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Review Article

# Assessment of the Population Status of *Zegris Fausti* Christoph, 1877 (Lepidoptera, Pieridae) in Tajikistan

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## Abstract

This paper describes the monitoring of the current population status of *Zegris fausti* Christoph, 1877 in Tajikistan. The results show that this species has a fragmented distribution and its populations occupy only small areas. The number of adults within each population varies, but is generally not low. The densest populations are found within the Tabakchi Ridge. The results of the study indicate a stable state of the *Z. fausti* population in Tajikistan. Based on these data, additional conservation measures are not required to protect this species. Given the fragmented distribution of *Z. fausti* in Tajikistan, further monitoring of the population status of this species seems necessary.

## Introduction

*Zegris fausti* is found in Central Asia and Southern Kazakhstan [1]. In Tajikistan, this species is distributed mainly in the Southwestern part of the country, preferring sandy areas, hills with ephemeral vegetation and rocky slopes at an elevation of 350-700 m. There is very little information about *Z. fausti* in Tajikistan. Stshetkin [2] classified this species as rare, and the work of Tshikalovets [3] mentions only the capture of a single specimen, which indicated a low abundance of *Z. fausti*. In the spring of 2023, during the collection of material on the Tabakchi Ridge, we discovered a fairly dense population of *Z. fausti*. In 2024, we also found this species on the Tyuntau and Panj Karatau Ridges. Taking into account previous reports about the rarity of the species, we conducted monitoring on the current state of the *Z. fausti* population in Tajikistan. The purpose of the study was to determine whether this species is really rare and whether it needs conservation measures or not.

## Material and Methods

The material for this study was collected in the spring of 2023-2024 in southwestern Tajikistan, in particular in the Tabakchi, Tyuntau and Panj Karatau Ridges. The Tabakchi is a medium-mountain Ridge (37°52'46.27"N, 068°57'31.57"E), located on the left bank of the Vakhsh River in Southwestern Tajikistan and is part of two districts of the Khatlon region: Levakand and Dangara at an elevation of 350-1300 m. The research area located at an elevation of 350 m and is a hilly foothill with sparse vegetation. The Tyuntau Ridge is located in Southern Tajikistan, in the Khatlon region, Nosiri Husrav District. The area under study is located at an elevation of 460 m and is a rocky slope with sparse vegetation (37°18'20.03"N, 067°58'24.64"E). The Panj Karatau Ridge is located in southern Tajikistan (37°23'075"N, 069°19'421"E), in the administrative territory of the Panj and Farkhor districts of Khatlon region. The foothills of the ridge where the research was conducted is located at an elevation of 450 m and belong to the upper band of low-grass semi-savannas, characterized by longer-lived shrubs ephemeroïds (mainly *Phlomis bucharica* Regel). The butterflies were counted using the transect method [4,5]. This helps quantify the size of the population in different regions. According to this method, the length of the transect is ideally 1 km, and butterflies counted to a width of 5 m on both sides. The count was carried out twice a day, between 10 a.m. to 12 p.m., and from 2 p.m. to 4 p.m. every 5 days. This approach allows us to give a robust estimate of the number of butterflies within the selected areas (Figure 1,2).

**Figure 1:** Distribution of *Zegris fausti* in Tajikistan. Black dots indicate the location where this species occurs.



**Figure 2:** Butterfly of *Zegris fausti* (A), habitats of *Zegris fausti*, Tyuntau Ridge (B), Tabakchi Ridge (C) (photo by AM Davlatov).



number of *Z. fausti* butterflies was observed at the beginning of the flight period, that is during the first half of March, after which the number decreases. It is important to note that *Z. fausti* was not previously found on the Tyuntau and Panj Karatau Ridges, and this is a new location for this species in Tajikistan. *Z. fausti* flies together with other species of Pieridae, such as *Euchloe tomiris* Christoph, 1884, *Euchloe daphalis* (Moore, 1865) and *Euchloe pulverata* (Christoph, 1884), but is slightly more numerous. *Z. fausti* is characterized by a fast flight, which often makes it difficult to capture it.

### Conclusion

From the above data, it can be concluded that the populations of *Z. fausti* in Tajikistan it does not need immediate conservation measures. However, given the fragmented distribution of this species in the region it is important to continue monitoring the state of its population in the future.

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### Results and Discussion

On the Tabakchi ridge, on the first day of account (March 11), butterflies were found in noticeable numbers: between 20 to 28 individuals were recorded in each transect count. In subsequent surveys conducted every 5 days, the number decreased to 8 and 3 individuals, respectively. A different pattern was observed on the Tyuntau and Panj Karatau Ridges. Unlike the Tabakchi Ridge, the number of butterflies was significantly lower here, ranging from 3 to 5 individuals per account. The results of our study showed that the densest populations of *Z. fausti* were concentrated within the Tabakchi Ridge. The number of butterflies in the other two ranges (Tyuntau and Panj Karatau) was significantly lower, although their presence there has also been recorded. The largest