

# The Conservation Status of EPT Taxa in Kosovo

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## Introduction

The aquatic insect orders **Ephemeroptera (mayflies)**, **Plecoptera (stoneflies)**, and **Trichoptera (caddisflies)**-collectively referred to as **EPT taxa** - are widely recognized as key bioindicators of freshwater ecosystem health due to their sensitivity to environmental changes. Despite its relatively small territory (10, 877 km<sup>2</sup>), the Republic of Kosovo spans multiple biogeographic regions and supports a remarkably rich and diverse EPT fauna with over 300 recorded taxa. However, comprehensive data on their conservation status remains scarce. The EPT diversity in Kosovo is increasingly threatened by anthropogenic pressures, including habitat degradation, pollution, and climate change. This study assesses the conservation status of EPT taxa in Kosovo by applying the International Union for Conservation of Nature (IUCN) Red List criteria alongside national evaluations from the Red Book of Fauna of Kosovo and the Administrative Instruction for the Proclamation of Wild Species Protected and Strictly Protected. The research identifies current threats to these taxa, highlights species at greatest risk, and offers strategic recommendations for conservation and management efforts aimed at preserving freshwater biodiversity in the region.

## Aims and Methods

This study aims to:

- **Evaluate** the conservation status of EPT taxa in Kosovo using standardized IUCN Red List criteria.
- **Identify** the primary threats affecting EPT taxa across freshwater habitats in the region.
- **Recommend** targeted conservation priorities and management actions to support the long-term persistence of EPT diversity in Kosovo.

To assess the conservation status of EPT taxa, the study employed:

- **Conservation Assessment:** Evaluation based on IUCN Red List Categories and Criteria complemented by driven threat analysis.
- **National Data Sources:** Species occurrence and threat data were obtained from the *Red Book of Fauna of the Republic of Kosovo* and relevant national legislation, including the *Administrative Instruction on Proclamation of Wild Species Protected and Strictly Protected*.
- **Threat Identification:** Anthropogenic and environmental pressures were analyzed in the context of habitat quality, pollution levels, and climate-related stressors.

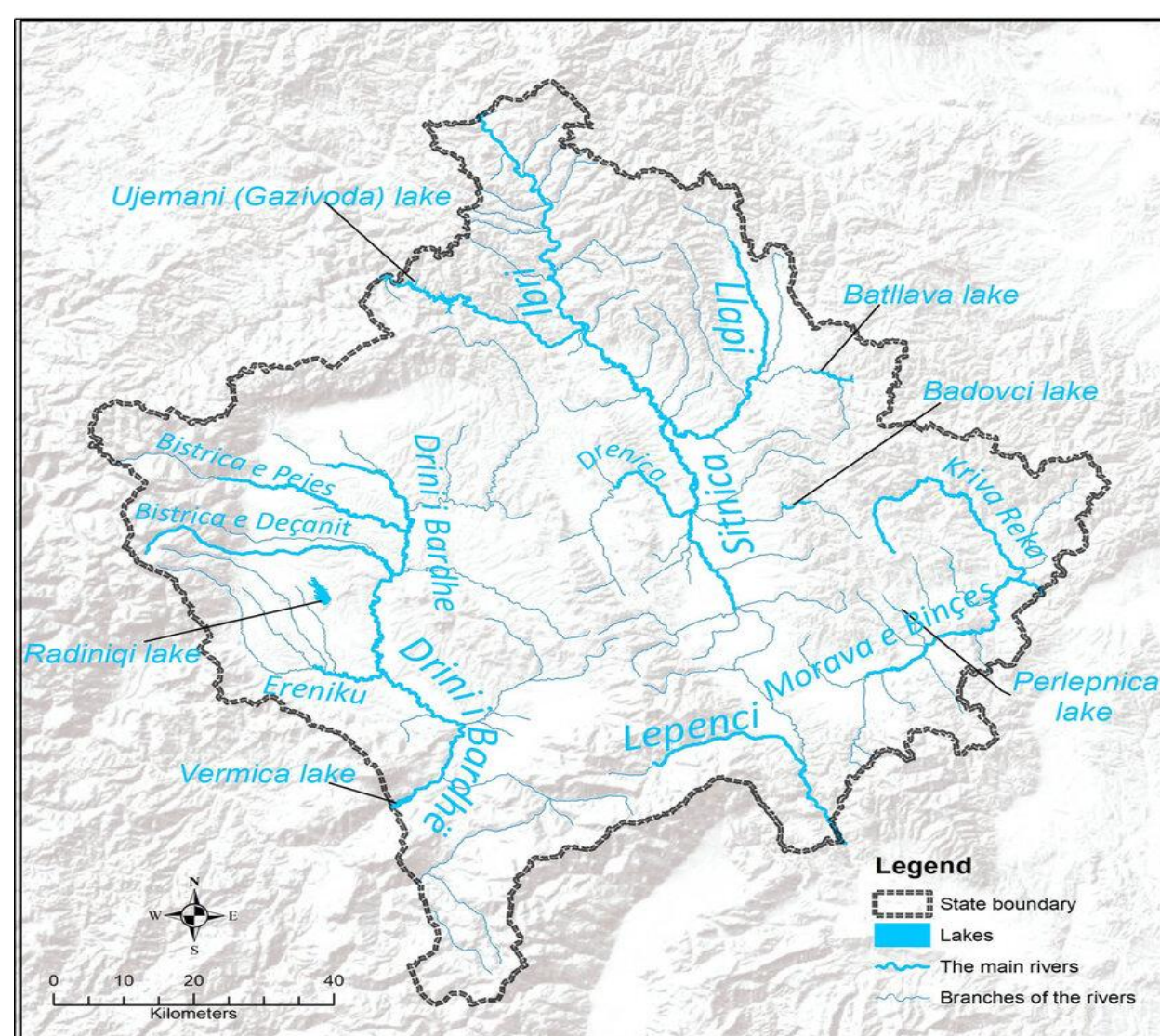


Fig. 1. Map of Kosovo (Main rivers)

## Results

### EPT Species Richness to date:

- **Trichoptera (Caddisflies): 190** species.
- **Plecoptera (Stoneflies): 60** species.
- **Ephemeroptera (Mayflies): 52** species.

Total to date documented EPT species: **302 species**.

### Conservation Status

- **64 species** of EPT evaluated using **IUCN Red List** criteria (Kosovo Red Book of Fauna).
- **80+ species** of EPT are protected by law (**Administrative Instruction No. 12/2020**).

**Critically Endangered Species** mostly belong to **Trichoptera** and **Plecoptera**.

### Threats to EPT Taxa:

- Habitat degradation and fragmentation due to hydropower development.
- Water pollution from agriculture and power plants.
- Lack of political will and low public awareness.

Species within **Trichoptera** and **Plecoptera** exhibit **high vulnerability** due to:

- Specialized habitat requirements
- High sensitivity to environmental change
- No major action towards the prevention of these activities, or restoration of damages caused by their long-term impact.

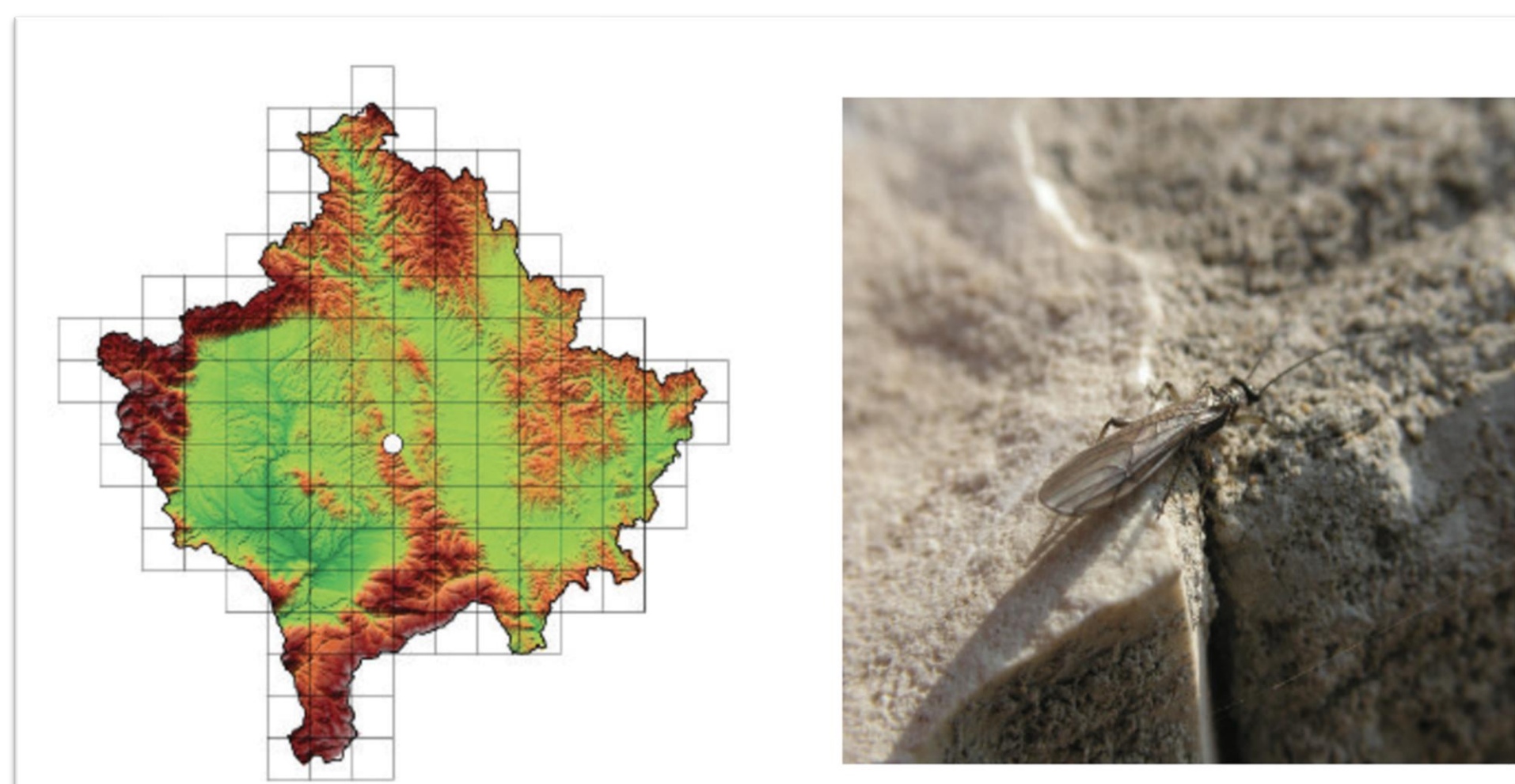


Fig. 2. Plecoptera: *Nemoura asceta* (**Critically Endangered, CR**)

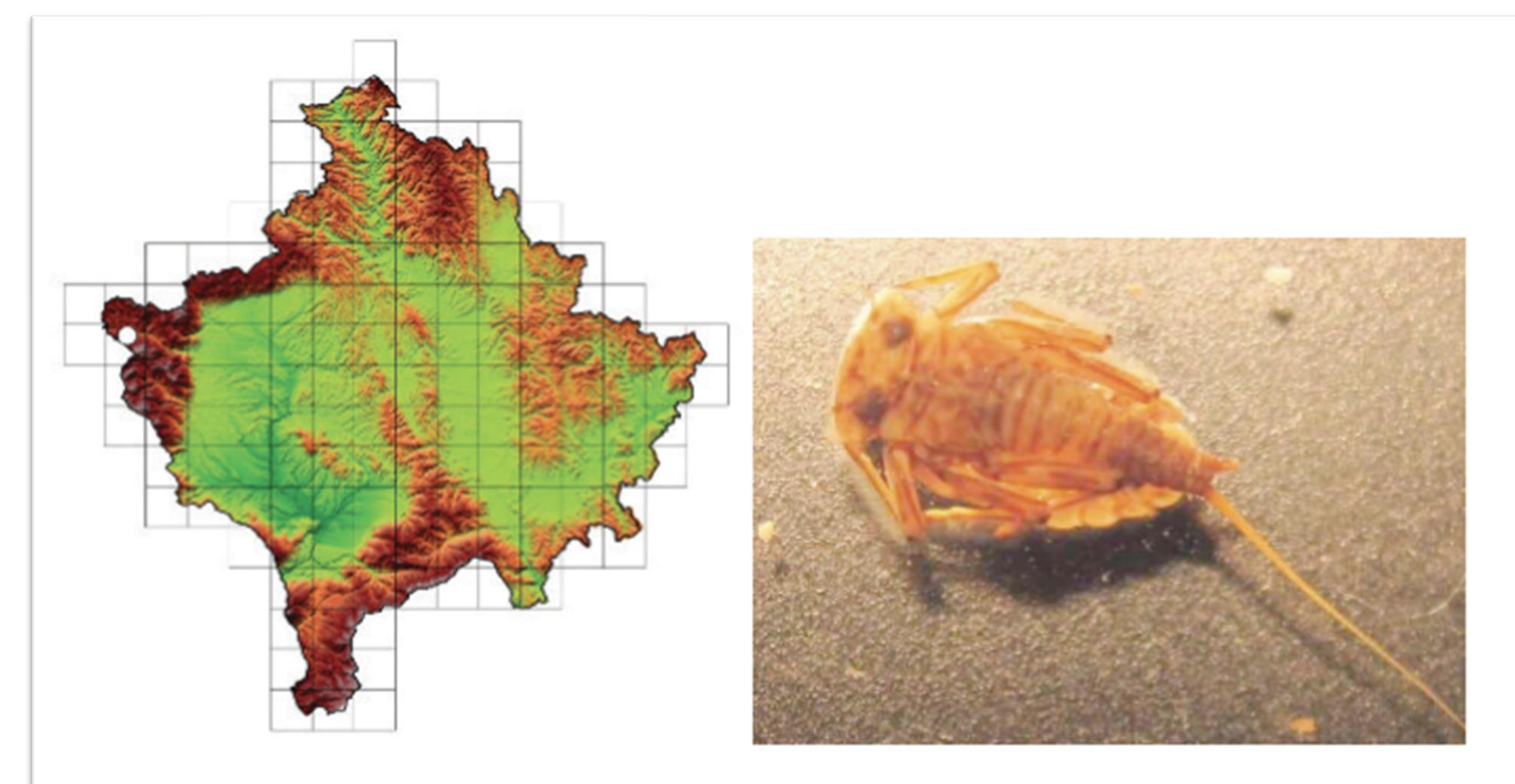


Fig. 3. Ephemeroptera: *Epeorus yougoslavius* (**Endangered, EN**)

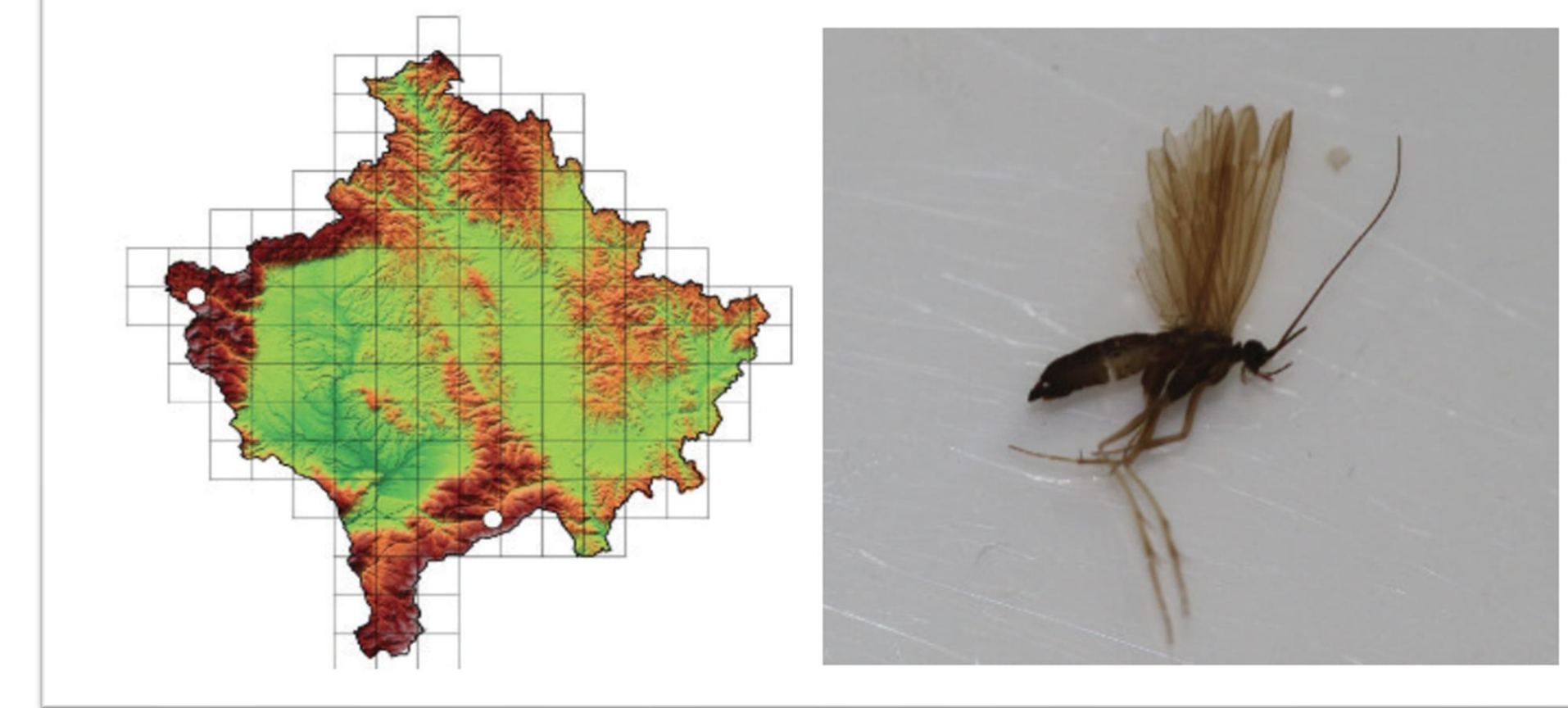


Fig. 4. Trichoptera: *Rhyacophila obtusa* (**Vulnerable, VU**)

## Discussion

Approximately 25% of all EPT (mayflies, stoneflies, and caddisflies) species worldwide are estimated to be threatened with extinction (Sánchez-Bayo & Wyckhuys 2019). The rich EPT biodiversity of Kosovo is under threat. **Urgent and coordinated conservation efforts** are required to safeguard freshwater ecosystems and preserve their essential indicator species.

However, EPT species with narrow habitat ranges are at severe risk. Current water policy and habitat protections are insufficient for long-term conservation.

### Conservation Needs

- Targeted protection measures for EPT taxa.
- Habitat protection and restoration.
- Long-term biomonitoring of EPT Taxa.
- Educational campaigns.
- New research to fill data gaps.

## Conclusion

The conservation status of EPT taxa in Kosovo highlights the urgent need for targeted protection measures. With many EPT species facing high risks, safeguarding their habitats is crucial not only for their survival but also for maintaining the overall health of freshwater ecosystems.

This study serves as a critical starting point for long-term EPT conservation efforts and ecological assessments, emphasizing the importance of continued research, monitoring, and habitat preservation.

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