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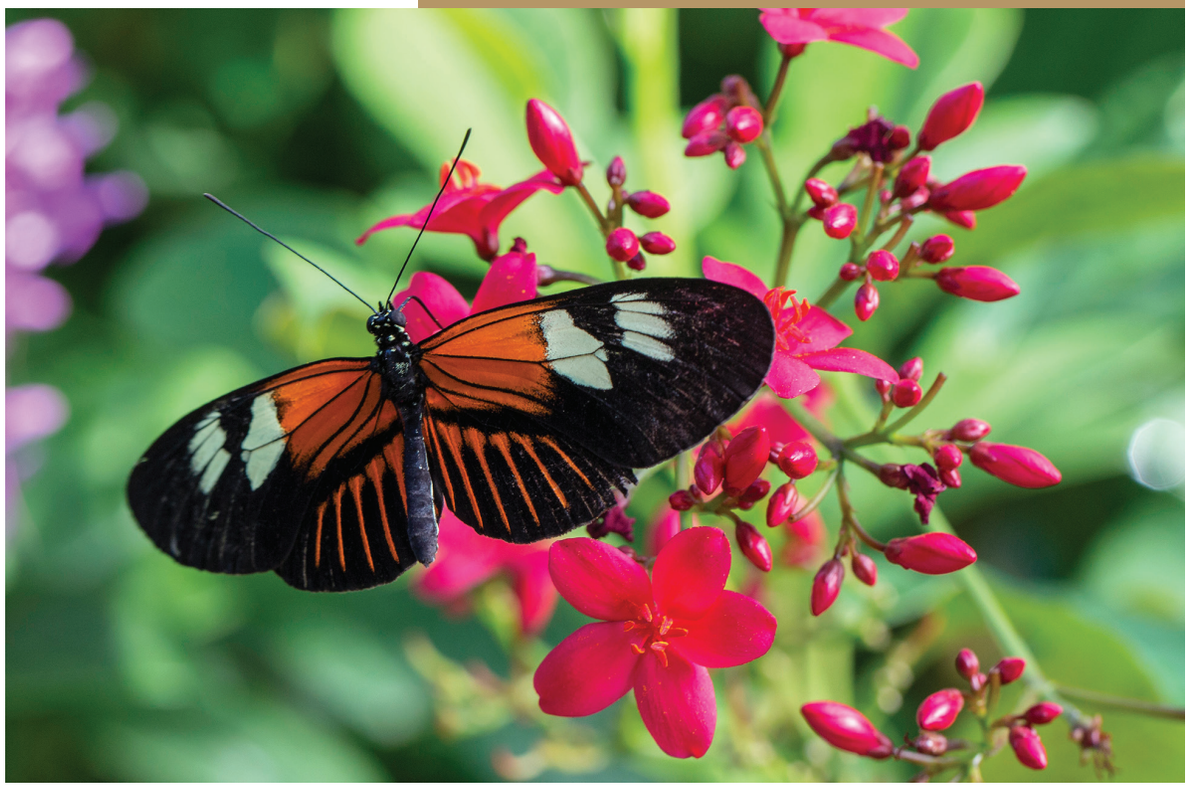

Program and Abstracts

31st Annual Meeting of the High Country Lepidopterists

October 9, 2021
Butterfly Pavilion, Westminster

Sarah Triplett (Ed.)

BUTTERFLY PAVILION

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31st Annual Meeting of the High Country Lepidopterists

October 9, 2021, Butterfly Pavilion, Westminster

Edited by
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PROGRAM

Saturday, October 9

9:00am:	**Arrive, check in**
9:30am–1:05pm:	**Contributed papers**
9:30am–9:50am:	**Shiran Hershcovich:** Sustainable Butterfly Farm in Sumatra
9:50am–10:10am:	**Adrian Carper:** Hostplant Effects on a Specialist Caterpillar-Parasitoid Interaction
10:10am–10:30am:	**Chuck Harp**: Update on the Distribution of the 'Once-Rare' *Schinia zuni* (Heliothinae), with New Records for the Moth Using Host-plant Observations from iNaturalist
10:30am–10:45am:	**Coffee Break**
10:45am–11:05am:	**S. Mark Nelson:** Duskywing butterflies (*Erynnis* spp.) of Roxborough State Park
11:05am–11:25am:	**Christian Nunes**, Andrew Warren, Stephen J. Cary & Chris Pague: A Butterfly Inventory of Fisher's Peak State Park
11:25am–11:45am:	**Chuck Harp:** C.P. Gillette Museum's Partnership with a Montana Wildlife Group Attempting to Sample Moths Across the Treasure State
11:45am–12:15pm:	**Lunch Break**
12:15pm–12:45pm:	**Paul A. Opler**: Is Colorado's Butterfly Fauna Stable?
12:45pm–1:05pm:	**Sarah Triplett** & **Shiran Hershcovich**: Butterfly Longevity Study
1:10pm–1:40pm:	**Business meeting** • Selection of 2022 meeting site • Other business
1:40pm:	**Explore Butterfly Pavilion exhibits and behind-the-scenes tours**

ABSTRACTS

Hostplant Effects on a Specialist Caterpillar-Parasitoid Interaction

Adrian Carper
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Alternate hostplants can affect caterpillar behavior, performance, and defensive traits, which could in turn impact interactions with natural enemies. We used the Baltimore checkerspot, *Euphydryas phaeton* (Nymphalidae), and its specialist braconid parasitoid, *Cotesia euphydryidis* (Braconidae), to explore how an introduced hostplant impacts parasitoid-host interactions in this sequestering, specialist caterpillar. We used a combination of observations in the field and experiments in the lab to determine if parasitoid pressures vary between populations using different hostplants. In the field, we observed parasitoid and parasitized caterpillar behavior, and collected caterpillars to rear parasitoids. In the lab, we tested for parasitoid preference for caterpillars reared on either a native hostplant, *Chelone glabra* (Plantaginaceae), or an introduced hostplant, *Plantago lanceolata* (Plantaginaceae). We then compared mortality and survivorship of parasitized and unparasitized caterpillars on both hostplants. We found that *C. euphydryidis*, while present at most aggregations of pre-diapause caterpillars in the field, was found in low frequencies in post-diapause larvae. Parasitized late instar larvae also showed interesting behavioral changes, enclosing themselves in silk nests in leaves of non-hostplants. In the lab, parasitoids preferred *E. phaeton* caterpillars reared on the introduced *P. lanceolata* compared to those reared on the native, *C. glabra*. However, caterpillars suffered twice the mortality when reared on *P. lanceolata* and were three times more likely to die when parasitized. This conflict between parasitoid preference and host survivorship could be mediated by hostplant chemistry, a mechanism currently under exploration. Future work studying the demographic consequences of these interactions could provide important insights into the role of multi-trophic interactions in driving novel host shifts and the evolution of herbivore diet-breadth.

Update on the Distribution of the 'Once-Rare' *Schinia zuni* (Heliothinae), with New Records for the Moth Using Hostplant Observations from iNaturalist

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Until it was rediscovered in 2009, *Schinia zuni* (Noctuidae, Heliothinae) was thought to be either extinct or merely an aberration of the closely related *Schinia meadi*. Known only from 5 specimens collected in 1950 and 1951, *Schinia zuni* had been one of a few long-lost species unfamiliar to many collectors and researchers. As the part of research for an upcoming treatment for the Heliothine moths of the western hemisphere, a dedicated search was launched for this enigmatic moth. Observers from iNaturalist have assisted in these searches by documenting valuable plant observations. The history of that search and subsequent study of its distribution and life history is discussed in this presentation.

C.P. Gillette Museum's Partnership with a Montana Wildlife Group Attempting to Sample Moths Across the Treasure State

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In December of 2019, a request was made to an iNaturalist observer from Missoula, Montana to consider saving specimens of a couple of moths posted from the previous season for inclusion to the C.P. Gillette Museum. Discussions of saving other specimens of moths from western Montana evolved into an agreement to begin a detailed study of moths across the state of Montana with the Gillette Museum due to receive up to 3,000 to 4,000 moths through the first season of 2020. By summer of 2021 the number sent to the museum has passed 13,000, making the Colorado State University's holdings of Montana moths the largest in the country.

The Northern Rockies Research and Education Services (NRRES) has been doing wildlife studies for several years on the 31,000-acre MPG Ranch south of Missoula, Montana, deep in the Bitterroot Mountains of western Montana. It is with their help that we continue to add valuable material from a poorly-known and undercollected region of the country.

This paper will introduce us to the long-term project to document the moths of the Treasure State of Montana.

Sustainable Butterfly Farm in Sumatra

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Tropical rainforests continue to be one of the world's most endangered habitats, facing great pressures from deforestation and development. Sustainable butterfly farming offers a method of addressing this concern, while also providing a green source of employment for the local community. Butterfly Pavilion is partnering with Wildlife Protection Solutions (WPS) in Sumatra, Indonesia to develop a new butterfly farm that will also help support conservation management of a protected area in the threatened Leuser Ecosystem which shows high rates of biodiversity and endemism.

Duskywing butterflies (*Erynnis* spp.) of Roxborough State Park

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Roxborough State Park is in the foothills of Douglas County, Colorado. Butterfly surveys in the 1980s and more recently from 2018–2021 have documented nine *Erynnis* species along a standard pathway (ca. 6 miles in length) through the park. Five of these are uncommon; *E. persius* was only occasionally collected, while *E. funeralis*, *E. pacuvius*, and *E. icelus* were detected on single occasions. *Erynnis tristis* was also only collected once (in 2019) and is considered a state record.

Erynnis afranius and *E. horatius* were documented in low numbers most years with two flights per year (bivoltine). *Erynnis brizo* is an early season univoltine duskywing that is also present in low numbers.

Erynnis telemachus is the most abundant duskywing and, similar to *E. brizo*, is also univoltine. Weather in 2020 and early 2021 may have impacted duskywing abundance and decreased abundance was especially noticeable in *E. telemachus*.

A Butterfly Inventory of Fisher's Peak State Park

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Rising to an elevation of 9,632 ft, Fisher's Peak is the apex of the Raton Mesa, a unique biogeographic region straddling the Colorado–New Mexico border that supports a high level of floral and faunal endemism. In 2019, a coalition of conservation organizations, including The Trust for Public Lands, Great Outdoors Colorado, and The Nature Conservancy, purchased the 20,000 acre Crazy French Ranch, a storied property stretching from Raton Pass north to Trinidad, Colorado on the west flank of the mesa. The parcel was soon transferred to Colorado Parks and Wildlife, enshrining a diverse suite of habitats into the public trust as Fisher's Peak State Park. From 2019–2021, a rapid ecological assessment of the Park's diurnal Lepidoptera was undertaken in order to clarify the status of endemic taxa and to formulate a baseline butterfly species list. The results were incorporated into a collaborative Open Standards for the Practice of Conservation natural resource and recreation report, Guidance for a Resilient Park: Conservation Priorities and Recreation Opportunities at Fisher's Peak State Park. This report ensures that butterflies and butterfly habitats will be highlighted as important resources deserving careful management. The specifics of the inventory, including the status of conservation targets such as *Oeneis alberta capulinensis*, *Lon hobomok wetona*, and *Speyeria hesperis ratonensis*, will be described here in detail.

Is Colorado's Butterfly Fauna Stable?

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Our understanding of Colorado's butterfly fauna, as indicated by periodic assessments of the State's fauna, has continued to grow and change over the course of the past 100+ years. Gillette (1898) list was a short list of the species known at the time, and Frank Cross (1937) published a book length treatment. The classic Colorado Butterflies (1954–1956) by F.M. Brown and assisted by Donald Eff and Reverend Bernard Rotger, approached our modern level of knowledge. Brown listed 248 'species' but 17 were erroneously reported, now considered subspecies or misidentified leaving a list of 231 which is comparable to present-day concepts. Mike Fisher's (2005–2017) treatment is the most recent and the most detailed.

The state list may grow by the description of new species, by the documentation of strays or colonists, by changes in taxonomic status of subspecies or populations, and by range extensions from adjacent states. There are no known extinctions of Colorado's resident species.

At the end of his publication Mike Fisher summarizes the state list as 283 species not including two more southern species not previously reported in Colorado.

Over the past few decades genetic studies of butterflies, based primarily on DNA analysis, have contributed objective data to our understanding of Colorado's butterflies. These kinds of studies will continue to contribute to our future knowledge. I am aware of five additional species that have been or should be added to Colorado's fauna bringing the state's list to 290 species. With the adddition of 1 more species per

year, it is likely that the state's list will almost reach 300 species by the end of the decade.

A similar process is taking place with the North American fauna (Opler, unpublished) where the current list stands at about 810 species. With 3–4 species being added each year, on average, the North American list should reach 900 species by mid-entury.

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Butterfly Longevity Study

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Butterfly conservatories offer a unique opportunity to understand and monitor life history traits of lepidopteran species. To track species longevity, imported tropical butterflies were marked upon emergence from chrysalides and then released into the exhibit flight house. Regular recaptures occurred from September 2019 through August 2021. We found significant interspecies variation in longevity and recapture rate under exhibit conditions, as well as intraspecies variation in these parameters. The data from this study has implications for exhibition species selection based on their cost-effectiveness and guest experience value.

29 Years High Country Lepidopterists' Meetings

1990: 1st meeting (High Plains Lepidopterists), September 14–15, Holiday Inn University Park, hosted by Colorado State University, Entomology Department, Fort Collins
1991: 2nd meeting (High Plains Lepidopterists), October 4–5, University of Colorado Museum, Boulder
1992: 3rd meeting, September 11–12, Denver Museum of Natural History, Denver
1993: 4th meeting, September 18, University of Wyoming, Department of Entomology Insect Collection, Laramie
1994: 5th meeting, October 28–29, Holiday Inn University Park, hosted by C.P. Gillette Museum of Arthropod Diversity Colorado State University, Fort Collins
1995: 6th meeting, October 20–22, University of Colorado Museum, Boulder
1996: 7th meeting, October 25–26, Butterfly Pavilion, Westminster
1997: 8th meeting, September 19–20, Holiday Inn University Park, hosted by C.P. Gillette Museum of Arthropod Diversity Colorado State University, Fort Collins
1998: 9th meeting, October 23–24, University of Colorado Museum, Boulder
1999: 10th meeting, October 22–23, C.P. Gillette Museum, Colorado State University, Fort Collins
2000: 11th meeting, November 3–4, C.P. Gillette Museum, Colorado State University, Fort Collins
2001: 12th meeting, September 7–8, C.P. Gillette Museum, Colorado State University, Fort Collins
2002: 13th meeting, October 11–12, University of Colorado Museum, Boulder
2003: 14th meeting, November 7–8, C.P. Gillette Museum, Colorado State University, Fort Collins
2004: 15th meeting, November 5–6, University of Colorado Museum, Boulder
2005: 16th meeting, October 21–22, C.P. Gillette Museum, Colorado State University, Fort Collins
2006: 17th meeting, October 27–28, University of Colorado Museum, Boulder
2007: 18th meeting, November 2–3, C.P. Gillette Museum, Colorado State University, Fort Collins
2008: 19th meeting, October 24–25, University of Colorado Museum, Boulder
2009: 20th meeting, October 23–24, Denver Museum of Nature & Science, Denver
2010: 21st meeting, November 5–6, C.P. Gillette Museum, Colorado State University, Fort Collins
2011: 22nd meeting, October 14–15, University of Colorado Museum, Boulder
2012: 23rd meeting, October 20, Butterfly Pavilion, Westminster
2013: 24th meeting, November 1–2, C.P. Gillette Museum, Colorado State University, Fort Collins
2014: 25th meeting, November 7–8, Denver Museum of Nature & Science, Denver
2015: 26th meeting, October 23–24, University of Denver, Denver
2016: 27th meeting, November 11–12, University of Colorado, Boulder
2017: 28th meeting, December 1–2, C.P. Gillette Museum of Arthropod Diversity, Department of Bioagricultural Sciences, Colorado State University, Fort Collins
2018: 29th meeting, November 17, Butterfly Pavilion, Westminster
2019: 30th meeting, October 11–12, Denver Museum of Nature & Science, Denver
2020: Covid year, no meeting
2021: 31st meeting, October 9, Butterfly Pavilion, Westminster

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Cover photo: *Heliconius melpomene aglaope* on *Jatropha integerrima* flowers in Wings of the Tropics exhibit, Butterfly Pavilion, Westminster, Colorado. Photo: Cliff DeJong.

Frank Krell, PhD, Editor and Production

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