



NEW WESTERN
NORTH AMERICAN BUTTERFLIES

BY DR. JAMES A. SCOTT
60 Estes Street, Lakewood, Colorado 80226,

and one taxon by MICHAEL S. FISHER
6521 S. Logan Street, Littleton, Colorado 80121

Abstract. New subspecies and other geographic taxa from western U.S. are described and named.

INTRODUCTION

Scott (1981) named various new subspecies of butterflies from western U.S. Since then a few other butterflies have come to my attention that deserve to be named. They are named below.

NEW TAXA

***HIPPARCHIA (NEOMINOIS) RIDINGSII WYOMINGO* SCOTT 1998,
NEW SUBSPECIES (OR SPECIES?)**

(Figs 1-2)

DIAGNOSIS. This subspecies is distinguished by its very late flight, L Aug. to M Sept., versus June for ordinary *ridingsii* (Edwards), and by its mate-locating behavior (at least in central Wyoming including the type locality), in which males perch in swales in early morning to await females, versus ridgetops for ordinary *ridingsii*. This butterfly is not a freak late-season occurrence; it flies every year, is very widespread in distribution, and around the end of August it is the commonest butterfly in Wyoming (except perhaps *Hesperia comma*). I examined valvae of this ssp. and June *ridingsii*, and the first few comparison pairs of examined males had a different curl on one dorsal shoulder of the valva, but as more additional males were examined, some were found to have the shape of the other, and after a dozen males of *wyomingo* were examined and compared to a dozen June *ridingsii*, it appeared that this trait was sufficiently variable that it is not a consistent difference. Possibly *wyomingo* is a separate species from June *ridingsii*, because its much later flight and different mating location virtually eliminate any likelihood of their interbreeding in nature, though potential interbreeding (in lab) might be possible (behavioral and physiological reproductive isolation may be absent). Rearing studies have proven that June *ridingsii* has a very slow developmental rate, the complete life cycle requiring more than 3-4 months even in lab, so it is not physiologically possible for the June generation found in most of the *ridingsii* range to lay eggs that would develop in nature into this late-summer subspecies during the same single season. Further proof is the observation that *ridingsii* has a two-year biennial life cycle in some locations such as Sonora Pass in the Calif. Sierra Nevada, reemphasizing that *N. ridingsii* has a two-year or at least a one-year life cycle, but is nowhere multigenerational, thus this late-summer subspecies cannot develop from the June generation. Wing pattern of *wyomingo* does not appear to differ significantly from some June *ridingsii*, and resembles the wing pattern of many June populations that occur across the area. But the problem with *Hipparchia (Neominois)* wing pattern is its great variation from one population to another, and this geographic variation was not adequately captured by the subspecies named by Austin (1986). For instance the June adults at Glenwood Springs, Garfield Co. Colo., are giant in size, and some June populations in Moffat Co.

Glenwood Springs, Garfield Co. Colo., are giant in size, and some June populations in Moffat Co. Colo. (Diamond Peak) are paler (creamier), as are some June populations in S Utah (S of Hatch), yet all these were placed in the same ssp. by Austin. Austin's northern Great Plains ssp. *minimus* Austin was named only because of its average smaller size, and a subspecies based only on one trait such as size is not a very good subspecies, when size varies greatly elsewhere and might be partially influenced by colder northern temperatures. Thus the named ssp. of *Hipparchia* (*Neominois*) are weak to worthless, as their wing pattern differences are not great and are variable between individuals and populations. The only current subspecies that seems to be reliably distinctive is *pallidus* Austin from the Sierra Nevada and White Mts., which is consistently whiter and smaller. Even populations of *wyomingo* differ in coloration. For instance the populations WNW Douglas Wyo. (Aug. 18, 1993) and around Casper Wyo. (Aug. 25, 1993) look a little darker (like many central Colo. June populations), while a population WNW of Midwest in Natrona Co. Wyo. (Aug. 18, 1993) is tawnier and larger, and the population at Sinks Canyon Fremont Co. Wyo. 5400' (Aug. 21-Sept. 1, 1960-1963) is paler (creamier) in coloration. Thus, I have great doubts that the interpopulation differences in coloration in this species correctly delineate valid distinct biological units or subspecies. But biologically, this late-summer *wyomingo* may be the most distinctive subdivision within *Hipparchia* (*Neominois*), despite its lack of wing pattern differences.

In some areas, June *ridingsii* populations and Aug.-Sept. *wyomingo* populations fly at or very near the same localities, for instance in northern Larimer & Weld Cos. Colo.

Scott (1993) showed that the larva of *Neominois* is amazingly similar to that of European *Hipparchia statilinus*, which—together with the taxonomic similarity of *Neominois* to *Hipparchia* previously demonstrated by Miller (1968)—suggests that *Neominois* is merely the American representative of European *Hipparchia*, so I treat *Neominois* as a subgenus of *Hipparchia* here.

FLIGHT PERIOD. Always flies from mid Aug. to mid Sept. **MATE-LOCATING BEHAVIOR:** At the type locality, males engaged in perching behavior (resting at characteristic sites and frequently returning to those sites after investigating passing individuals) by perching on sagebrush or on the ground in a small rather flat gently-sloping **valley bottom** from 8:55-9:30 and investigating eight other males and one female there then. At Casper Wyo., a male perched and chased another male at 8:54 a.m. in a broad valley bottom, two males chased each other at 11:19 on a sloping flat, and a male chased another male at 11:50 on a gently-sloping flat. Later in the day (11:30-12:00) WNW Douglas Wyo., males did not display perching behavior. And at 11:30-12:00 in Moffat Co. Colo. males did not display mate-locating behavior. In contrast, Scott (1973) found that June populations mate-locate by perching on the tops of **ridgetops and saddles** (SE of Salida, in Chaffee/Fremont Cos. Colo.), and my observations since then at other sites in Colo. continue to show that June males perch on ridgetops, NOT in valley bottoms. The behavior of *N. ridingsii* has misled many people. Mate-locating behavior occurs only in early morning in this species (usually approximately 7:50-11:00 standard time). Males are quite active at this time, and from rest males dart out at other butterflies and fly about the area sometimes before finding another perching spot. Later in the day, however, males mostly just rest and seldom fly (they do not mate-locate), and at this time people walk through the habitat and encounter *ridingsii* only when adults are disturbed and make escape flights, which resemble that of some grasshoppers such as the Carolina Grasshopper (causing Scott 1986 to use the common name Grasshopper Satyr). These people--based on superficial incomplete observations--then report that *ridingsii* seldom flies, and flies only when disturbed; but of course they are wrong, as males are quite active during the early-morning mate-locating period. **FLOWER-FEEDING:** One male fed on *Chrysothamnus nauseosus*. In very hot weather, adults rest on top of tall plants to avoid the hot ground, or rest in the shade of bushes. **RANGE AND HOSTPLANT:** Widespread throughout lowland **Wyoming**, from around Cheyenne, north to Douglas and Casper and to near Gillette, west to Sinks Canyon W of Lander (where I found it Aug. 21, 1960, and Sept. 1, 1963), and no doubt ranges continuously southward from there to NW Colo. It also occurs in adjacent states. In **Colorado** it occurs east of the main Rockies in Larimer Co. (near Virginia Dale) and Weld Co. (just S of Cheyenne Wyo.), and occurs on the sage flats in the northwest part of the state in Moffat Co. (just S of Baggs Wyo.). It even ranges northwest to **Montana** (Gallatin Co., Buffalo Jump Road, 4 mi. S Logan, sandy openings among sagebrush & cacti, 4400', Aug. 24, 1996, Chuck Harp & Chris Harp). In **Utah** it occurs on south-facing slopes in canyons of the Wasatch Mts. just east of Salt Lake City and Provo, where Wayne Whaley observed ovipositions on *Agropyron* (*Elymus*) *spicatum*. **TYPE LOCALITY AND TYPES:** type locality 6 miles WNW Midwest, along I-25, Natrona Co. Wyo., Aug. 18, 1993 (holotype [in BMNH], allotype, and various paratypes), many other paratypes from various sites in Wyoming (including 12 mi. SE Natrona, Natrona Co., Aug. 25, 1993; 11 mi. N Casper, Aug. 25, 1993; Cheyenne River Divide and SE Ross, Converse Co. Aug. 17, 1994; E junction 387 X 192, Johnson Co. Aug. 17, 1994; Cheyenne, Laramie Co. Aug. 22, 1994; Lone Tree Can., Goshen Co. Wyo. Aug. 22, 1994 (J. Scott and Ray Stanford), E Douglas, Converse Co., Aug. 24, 1994; 8 mi.

NE Glenrock, Converse Co., Aug. 24, 1994; Casper Aug. 24, 1994; and Evansville, Natrona Co. Aug. 24, 1994) and Colorado (9.5 mi. S Baggs, Moffat Co., Aug. 18, 1994), all caught mid Aug.-mid Sept.

CHLOSÝNE WHITNEYÍ (INCLUDING DAMOETAS) GEOGRAPHIC VARIATION

This species has some geographic variation that deserves describing, because there is a current misconception that all Rocky Mountain populations are ssp. *damoetas* and have nothing in common with California *whitneyi* populations. On dorsal forewing, two dark bands are notable because they differ geographically: the “median” dark band extends from the end of the discal cell posteriorly and basally, then bends distally again to the rear margin; the “postmedian” band is mostly weaker, and extends from costa posteriorly and a little basally toward rear margin; (then the “submarginal” blackish band is inside the margin).

California ssp. *whitneyi* (= *malcolmi* [Comstock]) populations have the postmedian upf band much more continuous, and females tend to be paler on ups.

Colorado ssp. *damoetas* (Skinner) populations have more rounded fw, whereas the fw margin is indented in all other ssp. (including California, Alberta, Wyoming) The upf postmedian dark band is more interrupted than Calif. *whitneyi*. The ups is much darker than other populations, and very-blackish specimens (esp. females) are very common.

CHLOSÝNE WHITNEYÍ ALTALUS SCOTT 1998, NEW SUBSPECIES (Figs. 3-4)

DIAGNOSIS. **Alberta** populations appear to be a little intermediate between ssp. *whitneyi* (= *malcolmi*) from the Sierra Nevada of California, and ssp. *damoetas* from Colorado. They have the fw shape of Calif. populations, and are more uniform orangish on the ups than Colo. *damoetas*. They have the anterior part of the median band joined to the posterior part of the postmedian band in most adults, while the anterior part of the postmedian band is short and broken and so not connected to the rear part. **TYPES AND TYPE LOCALITY.** Nigel Pass, Aug. 2, 1966, holotype male BMNH, a dozen paratype males and females from type locality and other locations in the Alberta alpine zone (down to timberline). **NAME** is based on the British Columbia-ALberta-Montana **TALUS** range & its habitat on talus slopes.

CHLOSÝNE WHITNEYÍ WINDRIVER SCOTT 1998, NEW SUBSPECIES (Figs. 5-6)

DIAGNOSIS. **Wind River Mts. Wyoming** populations have the central parts of upf of males paler (more ochre) because the postmedian upf dark band is weak; the fw is pointed like *whitneyi* and *altalus*. **TYPES AND TYPE LOCALITY.** Near Bears Ears Mountain, 11,000', Wind River Mts., Wyo., Aug. 14, 1983, holotype BMNH, about a dozen paratype males and females from same and nearby localities. **NAME** is based on Wind River Mountains.

BOLORIA IMPROBA NUNATAK SCOTT 1998, NEW SUBSPECIES

DIAGNOSIS. This ssp. is characterized by the creamy middle third of upf and uph. The postmedian upf blackish-brown spots are smaller than those of all other subspecies (ssp. *improba* [Butl.], *B. improba harryi* F., *B. improba acrocneema* G. & S.). The fw is shorter than all other ssp., but the fw apex is pointed unlike ssp. *acrocneema*. The blackish-brown upf and uph wing bases are wider than those of ssp. *harryi* and ssp. *acrocneema* (wing pattern of the latter two ssp. is very similar to each other). *B. i. nunatak* is well figured in the recent book by C. Bird et al., which I will not cite formally here because the book has an incredibly large number of errors in illustrations and text (many dozen photos are misidentified, dozens of hostplant errors are listed, etc. etc., documented in a review I can send upon request)(additionally the perpetrators of that book reprinted the blotch maps from my copyrighted book without permission). This ssp. has nothing to do with *youngi* (Holl.), which represents a slightly yellower individual variant of *B. improba improba*, not a ssp. This ssp. presumably uses low *Salix* as hostplants, but Alberta lepidopterists have failed to determine any biological information on the taxon thus far. **TYPE LOCALITY and TYPES:** Holotype male (left antenna only present) and paratype male (both antennae present) from Torrens River, Alberta.; paratype male Hoff Range, Alta.; all in AMNH. **RANGE** the alpine zone

in Alberta, in late June-July. **NAME** is from the presumed Pleistocene refuge for this species, as the butterfly evidently survived the Pleistocene on isolated vegetation on mountain ridges that rose up above the valley and plains glaciers on the eastern edge of the Rocky Mts. in Alberta. This edge of the mountains was evidently less glaciated than the mountains westward in Alberta and British Columbia, which were closer to the sea so received much more precipitation that buried them under ice and snow and converted the westward mountaintops into a lifeless freezer. There was evidently a narrow ice-free corridor just east of the mountains in Alberta, except during the very maximum extent of the glacial advances, a corridor that separated the British Columbia Ice Sheet from the massive Hudson Bay Ice Sheet that covered most of North America. This usually-ice-free corridor was caused by a rain-shadow effect as winds blowing eastward over the mountains deposited most of their moisture westward, and warm chinook winds blowing down from the mountains dried out the nearby plains.

***APODEMIA MORMO PUEBLO* SCOTT 1998, NEW SUBSPECIES**
(Figs. 7-8)

DIAGNOSIS. This ssp. resembles *mejicanus* (Behr) of S Ariz.-W Tex., except the basal two-thirds of uph has less orange. It resembles *cythera* (Edw.), but there is less orange on the rear of upf than on *cythera*, and the upf color is redder than the orangish upf of *cythera*. Larvae eat *Eriogonum jamesi* (this plant was formerly known as *E. jamesi* var. *jamesi*, but the only other Colo. variety of *E. jamesi* is var. *flavescens*, which is now thought to be a synonym of *E. flavum*). **NAME** is from its range on the plains and mountains near Pueblo in S Colo. **TYPE LOCALITY** and **TYPES.** Holotype, allotype (both BMNH), and many paratypes S of Security, El Paso Co. Colo., Aug. 11, 1971. At the type locality adults fly on the abundant *Eriogonum jamesi* growing on hills along I-25. Numerous other paratypes from south-central Colo. and north-central New Mex., all east of the continental divide including the northern part of San Luis Valley. The type locality of ssp. *mejicanus* is supposedly north of Mazatlan in Sinaloa Mexico, but the type was burned and topotypes are unavailable, so I will assume that the name *mejicanus* applies to the lowland S Ariz. phenotype. **RANGE** is south-central Colo., where it occurs on the plains, in the mountains on the eastern slope of the continental divide, and in parts of the San Luis Valley.

***SATYRIUM SYLVINUS NOOTKA* MICHAEL S. FISHER 1998,**
NEW SUBSPECIES

(Figs. 9-10)

(common name **Northwestern Willow Hairstreak**)

DIAGNOSIS. Distinguished by its ventral wing ground color, which is gray without any tendency to white, and even has a slight brownish tint, whereas other described subspecies have whitish (varying geographically from grayish-white to pure white) ventral wing color (see Scott 1986). Ventral maculation is otherwise essentially like subspecies *sylvinus* (Bdv.). The upperside is somewhat-golden brown; fulvous overscaling is absent in males but is occasional on females but with subdued intensity and often concentrated into a small fulvous patch at the tornal-submargin of the forewing. The hindwing upperside usually has a single small fulvous spot or patch often accompanied by a second even smaller patch nearer the anal angle (though the second patch is sometimes conspicuous on the female, including on the allotype). Normally, the naming of a new subspecies is preferably done only with a thorough study of the group at hand. However, this phenotype is very distinctive in its basic ventral coloration (gray, versus some shade of whitish in all other ssp.) and occupies a large and separate range, and my (M. Fisher) studies of it for 20 years clearly show that it is distinct and worth naming. **HOSTPLANT.** Always found in association with willow (*Salix* species). **TYPES.** Holotype male and allotype female Wellington, Vancouver Island, British Columbia, Canada, collected by R. Guppy, July 5, 1969 (holotype) and July 12, 1969 (allotype), to be deposited in Natural History Museum of Los Angeles County. Additional type specimens are currently in collection of M. Fisher. **RANGE.** This subspecies, as noted by Scott (1986), is very distinctive and occupies an extensive range from the type locality on Vancouver Island British Columbia, south through Washington and Oregon to Siskiyou County California (Figs. 9-10), eastward through western Montana, and south into Idaho and Wyoming, where the southern limit appears to be Albany County, Wyoming (LaBonte Canyon). **GEOGRAPHIC VARIATION AND DISCUSSION.** Males are remarkably consistent in appearance throughout the range. Females from the Albany Co., Wyoming locale have more extensive fulvous suffusion on the upperside, a common trait of the Great Basin subspecies

currently referred to as *S. sylvinus putnami* (H. Edwards). This butterfly may be confused with Idaho and Montana specimens of *Satyrium acadica* (W. H. Edwards). Specimens of *nootka* have masqueraded in collections as both *S. acadica montanensis* and *S. acadica coolinensis* (both named by Watson and Comstock, the TL of the former “Montana” and the TL of the latter Coolin, Idaho). I (M. Fisher) have examined photographs of the types of both these taxa and confirm that they do in fact represent *S. acadica*, not *S. sylvinus* (Dr. Frederick Rindge, American Museum of Natural History, kindly loaned negatives of both taxa for prints). Unlike *nootka*, the dorsal coloration of *S. acadica* is gray, and the ventral hindwing of *acadica* has the blue patch on tornus much larger and capped with orange. **NAME.** Nootka is the Native American Indian tribe whose homeland occupied Vancouver Island as part of the Northwest Coast Indian Culture Area.

***EUPHILOTES BATTOIDES ANASAZI* SCOTT 1998, NEW SUBSPECIES
(Figs. 11-12)**

DIAGNOSIS. Identical to *Euphilotes battoides ellisii* Shields, and has the same hostplant, except the orange submarginal unshaded band is only about half as thick. In phenotype it appears to be similar to the undescribed *battoides* ssp. that flies in September in the Mojave Desert of California, although the differing hostplant of the latter and its disparate range probably means that they are not phylogenetically related. **HOSTPLANT.** *Eriogonum corymbosum* var. *velutinum*. **TYPES.** Holotype, allotype (both BMNH), and many paratypes Aztec, San Juan Co., New Mexico, Aug. 27, 1977, J. Scott. **RANGE.** Pinyon/juniper habitat in northwestern New Mexico, which is the center of distribution of the ancient Anasazi Indians, whose descendants are evidently today’s Pueblo Indians.

***PLEBEJUS LUPINI SPANGELATUS* BURDICK,
AND REINTERPRETING THE RELATIONSHIP BETWEEN *PLEBEJUS*
LUPINI AND *PLEBEJUS* *ACMON***

This Colorado alpine “variety” eats *Eriogonum flavum chloranthum* (whose name has been battered about by botanists as *E. flavum* var. *xanthum* and then *E. jamesi* var. *xanthum*). It resembles Olympic Mts. ssp. *spangelatus* very closely (reduced uph orange marginal band, and darker-gray unshaded), and the genitalia of both Wash. and Colo. *spangelatus* resembles ssp. *lutzi* (dos P.). Ssp. *spangelatus* could be darker only because of colder alpine temperatures; but rearing studies have shown that all altitudinal “subspecies/varieties/forms” are actually genetically different and are not environmental forms, so *spangelatus* would seem to be a genetically distinct subspecies. I have seen a few adults of it from the alpine zone of Alberta.

After dealing with this group for several decades, I have concluded that some of the subspecies now lumped into *Plebejus acmon*, must be switched to *P. lupini*. Currently, ssp. *lutzi* and *texanus* (*Goodpasture*) and *spangelatus* are placed into *Plebejus acmon* (Westw. & Hew.). But these three taxa actually seem to belong to *Plebejus lupini* (Bdv.), because their wing pattern is much more like *lupini* (the *texanus* wing pattern is almost identical to *lupini*), and their genitalia traits resemble *lupini* in as many ways as they resemble *acmon* (when I examined genitalia of *acmon*, *lupini*, and *lutzi* years ago, for instance, I thought that the dorsal view of uncus of *lutzi* resembled that of *lupini* more than *acmon*).

There are many reasons for switching these subspecies to *P. lupini*: **A.** *P. acmon* ranges through Oregon and Washington at low altitude where it shows little difference from Calif. *acmon*. For instance, I have a series of typical *acmon* from Chelan Washington, that is identical to Calif. *acmon* and seems to show no intergradation with the *lutzi* that is reported to inhabit that Washington area. In Ore.-Wash., *lutzi* occurs at higher altitudes, in mountains (*Goodpasture* 1973b p. 474). *Goodpasture* (1973b, map 2) suggests that *acmon* and *lutzi* intergrade somewhat in Ore.-S Wash., including in genitalia, but the intergradation must not be extensive if pure *acmon* reaches all the way to N Wash. Such intergradation between *acmon* and *lutzi* may be no more extensive than the intergradation between *P. acmon* and *P. lupini* at Crater Lake Ore. (*Goodpasture* 1973b Figs. 11-18). Intergradation seems to be rather frequent between all members of the entire *P. acmon* complex, even between *P. neurona* and *P. lupini* (*Goodpasture* 1973b p. 481). **B.** *P. lupini lupini* intergrades extensively with *lutzi* (*Goodpasture* 1973b, map 3) in Ore.-Wash. (where most specimens showed intermediacy) and in Nevada. **C.** *P. lupini* shares the same wing pattern (the same dark border edging the uph orange band of males, the same wide dark upf margin of males, etc.) with *lutzi* and *texanus*. *Goodpasture* (1973a) even found that the Mono Pass Calif. population of *P. lupini lupini* was identical in wing pattern to *texanus*. **D.** The uncus of *lutzi/texanus* in dorsal

view resembles *lupini* more than *acmon*. **E.** Some individuals of *texanus* from Schillings Spring Colo. have a female sterigma that is identical to *lupini* (Goodpasture 1973a), and the female sterigma of *texanus* in general resembles that of *lupini* much more than *acmon*. **F.** Small series examined from desert mountains of SE Calif. include both ssp. *acmon* and *texanus* but not intermediate phenotypes (Goodpasture 1973a), which suggests that *P. acmon* and *P. lupini texanus* are distinct species. **G.** The habitat of *lutzi* and *texanus* is more similar to that of *lupini* than of *acmon*. **H.** Ssp. *acmon* is polyphagous, eating legumes as well as *Eriogonum*, and ovipositing on leaves as well as flowers, whereas *lupini* and *lutzi* and *texanus* eat only *Eriogonum*, and oviposit only on flowers (Goodpasture 1973b p. 478, and my data).

Evidently there is character displacement in California, where *acmon* and *lupini* are rather different from each other and have diverged away from *lutzi/texanus* in some characters. But the evidence suggests that *lupini*, *lutzi*, and *texanus* have become a separate species from *P. acmon*. Therefore, *P. acmon* ranges only from Baja Calif. to lowland central Wash., and has no subspecies, while *P. lupini* is widespread in western U.S. and Mexico, and is polytypic:

Plebejus acmon (Westwood & Hewitson)

Plebejus lupini (Bdv.)

ssp. *monticola* (Clemence)

ssp. *lupini* (Bdv.)

ssp. *lutzi* dos P., NEW COMBINATION

ssp. *spangelatus* Burdick, NEW COMBINATION

ssp. *texanus* Goodpasture, NEW COMBINATION

***AMBLYSIRTES AENUS MEGAMACULA* SCOTT 1998, NEW SUBSPECIES**

(Figs. 13-14)

DIAGNOSIS. Differs from other varieties of this species (ssp. *aenus* Edw., ssp. *linda* F., and form *erna* F.) by having the pale unih spots very large. **RANGE.** Occurs in southern Arizona, south into central Mexico. **TYPES AND TYPE LOCALITY.** Holotype male (BMNH) WSW Peña Blanca Lake, Santa Cruz Co. Ariz., July 30, 1986; many paratypes from S Ariz. **NAME.** The ending *-a* is added only to make the name sound pleasing; and is not a latin suffix, therefore the nomenclatural pedants who enjoy changing the sex of species/subspecies names to make them either homosexual or lesbian, but never heterosexual, should NOT change the ending to *-us*.

***HESPERIA COLORADO COLORADO* (SCUDDER)**

(Fig. 15)

There are some taxonomic problems currently clouding the identity of names in *Hesperia comma* and the related *Hesperia colorado*, which must be fixed here.

H. colorado was named by Scudder as *Pamphila colorado* (Mem. Boston Soc. Nat. Hist. 2:349 [1874], syntypes may be in MCZ), from a type locality of "Colorado, Arizona". This name therefore lacks a proper type locality, which means that the name could be applied to some other ssp. such as the lower altitude populations that represent intergrades between high-altitude true *colorado* and lowland sagebrush *H. c. idaho* (Edw.). To fix this problem, I hereby designate its type locality as Tennessee Pass, 3150 m (=10300 feet), Lake-Eagle Cos. Colorado. Scott (1975) studied adults at this locality and elsewhere and demonstrated that *colorado* intergrades clinally with the lower-altitude *H. colorado oroplata* Scott.

I use the name *Hesperia colorado* here, because J. Donald Lafontaine and Norbert Kondla have written to me that ssp. *assiniboia* (Lyman) and *manitoba* (Scudder) are sympatric in aspen parklands from Alberta (including the Cypress Hills) to Saskatchewan and Manitoba, where they evidently do not interbreed, thus would seem to be distinct species. (However, Paul Klassen wrote to me that specimens from Thompson & Gillam in central Manitoba are somewhat intermediate. Also, the photos of *H. comma assiniboia* and *H. c. "borealis"* in the new Alberta Butterflies book look very similar to each other suggesting that they are conspecific, but based on the dozens of other misidentified photos in that book these photos of "*borealis*" are probably misidentified *assiniboia*.) Perhaps Kondla or Lafontaine will publish this information in a formal paper. I have not studied the problem, but for the purposes of this paper I will guess that *H. comma* (L.) includes only ssp. *laurentina* (Lyman) and perhaps *borealis* Lindsey and *manitoba* and possibly *hulbirti* Lindsey, while the remaining North American ssp. including *assiniboia* should be called by the

oldest name *colorado*, which is older than the name *harpalus*. The name *colorado* was treated as a distinct species by MacNeill (1964), but Scott (1975a, 1975b) proved conclusively that it intergrades clinally in wing pattern and egg micropyle spines etc. with lowland *H. c. oroplata*, which in turn seems to belong to the same species as what has been called *harpalus*. Ssp. *assiniboia* would seem to belong to *H. colorado*, because it resembles what was known as *ochracea* Lindsey so closely that I think *ochracea* is a synonym of *assiniboia* or at best a weak ssp. (the unh spots of both taxa have a tendency to be weak and sometimes entirely absent, and have a tendency to be yellowish, and the unh color is yellowish), and Colorado "*ochracea*" intergrades altitudinally with high-altitude *colorado*. Ssp. *assiniboia* evidently occurs in a series of isolated populations, in the prairies of Canada, the Dakotas, the Black Hills of S.D., and (as *ochracea*) the Colorado Front Range.

H. c. colorado occurs at high altitude in Colorado in mountains along the continental divide (it is absent from the Sangre de Cristo Mts.), from about 10,000 feet upward (the darkest populations are at the highest altitudes of up to 12,400 feet or more). But intergrades near *colorado* occur in the Wind River Mountains of Wyoming (Sublette Co., trail to Twin Lakes vicinity Green River trail, 9500 feet, Aug. 4, 1996, Andrew Warren).

HESPERIA COLORADO IDAHO ("HARPALUS") NAMES

Most of the names formerly applied to this subspecies unfortunately apply to other subspecies, so I am forced to reassign them, as follows.

Adults have greenish (or greenish-ochre, or ochre when worn) unh with strong pearly unh spot bands. This subspecies occurs on the prairies of central Montana to central Wyoming and the extreme northwestern plains of Colo., westward through the lowlands of western Colo., Utah, Idaho, Nevada, eastern Oregon, eastern Wash., and S B.C.

Nomenclatural Background. Study of the names formerly used for this subspecies (by MacNeill 1964, etc.) has proven that almost none of them validly apply to it. Most of those names actually apply to the Sierra Nevada ssp., which has an ochre unh with reduced spots. The names are:

Pamphila harpalus (W. H. Edwards), Trans. Amer. Ent. Soc. 9:3 (1881), TL "Nevada", restricted to vicinity Carson City, Ormsby Co. by Brown & Miller (1977) p. 288-290, lectotype in CM, designated by Brown & Miller (1977). The lectotype male has the unh ochre with rather weak spots. As Holland (1931) wrote (Holland worked at the Carnegie Museum where the syntype female and lectotype male reside), "This species [*harpalus*] is near the preceding [*cabelus*], but differs in having the wings faintly spotted on the under side." Brown & Miller (1977) stated that *harpalus* was unlike the description of *ruvicola* Bdv. which was described as having a greenish unh. Thus in two characters, *harpalus* is not the green-unh lowland subspecies, and is not the strongly-white -spotted -unh-band lowland ssp. The photo of lectotype in Brown & Miller (1977) clearly shows that this ssp. lacks the pearly unh spot band of the Great Basin subspecies. So the name *harpalus* cannot apply to the green-unh strong-white-unh-band lowland ssp. which ranges widely throughout the western U.S. Brown & Miller (1977) wrote that Herbert Morrison collected the types of both *harpalus* and *cabelus* (Edw.) on the same trip, and wrote that "The two appear to be the same biologic entity.", and wrote that "The types of *harpalus* and *cabelus* demonstrate nicely the usual range of variation found in a good series taken at one place." Since *cabelus* has the unh spots nearly obsolete, and *harpalus* has somewhat weak spots, this reemphasizes that *harpalus/cabelus* represent the less-spotted ochre-unh Sierra Nevada subspecies, and **do not represent** the heavily spotted green-unh lowland ssp. that is widespread in western U.S. Since they represent the Sierran ssp., I hereby correct Brown & Miller's type locality slightly, to "Sierra Nevada Mts., west of Carson City". The two names were proposed in the same paper by Edwards, so either could be used, since page-priority does not exist in the ICZN Code, but various authors such as MacNeill (1964) and Brown & Miller (1977) have acted as first revisers to suppress *cabelus* as a synonym of *harpalus*.

MacNeill (1964) defined a subspecies *harpalus* as having a strongly-spotted variably-colored unh. His description was intended to describe a miscellaneous hodgepodge of populations across the west, including some that intergrade into other named ssp (such as some western Colo. populations that intergrade between the lowland green-unh ssp. and *H. c. colorado*, and populations on the Kaibab Plateau of Ariz. that intergrade between the lowland green-unh ssp. and *H. c. susanae* L. Miller, etc.). But MacNeill's description does **not** fit the types of *harpalus*, which belong to another subspecies, so MacNeill's usage of the name cannot continue.

Pamphila cabelus (W. H. Edwards), Trans. Amer. Ent. Soc. 9:4 (1881), TL “Nevada”, restricted to vic. Carson City, Ormsby Co. by Brown & Miller (1977) p. 288-290, lectotype in CM, designated by Brown & Miller (1977). The lectotype male has the unh ochre with the white spots almost absent (only the postbasal V and a small anterior median pale spot are easily noticeable but are weak). Two syntype males also have ochre unh with weak spots, and one of them (fig. by Holland 1931 plate 52 fig. 18) has the unh spots almost entirely absent. Holland (1931) states that *cabelus* is characterized by obsolescence of unh markings on the “pale reddish” [ochre] unh. Since *cabelus* obviously represents the Sierran ssp., I hereby correct Brown & Miller’s type locality slightly, to “Sierra Nevada Mts., west of Carson City”.

Pamphila oregonia (W. H. Edwards), Can. Ent. 15:150 (1883), TL “in north California and Nevada”, restricted to Trinity Co. Calif. by Miller & Brown (1977), lectotype male in CM, designated by Brown & Miller (1977). The lectotype looks suspiciously almost identical to the *harpalus* lectotype (the unh being slightly less spotted), and MacNeill (1964) wrote that “Holland’s (1931) figures of the upper surface of the “types” are too pale.”, yet Holland’s figures are the correct types designated by Brown & Miller (1977), who wrote: “Whether *oregonia* is part of this complex or stands a little aside, as MacNeill sees it, we do not know.” Thus the lectotype is paler than the subspecies that MacNeill applies it to, and it seems probable that *oregonia* is also a synonym of *harpalus* and belongs to the Sierra Nevada ssp., as was stated to be possible by Brown & Miller, so a perusal of Oscar Baron’s travels might find a locality in the Sierras to designate as a type locality to make the lectotype match populations at the type locality. The travels of Baron were chronicled by Brown (1965), who wrote that “Baron traveled widely building railroads in California and eastward from that state”, so he could have collected *oregonia* in the Sierras near Lake Tahoe/Carson City, where the other taxa were from. Since the lectotype is so similar to the *harpalus* lectotype, I must conclude that it came from the same series, so I will hereby correct the type locality to the same locality, “Sierra Nevada Mts., west of Carson City”.

Pamphila idaho (W. H. Edwards), Can. Ent. 15:148 (1883), lectotype male labeled “East Cal.” in CM, lectotype designated by Brown & Miller (1977), TL “Oregon, Washington Terr. and California”, TL “tentatively” restricted to vic. Lake Tahoe, Placer Co. Calif., by Brown & Miller (1977). The lectotype has a pale unh with the spots well-developed, and the ups is very pale with even the wing margins pale. Holland (1931) stated “This form [*assiniboia*] is very close to the preceding [*idaho*], but may be distinguished by the very pale greenish-gray of the under side, and the more or less obsolescent state of the light markings.”, which probably means that *idaho* has an unh that is more yellowish than greenish, as Holland possessed the *idaho* types in CM. But the lowland green-unh ssp. often has the unh yellowish, especially on worn individuals. So *idaho* is the only one of the names discussed so far that might actually properly apply to the lowland green-unh ssp. I could place *idaho* into the synonymy of the less-spotted Sierra Nevada ssp. and name the lowland green-unh ssp. a new ssp., because of *idaho*’s more-yellow unh color, and because Brown & Miller stated that *harpalus*, *cabelus* and *idaho* “probably represent one biological entity.” But I will be conservative here, and retain the name *idaho* because its type could have come from the green-unh-pearly-band ssp. Brown & Miller’s designated type locality is easy to correct because they stated it was “tentative”; and they realized that *idaho* is different from *harpalus* and *cabelus* because they used the word “probable” in their statement. So, to clarify the situation, I hereby change Brown & Miller’s “tentative” type locality of the “vicinity of” Lake Tahoe, to the lowlands east of the Sierra Nevada in E Calif., specifically to the lowlands at Doyle in Lassen Co. Calif. And I hereby state that the name *idaho* is to be applied to the lowland greenish/yellowish-well-spotted-unh ssp., not to the less-spotted ochre-unh Sierra Nevada ssp.

Hesperia yosemite Leussler, Ent. News 44:169 (1933), TL near Yosemite, Calif., holotype Ohio State Univ. This final name applies to the Sierra Nevada ssp. that has the unh ochre with weak (often absent) spots. This name should be treated as a synonym of *harpalus*. To summarize:

H. colorado colorado

H. colorado idaho

H. colorado harpalus=cabelus=oregonia=yosemite.

**ERYNNIS ZARUCCO TERENTIUS (SCUDDER & BURGESS) 1870,
NEW STATUS**

DIAGNOSIS. Based on preliminary study, ssp. *terentius* occurs in SE U.S., whereas ssp. *zarucco* occurs in the Florida Keys and the Caribbean (the type locality of *zarucco* (Lucas) is Cuba). Ssp. *terentius* has brown hindwing fringes, whereas the fringes of Caribbean and Florida Keys *zarucco* are whiter (whitish-brown). Ssp. *funeralis* from SW U.S. and the Latin American mainland has pure white fringes, and a slightly-narrower forewing. Ssp. *zarucco* seems to be intermediate in some traits between *terentius* and *funeralis*. The biology of *terentius* and *funeralis* (Scud. & Burg.) appears to be identical (Scott 1986), and it would still appear that they are ssp. of each other, while each occasionally migrates into the range of the other. More careful study where the ranges of these taxa approach each other might elucidate their relationship.

ACKNOWLEDGEMENTS

I thank J. Donald Lafontaine and Norbert Kondla for discussions regarding *Hesperia* “*comma*” *manitoba* and *assiniboia*, and Andrew Warren for discussions regarding Colorado *H. colorado*. L. Paul Grey kindly loaned the types of *B. improba nunatak*. Ray E. Stanford helped sample *Hipparchia* (*Neominois*) populations.

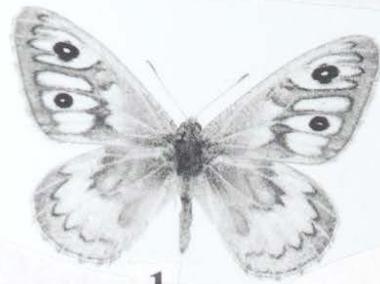
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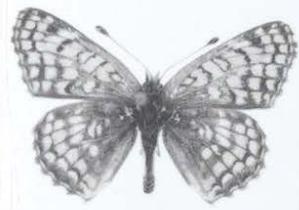


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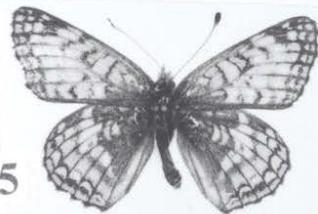
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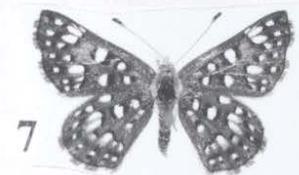
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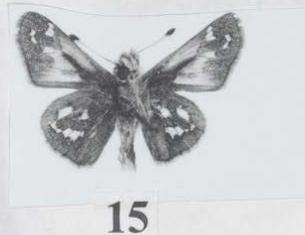
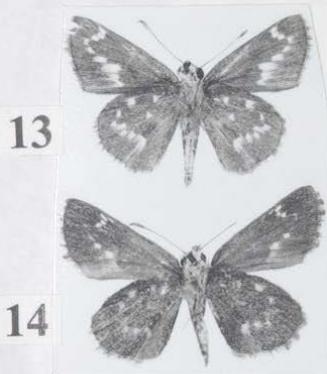
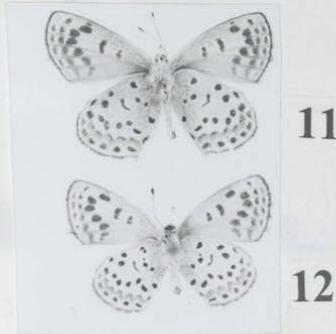
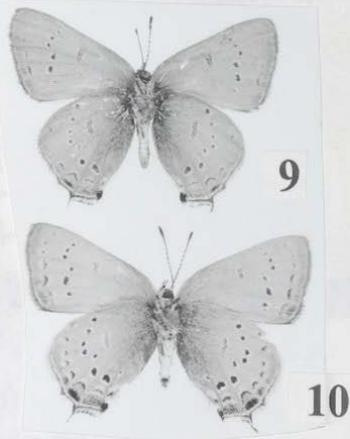


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Figures 1-8. 1-2, *Hipparchia ridingsii wyomingo*: 1, holotype male WNW Midwest, Natrona Co. Wyo., Aug. 18, 1993 J. Scott; 2, allotype female same data. 3-4, *Chlosyne whitneyi altalus*: 3, holotype male Nigel Pass, Alta., Aug. 2, 1966; 4, paratype female Highwood Pass, Alta., July 15, 1966. 5-6, *Chlosyne whitneyi windriver*, Bears Ears Mtn., 11,000', Wind River Mts. Wyo., Aug. 14, 1983 J. Scott: 5, holotype male; 6, paratype female. 7-8, *Apodemia mormo pueblo*, S Security, El Paso Co. Colo., Aug. 11, 1971 J. Scott: 7, holotype male; 8, allotype female.



Figures 9-15. 9-10, *Satyrium sylvinus nootka*, Scott Camp Crk., Siskiyou Co. Calif., Aug. 3, 1974 J. Scott: 9, male; 10, female. 11-12, *Euphilotes battoides anasazi*, Aztec, San Juan Co. New Mex., Aug. 27, 1977 J. Scott: 11, holotype male; 12, allotype female. 13-14, *Amblyscirtes aenus megamacula*: 13, holotype male WSW Peña Blanca Lake, Santa Cruz Co. Ariz., July 30, 1986 J. Scott; 14, paratype female Bear Can., Santa Catalina Mts. Ariz., June 24, 1968 J. Scott. 15, *Hesperia colorado colorado* male, Loveland Pass, 12,400', Summit Co. Colo. Aug. 20, 1997 J. Scott.