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New Distribution Records of Phlebotomine Sand Flies (Diptera: Psychodidae) in Western Romania: Findings from 2024–2026

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***Abstract**: Phlebotomine sand flies are insect vectors of many pathogens of medical and veterinary importance, including Leishmania spp. Although several sand fly species have been previously reported in Romania, their geographical distribution remains incompletely documented. This study aimed to update the current knowledge of sand fly occurrence in western Romania and identify previously unreported positive sites. Between 2024 and 2026, entomological surveys were conducted in 27 localities across three counties in western Romania (Timiș, Arad, and Caraș-Severin). Sampling sites were selected based on habitat characteristics considered favorable for sand fly developement, particularly animal shelters and environments containing organic matter. Adult sand flies were collected using CDC light traps operated for three consecutive nights per sampling session. Specimens were identified morphologically using available taxonomic keys. A total of 356 sand flies were collected in six positive sampling sessions from four localities (14.8%): Becicherecu Mic, Beregsău Mic, Arad, and Șiria. Two species were identified: Phlebotomus perfiliewi (n = 315; 88.5%) and Phlebotomus papatasi (n = 41; 11.5%). Overall, 197 specimens (55.3%) were males and 159 (44.7%) were females. Phlebotomus perfiliewi was recorded in Becicherecu Mic, Beregsău Mic, and Arad, whereas Ph. papatasi was identified exclusively in Șiria. No sand flies were collected from the surveyed sites in Caraș-Severin County. All four positive localities represent new geographical occurrence records for the respective species. The detection of two phlebotomine sand fly species in previously unreported localities provides new evidence of their occurrence in western Romania. These findings contribute to updating the known geographical distribution of sand flies and highlight the importance of continued entomological surveillance in habitats potentially suitable for vectors of medical and veterinary relevance.*

***Keywords:** Phlebotomine sand flies; Phlebotomus perfiliewi; Phlebotomus papatasi; geographical distribution.*

INTRODUCTION & OBJECTIVE

Phlebotomine sand flies (Diptera: Psychodidae) transmit pathogens of medical and veterinary importance, including *Leishmania* spp. Their distribution in Romania remains incompletely documented. This study updates occurrence data and identifies previously unreported positive localities in western Romania.

MATERIALS & METHODS

27
localities surveyed

2024–2026
sampling period

01 Three counties: Timiș, Arad and Caraș-Severin.

02 CDC light traps placed mainly in animal shelters for three consecutive nights per sampling session.

03 Preservation in 70% ethanol; morphological identification to species and sex using taxonomic keys.

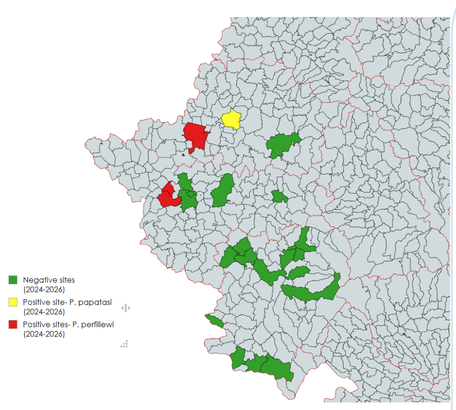


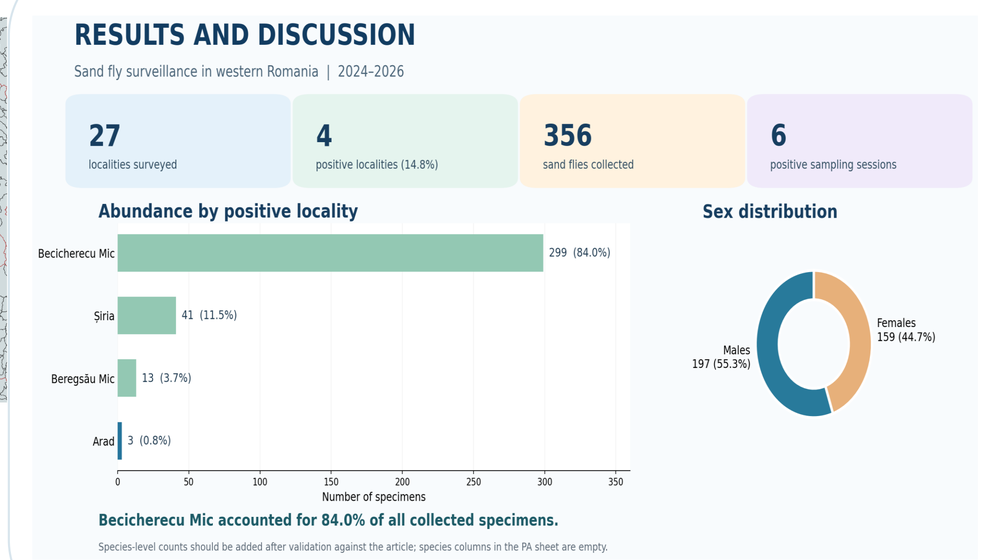
KEY RESULTS

356 specimens • 4 positive localities (14.8%)

Phlebotomus perfiliewi	**315 | 88.5%**
Phlebotomus papatasi	**41 | 11.5%**

All four positive localities are new occurrence records.





CONCLUSIONS

Two *Phlebotomus* species were detected, with heterogeneous distribution and marked differences in local abundance. Continued entomological surveillance is essential to clarify sand fly distribution and potential vector-related risks.