

PRELIMINARY CONTRIBUTION TO A REDEFINITION OF
THE GENERA OF NORTH AMERICAN HAIRSTREAKS
(LYCÆNIDÆ) NORTH OF MEXICO

by J. BENJAMIN ZIEGLER

It is well known that the generic arrangement of the North American hairstreaks (*Theclinae* auct.) is unsatisfactory (cf. A. B. KLOTS, 1951: p. 126). The current classification is exemplified for the eastern part of the continent north of Mexico by that of KLOTS (1951: pp.314-316), and for the continent as a whole north of Mexico by that of J. McDUNNOUGH (1938).

For some time the author has been working on this problem, and has arrived at a revised classification based in large part on a survey of the male and female genitalia of practically all of the hairstreaks known to be permanent residents of North America north of Mexico. Although a definitive manuscript giving full details of this work is in process of preparation, increasing current interest in this area has prompted the presentation of the major results at this time. They may be summarized as follows:

(1) The species contained in the monotypic genera *Habrodais* Scudder, *Hypaurotis* Scudder, *Eumæus* Hübner, *Atlides* Hübner, and *Erora* Scudder are quite distinct and these genera may be retained, at least provisionally.

(2) The genus *Strymon* Hübner with *S. melinus* Hübner as type species is restricted to a few of the species currently included therein.

(3) The type species of the monotypic genera *Callipsyche* Scudder and *Satyrimum* Scudder are found to be congeneric with each other and with a large group of species hitherto included in the heterogeneous "genus" *Strymon* (*s.l.*). The name *Satyrimum* Scudder is selected for this new grouping.

(4) The remaining species from the old *Strymon* (*s.l.*), apparently mostly tropical in their affinities, were for the most part not studied and are relegated for the time being to the non-committal, quasi-generic grouping "Strymon." It is emphasized that this is purely a device of nomenclatorial convenience, and it is not intended that the term "Strymon" should have any formal status in nomenclature. Much more study of the Neotropical fauna will be required to enable proper placement of these species.

(5) The genera *Mitoura* Scudder, *Incisalia* Scudder, and *Callophrys* Billberg are combined under the latter name.*

(6) The two genera *Satyrimum* (*s.l.*) and *Callophrys* (*s.l.*), as herein redefined, are subdivided into sections and species groups. No new infrageneric names are coined, but existing names are indicated where applicable in a sub-generic sense.

Changes made in the existing classification are given below in check-list form, expanded to indicate the infrageneric groupings adopted; no attempt has been made to re-assess the taxonomic validity of the specific names listed.

* This combination was first suggested by Mr. HARRY K. CLENCH, based on other than genitalic characters.

This is followed by keys defining the generic and infrageneric groupings as listed. The genitalic terms used are taken from KLOTS (in S. L. Tuxen, 1956). Male genitalia were mounted for study to show the ventro-caudal aspect, with the valvæ and penis removed and mounted separately to display the ventro-caudal and lateral aspects, respectively. Female genitalia were mounted to show the ventral aspect.

Several individuals and institutions have generously given assistance of various sorts during the conduct of this research. Proper acknowledgment of this indebtedness will be deferred for the most part until the appearance of the amplified version of this paper. However, it is desired to express thanks at this time to Dr. PAUL R. EHRLICH and Mr. HARRY K. CLENCH for kindly permitting the examination before publication of their manuscript describing the new species (and subgenus) *Callophrys* (*Sandia*) *macfarlandi* Ehrlich & Clench.

CHECK LIST OF SPECIES FORMERLY INCLUDED IN THE GENERA *Strymon*,
Callipsyche, *Satyrium*, *Mitoura*, *Incisalia*, AND *Callophrys*

Strymon Hübner

1. *melinus* Hübner
2. *avalona* Wright
3. *martialis* Herrich-Schäffer
4. *acis* Drury
5. *columella* Fabricius

Satyrium Scudder (*s.l.*)

Section A

Group I

1. *liparops* Boisduval & Leconte
2. *kingi* Klots & Clench
3. *titus* Fabricius
4. *behrii* Edwards
5. *sæpium* Boisduval

Group II

6. *fuliginosa* Edwards
7. *adenostomatis* Henry Edwards
8. *auretorum* Boisduval

Section B

Group III

9. *falacer* Godart
10. *calanus* Hübner
11. *caryævorus* McDunnough
12. *edwardsii* Grote & Robinson
13. *californica* Edwards
14. *acadica* Edwards
15. *sylvinus* Boisduval
16. *dryope* Edwards

Group IV

17. *ontario* Edwards
18. *favonius* J. E. Smith

Group V

19. *alcestis* Edwards
20. *oslari* Dyar

Callophrys Billberg

Section A

Group I (subgenus *Mitoura* Scudder)

1. *gryneus* Hübner
2. *siva* Edwards
3. *loki* Skinner
4. *hesseli* Rawson & Ziegler
5. *nelsoni* Boisduval

Section B

Group II (subgenus *Sandia* Clench & Ehrlich)

6. *xami* Reakirt
7. *macfarlandi* Ehrlich & Clench

Group III (subgenus *Incisalia* Scudder)

8. *augustinus* Westwood
9. *iroides* Boisduval
10. *irus* Godart
11. *henrici* Grote & Robinson
12. *mossii* Henry Edwards
13. *fotis* Strecker
14. *doudoroffi* dos Passos
15. *polios* Cook & Watson
16. *lanoraieensis* Sheppard
17. *niphon* Hübner
18. *eryphon* Boisduval

Section C

Group IV

19. *spinetorum* Hewitson
20. *johnsoni* Skinner

Group V (subgenus *Callophrys* Billberg)

21. *dumetorum* Boisduval
22. *affinis* Edwards
23. *sheridani* Edwards
24. *apama* Edwards

"Strymon"

1. *m-album* Boisduval & Leconte
2. *cecrops* Fabricius
3. *beon* Cramer

4. *buchholzi* H. A. Freeman
5. *simæthis* Drury
6. *pastor* Butler & Druce
7. *facuna* Hewitson
8. *mæsites* Herrich-Schäffer
9. *bazochii* Godart
10. *clytie* Edwards
11. *azia* Hewitson
12. *endymion* Fabricius
13. *cestri* Reakirt
14. *yojoa* Reakirt
15. *spurina* Hewitson
16. *laceyi* Barnes & Mc Dunnough
17. *zebina* Hewitson
18. *rufofusca* Hewitson
19. *echion* Linnæus
20. *jada* Hewitson
21. *critola* Hewitson
22. *leda* Edwards
23. *polingi* Barnes & Benjamin

KEYS TO THE GENERA

STRYMON *s. s.*, CALLOPHRYS, AND SATYRIUM

A. Based on Male Genitalia.

1. Orifice of ædœagus unornamented, the ædœagus being simply and abruptly truncated distally*Strymon*
1. Orifice of ædœagus with a prominent rostellum and one or two cornuti, usually serrate, directed dorso-caudally2
2. Ædœagus rather more than twice as long as long axis of ring, more or less strongly curved ventrally, rostellum rather less conspicuous, flattened or spatulate dorso-ventrally*Callophrys*
2. Ædœagus considerably less than twice as long as long axis of ring, slightly curved dorsally, rostellum more conspicuous, heavily sclerotized and keel-shaped, flattened laterally*Satyrium*

B. Based on Female Genitalia.

1. Ductus bursæ with a more or less tightly-convoluted spiral near corpus bursæ; latter with paired, elongated, "feather-shaped" signa *Strymon*
1. Ductus bursæ straight, without convolution near corpus bursæ, paired signa of the latter, when present, not "feather-shaped"2
2. Corpus bursæ without a sclerotized cervix at juncture with ductus bursæ*Callophrys*
2. Corpus bursæ with a narrow, more or less heavily sclerotized cervix at juncture with ductus bursæ*Satyrium*

KEY TO SECTIONS AND SPECIES GROUPS OF THE GENUS
SATYRIUM BASED ON FEMALE GENITALIA

1. Genital plate with a bilateral pair of more or less conspicuous, more or less heavily-sclerotized, lobe-like pockets or invaginations, their bottoms directed cephalad (SECTION A)2
1. Genital plate without such a pair of pockets (SECTION B)3
2. Ductus bursæ relatively short, flaring widely at or near antrum, outline ovate or roughly triangularI. *LIPAROPS* GROUP
2. Ductus bursæ relatively longer and without marked flare at or near antrumII. *FULIGINOSA* GROUP
3. Ductus bursæ with shallowly sinuate outline, doubly or triply-inflected and narrowing between ostium bursæ and corpus bursæIII. *FALACER* GROUP
3. Ductus bursæ without definitely sinuate outline4
4. Ductus bursæ relatively short and lightly sclerotized with rather fragile wrinkled appearanceIV. *ONTARIO* GROUP
4. Ductus bursæ relatively longer and more heavily sclerotized, with more robust, smoother appearanceV. *ALCESTIS* GROUP

KEY TO SECTIONS AND SPECIES GROUPS OF
CALLOPHRYS BASED ON ♀ GENITALIA AND WINGS

1. Corpus bursæ with signum vestigial or absent (SECTION A)I. *GRYNEUS* GROUP (Subgenus *Mitoura*)
1. Corpus bursæ with paired signa present2
2. Ductus bursæ weakly sclerotized or membranous at juncture with corpus bursæ and/or antrum of ductus (SECTION B)3
2. Ductus bursæ entirely sclerotized (SECTION C)4
3. Wings beneath a shade of greenII. *MACFARLANDI* GROUP (Subgenus *Sandia*)
3. Wings beneath a shade of brown or gray, not greenIII. *NIPHON* GROUP (Subgenus *Incisalia*)
4. Hind wings with tail, color beneath a shade of brownIV. *SPINETORUM* GROUP
4. Hind wings without tail, color beneath a shade of greenV. *RUBI* GROUP (Subgenus *Callophrys*)

References

- Klots, Alexander B., 1951. *A field guide to the butterflies of North America, east of the Great Plains*. Houghton Mifflin Company, Boston.
-, 1956. 20 Lepidoptera, in: S. L. Tuxen, *Taxonomist's glossary of genitalia in Insects*: 97-111. Ejnar Munksgaard, Copenhagen.
- McDunnough, J., 1938. Check list of the Lepidoptera of Canada and the United States of America. *Mem. So. Calif. Acad. Sci.* 1: 23-25.