Lowry Jean Morgan Amy Chu

7/20/2016 10:45-12:30 p.m. 21-25 °C sunny, breezy	<b>Reynold's Ranch Giggey Lake</b>		alfalfa Allium sp. bedstraw bistort Black-eyed Susan clover red death camus Elephantella evening primrose fleabane sps. Gaillardia geranium harebell Heterotheca larkspur loco Lambert harebell lily, mariposa paint brush,red Potentilla,2 species sulfur flower thistle, white thistle, Canada yarrow	Ringed-neck family Junco Nuthatch wh br Hummingbird br tled Sparrow, vesper	Dan Fosco
7-20-2016 12:40-2:30 p.m. 26 °C Partly sunny to cloudy, breezy,	North Bog		alfalfa Allium sp. bedstraw bistort Black-eyed Susan clover red death camus Elephantella evening primrose fleabane sps. Gaillardia geranium harebell Heterotheca larkspur loco Lambert lousewort, giant - see pic harebell lily, mariposa lily wood - see pic paint brush,red Potentilla (2 species) stonecrop sulfur flower thistle, white thistle, Canada yarrow	Broad Tail Hummingbird Turkey Vulture Chipping sparrow	Dan Fosco (continued)
8-22-2016 8:45 – 11:35 a.m. 19-21 °C, 0-5 mph wind. High overcast	North Bog Walked the eastern side then back on the west side, some west of barbed wire fence.	Few butterflies, all active. Fritillaries were on bull thistle west in clear-cut area.	Lady tress orchid Buttercup, Potentilla; aster, smooth blue yarrow thistle, Canada thistle, bull dandelion fall, smooth leaf purple clover primrose, yellow	Bluebird, mtn Chickadee, bl-capped flycatcher Hawk red-tailed Hummingbird, br- tled Nutcracker, Clark's Nuthatch pygmy Nuthatch, wh br Siskin pine Sparrow Lincoln Swallow tree	Greg Muench Chuck Lowry Dan Fosco Jan Chu

## G. Hall II

Hall II	Late Season comparison 2013-2016	8/27 2013	9/4 2014	8/17 2015	8/30 2016
<i>Papilio rutulus</i>	W. Tiger Swallowtail				
<i>P. multicaudata</i>	Two-tailed Swallowtail		1		
<i>Pontia protodice</i>	Checkered White	1		2	
<i>P. sisymbrii</i>	Spring White				
<i>Pieris rapae</i>	Cabbage White	7	4	23	
white sp.		6	5		5
<i>Euchloe ausonides</i>	Large Marble				
<i>Colias philodice</i>	Clouded Sulphur		2	1	
<i>C. eurytheme/philodice</i> <i>alba form</i>	Sulphur female				
<i>C. eurytheme</i>	Orange Sulphur	21	6	22	6
sulphur sp.			4		3
<i>Callophrys mossii</i>	Moss Elfin				
<i>Cupido amyntula</i>	W. Tailed-blue				
<i>Glaucopsyche lygdamus</i>	Silvery Blue				
<i>Echinargus isola</i>	Reakirt's Blue		1	5	4
<i>Plebejus melissa</i>	Melissa Blue	5	13	15	2
<i>P. lupini lutzi</i>	Lupine Blue				2
<i>P. glandon rustica</i>	Arctic Blue				
blue sp.		2	2	4	
<i>Danaus plexippus</i>	Monarch			1	
<i>Euptoieta claudia</i>	Variegated Fritillary			5	3
<i>Speyeria aphrodite</i>	Aphrodite Fritillary	7	8	1	10
<i>S. edwardsii</i>	Edwards' Fritillary		1		4
<i>S. hesperis</i>	Northwestern Fritillary				
fritillary species		7	9	3	8
<i>Phyciodes cocyta</i>	Northern Crescent			1	
<i>P. pulchella</i>	Field Crescent	11	18	1	2
<i>P. tharos</i>	Pearl Crescent			2	
<i>Polygonia gracilis</i>	Hoary Comma				
<i>Nymphalis antiopa</i>	Mourning Cloak		1		1
<i>Vanessa atalanta</i>	Red Admiral		2		
<i>V. cardui</i>	Painted Lady				
<i>V. virginiensis</i>	American Lady			1	
<i>Limenitis weidemeyerii</i>	Weidemeyer's Admiral	1			
<i>Asterocampa celtis</i>	Hackberry Emperor	1	4	2	
<i>Coenonympha tullia</i> <i>ochracea</i>	Common Ringlet				
<i>Cercyonis pegala</i>	Common Wood-Nymph	1	3	5	
<i>Pyrgus communis</i>	Common Checkered-skipper	5	5	9	15
<i>Pholisora catullus</i>	Common Sootywing				
<i>Hesperia colorado</i>	W. Branded skipper	21	1		
<i>H. leonardus pawnee</i>	Leonard's Skipper		4		
<i>Ochlodes sylvanoides</i>	Woodland Skipper	8	1		
<i>Poanes taxiles</i>	Taxiles Skipper			1	
<i>Atrytonopsis hianna</i>	Dusted Skipper				
skipper sp.		4			1ph

<b>Hall II</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
# of Species Identified During Each Year in Hall II	31	17	17	10
Cumulative # Species Sighted in Hall II	31	32	37	37
Research Hours on Site	15	3.5	4	5
# Individual Butterflies Counted	319	95	104	66
# Individuals / Research Hour	21	27	26	13
# Species / Research Hour	2.1	4.8	4	2

Date, Conditions	Location <b>Hall II</b>	Butterfly Behavior	Blossoming Plants	Animals	Researchers
<b>8/27/2013</b> 9:30 – 1:00 p.m. 22- 28 °C , clear, wind 0-5 mph	Parking thru ‘Carcass Crossing’ along old ‘roadway’ to rocky cliff to the right near stream.	Cabbage white and fritillaries nectaring on rabbit brush and gay feather.	bouncing bet gay feather, geranium Fremont’s knapweed, white Solidago, prickly poppy, gumweed, rabbit brush, snakeweed, wild lettuce, Erigeron, white, flax	blue jay mourning dove, nuthatch wh. breast wren canyon, wren.house. spotted towhee, swallow vio green, goldfinch Am. goldfinch lesser, robin, w. wood pewee, downywoodpecker chickadee bl. cap Rattlesnake Crotalis viridis, Woodhouse’s toad – adult and juvenile. Bear paw print and choke- cherry seed scats	Jan Chu Larry Crowley, Jean Morgan, Chuck Lowry
<b>9/4/2014</b> 10:00-1:40 p.m. 19-22 °C , high overcast to partial clearing, wind 0-5 mph	Waded thru St Vrain Creek, along upper old roadway to ridge dropping toward the creek	red admiral, & hackberry nectaring on rabbit brush, field crescent on Erigeron	alfalfa gayfeather geranium Fremont’s groundsel gumweed Helianthus knapweed white Mentzelia multiflora, yellow moth mullein mullein rabbit brush Salsify snake weed	blue-gray gnatcatcher, goldfinch lesser magpie sharp shin hawk(2) Steller’s jay towhee, spotted	Dennis Morris, Ranger, Dan Fosco, Cindy Maynard Jan Chu, Larry Crowley

Hall II	Late Season comparison 2013-2016				
8/17/2015 9:10-1:00 20 – 19 °C clear sky, wind 0-5 mph	Waded St Vrain near a Hall family washed-out cabin. Hiked past Carcass Crossing into Bobcat Canyon.	Few butterflies flying. Variegated Fritillary nectaring on gumweed. Hackberry landed on Dan and Larry.	alfalfa black-eyed Susan catnip chickory clematis clover, red clover, Melilotus Erigeron flax Geranium Frem. gumweed knapweed, white Liatris Mexican hat lettuce Monarda mullein primrose, yel evening rabbit brush snakeweed Solidago thistle, bull toad flax	canyon wren catbird chickadee bl cap falcon, prairie gnatcatcher, bl gr goldfinch, Am goldfinch, lesser humming bl throat hummingb, br tail kestrel lazuli bunting oriole, Bullock's owl gr horned. pine siskin rock wren spotted towhee warbler, yellow wood peewe, w. woodpecker, downy. Garter snake Woodhouse toad bear scat and trails	Dan Fosco, Jan Chu, Larry Crowley, Jean Morgan, Amy Chu, Pam Piombino, Venice Kelly, Wildlife Specialist Dave Hoerath
8/30/2016 9:00 – 2:00 p.m. 19-25 °C some high clouds, 0-5 mph	Waded St. Vrain river near cabin, went into Bobcat Canyon	Few butterflies.	Few flowers: Gumweed Snakeweed Liatris Rabbit brush.  17 Meadowhawk bard-winged 4 Striped meadowhawk 2 Variegated Meadowhawk 5 Great spreadwing 5 Shadow darner	Chickadee black-capped Chickadee mtn Gnatcatcher bl gr Grosbeak blu Hawk red-tail Kestrel Towhee spotted Waxwing cedar. Wren canyon Wren rock Mouse (Microtis) Woodhouse Toads Bear scats and paths	Ann Cooper Pam Piombino Dan Fosco Jean Morgan John Barr Jan Chu Kevin Grady, Ranger

## H. Caribou Ranch- Mud Lake and Bridge Meadow

Caribou Ranch and Mud Lake	2016	6/5 2016	6/15 2016	6/26 2016	7/17 2016	7/22 2016	7/29 2016	8/1 2016	Total
<i>Parnassius smintheus</i>	Rocky Mountain Parnassian		1	11	3	2			17
<i>Battus philenor</i>	Pipevine Swallowtail								
<i>Papilio polyxenes</i>	Black Swallowtail							1	1
<i>P. zelicaon</i>	Anise Swallowtail								
<i>P. rutulus</i>	W. Tiger Swallowtail		2	5					7
<i>P. eurymedon</i>	Pale Swallowtail		1	2					3
<i>P. multicaudata</i>	Two-tailed Swallowtail								
<i>Neophasia menapia</i>	Pine White								
<i>Pontia protodice</i>	Checkered White		5	2				2	9
<i>P. occidentalis</i>	Western White		2	3					5
<i>Pieris rapae</i>	Cabbage White			2				3	5
<i>P. marginalis</i>	Mustard White							1	1
<i>Euchloe ausonides</i>	Large Marble	10	8	2					20
<i>Anthocharis sara julia</i>	Julia Orangetip	7	4	1					12
white sp.		6	7	8				1	22

<b>Caribou Ranch and Mud Lake</b>	<b>2016</b>	<b>6/5 2016</b>	<b>6/15 2016</b>	<b>6/26 2016</b>	<b>7/17 2016</b>	<b>7/22 2016</b>	<b>7/29 2016</b>	<b>8/1 2016</b>	<b>Total</b>
<i>Colias philodice</i>	Clouded Sulphur		1						1
<i>C. eurytheme</i>	Orange Sulphur	1	4	8	5/2alb	8	3	6	37
<i>C. alexandra</i>	Queen Alexandra's Sulphur			38	25+	32	11	10	116
sulphur sp.								1	1
<i>Eurema mexicana</i>	Mexican Sulphur								
<i>Abaeis nicippe</i>	Sleepy Orange								
<i>Nathalis iole</i>	Dainty Sulphur				2				2
<i>Lycaena rubidus</i>	Ruddy Copper				1				1
<i>L. heteronea</i>	Blue Copper				2				2
<i>L. helloides</i>	Purplish Copper				5	1			6
<i>Callophrys affinis homoperplexa</i>	Canyon Green Hairstreak	6	7	1					14
<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	3	4						7
<i>C. eryphon</i>	Western Pine Elfin	8	2						10
elfin sp.		2	3						5
<i>Satyrium saepium</i>	Hedgerow Hairstreak								
<i>Strymon melinus</i>	Gray Hairstreak					1			1
<i>Cupido amyntula</i>	Western Tailed-Blue	3	5	0?	1				9
<i>Celastrina ladon sidara</i>	Echo (Spring) Azure	1	1						2
<i>Glaucopsyche piasus</i>	Arrowhead Blue								
<i>G. lygdamus</i>	Silvery Blue	31	4	1					36
<i>Euphilotes ancilla</i>	Rocky Mountain Dotted-Blue			10	5		2		17
<i>Echinargus isola</i>	Reakirt's Blue			3			5		8
<i>Plebejus melissa</i>	Melissa Blue								
<i>P. saepiolus</i>	Greenish Blue			1		3			4
<i>P. icarioides</i>	Boisduval's Blue			12		1	2		15
<i>P. lupini lutzi</i>	Lupine Blue				1	5			6
<i>P. glandon rustica</i>	Arctic Blue				1				1
blue sp.		33	22	19		2			76
<i>Euptoieta claudia</i>	Variegated Fritillary			4	3	3		1	11
<i>Speyeria aphrodite</i>	Aphrodite Fritillary								
<i>S. edwardsii</i>	Edwards' Fritillary								
<i>S. coronis</i>	Coronis Fritillary								
<i>S. hesperis</i>	Northwestern Fritillary								
<i>S. mormonia</i>	Mormon Fritillary								
fritillary sp.		2?				1			3
<i>Poladryas arachne</i>	Arachne Checkerspot								
<i>Chlosyne gorgone</i>	Gorgone Checkerspot								
<i>C. nycteis</i>	Silvery Checkerspot			4	1				5
<i>C. palla</i>	Northern Checkerspot								
checkerspot sp.			1						1
<i>Phyciodes pallida</i>	Pale Crescent								
<i>P. tharos</i>	Pearl Crescent								
<i>P. cocyta</i>	Northern Crescent			6+6?	2				14
<i>P. pulchella</i>	Field Crescent			5	1				6
<i>Euphydryas anicia</i>	Variable Checkerspot								
<i>Polygonia faunus</i>	Green Comma								
<i>P. gracilis</i>	Hoary Comma	1							1
<i>Nymphalis antiopa</i>	Mourning Cloak	1							1
<i>Vanessa atalanta</i>	Red Admiral								
<i>V. cardui</i>	Painted Lady			1			1		2
<i>V. virginiensis</i>	American Lady								
<i>Danaus plexippus</i>	Monarch								



<b>Caribou Ranch and Mud Lake</b>	<b>2016</b>	<b>6/5 2016</b>	<b>6/15 2016</b>	<b>6/26 2016</b>	<b>7/17 2016</b>	<b>7/22 2016</b>	<b>7/29 2016</b>	<b>8/1 2016</b>	<b>Total</b>
<i>Limenitis weidemeyerii</i>	Weidemeyer's Admiral				1		1		2
<i>Coenonympha tullia ochracea</i>	Common (Ochre) Ringlet		6	14	2				22
<i>Cercyonis pegala</i>	Common Wood-Nymph								
<i>C. oetus</i>	Small Wood-Nymph				8	28	28	49	113
<i>Erebia epipsodea</i>	Common Alpine		6	5					11
<i>Oeneis chryxus</i>	Chryxus Arctic			5	3	1			9
<i>Thorybes pylades</i>	Northern Cloudywing								
<i>Erynnis icelus</i>	Dreamy Duskywing	1	2						3
<i>E. pacuvius</i>	Pacuvius Duskywing		3						3
<i>E. persius</i>	Persius Duskywing	10	15	14					39
duskywing sp.		2							2
<i>Pyrgus ruralis</i>	Two-banded Checkered-Skipper	2							2
<i>P. communis</i>	Common Checkered-Skipper	1		1	1				3
<i>Piruna pirus</i>	Russet Skipperling				2	1			3
<i>Oarisma garita</i>	Garita Skipperling				2	3			5
<i>Hesperia juba</i>	Juba Skipper								
<i>H. colorado</i>	Western Branded Skipper								
<i>H. pahaska</i>	Pahaska Skipper			1					1
<i>H. viridis</i>	Green Skipper								
<i>H. nevada</i>	Nevada Skipper								
<i>Polites draco</i>	Draco Skipper		2	1					3
<i>P. mystic</i>	Long Dash				1				1
<i>Poanes taxiles</i>	Taxiles Skipper								
<i>Ochlodes sylvanoides</i>	Woodland Skipper								
<i>Euphyes vestries</i>	Dun Skipper								
skipper sp.				4					4

<b>Caribou Ranch, Mud Lake</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>
# of Species Identified Caribou Ranch and Mud Lake	48	48	40	20	46	28	38	47	55	50
Cumulative # of Species Sighted in Caribou/Mud Lake 2007-2016	75	75	80	80	81	82	83	83	84	85
# of Research Hours on Site	10	12	8.5	6	12.5	8	8	14	15	10
# of Individual Butterflies Counted	358	647	278	145	488	304	361	752	587	657
# Individuals /Research Hour	36	54	33	24	39	38	45	54	39	65
# Species /Research Hour	4.8	4.0	4.7	3.3	3.7	3.5	4.8	3.4	3.6	5.0

## Caribou Ranch, Mud Lake

Date, Conditions	Location <b>Caribou, Mud Lake</b>	Butterfly Behavior	Blossoming Plants	Animals	Researchers
6/5/2016 18-21°C 10:45 – 12:30 p.m.	Bridge Meadow	Blues not landing		Young female moose. She and her brother were recently chased off due to a new baby moose.	Venice Kelly Jeff McLaughlin
6/15/2016 10:30-noon 23°C Full sun	Bridge Meadow				Venice Kelly
June 26, 2016 10:15a.m.- 12:00 p.m. 24 °C	Bridge Meadow/Sherwood Mine Trail	Reakirt's blue ovipositing on sweet Clover			Venice Kelly Jeff McLaughlin
July 17, 2016 10:30-11:15 a.m. 25°C sunny, windy	Bridge Meadow Very dry but still some flowers				Venice Kelly Jeff MacLaughlin
July 22, 2016 10:30-12:00 p.m. Partly cloudy, breezy	Caribou parking lot along trail to large meadow, then small meadow to road		Asters Harebells Gumweed yarrow		Jeff MacLaughlin Venice Kelly
July 29, 2016 9:45 – noon 18-22°C Sunny, slight breeze	Around Mud Lake then a trail to the left	Small wood nymphs were nectaring on goldenrod	Sulfur flowers (aging) Fireweed Yellow evening primrose Goldenrod yarrow Potentilla, bushy sp. Monument plant	Ruby crowned kinglet Warbler W. chorus frog	Dan Fosco
Aug. 1, 2016 8:45-10:20 a.m. 20-25°C 90% blue sky 5-30 mph	Inside locked gate of Caribou, north to streamlet, roadway to DeLonde Homestead	Active flying, some nectaring on bull thistle; oetus mating	Dandelion, straight-leaf Erigeron Gentian, green Geranium, Fremont Gumweed Harebell Monkshood Oxeye daisy Potentilla, bush Rudbeckia Solidago Susan, black-eyed Thistle, bull Yarrow	Chipping sparrow Flicker House wren nest in aspen Hummingbird Junco Mallard Spotted towhee Townsend's solitaire  Chipmunk Ground squirrel Golden mantle ground squirrel	Dan Fosco, Jean Morgan, Larry Crowley, Amy Chu, Jan Chu

## **V. Discussion**

This year the inventories were fewer; about 31 as compared to other years which were typically around 40. Fortunately, Dan Fosco and Venice Kelly took many days on their own to support the inventories. Springtime was often cold and wet, which seems to be a common weather pattern in Boulder County; summer was hot and turned into drought early. Late summer was dry diminishing the numbers of blossoms available for butterflies. Anne U. White was not visited in 2016.

### **A. Southeast Buffer**

This short and mixed prairie is located west of McCaslin Boulevard, south of Superior and north of Hwy 128. It is adjacent to a Boulder City property on the west. This is an important grassland within the Boulder County Open Space properties. It provides a large habitat for many butterflies and birds. Grazing occurs sporadically and the hoof prints benefit the butterflies by creating water-depressions and open muddy surfaces. Butterflies take advantage of the moisture during the heat to imbibe minerals which they use in the formation of spermatophores. The average number of Individuals per Research Hour (I/RH) in 2016 was 27 which matches the average for ten-years of individual butterfly counts in the Southeast Buffer. On May 21, the Field Crescents (*Phyciodes pulchella*) were numerous, especially in the east-west ravine which parallels Hwy 128; August 15, Cabbage Whites (*Pieris rapae*) were numerous as they often are flying over the area. The rare Arogos Skipper (*Atrytone arogos*) was not sighted.

### **B. Heil Valley Ranch, Geer Watershed**

Orange Sulphurs (*Colias eurytheme*) and Common Wood Nymphs (*Cercyonis pegala*) had large numbers flying on August 17, as did Cabbage Whites, which are common near the old ranch buildings. The ten-year average for numbers of I/RH was 39, while in 2016, 49 I/RH were counted. We did hike in two separate groups, so found more species and a few more individuals. The butterflies in the Geer Watershed seemed to be recovering from the drought earlier and especially gathered around the open water sites. Thirteen Gray Hairstreaks (*Strymon melinus*), usually seen as singletons, were gathered at the water puddle at the foot of the small cliff west of the barn. The Frog Pond, next to the entrance road, was completely filled with cattails, so there no butterflies or dragonflies to be seen. For two years (before the road reconstruction) there could be twenty or so species flying there.

### **C. Heil Valley Ranch, North**

The North section encompasses the North Pointe property and the Red Gulch. The team did not survey the Ingersoll or Red Saddle areas this summer. Melissa Blues (*Plebejus melissa*) were numerous on June 2, in Red Gulch, especially near the stream. On August 19, there were 46 Common Checkered-Skippers (*Pyrgus*

*communis*) flying low over their host plant *Malva* sp. growing on newly scrapped soil near Ron LaFollette's home.

#### **D. Heil Valley Ranch, Plumely Canyon**

Numerous Orange Sulphurs, Reakirt's Blues (*Echinargus isola*), and Aphrodite Fritillaries (*Speyeria aphrodite*) were flying on July 27. It was with difficulty Dan Fosco reached the top of Plumely twice. Effects of the 2013 Flood continue to expose boulders and steep banks along the once accessible streamside. Only two surveys were conducted in 2016.

#### **E. Walker Ranch, Meyer's Homestead and Loop Trails**

Two butterflies, the first to be reported in our surveys at Walker Ranch, were on the South Loop Trail, April 22, Nais Metalmark (*Apodemia nais*) and Arachne Checkerspot (*Polydryas arachne*). Both are uncommon and surprisingly early. On the Meyer's Trail, on June 3, the Hoary Elfins (*Callophrys polios*) flew low over their host plants, the kinnikinnick patches, about one butterfly to a patch. They seem to be territorial and disperse over the hillside. On that day spring-flying Echo Azures (*Celestrina ladon sidara*) were puddling and nectaring. Rocky Mountain Dotted-Blues (*Euphilotes ancilla*) were puddling in the few small muddy areas on the trail, on June 17. On July 24 The Small Wood Nymphs (*Cercyonis oetus*) were numerous. The wood nymphs usually fly as the summer season comes to a close.

#### **F. Reynold's Ranch, North Bog and Giggey Lake**

The North Bog remained soggy and water-logged until mid-September. This makes for a muddy walk and sometimes fewer butterflies. On the other hand, the Common Ringlets (*Coenonympha tullia ochracea*) and Common Alpines (*Erebia epipsodea*) were numerous in June. Also the higher altitude Greenish Blues (*Plebejus saepiolus*), Draco Skippers (*Polites draco*) and Persius Duskywings (*Erynnis persius*) were abundant. A newly reported butterfly for Reynold's was the Dreamy Duskywing (*Erynnis icelus*). The numbers of Orange Sulphurs remained constant all summer. We especially look for Pine Whites (*Neophasia menapia*) in the late season and were not disappointed. At least six flew up and down, lower branches to top in the ponderosa pines. Lady tress orchids showed through the taller grasses in North Bog.

#### **G. Hall II**

We entered only one time, wading across the St. Vrain River. The grasses were quite dry with very few blossoms. Aphrodite Fritillaries and Common Checkered-Skippers seemed the most numerous, but overall there were few butterflies in late August. Many immature Woodhouse's toads hopped ahead of us. Bear scat contained seeds of plums and chokecherries.

## H. Caribou Ranch

Bridge Meadow, near the entrance to the Caribou Ranch parking, was visited by Venice Kelly three times in June, once in July. Julia Orangetips (*Anthocharis sara julia*) and Canyon Green Hairstreaks (*Callophrys affinis homoperplexa*), and Silvery Blues (*Glaucopsyche lygdamus*) three early season butterflies were sighted in numbers. Western Pine Elfin (*Callophrys eryphon*) was present in early June in the Bridge Meadow, however unfortunately not seen at other sites. Some of the Small Wood Nymphs, the most common butterfly in Caribou in late July and August were mating.

## VI. Summary

In 2016 the weather was about typical for Open Spaces and the activity of the butterfly populations. The cold wet spring reduced the emergences of the early-season adults. Summer was hot and blossoms plentiful, but the dry period came early. Late summer butterflies seemed to show up in damp areas.

None of the notable rare butterflies, Arogos (*Atrytone arogos*) and Ottoe (*Hesperia ottoe*) Skippers, Hops Azure (*Celastrina humulus*), Dusted Skipper (*Atrytonopsis hianna*), or Moss' Elfin (*Callophrys mossii schryveri*) was reported on the inventory this year. The biennial Chryxus Arctics (*Oeneis chryxus*) were seen at Reynold's and Caribou Ranches. These appear only on the even numbered years in Boulder County. Two uncommon butterflies, the Nais Metalmark (*Apodemia nais*) and Arachne Checkerspot (*Polydryas arachne*) were recorded on April 22, the first to be reported in our 12-year surveys at Walker Ranch. These were on the South Loop Trail. It was no surprise that the non-native Cabbage Whites (*Pieris rapae*) were the most common overall in the Open Space properties, along with the Orange Sulphurs.

## VII. Recommendations

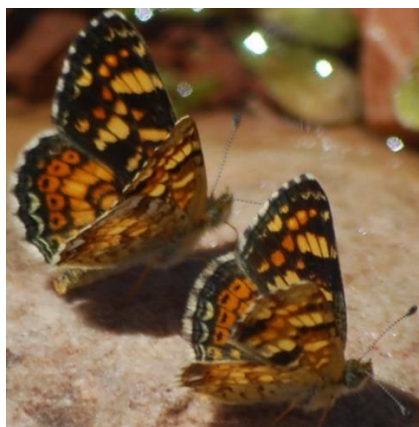
1. Support the calculation of 10 to 12-year trends for each Open Space property and for the overall trend for the butterfly populations. Offer this through the County with a mini-grant.
2. Re-dig the Frog Pond beside the road at Heil Valley Ranch. There is a fairly easy habitat to restore. Before the dirt from the newly-reworked gravel road, filled in the pond, and presently cattails totally occupy the space with no watery or muddy shores available.
3. Continue to support the butterfly inventories by providing Research Permits.
4. Produce a 2-page, educational pdf on Boulder County butterflies, that the public can download from the BCPOS website.

## Butterflies Found in the Greatest Numbers in Different Areas



Cabbage White Dan Fosco

Numerous in Southeast Buffer, Geer Watershed



Field Crescent Dan Fosco

Numerous in Southeast Buffer



Common Wood Nymph John Barr

Geer Watershed, Heil Valley



Orange Sulphur Dan Fosco

Most numerous butterfly in 2016;  
common in Geer, North Pointe, Plumely, Walker, Reynold's  
and Caribou



Melissa Blue



Common Checkered-Skipper (female left, male right)



Numerous in North Pointe, Heil Valley



Ochre (Common) Ringlet Dan Fosco

Numerous in Plumely Canyon and Caribou

Numerous in North Pointe, Heil Valley



Hoary Comma (Dorsal Steve Jones and ventral John Barr)

Numerous at Walker Ranch



Echo Azure Greg Muench



Small Wood Nymph Dan Fosco

Both Azure and Wood Nymph numerous at Walker Ranch



Queen Alexandra's Sulphur John Barr



Large Marble Steve Jones

Both of the above species are numerous at Caribou and Reynold's Ranch.



Greenish Blue (dorsal and ventral) Steve Jones



Common Alpine Steve Jones

Both of the above species were numerous at Reynold's Ranch



Echo Azure (left) Greenish Blue (middle back) Melissa Blue (back, center right)

Silvery Blue (dorsal, front and two ventral views to the right)

Numerous at Caribou Ranch, especially in the spring.

Photos by the author unless otherwise noted.



Janet Chu, September 29, 2016