Final Report

An Inventory of Butterflies –

Heil Valley Ranch Open Space
2002 – 2004

Caribou Ranch Open Space
2004

Boulder County Parks and Open Space
Small Grants Program 2004

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I. Abstract

This project included two primary purposes:

1) Continue an inventory of butterflies on Heil Valley Ranch Open Space for the third summer season, and

2) Begin a new survey of butterflies on the Caribou Ranch Open Space.

Field observations occurred in several different habitats, including pine forests, grasslands, willow bog, riparian, and disturbed areas (roads and trails). In addition to surveying butterflies, we took field notes of easily identified blooming flowers (nectar sources) and host plants (food sources for caterpillars), as well as interesting butterfly behavior.

Heil Valley Ranch:

Sixty species were observed from March 23 through August 12, 2004. During the years 2002-2004, eighty-seven species were identified on Heil property. The spring and late summer-early fall butterfly populations seemed to be typical. Three years of sampling resulted in a list of the more common species in the form of a brochure, "Heil Valley Ranch - Butterflies."

Caribou Ranch:

Thirty-seven species were seen at Caribou during the short season of June 29 through August 5, 2004. These were found on disturbed roadways, in surrounding pine forests, agricultural land and near willow bogs. Additional surveys in future years may set a better baseline for comparison of populations than this year did.

In Boulder County the number of recorded butterflies is about 192 species (Opler, 2004); therefore 45% of these were seen in Heil Valley Ranch during the years 2002 through 2004. About 19% of the total recorded Boulder County butterflies were observed on Caribou Ranch during the first survey year. Many of the county species typically inhabit the Foothills-Montane zones; but others are found only on the prairies and at higher elevations. The Boulder County record includes seldom-observed migrant visitors also.

The Open Space communities we studied were rich with diversity of species and habitats. Both Heil and Caribou are supporting vigorous habitats as shown by the numbers of butterfly species living in these Open Spaces or migrating into these areas for the summer. Further surveys and research are needed to better understand the habitat needs of Boulder County butterflies. This information will help the Parks and Open Space Department make

recommendations for protection of species in the years to come, whether by limiting human use, halting habitat destruction, or by other means.

II. Introduction and literature review

The three primary members of the survey team are all volunteer naturalists for Boulder County Parks and Open Space. Although we are not trained lepidopterists, between the three of us we have over 40 years of butterfly study and fieldwork experience. We are interested in compiling surveys of the butterflies found on Boulder County Open Space properties to identify species, to understand their habitat requirements, to look at changes in populations (due to disturbance of habitat or changes in weather patterns), to locate colonies of the rare butterflies, to record unusual population fluctuations, and to provide helpful information in order to assure the continuing survival of these butterflies.

Throughout this region's history including use by prehistoric people, homesteaders, ranchers, farmers, and miners, Heil and Caribou have maintained a relatively undeveloped and natural setting. Both Heil and Caribou properties include rich and diverse habitats that support an abundance of wildlife, both large and small. Although detailed plans are often put in place to protect the vertebrates found on each Open Space property, such as birds, squirrels, prairie dogs, foxes, deer, elk, bobcats, black bears and mountain lions, the invertebrates in residence are often overlooked. In order to protect the invertebrate butterflies specifically, it is important to identify their occurrence, locate and protect critical habitat areas from unnecessary forest thinning, prescribed burns, trails or other excessive use by the public.

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III. Materials and Methods Used

Survey Timeline:

The 2004 plan was to conduct field studies biweekly, at Heil one week and Caribou the next. However, a delay in the date of access to Caribou due to restrictions related to elk calving changed that plan. June and July were cold, wet and cloudy months, which also reduced our sighting days and numbers of individuals. Different habitats within each Open Space were visited periodically. The field period for Heil Valley was from March 23 to August 12; Caribou June 29 to August 5.

Heil Valley Ranch: Observations began before the snow had disappeared, to observe some of the over-wintering and early spring butterflies. On that first field day we observed hoary comma (*Polygonia gracilis)*, mourning cloak (*Nymphalis antiopa)*, milbert's tortoiseshell (*N. milberti)* and the always-present cabbage white (*Pieris rapae),* waking from their winter's dormancy to enjoy the mild temperature. On April 15 the common roadside-skipper (*Amblyscirtes vialis),* the only one sighted in three years, and the Sheridan's hairstreak (*Callophrys sheridanii),* the earliest emergent butterfly in the Foothills, were observed. During this summer, the greatest number of western pine elfin (*C. eryphon,* was also sighted on that day. It was fortunate we began the season early this year, as Ray Stanford suggested. In spite of the wet, cool weather, we visited Heil Valley Ranch nine times during 2004. The final observation at Heil was August 12.

Caribou Ranch: An inventory of butterflies began on June 29, 2004, the day we were permitted to enter the area, following closures for elk calving. Two additional days for observations occurred in July and August.

Survey Procedure:

This survey was not executed using traditional scientific protocol or to a restricted specified area, but was made by more casual observations. As butterflies were sighted, they were identified using close-focusing binoculars or a net and release procedure. The species and numbers (clearly identified at close range) were listed on the enclosed charts. Records include the date, and time in the field, temperature, general sky and atmospheric conditions. Special notations were made of nectaring sightings (the proboscis of the butterfly could be seen extending into the flower), ovipositing (eggs laid on a leaf), and caterpillars feeding.

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Some butterflies were photographed with slide film and a digital camera. The slides will be duplicated and added to the resource collection of Boulder County specimens in the A-Frame. Each will be labeled with scientific and common name, photograph site, and date. Additional images were recorded using a Canon Power Shot S1 IS digital camera.
The accompanying records will be registered in the Listing and Mapping of Western USA County Records. We have conferred with Dr. Ray Stanford, the editor and caretaker of these county records, to consider our findings, especially individual sightings of only one species. Butterfly specimens were *not* removed from either Heil or Caribou for further identification or to curate at the Gillette Museum, Colorado State University, Ft. Collins, as has been done throughout the state when new or unusual species are found. In scientific naming of species, there are new discoveries occurring, and our comprehensive up-to-date source (Opler, Warren, 2003) provided the names included in this report and brochure.

Survey Habitats:

Heil Valley Ranch: This Open Space comprises 4,923 acres, in the Foothills zone with an elevation range of 5,390 ft. to 8,080 ft. (North Foothills, 1996) Heil Valley preserves a wide diversity of habitats, including pine forests, grasslands, wetlands, riparian, and disturbed areas around old quarry pits, roads and trails. In addition, the Overland Fire burned nearly 2,000 acres, providing a renewing habitat. Study sites were along Red Hill, Plumely Canyon and Geer Creek.
Red Hill is a 2,800-acre site rising from 6,240 ft. to 6,360 ft covered primarily with big bluestem, ponderosa pine, and mountain mahogany woodland. (Simonson, 1995) Red Hill saddle is on top of a sandstone ridge with extensive mixed grassland and bushes on its slopes. A seep from the sandstone provided moisture for toads and butterflies – relief from the summer's heat.
Plumely Canyon covers 620 acres, is dramatically narrow, forested, and gains a steep 1,000 ft. elevation. The east-west canyon has water present year round, and maintains the overall best habitat. The homestead at the higher end had an extensive meadow, which produced many sightings.

Geer Creek is lined by ponderosa pine and a riparian habitat. From the public parking lot to the Manager's Residence the stream valley was very productive. Above the Manager's Residence, Geer valley narrows exposing forested sheltered cliffs. On the opposite side were exposed hilltops covered with xeric native plants and some invasive weeds. A once-mowed field was a monoculture that was not productive for finding butterflies. The roadway toward the Lichen Trailhead and toward Plumely Canyon was well liked by the heat-seeking butterflies. A small stream often crossed this road, where we found butterflies puddling in the moist sand.

Caribou Ranch: Located north of Nederland, it is rich Montane parkland of 2,180 acres with an elevation range of 8,310 ft. to 10,130 ft. This property is governed by conservation measures to preserve diverse wildlife habitat, plants and especially watershed resources. Our observations were at elevations from 8,440 ft. to 8,800 ft., inside the gate on the southeast quadrant. There were forested areas and agricultural fields of hay. Butterflies associated with cultivated crops flew over the fields. The roadway led to a willow bog and beaver ponds. Another roadway led westward into the forest and met the Switzerland Trail, where the forest was too shady for many butterflies. The public DeLonde Trail was being completed, but no survey was conducted there.

IV. Results with Detailed Analysis:

Two accompanying spreadsheets with details are attached at the end of this report:

- "2004 Butterfly Survey, Heil Valley Ranch Open Space," Boulder County, CO *(See Attachment # 1).*
- "2004 Butterfly Survey, Caribou Ranch Open Space," Boulder County, CO *(See Attachment # 2).*

The Heil Ranch report lists *2004* observations (column 1) and *all* butterfly species observed during the *2002-2004* seasons. The spreadsheets display scientific and common names, places and dates of observation, and additional notes of time, specific site, weather conditions, special observations, and names of field naturalists.

V. Discussion of the results, including a description of how the results apply to natural resource and/or visitor management for BCPOS

Heil Valley Ranch: Several sites at Heil have been studied, but further fieldwork needs to be continued to obtain a true picture of the presence of the remarkable variety of species. The burned area should be closely monitored to document butterfly recovery from the fire.

Weather:

A major factor in gathering data this year. Late March, April and May were generally sunny and warm, and yielded more butterflies than expected, perhaps due to the early warm weather. We did experience cloudy and windy conditions on some of the early field days scheduled during late March through May. Late June and July were abnormally wet and cold when the butterflies were not readily visible. Bill Callahan of the *Daily Camera* provided a summary:

> *"For only the fourth time in history, Boulder has experienced five consecutive months with over two inches of moisture."* According to Callahan, the average temperature was 62.6 degrees F (17.4 degrees C) for these months June through October, where as the normal temperature is 65.6 degrees F (19.2 degrees C) *(Daily Camera, 2004).*

Mountain and foothill butterflies are sensitive to these weather factors. Normally they fly when the temperature is 61 degrees F (16 degrees C) or above, because they are cold-blooded invertebrates and wing muscles must be warmed enough by sunlight or environmental heat to work. Because of the cool wet weather, the emergence of butterflies from chrysalises may have been negatively affected. *(Questions raised: Did the adults emerge and become the tasty morsels for hungry carnivores? Did they not emerge, remaining in diapause, to emerge in 2005?)*

Overland Fire:

As a result of the Overland Fire (fall of 2003) there was a dramatic reduction in the available nectaring sources and food plants for caterpillars during the April 28, 2004 study. Observations in the this burn area near the Manager's Residence yielded very few butterflies on a few sparse mustards, and a few flying through the blackened area, perhaps seeking flowers for nectar outside the burned area. Later in the season, the grasses, sedges, and especially golden banner were recovering. The persius duskywing *(Erynnis persius)* caterpillars depend upon this particular flowering plant species. *(Question: How long does it take butterfly populations to colonize and recover from the fire?)*

On May 21 butterflies were concentrated in the Geer Creek riparian area. In the bright sunlight we observed some amazing sights at the remnant charred posts and stumps which stood in the water. The moisture seemed to be pulled by capillary action into the carbonaceous fibers. On these remnants, the butterflies were as concentrated as in 'favored' muddy puddles. A variety of species gathered on one post, including fifteen field crescents (*Physiodes pulchella)*, three silvery blues (*Glycopsyche lygdamus)*, and a margined white (*Pieris marginalis).* A nearby stump attracted spring azures (*Celestrina "ladon" sidara)*, persius duskywings (*Erynnis persius),* field crescents (*P. pulchella)*, gorgone crescents (*Chlosyne gorgone)*, and silvery blues (*G. lygdamus),* making a mosaic of colors on a cool day registering 17 degrees C. A spring azure (*C. "ladon" sidara)* sipped the water and was imbibing so much moisture that the exudates (liquid waste) were released in golden droplets, which attracted other blue butterflies! Blues often ingest moisture laden with minerals from animal waste (manure) sources. *(See photographs Attachment # 3.)*

Butterfly Populations:

Numbers in a population vary greatly from year to year. For example, the most obvious is the Chryxus arctic (*Oeneis chryxus)*, which emerges during even-numbered summers, not to be seen in 2005. Western pine elfins (*C. eryphon),* silvery blue (*G. lygdamus),* and spring azure (*C. "ladon" sidara)*, fly early from April to late May. The black swallowtail *(Papilio polyxenes)* often observed in most years, however in 2003, almost every 'black swallowtail' in the foothills was an indra swallowtail (*P. indra)* which was a surprise to us. The pale swallowtail (*P. eurymedon),* emerged in great numbers in Geer Canyon on June 3, and ochre ringlets (*Coenonympha tullia ochracea),* appeared in the greatest numbers on that date flying close to the grass tops. Likely the adults were just emerging from chrysalises and had not dispersed yet.

Another butterfly, a special delight to see, was the pine white (*Neophasia menapia),* on August 12, at the upper end of Plumely. These are late season fliers generally found in the tops of pines where the female will deposit eggs on pine needles. A photo was taken of an egg-laden female pine white nectaring near the ground.

New undamaged cabbage whites (*Pieris rapae,* were found in Plumely on August 12. Their fresh condition indicates three broods in 2004: 1st brood – March/April, 2nd – May/June, and 3rd – August. Aphrodite fritillaries (*Speyeria aphrodite)* and northwestern fritillaries (*S. hesperis),* numbered in the 20's on that date. Fritillaries are associated with their food

plants, the violets. Northern crescents (*Phyciodes cocyta),* common wood nymphs (*Erebia epipsodea),* and woodland skippers (*Ochlodes sylvanoides)* were also flying in great numbers on that late summer date.

The 6,000-acre Overland Fire definitely affected the nectar sources for the butterflies and the food plants for the caterpillars, for the ground was blackened in the burn area. There is no effective way to count the chrysalises, caterpillars and butterflies that were destroyed in the fire. In fact, there might have been a count of the butterflies this summer comparable to the past two years, comparing changes brought about by the single factor of the fire, but the weather had a negative effect on the numbers of individuals and species on both properties in July.

Butterfly Checklist:

There is included with this report a brochure Heil Valley Ranch Butterflies that might be helpful for guests or volunteer naturalists. *(See attachment # 4)* We are aware that the areas we studied are not open to the public except for the Lichen Trail, roadway and parking lot. Therefore we did not give any locations in the brochure. Observations were made during only a three-year period, but visitors sometimes do enjoy a checklist. Flight times were listed as E=early (April-May, 1st week of June), M=mid-summer (2nd week of June-July), L= late summer, (August, September). These flight times vary each year depending on many factors, including late heavy snows, which can delay the season. This happened in the spring of 2004 when the expected flight of butterflies (and bird fledglings) was delayed about two weeks.

Rare Butterflies:

In 1995 Sara Simonson and Phyllis Pineda reported (and captured type specimens which are in the C.S.U. Gillette Museum) of the arogos skipper *(Atrytone arogos),* ottoe skipper (*Hesperia ottoe),* and snow's skipper *(Paratrytone snowi).* These were recorded in the original work (Simonson, 1995). We have not yet located any of these species. It is likely our team has not found the 'distinct' site of the colonies, nor been present for their apparent short flight periods. We should continue to verify these findings in 2005 and venture further north and east beyond Red Hill saddle. It is of great value to find these rare butterflies. As stated in the 1995 report, the state ranking follows:

Snow's skipper	*Paratrytone snowi*	S3 rare (100-200 known populations in Colorado.)
Arogos skipper	*Atrytone arogos*	S2 very rare (5-20 known populations)
Ottoe skipper	*Hesperia ottoe*	S2 very rare

Snow's skipper favors the upper end of ponderosa pine riparian habitat and depends entirely on a species of *Poa*, pine dropseed. The Arogos lives on big bluestem, and the Ottoe skipper lives in undisturbed prairie on big and little bluestem, fall witchgrass and other grasses (Opler 1999), but Simonson reported this in a foothills pine scrub woodland.

Caterpillar Food Plants:

Caterpillars typically choose to eat certain food plants. The adult females are able to scratch and taste-smell the leaves before depositing the eggs, thus giving the caterpillars the best chance to find food, after they consume their own discarded egg cases. Listed below are some of the food plants and the more common butterflies observed at Heil Valley Ranch Open Space.

Caterpillar food plants	Butterfly scientific name	Butterfly common names
Stonecrop - *Sedum lanceolatum*	*Parnassian smintheus*	Parnassian
Parsley family – wild, cultivated carrot, dill, celery		
	Papilio polyxenes	Black swallowtail
Parsley family	*P. zelicaon*	Anise swallowtail
Willow, poplar, aspen, cottonwood, alder	*P. rutulus*	W. tiger swallowtail
Buckthorns, wild plum, wild lilac	*P. eurymedon*	Pale swallowtail
Mustard family – flowers, seed pods	*Pontia protodice*	Checkered white
Mustard family, winter cress, peppergrass	*Pieris rapae*	Cabbage white
Mustard family	*Euchloe ausonides*	Large marble
Legumes, vetches,	*Colias eurytheme*	Orange sulphur
Wild buckwheat, Fendler's buckbrush	*Callophrys affinis*	W. green hairstreak
Lodge pole and Ponderosa pine	*C. eryphon*	W. pine elfin
Ceanothus	*Celestrina "ladon" sidara*	Spring azure
Legumes - lupine, vetch, locoweed	*Glycopsyche lygdamus*	Silvery blue
Lupines with hairy leaves	*Plebejus icarioides*	Boisduval blue
Violets	*Speyeria aphrodite*	Aphrodite fritillary
Violets	*S. hesperis*	Northwestern fritillary
Asters	*Phyciodes pulchella*	Field crescent
Wax currant	*Polygonia gracilis*	Hoary comma
Willows, birch, cottonwood	*Nymphalis antiopa*	Mourning cloak
Willows, aspen, choke cherry	*Limenitis weidemeyerii*	Weidemeyer's admiral
Grasses	*Coenonympha tullia ochracea*	Ochre (common) ringlet
Grasses – tall, broad-leaved	*Poanes taxiles*	Taxiles skipper

Caribou Ranch: Access was not granted until June 29; therefore we failed to observe the spring and early summer butterflies. Observations at Caribou were too few to be called a 'baseline' in our opinion. Many more years of observations need to be conducted in the future. The survey did find about thirty-seven mid-summer species. The habitats were ponderosa pine and Douglas fir woods, meadows, agricultural hay fields, willow bog and ponds. The fields will continue to produce hay, and the existing roads and trails will be available for farming and research. Our team did *not* survey the new DeLonde trail, which was opened after we had completed fieldwork for the 2004 season.

VI. Maps

Maps of the Heil Valley Ranch and Caribou Ranch Open Spaces are included. They are not sufficient to show the exact locations of our studies, but locate approximate areas we surveyed. *(See Attachments 5 and 6)*

VII. Conclusion

Butterfly surveys are important in documenting the species, which reside in the different habitats, as well as clarifying the specific habitat requirements necessary to sustain each species. This is a multi-year project, because the immense acreage cannot be covered sufficiently in one season, nor all of the flight periods observed just at the time of emergence of the adults. Certain species have short flight periods and some are located in isolated colonies. This is the first year that food plants have been noted and more time is needed to locate the plants on site. This team should work closely with botanists to locate and identify the food plants. If the food plants grow in small distinct areas, those areas should not be cut or crossed with trails. If the rare butterflies are located, and their food plants mapped, every effort should be taken to avoid traffic or prescribed burning in these areas. Tracking changes in the Open Spaces will result after many more years of study and record keeping. The Overland burn area provides an opportunity for a number of scientists to document the return of pioneer plants, succession of noxious weeds and native plants, birds, animals and butterflies. Insights gained as data is compiled will influence the management of these lands, (development of trails, prescribed burning, public access) and the wildlife.

Further survey work and research on the habitat required to support these butterflies will give Boulder County Parks and Open Space checklists of butterflies to share with staff members,

volunteer naturalists, and visitors, as well as document information to protect specific areas from extensive use or habitat destruction.

With increased movement toward digital photography the team produced both 2x2 slides and digital images. Slides were reproduced for the County and are included with this report. *(See Attachment # 7.)* A few color prints are also included and accompany this report. The cost of converting digital images to 2 x 2" slides is prohibitive; therefore these digitized (.jpg) images may be available in the future for Power Point presentations.

VIII. Recommendations

A. Access granted to Caribou Ranch earlier in the season, for study of the spring and early summer butterflies. (Are there portions of the ranch where the elk and moose are not as likely to be calving?)

B. Issue permits for volunteer naturalists (and their associates) to observe, identify and study the butterflies in future years.

C. Expand the season of observations again in 2005. Begin while there is snow on the ground and extend the study later in the fall.

D. Locate the rare species and verify the vitality of their habitats.

E. Allow a permit to include a single catch of any unidentifiable species to be removed, given to a professional for certain identification, and be placed in the Colorado State University Gillette Museum permanent collection directed by Dr. Paul Opler. In the heat of the collecting day, it is very difficult to keep a butterfly alive long enough to be 'returned within 72 hours'. Vouchers are important for identification. Where these might be questions about the species in the future, the proof is in the voucher. Just as g.p.s. is being used to record the location of rare plants, Open Spaces can become respected butterfly registers.

F. Continue to look for species not yet recorded within Boulder County.

G. Work more closely with botanists to locate food plants and habitats of significant butterfly colonies.

H. Study meadows and woodlands adjoining the new Caribou trail to highlight any changes resulting from heavy public use.

I. Before opening new Open Space lands, provide time for butterfly surveys, and include consideration of butterflies in Open Space Management Plans.

J. Train new volunteers to assist in the surveys.

IX. Acknowledgements

We thank Boulder County Parks and Open Space Department, the Resource Management Division, and especially Therese Glowacki, for providing this rewarding opportunity for Boulder County Volunteer Naturalists. Kevin Grady, with his enthusiasm and experience, assisted our choice of areas to explore. Many employees of the County Parks and Open Space Department we met on the trails were interested, friendly and available for up-to-date information about bear or moose sightings where we were studying.

Catherine Cook produced the Heil Valley Ranch Butterflies brochure.
Slides and photographs were by Jan Chu.

We appreciate the associates who shared their expertise in the 2004 season including Larry Crowley, Susan Harris, Amy Helen Hurst, and Jean Morgan. Dr. Ray Stanford and Dr. Paul Opler continue to be our mentors and sources of valuable information.

X. Attachments

2004 Butterfly Survey
Heil Valley Ranch Open Space
Boulder County, CO

# =	Number of species observed in 2004										
	Butterflies found in 2002, 2003, 2004:										
		Location:	Geer	Plumely	Geer Canyon	Red Hill, roadway	Geer	Geer Canyon	Lichen Trailhead	Lichen Trailhead	Plumely Canyon
		Survey Dates:	23-Mar	15-Apr	28-Apr	6-May	21-May	3-Jun	11-Jun	12-Jun	12-Aug
#	*Scientific Name*	Common Name									
	Parnassius smintheus	Rocky Mountain Parnassian									
	Papilio polyxenes	Black Swallowtail									
1	*P. zelicaon*	Anise Swallowtail					1	2			
2	*P. indra*	Short-tailed Black Swallowtail						2			
		'black' swallowtail					1	2			
3	*P. rutulus*	Western Tiger Swallowtail			1	1	1	3	1	1	6
4	*P. multicaudatus*	Two-tailed Swallowtail									6
5	*P. eurymedon*	Pale Swallowtail						12	1		
	swallowtail sp.										
6	*Neophasia menapia*	Pine White									12
7	*Pontia sisymbrii*	Spring White		2							
8	*P. protodice*	Checkered White					1?				
9	*P. occidentalis*	Western White						2			
10	*Pieris marginalis*	Mustard White					2				
11	*P. rapae*	Cabbage White	1	1	8		1	9		1	7
12	*Euchloe ausonides*	Large Marble		1	1	2	6	6			
13	*E. olympia*	Olympia Marble		1		1					
14	*Anthocharis julia*	Southern Rocky Mountain Orangetip		1				1			
	white sp.						1	3			3
15	*Colias philodice*	Clouded Sulphur					1	1			
16	*C. eurytheme*	Orange Sulphur									2
	sulphur sp.										3
	Lycaena heteronea	Blue Copper									
	Satrium titus	Coral Hairstreak									
	S. behrii	Behr's Hairstreak									
17	*Callophrys affinis*	(Green) Bramble Hairstreak						2			
18	*C. gyrneus*	Siva' Juniper Hairstreak					1				
19	*C. sheridanii*	Sheridan's Hairstreak (White-lined Green)		3							
20	*C. eryphon*	Western Pine Elfin		14	12	2	3				

2004 Butterfly Survey
Heil Valley Ranch Open Space
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# =	Number of species observed in 2004										
	Butterflies found in 2002, 2003, 2004:										
		Location:	Geer	Plumely	Geer Canyon	Red Hill, roadway	Geer	Geer Canyon	Lichen Trailhead	Lichen Trailhead	Plumely Canyon
		Survey Dates:	23-Mar	15-Apr	28-Apr	6-May	21-May	3-Jun	11-Jun	12-Jun	12-Aug
#	*Scientific Name*	Common Name									
21	*Strymon melinus*	Gray Hairstreak					1				
22	*Hemiargus isola*	Reakirt's Blue									18
	Everes comyntas	Eastern Tailed-Blue									
23	*E. amyntula*	Western Tailed-Blue					1				
24	*Celestrina "ladon" sidara*	Spring Azure		1	1	1	1	6			
	C. humulus	Hops Blue									
25	*Glycopsyche lygdamus*	Silvery Blue		1	2		5	13			
26	*G. piasus*	Arrowhead Blue					1	2			
27	*Euphilotes ancilla*	Rocky Mountain						3			
28	*Plebejus icarioides*	Boisduval's Blue					1	3	1	1	
29	*P. melissa*	Melissa Blue					1	3			21
30	*P. glandon*	Arctic Blue						1			
	P. saepiolus	Greenish Blue									
31	*P. lupini lutzi*	Lupine Blue						5			
	blue sp.						1	7			1
32	*Euptoieta claudia*	Variegated Fritillary									2
33	*Speyeria aphrodite*	Aphrodite Fritillary						3	5	1	52
34	*S. edwardsii*	Edwards' Fritillary									1
35	*S. coronis*	Coronis Fritillary					1				
	S.callippe	Callippe Fritillary									
36	*S. hesperis*	Northwestern Fritillary									20
	S. mormonia	Mormon Fritillary									
	Speyeria sp.						1	11	1		10
37	*Chlosyne gorgone*	Gorgone Checkerspot					1	6			
38	*C. nycteis*	Silvery Checkerspot						2			
	C. palla	Northern Checkerspot									
	Euphydryas anicia	Variable Checkerspot									
	checkerspot sp.										
39	*Phyciodes tharos*	Pearl Crescent									
40	*P. cocyta*	Northern Crescent					1?too early				42
41	*P. pulchella*	Field Crescent		1	1	1	17	5	1	1	11
42	*Polygonia gracilis*	Hoary Comma	2	1	1		1				
	anglewing sp.					1					

2004 Butterfly Survey
Heil Valley Ranch Open Space
Boulder County, CO

# =	Number of species observed in 2004										
	Butterflies found in 2002, 2003, 2004:										
		Location:	Geer	Plumely	Geer Canyon	Red Hill, roadway	Geer	Geer Canyon	Lichen Trailhead	Lichen Trailhead	Plumely Canyon
		Survey Dates:	23-Mar	15-Apr	28-Apr	6-May	21-May	3-Jun	11-Jun	12-Jun	12-Aug
#	*Scientific Name*	Common Name									
43	*Nymphalis antiopa*	Mourning Cloak	3	5	2						
44	*N. milberti*	Milbert's Tortoiseshell	1								
	Vanessa virginiensis	American Lady									
45	*V. atalanta*	Red Admiral									7
46	*V. cardui*	Painted Lady				1			1		
47	*Limenitis weidemeyerii*	Weidemeyer's Admiral							1	1	1
	Asterocampa celtis	Hackberry Emperor									
48	*Coenonympha tullia ochracea*	Ochre (Common) Ringlet					1	15	3	1	
49	*Cercyonis pegala*	Common Wood Nymph									50
50	*C. oetus*	Small Wood Nymph									5
	Erebia epipsodea	Common Alpine									
	Oeneis chryxus	Chryxus Arctic									
	O. uhleri	Uhler's Arctic									
51	*Danaus plexippus*	Monarch									1
	Epargyreus clarus	Silver-spotted Skipper									
	Thorybes pylades	Northern Cloudywing									
	T. mexicana	Mexican Cloudywing									
52	*Erynnis icelus*	Dreamy Duskywing						2			
53	*E. persius*	Persius Duskywing					4	7			
	E. pacuvius	Pacuvius Duskywing									
54	*Pyrgus communis*	Common Checkered-skipper									1
	Piruna pirus	Russet Skipperling									
	Oarisma garita	Garita Skipperling									
	Hesperia pahaska	Pahaska Skipper									
55	*H. viridis*	Green Skipper					1		1		
	Polites themistocles	Tawny-edged Skipper									
	P. mystic	Long Dash									
56	*Ochlodes sylvanoides*	Woodland Skipper								1	41
57	*Poanes taxiles*	Taxiles Skipper							1		
58	*Euphyes vestris*	Dun Skipper									1
59	*Amblyscirtes vialis*	Common Roadside-Skipper		1							
60	*A. aenus*	Bronze Roadside-skipper					1				
	A. phylace	Orange-headed Roadside Skipper									
	skipper sp.										1

2004 Butterfly Survey
Heil Valley Ranch Open Space
Boulder County, CO

NOTES:		Comments:									
March 23, 2004 Manager's Cabin Cloudy; 22 deg C		antiopa - 2 mating in flight; milberti - small									Jan Chu, Cathy and Donn Cook
April 15, 2004 Plumely Canyon 10:00am-2:00pm Windy, High clouds; 13 deg C											Jan Chu, Cathy and Donn Cook, R. Carol Cushman
April 28, 2004 Geer Canyon 9:30am-1:00pm Windy, High clouds; 21 deg C	Walked to saddle at top of Geer field - Returned thru blackened burn area	rapae - 5 female, 3 male									Jan Chu, Cathy and Donn Cook
May 6, 2004 Red Hill roadway 11:00am-1:30pm 100% Sunny, Dry; 26 deg C	Red Hill Saddle, ravine, roadway on return drive.										Jan Chu, Cathy and Donn Cook
May 21, 2004 Geer Canyon 9:45am-3:00pm Sunny; 17 deg C	Geer Canyon from public parking lot toward Manager's cabin.	Water drawn into burned logs standing in the stream.	15 field crescents 3 silvery blues, margined white on one post Spring azure, persius, field crescent, gorgone crescent, silvery blue on stump (photo). Spring azure (photos) showing exudate from carbonaceous waters. Jan Chu, Cathy and Donn Cook, Jean Morgan								
June 3, 2004 Geer Canyon 9:00am-11:30am Full sun, cloudy at noon; 20-21 deg C			20 puddling on road: blues, duskywings, crescents - Puddling on dark dirt beside stream: 10 pale swallowtails - Large marble nectaring on tall mustard Jan Chu, Jean Morgan, Susan Harris								
June 11, 2004 Lichen Trailhead 9:30-10:30 am Windy, chilly; 16.5 deg C											Jan Chu, Cathy and Donn Cook
June 12, 2004 Lichen Trailhead, streamside, road. 70% cloudy; 16.5 deg C	Boisduval blue egg on lupine, tiny caterpillar on lupine										Jan Chu, Cathy and Donn Cook
August 12, 2004 Plumely Canyon 9:15am-3:15pm 12-14 deg C, full sun			Sylvanoides nectaring on monarda, solidago, white aster - Blue was greyish and very tiny (female?) - pulchella (photo) - Pine white (photo) - Northern crescents puddling in great numbers Jan Chu, Jean Morgan								

2004 Butterfly Survey
Caribou Ranch Open Space
Boulder County, CO

			Location:	Gate toward Switzerland trail	Gate	Gate to ponds	Gate toward Switzerland Trail
			Survey Dates:	29-Jun	10-Jul	18-Jul	5-Aug.
#	Number of species observed in 2004						
#	*Scientific Name*	Common Name		X = observed	Number of individuals observed		
1	*Parnassius smintheus*	Rocky Mountain Parnassian		X		1	
2	*Papilio zelicaon*	Anise Swallowtail		X			
3	*P. rutulus*	Western Tiger Swallowtail		X		3	
4	*Pieris marginalis*	Margined White		X		2	
5	*P. rapae*	Cabbage White				5	
6	*Euchloe ausonides*	Large Marble					1
	white sp.					1	
7	*Colias eurytheme*	Orange Sulphur				2	
8	*C. alexandra*	Alexandra's Sulphur		X	1	53	20
9	*Nathalis iole*	Dainty Sulphur				3	1
	sulphur sp.				1		
10	*Lycaena rubidus*	Ruddy Copper				1	4
11	*L. helloides*	Purplish Copper				2	2
12	*Callophrys eryphon*	Western Pine Elfin		X			
13	*Strymon melinus*	Gray Hairstreak			1		
14	*Hemiargus isola*	Reakirt's Blue				1	
15	*Everes amyntula*	Western Tailed-Blue		X			
16	*Celestrina "ladon" sidara*	Spring Azure		X			
17	*Glycopsyche lygdamus*	Silvery Blue		X			
18	*Euphilotes ancilla*	Rocky Mountain Dotted-Blue				6	
19	*Plebejus saepiolus*	Greenish Blue				5	
20	*P. icarioides*	Boisduval's Blue		X	1	5	3
21	*P. lupini lutzi*	Lupine Blue		X		11	1
	Blue sp.					8	
22	*Euptoieta claudia*	Variegated Fritillary				1	
23	*Speyeria aphrodite*	Aphrodite Fritillary				1	
24	*S. hesperis*	Northwestern Fritillary					1
	fritillary sp.			X	1		

2004 Butterfly Survey
Caribou Ranch Open Space
Boulder County, CO

			Location:	Gate toward Switzerland trail	Gate	Gate to ponds	Gate toward Switzerland Trail
			Survey Dates:	29-Jun	10-Jul	18-Jul	5-Aug.
#	Number of species observed in 2004						
#	*Scientific Name*	Common Name		X = observed	Number of individuals observed		
25	*Chlosyne nycteis*	Silvery Checkerspot		X			
26	*C. palla*	Northern Checkerspot		X		8	
27	*Poladryas arachne*	Arachne Checkerspot				1	
	checkerspot sp.					3	
28	*Phyciodes cocyta*	Northern Crescent		X		13	
29	*P. pulchella*	Field Crescent		X			
30	*Polygonia gracilis zephyrus*	Hoary Comma				2	
31	*Limenitis weidemeyerii*	Weidemeyer's Admiral				3	2
32	*Coenonympha tullia ochracea*	Ochre (Common) Ringlet		X		5	
33	*Cercyonis oetus*	Small Wood Nymph				4	26
34	*Oeneis chryxus*	Chryxus Arctic		X	2	2	
35	*Erynnis persius*	Persius Duskywing		X		2	
36	*Piruna pirus*	Russet Skipperling				29	6
37	*Hesperia colorado*	(Western) Common Branded Skipper		X			
	H. pahaska	Pahaska Skipper		X ? Too high			
	skipper sp.					1	
**	Number of species observed in 2004 = 40						

2004 Butterfly Survey
Caribou Ranch Open Space
Boulder County, CO

	NOTES:						
	June 29, 2004 Gate toward Switzerland Trail 9:15am-12:15pm Partly Cloudy 18-21 deg C						Cathy and Donn Cook
	July 10, 2004 Gate; Rain 11:30 am -12 noon						Jan Chu, Amy, ASA and Jeremy Hurst
	July 18, 2004 Inside gate to pond 9:00 - 1:00 pm		Margined white was old; Greenish Blue was very tiny; Reakirt's Blue (female); 8 blues puddling.				Jan Chu, Jean Morgan, Larry Crowley
	August 5, 2004 Overcast						Jan Chu, Cathy and Donn Cook, Larry Crowley

Cabbage white on wax currant leaves

Pine white female on ponderosa needles

Indra swallowtail

Anise (zelicaon) swallowtail

Silvery blue (dorsal view) on scat

Silvery blue (ventral) on scat

Common Checkered skippers (mating)

Spring azure exuding liquid droplets. Another blue shows inte in the waste containing minerals.

Field crescent, silvery blue, other blues on a charred stump in the stream. They are imbibing liquid and minerals.

Field crescent, icelus duskywing, others

Taxiles skipper (male) on the watch for female.

Bronze roadside skipper

Brushfoots *(Nymphalidae)* *(cont.)*

___Common Alpine (M)
Erebia epipsodea
___Chryxus Artic (M)
Oeneis chryxus
___Uhler's Artic (M)
Oeneis uhleri

Skippers *(Hesperiidae)*

___Silver-spotted Skipper (M)
Epargyreus clarus
___Dreamy Duskywing (E,M)
Erynnis icelus
___Persius Duskywing (M)
Erynnis persius
___Common Checkered-skipper
Pyrgus communis (M)
___Garita Skipperling (M)
Oarisma garita
___Pahaska Skipper (M)
Hesperia pahaska
___Woodland Skipper (L)
Ochlodes sylvanoides
___Taxiles Skipper (M)
Poanes taxiles
___Dun Skipper (M)
Euphyes vestries

Heil Valley Ranch is managed by the Boulder County Parks and Open Space Department. For further information or requests for interpretive programs, phone 303-441-3950.

Boulder County Parks and Open Space Department
2045 13th Street
P.O. Box 471
Boulder, CO 80306

Heil Valley Ranch

BOULDER COUNTY PARKS AND OPEN SPACE

BUTTERFLIES

Photo by Cathy Cook

The variety of habitats at Heil Valley Ranch – grasslands, shrublands, woodlands, forests, canyons, riparian, and trails – support an abundance of butterflies.

Seasons:
E = early (April-May, June-1st wk)
M = mid-summer (2nd wk June-July)
L = late (August-September)

From field observations of the more commonly seen butterflies by Jan Chu, Cathy Cook and Donn Cook 2002 - 2004

Swallowtails *(Papilionidae)*

___Rocky Mountain Parnassian
Parnassius smintheus (M)
___Black Swallowtail (M)
Papilio polyxenes
___Anise Swallowtail (M)
Papilio zelicaon
___Indra Swallowtail (M)
Papilio indra
___Western Tiger Swallowtail
Papilio rutulus (M)
___Two-tailed Swallowtail (L)
Papilio multicaudatus
___Pale Swallowtail (M)
Papilio eurymedon

Whites, Sulphurs *(Pieridae)*

___Spring White (E)
Pontia sisymbrii
___Checkered White (M)
Pontia protodice
___Cabbage White (E,M)
Pieris rapae
___Large Marble (E,M)
Euchloe ausonides
___Olympia Marble (E)
Euchloe olympia
___So. Rocky Mtn. Orangetip
Anthocharis julia (E)
___Clouded Sulphur (M)
Colias philodice
___Orange Sulphur (M)
Colias eurytheme

Blues, Hairstreaks, Elfins *(Lycaenidae)*

___Blue Copper (M)
Lycaena heteronea
___Coral Hairstreak (M)
Satrium titus
___Behr's Hairstreak (M)
Satrium behrii
___(Green) Bramble Hairstreak
Callophrys affinis (E)
___Western Pine Elfin (E)
Callophrys eryphon
___Eastern Tailed-blue (M)
Everes comyntas
___Western Tailed-blue (M)
Everes amyntula
___Silvery Blue (E)
Glycopsyche lygdamus
___Melissa Blue (M)
Plebejus melissa
___Boisduval's Blue (M)
Plebejus icarioides
___Lupine Blue (M)
Plebejus lupini lutzi

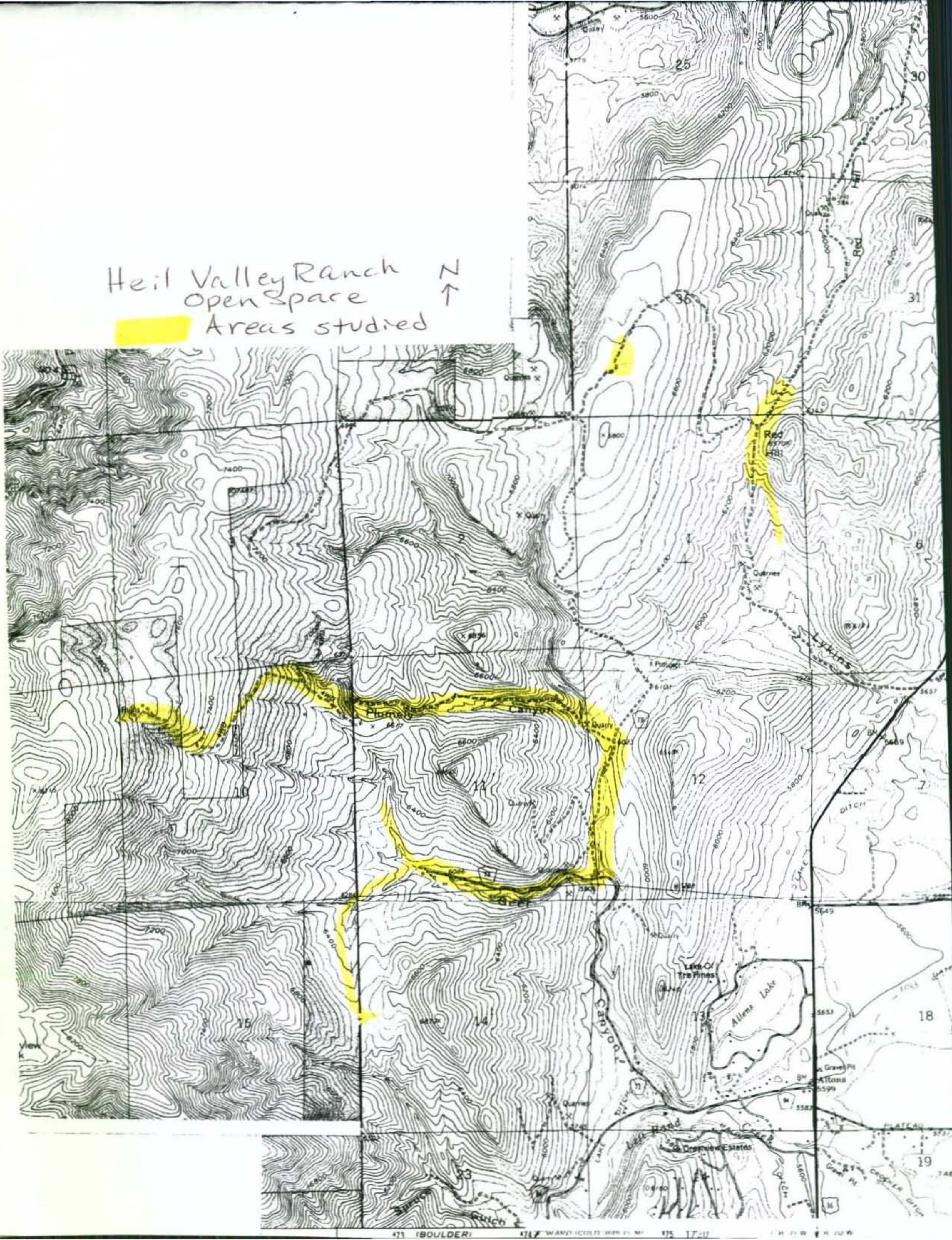
Brushfoots *(Nymphalidae)*

___Variegated Fritillary (M)
Euptoieta claudia
___Aphrodite Fritillary (M)
Speyeria aphrodite
___Edwards' Fritillary (M)
Speyeria edwardsii

Brushfoots *(Nymphalidae)* *(cont.)*

___Northwestern Fritillary (M)
Speyeria hesperis
___Gorgone Checkerspot (M)
Chlosyne gorgone
___Silvery Checkerspot (M)
Chlosyne nycteis
___Northern Checkerspot (M)
Chlosyne palla
___Pearl Crescent (E,M,L)
Phyciodes tharos
___Northern Crescent (M)
Phyciodes cocyta
___Field Crescent (M)
Phyciodes pulchella
___Hoary Comma (E,L)
Polygonia gracilis
___Mourning Cloak (E,M)
Nymphalis antiopa
___Red Admiral (M)
Vanessa atalantaa
___Painted Lady (M)
Vanessa cardui
___Weidemeyer's Admiral (M)
Limenitis weidemeyerii
___Ochre (Common) Ringlet
Coenonympha tullia ochracea (M)
___Common Wood Nymph
Cercyonis pegala (L)
___Small Wood Nymph
Cercyonis oetus (M,L)

(continued on back)


Heil Valley Ranch
Open Space
N
Areas studied
Plumely
Canyon
Red Hill
Lykins
Lake Of The Pines
Allens Lake
Altona
Left Hand
Creek
Spruce
Gulch
DITCH
Quarry
Quarries
25
30
31
36
2
1
6
7
10
11
12
13
14
15
18
19
23
24
(BOULDER)


Caribou Ranch
N
CARIBOU RANCH 1 CE
CARIBOU RANCH
CARIBOU RANCH 2 CE
CARIBOU RANCH CE
CARIBOU RANCH 2
CARIBOU RANCH CE
londe Willow Cart Conservation Area
Area studied in 2004