

# The female of *Satyrium persimilis* probably discovered in Yunnan, China (Lepidoptera: Lycaenidae)

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## KEY WORDS

Faunistics, taxonomy, genitalia, Palaearctic

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In the genus *Satyrium* Scudder the species *S. persimilis* was described by Riley in 1939 from Yunnan, China. Only the holotype, a male, seems to be known up till now. The species is closely related to *S. eximia fixseni* Leech. The status of *S. persimilis* is unclear: it could be a separate taxon or just an individual variation of *S. eximia fixseni*. However, some diagnostic characters suggest *S. persimilis* to be a separate species. A single female of a *Satyrium* species was found in 2006 in Dali, Yunnan, that fitted Riley's description of *S. persimilis*. The genitalia of this female differ from the genitalia of *S. eximia eximia* and *S. eximia fixseni*, which makes us conclude, that this specimen is not conspecific with *S. eximia*. Because of other external morphological characters we conclude that this female specimen very probably belongs to *S. persimilis*. The female's characters are described here for the first time.

## Introduction

In 2006 we had the possibility to set off on an entomological expedition to Yunnan. In this paper one of the results of the expedition is discussed.

Among material of *Satyrium* (*Satyrium*) *eximia fixseni* Leech, collected in Dali, Yunnan, between 25 and 27 June 2006, one female specimen attracted our attention, due to its different outer margin (rounded) of the forewing, its smaller size and the less pointed apex (figures 1, 2). Comparing the diagnostic characters, given by Weidenhoffer et al. (2004), we came to the provisional conclusion, that this specimen may be *Satyrium persimilis* Riley (type locality Yunnan).

## *Satyrium persimilis*

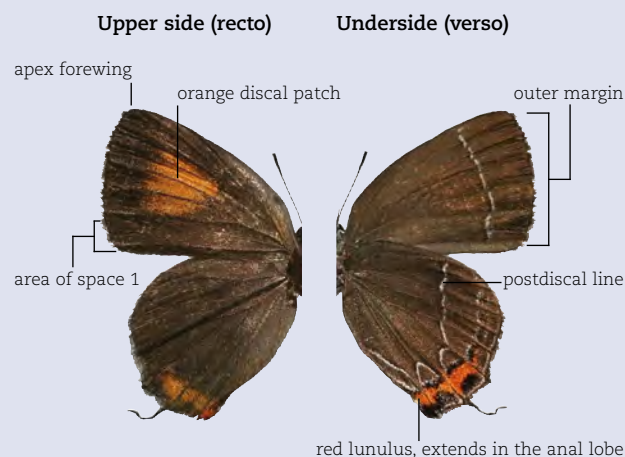
*Satyrium persimilis* is known only from the holotype. This specimen is a male of which the genitalia were neither described nor depicted. The original description of this male is as follows (Riley 1939; see box for an illustration of descriptive terms):

"The upperside of the unique male specimen of this species resembles almost exactly the *fixseni* form of the female of *S. eximia* (Seitz, *Macrolep*, 1, pl. 72 i), but the orange patches are a little less strongly developed – the forewing patch, for example, extends from vein 2 not quite to vein 6 and does not enter the cell at all. The androconial patch is relatively very large, being over 2 mm. long on a forewing of 16 mm. long. On the hindwing the red patch extends evenly from the lobe to vein 3. The underside is best compared with that of *percomis* Leech (l.c. pl. 73a), which it strongly resembles both in color and pattern. On the forewing, however, the silvery line of narrow lunules is completely missing and on the hindwing this line is composed of much fainter and flatter lunules, so that the inner edges of the red lunules near the anal angle are almost straight."

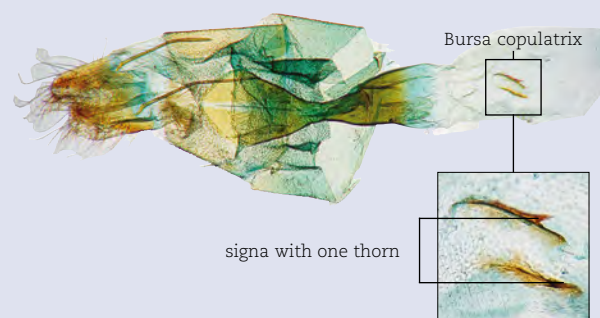
[Yunnan, RP Delavay (ex coll. Oberthür); type in the British Museum]

## Box

### Explanation of some descriptive terms

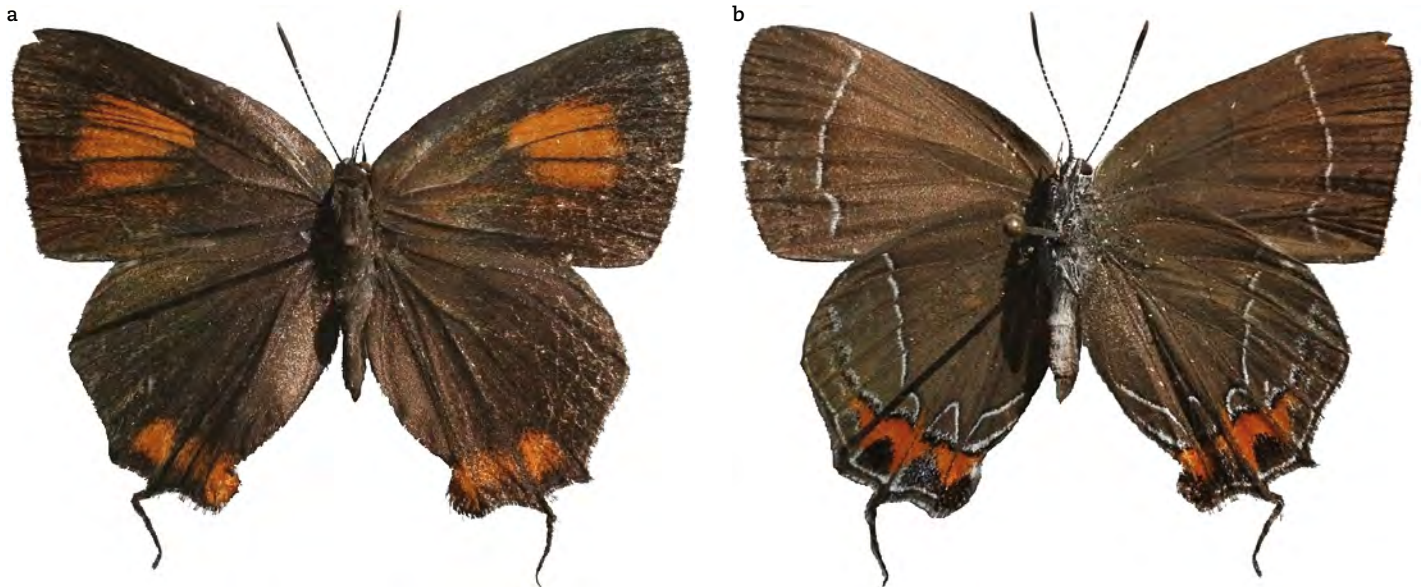


### Female genital organ





1. *Satyrium persimilis*, ♀, Yunnan, 10 km W of Dali, 2200 m, 27.VI.2006, (a) recto, (b) verso. Photos: Frans Slieker.  
1. *Satyrium persimilis*, ♀, Yunnan, 10 km W van Dali, 2200 m, 27.VI.2006, (a) bovenzijde, (b) onderzijde.



2. *Satyrium eximia fixseni*, ♀, Yunnan, 10 km W of Dali, 2200 m, 27.VI.2006, (a) recto, (b) verso. Photos: Frans Slieker.  
2. *Satyrium eximia fixseni*, ♀, Yunnan, 10 km W van Dali, 2200 m, 27.VI.2006, (a) bovenzijde, (b) onderzijde.

Our female fits this description, except for the typical male character (androconial patch). Female *Satyrium* species are generally larger than the male: the forewing of our female is 20 mm long. There was no need to study the male holotype because it would not reveal characters for a certain identification of our female specimen. We had to study the female genitalia of similar *Satyrium* species.

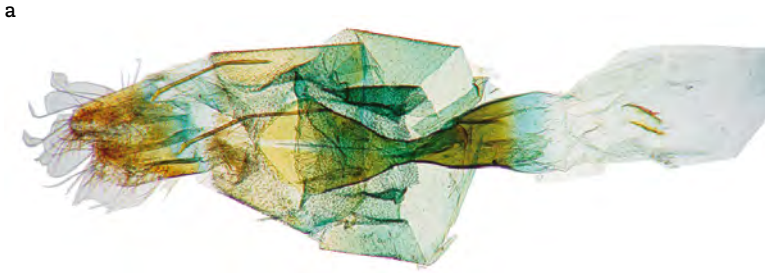
#### Female genitalia of *Satyrium* species

Our female specimen was dissected and the genitalia were compared with the female genitalia of *S. eximia fixseni*. We studied specimens from Dali (Yunnan), from Lijiang (Yunnan) and from Sichuan, the latter two kindly offered to us by Dr. GC Bozano (Milan, Italy). We observed conspicuous differences in the signa in the bursa copulatrix: signa with one thorn in the female under study (figure 3) and with two thorns in *S. eximia fixseni* (figures 4-6). The signa in the nominotypical *S. eximia eximia* has two thorns as well (Weidenhoffer et al. 2004). We discussed this matter with Dr. Bozano. Given that he does not know how much the shape of signa can vary within a single species in the genus *Satyrium*, he agrees with us our specimen is very likely not

conspecific with *S. eximia*. In addition he concludes that it is probably conspecific with *S. persimilis*. We did not observe variation in the shape of the signa of *S. eximia fixseni*. Thus we may suggest, that our specimen does neither belong to *S. eximia fixseni* nor to *S. eximia eximia*.

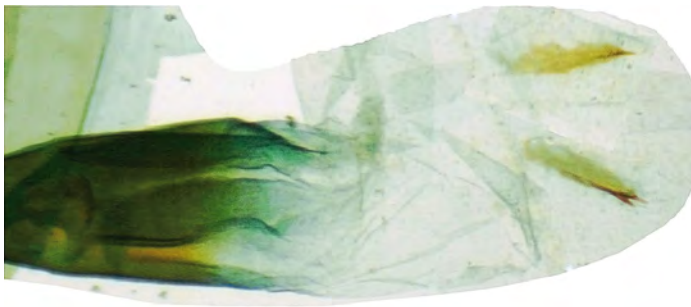
Yet another species is similar to *S. persimilis*: *S. lais* (Leech), of which only a single female is known (type locality Luding, Sichuan, China). Because of its strong resemblance with *S. persimilis* it is suggested by Weidenhoffer et al. (2004) to be the female of *S. persimilis*. Unfortunately pictures of the genitalia of *S. lais* are not available. When comparing the female of *S. lais* (depicted in Weidenhoffer et al. 2004) with our female, the following diagnostic characters are different:

- upperside forewing orange discal patch is small and obscure in *S. lais*; more clear, larger, developed till space 1 and intersected by veins 3 and 4 in our specimen;
- hindwing tail is shorter and of different shape in *S. lais*;
- undersides of both wings are more light brown and the post-discal lines are more white in *S. lais*;
- underside hindwing with prominent white discal lunules from inner edge of red lunules till costa are absent or faint in our specimen.



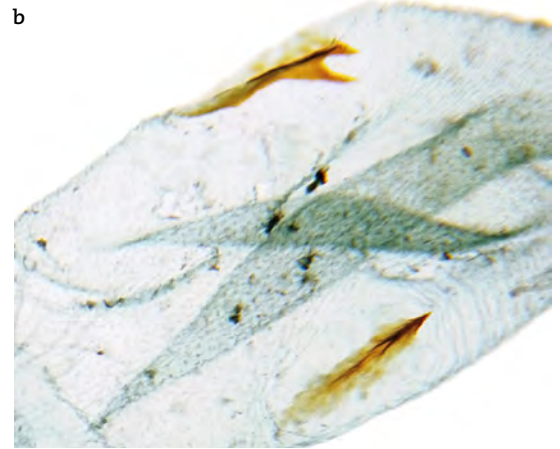
3. *Satyrium persimilis*, ♀, (a) genitalia complete, (b) bursa copulatrix with signa, prep. 8027CG, idem as 1. Photo: Cees Gielis.

3. *Satyrium persimilis*, ♀, (a) volledig genitaal, (b) bursa copulatrix met signa, prep. 8027CG, idem als 1.



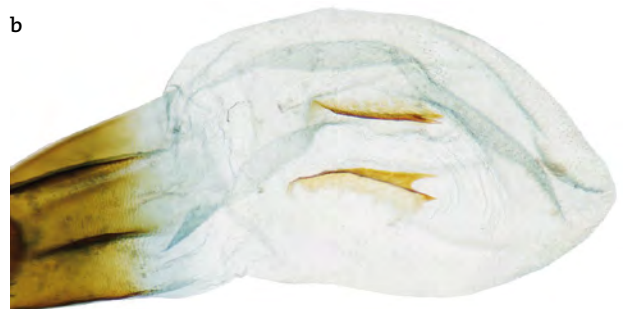
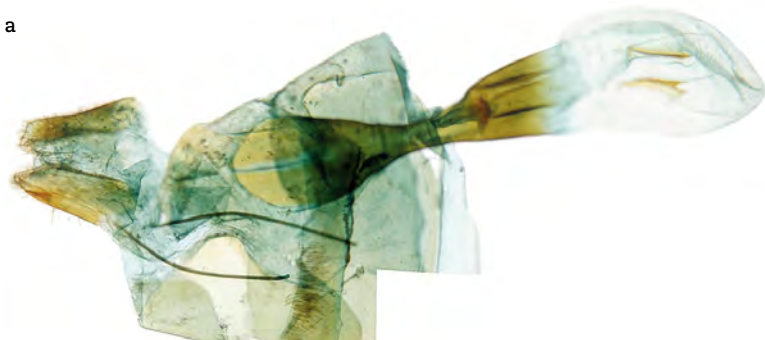
4. *Satyrium eximia fixseni*, ♀ bursa copulatrix with signa, prep. 8035CG, idem as 2. Photo: Joop Trausel.

4. *Satyrium eximia fixseni*, ♀, bursa copulatrix met signa, prep. 8035CG, idem als 2.



5. *Satyrium eximia fixseni*, ♀, (a) genitalia complete, (b) bursa copulatrix with signa, prep. 8032CG, Yunnan, Lijiang, 2200-2500 m, 30.V.1991, don. Bozano. Photo: Cees Gielis.

5. *Satyrium eximia fixseni*, ♀, (a) volledig genitaal, (b) bursa copulatrix met signa, prep. 8032CG, Yunnan, Lijiang, 2200-2500 m, 30.V.1991, don. Bozano.



6. *Satyrium eximia fixseni*, ♀, (a) genitalia complete, (b) bursa copulatrix with signa, prep. 8034CG, Sichuan, road Litang-Batang, 50 km E of Batang, 3200 m, 14-16.VII.1992, don. Bozano. Photo: Cees Gielis.

6. *Satyrium eximia fixseni*, ♀, (a) volledig genitaal, (b) bursa copulatrix met signa, prep. 8034CG, Sichuan, weg Litang-Batang, 50 km O van Batang, 3200 m, 14-16.VII.1992, don. Bozano.

Comparing both our female and the female of *S. lais* with the male of *S. persimilis*, our female is much more similar to that male than *S. lais*. For that reason, our female is a better candidate to be the female of *S. persimilis*. *Satyrium lais* must be treated as a different species for this moment.

## Discussion

Other closely related *Satyrium* taxa with orange patches are *S. percomis* (Leech), *S. ornata* (Leech) and *S. inflammata* (Alpheraky), but our female does neither fit the descriptions nor the signa drawings by Sugiyama in Weidenhoffer *et al.* (2004) of any of these species. As no other *Satyrium* species belong to the *eximia-persimilis-lais* complex, our conclusion is that our female specimen very probably is the first female of *S. persimilis*. At this moment we have no indication that our specimen should be

considered a new species. However, future data may bring additional facts. The specimen is deposited in the Zoological Museum Amsterdam.

## Acknowledgments

We thank Dr. Gian Cristoforo Bozano very much for his comment on *Satyrium persimilis* and for the donation of the specimens of *S. eximia fixseni*. We owe special gratitude to Dr. Cees Gielis for his help and professional assistance in dissecting and photographing the genitalia. Frans Slieker was very helpful in making the photographs of the adults and the preparation of the figures in this paper. We thank Joop Trausel for the picture of the slide. We are grateful to the Uyttenboogaart-Eliassen Stichting for the financial support to realise our expedition.

## References

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## Samenvatting

### Het vrouwtje van *Satyrium persimilis* waarschijnlijk ontdekt in Yunnan, China (Lepidoptera: Lycaenidae)

In het genus *Satyrium* Scudder werd *persimilis* door Riley in 1939 beschreven van Yunnan. Alleen het holotype, een mannetje, schijnt tot nu toe bekend te zijn. De soort is nauw verwant aan *Satyrium eximia fixseni* Leech. De status van *S. persimilis* is onduidelijk: het kan een goede soort zijn of slechts een individuele variatie van *S. eximia fixseni*. Enkele diagnostische kenmerken echter geven ons aanleiding *S. persimilis* als een afzonderlijke soort te beschouwen. Bij Dali, Yunnan, werd in 2006 een enkel vrouwtje van een *Satyrium*-soort gevonden dat overeenstemt met Riley's beschrijving van *S. persimilis*. Het genitaal van dit vrouwtje is afwijkend van het vrouwelijk genitaal van *S. eximia eximia* en van *S. eximia fixseni*, hetgeen ons tot de conclusie voert, dat dit exemplaar niet conspecifiek is met *S. eximia*. Op grond van andere uiterlijke morfologische kenmerken komen wij tot de conclusie, dat dit vrouwelijke exemplaar zeer waarschijnlijk *S. persimilis* is. De kenmerken van het vrouwtje worden hier voor de eerste keer beschreven.



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