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Phenology and distribution of the Clouded Apollo *Parnassius mnemosyne* (LINNAEUS, 1758) in Estonia, with the description of a new subspecies from south-eastern Estonia

(Lepidoptera, Papilionidae)

by

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Introduction

The purpose of the present paper is to give a survey of the Clouded Apollo (*Parnassius mnemosyne* L.), its changes in distribution, and the phenology of the imagines' flight times in Estonia, as there are no contemporary papers discussing these points. Data given in numerous publications until present times are predominantly of local character and do not discuss changes in the spread of this species lately. Of summarizing works only a UTM map of distribution (10 x 10 km squares) has been published, but it does not reveal changes in time (KESKÜLA, 1992). In addition to the habitat squares marked on the map, there is a lot of new and interesting information concerning various new findings during the last years. Distribution and population density of the Clouded Apollo has decreased in many European countries. Therefore, the species has aroused the interest of nature conservation. In Estonia this butterfly is under legal protection since 30.III.1995, belonging to the third category of protected species. All the above mentioned facts help us to explain the need for the present survey.

Distribution and phenology of the subspecies of the Clouded Apollo in Estonia

The Clouded Apollo is locally distributed in Estonia (fig. 1), although *Corydalis*, its foodplant, is spread almost all over the territory. Such distribution patterns are explained by post-glacial changes in climate and ecological conditions. Until the middle of the 1980s, only two populations were known from Estonia: ssp. *estonicus* BRYK, 1922 from the coast of Northern Estonia, and ssp. *osiliensis* VIIDALEPP, 1966 from Saaremaa Island.

The first data concerning the subspecies *osiliensis* came from the beginning of this century (SLEVOGT, 1910). Material in collections being scarce, the species has probably never been numerous. The last information on this subspecies dates back to the year 1973. There are no later records, although many entomologists have been searching for there (KESKÜLA, 1989). According to literature and collected material, only five habitats of *osiliensis* are known (VIIDALEPP, 1970). This subspecies flies in wooded meadows from the beginning of June till the middle of July.

Subspecies *estonicus* occurs on the coasts of Northern Estonia, from the mouth of the River Narva to Lahemaa. It has been found on the slopes of covered limestone banks, in river valleys and glades in deciduous and mixed forests, and on meadows at rivers. All the time known, this subspecies has occurred in more or less the same area and it has been numerous in its habitats. Subspecies *estonicus* flies from the first days of June until the middle of July (fig. 2).

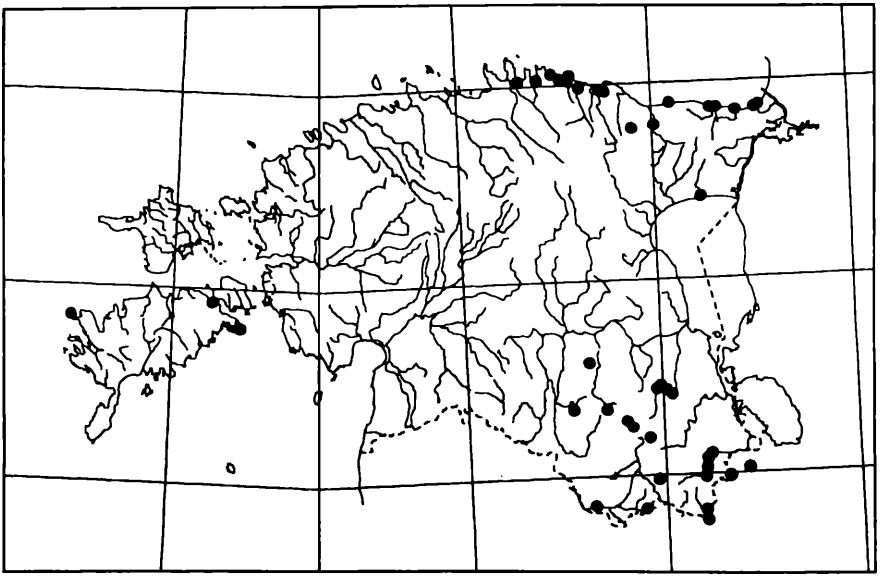

Fig. 1: Distribution of the Clouded Apollo in Estonia.

The Clouded Apollo was caught for the first time in South-Eastern Estonia near the river of Pedetsi in 1985 by H. REMM. The next year it was already found at the landscape protection area at the river Piusa. Numerous new habitats were detected in 1990. That year the Clouded Apollo was already caught at the river Ahja, near Rõuge, and at the river Koiva. At present the distribution of the Clouded Apollo extends to Vellavere, Puka and Valgametsa in Southern Estonia. There are many new habitats also in Valga and Võru counties. In a list published in 1986 (REMM & VIIDALEPP, 1986), the authors point out that the Clouded Apollo is a new, still undescribed and unnamed subspecies in Southern Estonia. The authors repeated this point of view in their taxonomic guide published lately (VIIDALEPP & REMM, 1996). This subspecies flies from the first days of May until the end of the first decade of July (fig. 2). As the subspecies is still undescribed and unnamed, the authors of this paper are going to fill the gap:

Parnassius mnemosyne ***viidaleppi*** **subspec. nov.**
(Colour plate IIa, Figs. 1, 2)

Holotype: ♂, Estonia, Põlvamaa, Suur-Taevaskoda, 13.V.1990, leg. J. LUIG, coll. Museum of Zoology of Tartu University (MZTU).
Forewing length 30.3 mm. Forewings cream-white, with wide marginal fields extending slightly over vein Cu1. Between the veins on the field there are hardly noticeable white

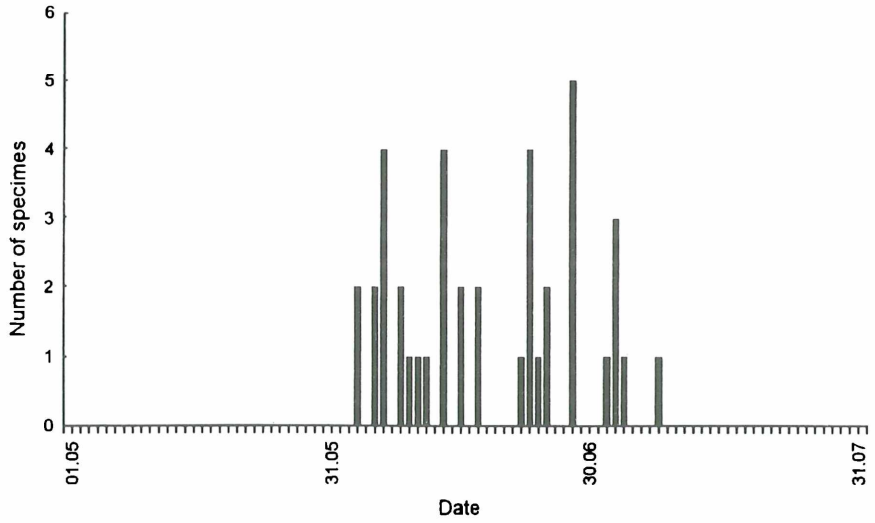

Fig. 2a: Phenology of the adult stage of *P. mnemosyne* in North-Eastern Estonia.

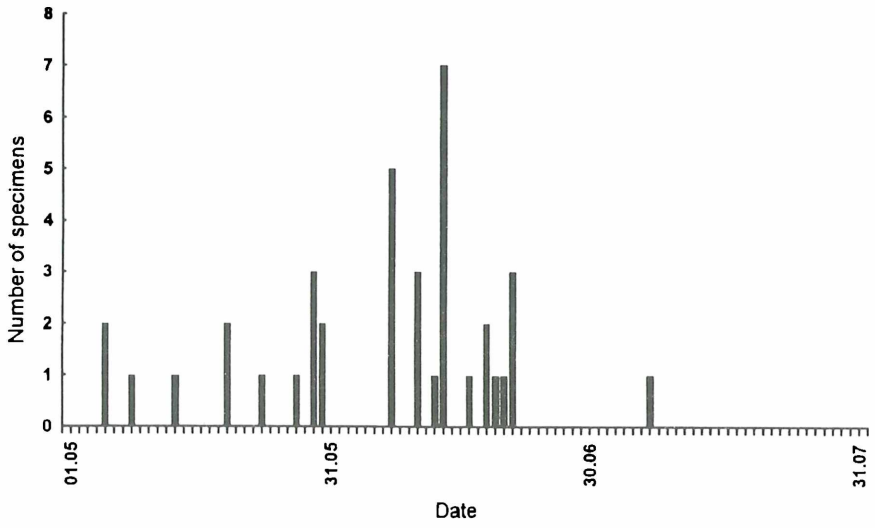

Fig. 2b: Phenology of the adult stage of *P. mnemosyne* in South-Eastern Estonia.

speckles. The discal spot is black, large, elliptical. Above this spot, towards the tip of the wing, there is a round greyish spot on the radial veins. The spot on the discoidal cell is black, round, and larger than the discal spot. The hindwings are of the same colour as the forewings. The base of the wing and the field between the discoidal cell and the inner margin of the wing are black. The spot situated towards the termen from the discoidal cell is greyish, large, and slightly oval.

Paratypes: 61 ♂♂, 50 ♀♀, caught at the same area in 1990, 1991 and 1993. In the collections of MZTU, the authors and A. SALDAITIS.

Forewing length 28.5–35.5 mm (average 32.55 mm). Colour and pattern of wings similar to holotype.

The new subspecies is named after the leading Estonian lepidopterologist Dr. JAAN VIIDALEPP.

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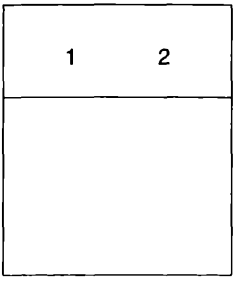
Explanation of colour plate IIa (p.197):

Fig. 1: *Parnassius mnemosyne viidaleppi* subspec. nov., ♂.
Fig. 2: *Parnassius mnemosyne viidaleppi* subspec. nov., ♀.



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Colour plate IIa

KESKÜLA, T. & J. LUIG: Phenology and distribution of the Clouded Apollo (*Parnassius mnemosyne* (LINNAEUS, 1758)) in Estonia, with the description of a new subspecies from south-eastern Estonia (Lepidoptera, Papilionidae). – Atalanta **28** (1/2): 17–20.

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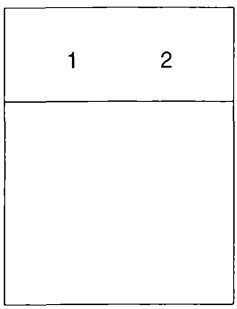
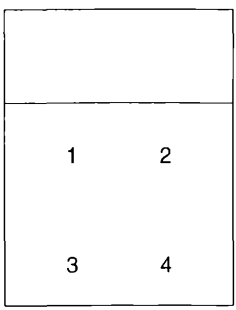


Colour plate IIb

KESKÜLA, T.: A new subspecies of *Colias alpherakii* STAUDINGER, 1882 from Uzbekistan (Lepidoptera, Papilionidae). – Atalanta **28** (1/2): 33–34.

Fig. 1: *Colias alpherakii tashkurgonica* subspec. nov., holotype ♂, Uzbekistan, Kaskadarya prov., Chakchar Range, Kashkurgon Pass, 07.VII.1995.
Fig. 2: *Colias alpherakii tashkurgonica* subspec. nov., allotype ♀, same place as holotype, 29.VI.1995.
Fig. 3: *Colias alpherakii alpherakii*, ♂, Tadjikistan, SW-Alai, Kok-Su valley, 3750–3800 m, 29.VII.1981.
Fig. 4: *Colias alpherakii roschkana*, ♂, Tadjikistan, Central Pamir, Tangmas valley, ca. 3500 m, 6.VII.1982.



Colour plate IIa/b