# A REVIEW OF THE GENUS *PSEUDOCHAZARA* DE LESSE, 1951 (LEP., SATYRIDAE) IN GREECE

*By* J. BROWN
12 *Browning Avenue, Sutton, Surrey*

This review is written in accordance with certain ideas concerning the taxonomic value of differences between populations (Brown, 1976) and after the examination of some 150 examples of *Pseudochazara* spp. It is to be hoped that the taxonomic principles thus gleaned for the genus *Pseudochazara* will be more fully described in later work. Furthermore, these criteria have been applied to the members of this genus from Greece, a region in which our knowledge has been confused and a region in which the author has collected fairly widely.

## TAXONOMY IN THE GENUS *Pseudochazara*

Male genitalia often present useful taxonomic characters in the Satyridae. However, it has been noted that the genitalia of the European *Pseudochazara* are rather uniform (Higgins, 1976) and, by and large, this is true. Nevertheless, male genitalia do provide auxiliary characters. Further useful taxonomic characters which help to define species lie in the wing markings and in androconial morphology.

Although the androconia of the *Pseudochazara* species so far examined are neomorphic in Warren's sense (Warren, 1936), androconial morphology alone can split this genus into three categories, each showing a fairly uniform type of scale:

| group | | examples | androconia |
|---|---|---|---|
| (1) | | *P. anthelea* Hübner, *P. telephassa* Hübner; | fig. 1. |
| (2) | a. | *P. kingovskii* Gross, *P. pelopea* Klug, *P. caucasica* Lederer, *P. lehana* Moore, *P. beroe* Freyer, *P. hippolyte* Esper; | fig. 2. |
| | b. | *P. mamurra* Herrich-Schäffer, *P. atlantis* Austaut, *P. geyeri* Herrich-Schäffer. | fig. 3. |

Probably, groups 1 and 2 are natural species-groups. Group 1 is also characterized by the morphology of its non-androconial scales, genitalia and markings. On the basis of androconial morphology group 2 can be subdivided as indicated above but the subgroups are very similar in other respects. Nevertheless, there does not seem to be a clear series of androconial scales intermediate between and linking those of subgroups a and b, and so, for the purposes of using androconia in the diagnosis of species, it is necessary to consider the species of subgroup a separately from

those of subgroup b. Within these groups, androconia usually show small differences between species, for example in the shape of the androconia of *mamurra* and *geyeri*. Within group 2 there are often slight specific differences in the dorsal structures of the male genitalia, especially in the gnathos. The uncus and tegumen may be useful although there is great individual variation in their proportions. The most constant and specific genitalic differences occur in the proportions of the ventral valves and especially in the position of the valvular shoulder and the shape of the valvular termination.

THE GENUS *Pseudochazara* IN GREECE

For some time now it has been known that *anthelea* Frivaldsky and *mamurra graeca* Staudinger fly in Greece (Staudinger, 1870). Recently, *sintenisi* Staudinger has been recorded from Greece (Koutsaftikis, 1974) and the same insect has been described as a new subspecies, *sintenisi cingovskii* Gross from Jugoslavian Macedonia (Gross, 1973). The following species are known to occur in Greece.

**Pseudochazara anthelea amalthea** Frivaldsky

*Hipparchia amalthea* Frivaldsky, 1845, *Evk. Kiral Magy Term. Tars.*, **1841/45**: 186, pl. 3, figs. 3, 4.

This flies over dry scree slopes from sea level to at least 1500 m from late May to September, depending on altitude. Below 900 m it is uncommon but otherwise it is widespread. It occurs in Crete (Tronicek, 1949), Mt. Taygetos, Mt. Chelmos and extensively in the N. Peloponnesos, Loutraki (Fountaine, 1902), Athens, Mt. Hymettos, Mr. Parnis, Mt. Parnassos, Mt. Ossa (Willemse, 1975), Mt. Pilion and near Florina (Dacie, 1972).

**Pseudochazara anthelea atavirensis** Coutsis

*Pseudochazara anthelea atavirensis* Coutsis, 1973, *Entomologist's Rec. J. Var.*, **85**: 165, pl. 13, figs. i, j.

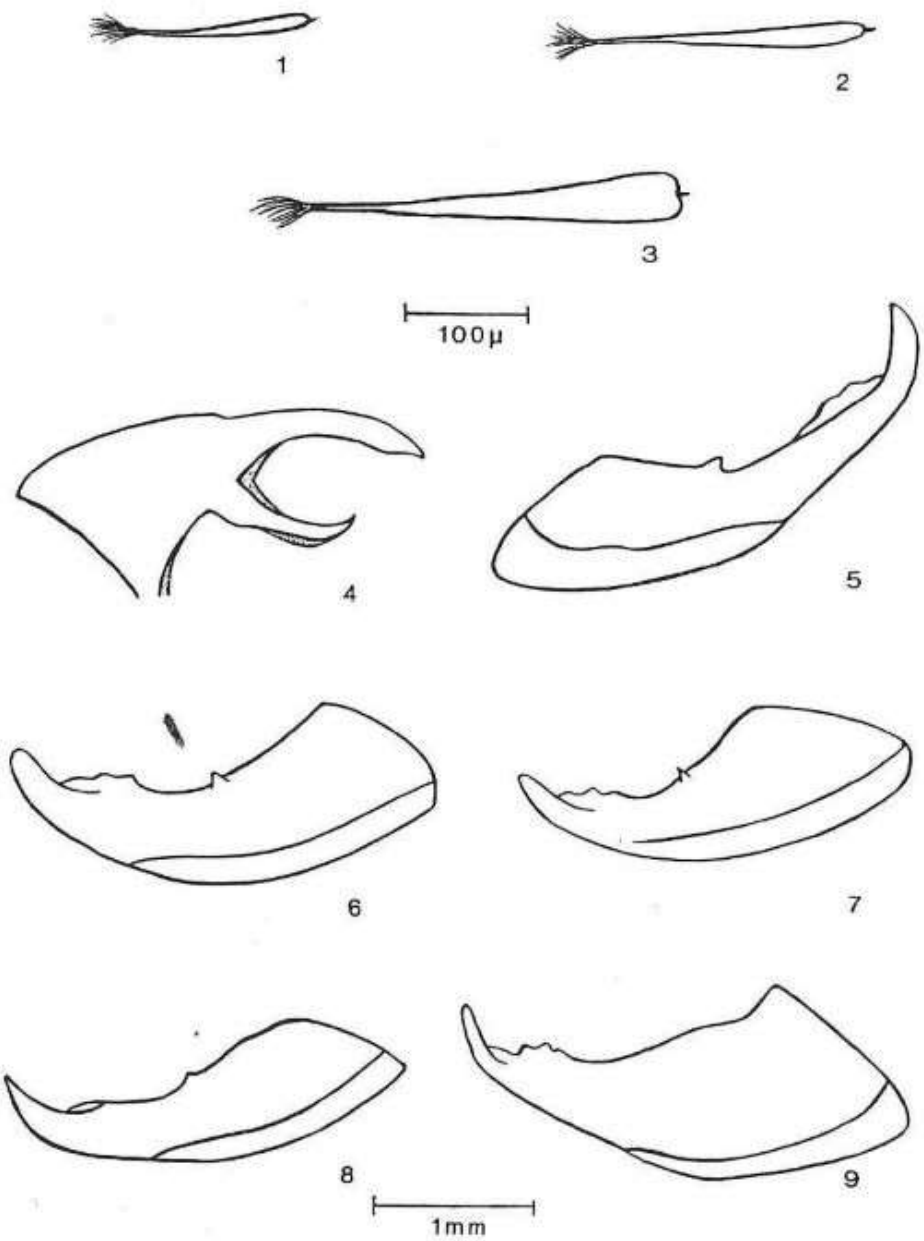
Reported from Mt. Ataviros, Rhodos at 500 m in late May. This subspecies shares the superficial characters of both the European *a. amalthea* and the Asiatic *a. anthelea* Hübner (Coutsis, 1973).

**Pseudochazara graeca** Staudinger **stat. nov.**

*Satyrus mamurra* var. *graeca* Staudinger, 1870, *Horae Soc. ent. ross.*, **7**: 70.

This insect flies between 1400 and 2100 m over scree slopes on Mt. Taygetos, Mt. Menalon (Willemse, 1975), Mt. Chelmos, Mt. Parnassos, Mt. Tymphristos, Mt. Iti (Willemse, loc. cit.) and Mt. Peristeri in July and August.

In the past *graeca* has been classified as a subspecies of the Asiatic *mamurra* because of superficial similarities. However, the androconia of *graeca* belong to subgroup a and resemble the androconia of *h. hippolyte* from Russia and of *h. williamsi* Romei




Figs. 1-3. Androconia in *Pseudochazara*. 1, *anthelea*, typical of group 1; 2, *graeca*, typical of subgroup 2a; 3, *mamurra*, typical of subgroup 2b.

Figs. 4, 5. Male genitalia of Greek *cingovskii* mounted under no pressure. 4, uncus, tegumen and gnathos; 5, inner surface of valve.

Figs. 6-9. Inner valvular surfaces in *mamurra*-group, 6, *mamurra*, Malatya, Turkey; 7, ditto, NE. Turkey; 8, ditto, Taurus, Turkey; 9, *amymone*.

from Spain almost exactly. Moreover, *graeca* typically shows a broad distal third to its valve and a pointed valvular tip. The shoulder is set at about the junction of the middle and distal valvular thirds. In all these characters *graeca* shows morphological affinities to *hippolyte*. It is possible that *graeca* has evolved from *hippolyte* or from a similar but more ancient species and that it is confined to Greece: the curiously disjunct distribution of *hippolyte*, which is found in the Sierra Nevada of Spain and apparently not again until Russia (Higgins & Riley, 1974), perhaps reflects this. Good plates and a description of *graeca* are given in Higgins & Riley (loc. cit.) and Higgins (1976).

**Pseudochazara cingovskii** Gross **stat. nov.**

*Satyrus (Pseudochazara) sintenisi cingovskii* Gross, 1973, *Ent. Z. Frankf. a.* M., **83**:213, fig. 2.

This insect is local and uncommon near Ioannina in N. Greece. It is known from three localities on scree slopes at about 1200 m in July (vide Koutsaftikis, 1974; Gross, 1973).

Gross (loc. cit.) described this insect as a subspecies of *sintenisi* Staudinger. However, examination of the holotype and of topotypical examples of *sintenisi* shows that *cingovskii* is distinct from *sintenisi* in both superficial and morphological characters. For example, the androconia of *cingovskii* belong to subgroup a whereas those of *sintenisi* are identical to those of *mamurra*. Since no full description of *cingovskii* exists, one can be given here.

MALE. *Upperside* similar to that of *Hipparchia semele cadmus* Fruhstorfer but forewing with prominent white ocelli in S 3, 4 and two white-pupilled ocelli in S 2, 5. Hindwing with small white-pupilled ocelli in S 2, 3 and often 4. Dark marginal borders 2-3 mm wide on all wings. Fringes grey, tipped white. Ground colour dark brown and sex brand indistinct. Well defined fulvous postdiscal band variably dusted brown on hindwing and broken along veins by ground colour, especially along v4 of forewing. Forewing length 25-29 mm. *Underside* ground colour dusky orange-brown or dirty yellow. Well marked discal line on forewing. Base of forewing uniform grey. Cell with one cell bar, which is continued vaguely to inner margin of wing. Hindwing irrorate with fine darker markings, especially marginally. Traces of pale postdiscal band occur after the vestigial grey discal and postdiscal lines. Often a white submarginal ocellus in S 3.

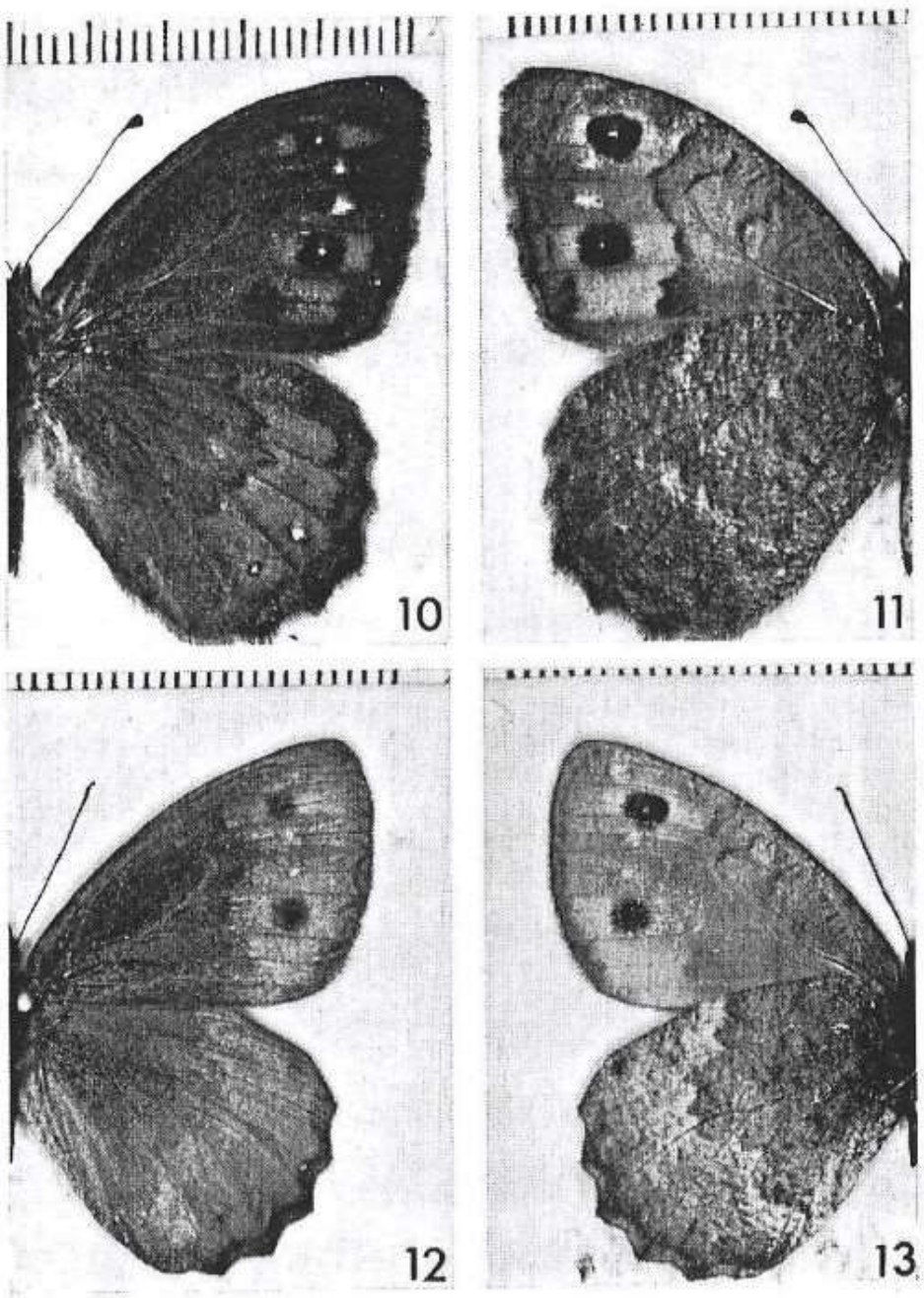
FEMALE. Similar but larger.

**Pseudochazara amymone sp. nov.**

(Pl. 6, figs. 12, 13)

MALE. *Upperside* similar to *graeca* but wings more rounded and with notably broad clear orange postdiscal bands more or less broken by grey-brown ground colour along v4 of forewing and

## PLATE 6




Figs. 10-13. Recently described and new *Pseudochazara*. 10, *cingovskii*, ♂, upperside; 11, ditto, underside; 12, *amymone*, paratype ♂, upperside; 13, ditto, underside.

enclosing blind black ocelli in S 2, 5 and minute black ocelli in S 3, 4 on forewing. Sex brand inconspicuous. Hindwing sometimes with small black ocellus in S 2 and dark grey submarginal line broken by orange along veins. Marginal grey band thin (1-2 mm wide). *Underside* ground colour pale yellow-grey but variable. Hindwing irrorate with darker scales and indistinct striae. Forewing length 26-27 mm.

FEMALE. Unknown.

MATERIAL EXAMINED

Holotype ♂ (forewing length 26 mm), mountains just N. of Ioannina, Epiros, Greece, 650 m, 10.vii.1975, J. Brown leg. et coll.

Paratypes 3 ♂ (forewing lengths 26-27 mm), data as for holotype but 5-10.vii.1975.

This insect is known from one rocky locality near Ioannina where it flies in July. In this locality it is rare.

*P. amymone* is closely related structurally to *mamurra*. It differs from *mamurra* in its markings and, morphologically, in that its valvular shoulder lies more distally than in any subspecies of *mamurra*. The ventral edge of the valves is less smoothly curved than in *mamurra* and the valve is rather squat. The valvular termination is sharp and pick-like. The tegumen is well domed and the gnathos is thin. Such characters do not typify any *mamurra*. The androconia of *amymone* differ from those of *mamurra* in being narrower and more parallel-sided distally and in having a less squat body piece; in these characters *amymone* resembles *geyeri*. Moreover, typical *mamurra* flies at 1000-2000 m. *P. amymone* is a Greek representative of the *mamurra*-complex of the genus *Pseudochazara*. It seems to be a member of the apparently relict element of the fauna of NW. Greece, Albania and SE. Jugoslavia. *P. geyeri*, which is still unrecorded from within the political boundaries of Greece, and *cingovskii* are perhaps also relict species.

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REFERENCES

BROWN, J., 1976. Notes regarding previously undescribed European taxa of the genera *Agrodiaetus* Hübner, 1822 and *Polyommatus* Kluk, 1801. *Entomologist's Gaz.*, **27**: 77-84.

COUTSIS, J. G., 1973. List of Grecian Butterflies, additional records 1972. *Entomologist's Rec. J. Var.*, **85**: 165-168.

DACIE, J. V., DACIE, M. K. V. & GRAMMATICOS, P., 1972. Butterflies in northern and central Greece, July 1971. *Entomologist's Rec. J. Var.*, **84**: 257-266.

FOUNTAINE, M. E., 1902. Butterfly hunting in Greece, in the year 1900. *Entomologist s Rec. J. Var.*, **14**: 24-35, 64-67.

GROSS, F. J., 1973. *Satyrus sintenisi* auch in Europa nebst Beschreibung einer neuer Unterart. *Ent. Z. Frankf. a. M.*, **83**: 211-214.

HIGGINS, L. G., 1976. *The classification of European Butterflies.* London.

HIGGINS, L. G. & RILEY, N. D., 1974. *A field guide to the butterflies of Britain and Europe* (2nd Edn). London.

KOUTSAFTIKIS, A. 1974. Recent butterfly records from Greece. *Entomologist's Rec. J. Var.*, **86**: 15-17.

STAUDINGER, O., 1870. Beitrag zur Lepidopterenfauna Griechenlands. *Horae Soc. ent. ross.*, **7**: 3-304.

TRONICEK, E., 1949. Contribution to the knowledge of the lepidopterological fauna of Crete. *Sb. ent. Odd. nár. Mus. Praze*, **26**: 15.

WARREN, B., 1936. *Monograph of the Genus Erebia.* London.

WILLEMSE, L., 1975. Distribution records of Rhopalocera in the Greek mainland and Crete. *Ent. Ber., Amst.*, **35**: 141-149.

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V. F. EASTOP