

## DISTRIBUTION AND BIOTOPE PREFERENCE OF *MELANARGIA GALATHEA* (LINNAEUS, 1758) IN ALBANIA

(*LEPIDOPTERA, NYMPHALIDAE, SATYRINAE*)

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### Abstract

The marbled white butterfly, *Melanargia galathea* is an univoltine species with a relatively long flight season starting in June and ending in early August. There are known up to 30 subspecies of *M.galathea*, from which only *M.galathea satnia* Fruhstorfer, 1917 was found for Albania. Several expeditions during the period 2011 – 2016, have surprisingly discovered another population of this species. The individuals were large, extreme melanistic and were living from the termomediterranean to mesomediterranean bioclimatic level. This subspecies was described as *M.galathea vrenozina* Aistleitner, 2017, locus typicus the north-western hill of Durrës. These two subspecies are the only ones which are found in Albania so far. Further expeditions will show other new interesting biotopes, thus enriching the distribution map of *Melanargia galathea* in Albania.

**Key words:** *Melanargia galathea vrenozina*, *Melanargia galathea satnia*, balkan distribution, termomediterranean level.

### Abstrakt

Flutura e bardhë e mermertë, *Melanargia galathea* është një lloj univoltin me një periudhë relativisht të gjatë fluturuese që fillon në Qershor dhe mbaron në fillim të Gushtit. Lloji *M.galathea* përfaqësohet deri në 30 nënloje, nga të cilat vetëm *M.galathea satnia* Fruhstorfer, 1917 është gjetur në Shqipëri. Disa ekspedita gjatë periudhës 2011 – 2016, çuditërisht kanë zbuluar një popullatë tjetër të këtij lloji. Individët ishin të mëdhenj, shumë melanistikë dhe jetonin nga niveli bioklimatik termomesdhetar në atë mezomesdhetar. Ky nënloj është përshkruar si *M.galathea vrenozina* Aistleitner, 2017, lokus tipik i të cilit është kodra very-perëndimore e Durrësit. Këto dy nënloje janë të vetmet që gjenden deri më sot në Shqipëri. Ekspedita të tjera do të tregojnë biotope të tjera interesante, duke pasuruar kështu hartën e shpërndarjes së *Melanargia galathea* në Shqipëri.

**Fjalëkyçe:** *Melanargia galathea vrenozina*, *Melanargia galathea satnia*, shpërndarje ballkanike, niveli termomesdhetar.

## Introduction

The genus *Melanargia* belongs to subfam Satyrinae, fam Nymphalidae, order Lepidoptera and is distributed with more or less 20 species, which are distributed from Europe and North Africa to Japan. The distribution area of the Euro-Siberian species *Melanargia galathea* (Linnaeus, 1758) is in the Western Palaearctic region and in detail from the Maghreb and from the north of Iberian Peninsula, in Scandinavia not found, going to the East of Europe, from Asia minor to the southern Caucasus (Gaede, 1931; Hesselbarth *et al.*, 1995).

In this large region a lot of different subspecies are described, but you can discuss on the validity of all. Genera *Melanargia* has a morphological variation among the population of its species based on the melanistic feature (Wagener, 1998). The populations of the Southern Alps and the Mediterranean region are a little bit darker than central European populations; they have been described as *ssp.procida* Herbst, 1794, but better this taxon is accepted as a group of subspecies in our opinion.

The marble white butterfly, *M.galathea*, is an Eurosiberian species, well adapted for humid and cold climate regions. The type locality is Germany. On all population of his area *M.galathea* is plentiful and not endangered species. It's named marble white butterfly based on the upper side of wings in black colour combined with white in marble patterns, and black lines and eye patterns in downside back white wings (Reichl, 1975; Tolman & Lewington, 1998).

First there have been collected and examined series of *Melanargia galathea* in Albania. This material belongs to *ssp.satnia* Fruhstorfer, 1917. In 2016 was discovered a population, the specimens of which are very melanistic and with a large wingspan. This species is described as *ssp.vrenozina* in honour of the research field work by the first author (Aistleitner, 2017).

In this manuscript it is described the distribution and biotope preferences of both subspecies of *Melanargia galathea*, which are found so far in Albania from previous expedition or both authors, including the data for the year 2017.

### Material and methods

The expeditions were focused only on adult's observations and data collection for both subspecies of *M. galathea*. The season of the field work was late spring (May) up to summer (June and July), during the years 2011-2017. This period belongs to the time when adults emerge from larvae, thus we could easily find in the meadows, fresh adults flying, sitting or feeding with their food plants, but also old adults were observed too.

Within this period, we tried to explore as many biotopes as possible from north eastern, west lowland to south eastern Albania (Fig. 1). Sometimes, because of the weather conditions which are more important considering that butterflies don't fly in rainy weather, we couldn't find any specimen. The collected material with fresh specimens is placed in small envelopes and firstly preserved in freeze till the end of each expedition and later is prepared and stored in the collection of the Entomologisches Forschungsmuseum in Feldkirch,

Austria. Some of the specimens of *ssp.vrenozina* will be exposed in the Museum of Natural Sciences in Tirana, Albania.

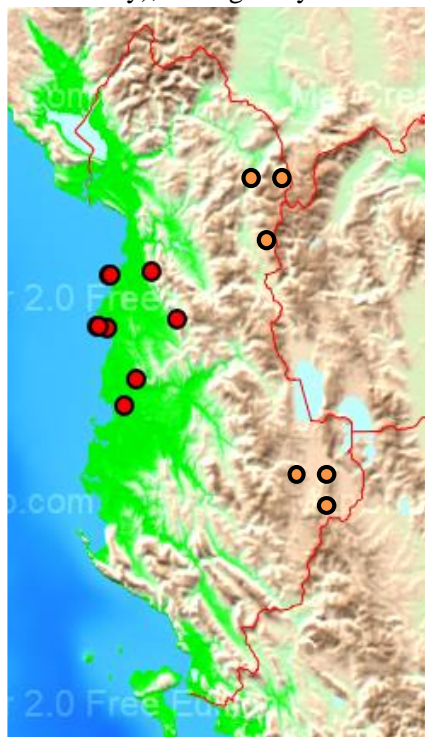
### Results & discussion

Several biotopes and habitats of *Melanargia galathea* are explored recently in Albania. One of the main interests of the field work was to look for more information on distribution and biotope/habitat preference about the new described interesting subspecies, *M.galathea vrenozina* Aistleitner, 2017.

#### Material:

The data for distribution of both subspecies of *M.galathea* in Albania, collected from the previous and recently expeditions in Albania are given as below.

The specimens of the populations of the border of the mountains near Tirana are dark and large. In 2017, further biotopes of the same population were found at the coastal region of the western Albania. They are added to the new subspecies *M.galathea vrenozina*.



**Figure 1.** Map of Albania with distribution points (red points: *ssp.vrenozina*; orange points: *ssp.satnia*)

Distribution of *ssp.vrenozina* Aistleitner, 2017

Krujë, Bektashi, N 41°31'02", E 19°48'14", 1135 m a.s.l, 4.7.2012, leg. Aistleitner & Vrenozi

Prov. Durrës, hills northwest of Durrës, N 41°19'05", E 19°26'05", 80 m a.s.l, 9-10.6.2016, 24.5.2017, 2.6.2017, leg. Aistleitner

Prov. Durrës, Kepi i Rodonit, village Sketaj, 200 m a.s.l, 5.6.2017, leg. Aistleitner & Vrenozi

Prov. Lushnje, Kolonjë-West, 100 m a.s.l, 6.6.2017, leg. Aistleitner & Vrenozi

Prov. Kavajë, Rrogozhinë, street in direction of village Hermenvaj, 150-200 m a.s.l, 7.6.2017, leg. Aistleitner & Vrenozi

Prov. Durrës, Durrës North, Bishti i Pallës, 20 m a.s.l, 9.6.2017, leg. Aistleitner

Prov. Tiranë, Dajti Mountain, N 41°21'47", E 18°54'40", 1100m a.s.l, 3.7.2012, 8.7.2015, leg. Aistleitner

Distribution of *ssp.satnia* Fruhstorfer, 1917

Prov. Korçë, vic. Voskopojë, N 40°37'43", E 20°34'47", 12-1250 m, 11.7.2011, leg. Aistleitner

Prov. Kukës, Topojan, N 42°00'40", E 20°31'40", 1300 m a.s.l, 6.7.2012, leg. Aistleitner

Prov. Dibër, Peshkopi, vic. Rabdisht, N 41°41'05", E 20°29'04", 950 m a.s.l, 24.6.2012, leg. Aistleitner

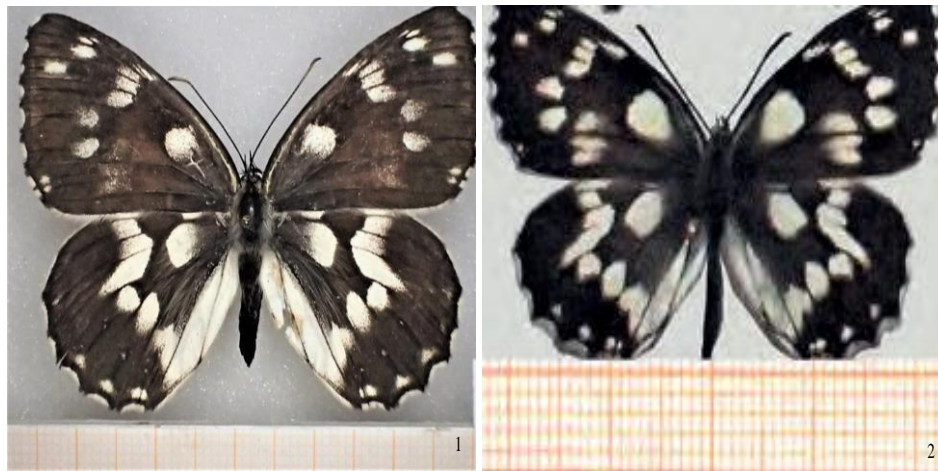
Prov. Korçë, vic. Dardhë, N 40°31'01", E 20°49'45", 1260 m a.s.l, 10.7.2011, leg. Aistleitner

26.6.2015, leg. Aistleitner & Vrenozi

Prov. Korçë, vic. Korçë, Mali i Moravës, N 40°36'45", E 20°48'54", 1300 m a.s.l, 28.6.2015, leg. Aistleitner & Vrenozi

Prov. Kukës, Kolesjan, N 41°58'23", E 20°24'05", 700 m a.s.l, 22.6.2016, leg. Aistleitner

*Ssp.vrenozina* and *ssp.satnia* differ from each other from morphological features. Thus, comparing a series of specimens, both size and patterns of the first wings, based on Aistleitner (2017) and from our research field work observations, results that the *ssp.vrenozina* is larger and very melanistic in comparison with *ssp.satnia* (Fig. 2).



**Figure 2.** *Melanargia galathea*: 1. ssp.*vrenozina* (holotype female); 2. ssp.*satnia* (male)

Furthermore, *M.g.vrenozina* in Durrës is larger and darker in comparison with Dajti Mountain, because its warmer climate closes to the sea (see also Aistleitner, 2017) (Fig. 3).



**Figure 3.** *M.g.vrenozina*: 1. Durrës; 2. Dajti Mountain

The population of ssp.*vrenozina* is found in warmer climate, inhabiting the areas close to the sea of the west lowland and Dajti Mountain; whilst ssp.*satnia* is observed in the mountain meadows in north eastern and south eastern Albania.

The biotop in Durrës is a hill with a typical Mediterranean plant composition with remains of macchia with *Rubus ulmifolius* and *Sparthium junceum*; meanwhile in Shetaj village at the Cape of Rodon, it is with *Pteridium aquilinum* (Fig. 4).



**Figure 4.** Biotopes of *ssp.vrenozina*: 1. Hill in the city of Durrës; 2. Shetaj, Cape of Rodon

Especially the locality in Bishti i Pallës at Durrës North (Fig. 5), where *ssp.vrenozina* was flying near the sea, is very interesting, because *Melanargia galathea* is a Eurosiberian species, adapted in a colder and humid region, meanwhile in this area *ssp.vrenozina* flies in the termomediterranean level. On the geological view the biotopes are situated in old Pleistocene dunes.



**Figure 5.** Biotope of *ssp.vrenozina*: Bishti i Pallës

The biotope in Dajti Mountain is a submediterranean wood on mesomediterranean level with *Quercus cerris*, *Fraxinum ornus*, *Ostrya carpinifolia* and *Carpinus betulus*. *Melanargia* specimens were found in the pasture with high grass with the flower specimen sucking *Scabiosa ochroleuca* and bushes margins (Fig. 6).



**Figure 6.** Biotopes of *ssp.vrenozina*: Dajti Mountain – 1. Western; 2. Eastern

Meanwhile, as far as it's known until today, in the southern, the eastern and the northern part of Albania in the supramediterranean level lives the subspecies *M. galathea satnia* Fruhstorfer, 1917.

In south eastern, there are observed specimens in Korça district, especially in the areas of Voskopojë, Dardhë and Mt. Moravës (Fig. 7).



**Figure 7.** Biotopes of *ssp.satnia*: Korçë – 1. Voskopojë; 2. Mt. Moravës; 3. Dardhë

The population of *ssp.satnia* is extended in more northern, up to Montenegro, where there are observed some specimens (Petrovac-N, Glubi Do, 580 m, 10.6.2007, leg. Aistleitner).

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