

Scientific Note

New record of *Cyrtobagous salviniae* Calder & Sands, 1985 (Coleoptera: Curculionidae) from southeastern Brazil with comments on its dispersal among freshwater ponds

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Abstract. *Cyrtobagous salviniae* Calder & Sands, 1985 (Coleoptera: Curculionidae) is a weevil native to South America and distributed worldwide as a biocontrol agent of aquatic weeds of the genus *Salvinia* Ség. Native populations and aspects of this weevil biology, such as dispersal mechanisms, are still poorly known, especially in southeastern Brazil. Here, we report the first record voucher-based of *C. salviniae* for the state of Minas Gerais, which not only extends its distribution westward in the southeastern region, but also documents the dispersal of individuals among freshwater ponds via mats of *Salvinia auriculata* Aubl. displaced during a regional river flood, and briefly discuss the ecological importance of such processes.

Keywords: weevil, *Salvinia*, aquatic beetles, aquatic weeds, aquatic plants, aquatic macrophytes.

The salvinia weevil, *Cyrtobagous salviniae* Calder & Sands, 1985 (Coleoptera: Curculionidae), is a weevil native to South America. This species has been introduced worldwide as a biocontrol agent for plants of the genus *Salvinia* Ség. (Salviniaceae) (Thomas & Room 1986; Cilliers 1991; Woodley et al. 2023), particularly *Salvinia molesta* Mitchell, which has become a pest on several continents (Luque et al. 2014). Despite its role in biological control, native populations and aspects of *C. salviniae* biology, such as dispersal mechanisms, remain poorly understood. Therefore, the aim of this study was to report a new occurrence record of a *C. salviniae* population in southeastern Brazil and to provide additional information on the dispersal of individuals within its native range.

During weekly field campaigns conducted along the entire year of 2023, individuals of *C. salviniae* were observed on *Salvinia auriculata* Aubl. plants in a floodplain pond of the Rio das Mortes, in the municipality of Santa Cruz de Minas (21°07'31"S 44°13'30"W) (Fig. 1), in the Campos das Vertentes, south-central region of Minas Gerais State, southeastern Brazil. Some individuals were collected, labeled with locality and specific data, and subsequently stored in vials containing 70% ethanol, then sent to the Coleoptera Research Laboratory (LapCol), which is part of Entomological Collection of the Palotina Sector (CESP/PR) at the Federal University of Paraná – Palotina municipality. The identification of the specimens was assisted by the use of specific taxonomic keys for the subfamilies and genera of Curculionidae (Hustache 1929; Calder & Sands 1985; Marvaldi & Lanteri 2005; Sousa et al. 2024). The identified specimens were cataloged in the CESP/PR under the following records: CESP 043024; CESP 043025; CESP 043026; CESP 043027; CESP 043028; CESP 043029.

The weevils were found in the third week of January, approximately two weeks after a flood occurred in the river *Rio das Mortes*. It is noteworthy that *C. salviniae* was not observed during the prior two years of weekly monitoring of *S. auriculata* plants in search of natural herbivores of this plants in the same pond conducted by the authors, which may indicate that the arrival of the weevils in this lake was

related to the flood event. The flood that took place in early January 2023 displaced several mats of plants and individual clonal structures of *S. auriculata* from floodplain lakes downstream along the river (Fig. 2), which may suggest that *C. salviniae* populations existed in lakes upstream of the river and that some individuals reached the observation site on *S. auriculata* plants carried by the river current. Although other dispersal pathways cannot be ruled out, such as flight and human-mediated transport of plants.

Cyrtobagous salviniae occurs naturally in northern Argentina, Paraguay, Uruguay, and in the Central-West, Southeast, and South regions of Brazil (Calder & Sands 1985; Madeira et al. 2006; Russell et al. 2017; Sousa et al. 2022; Clarkson et al. 2026). Records from southeastern Brazil are restricted to the eastern portions of the state of Rio de Janeiro (Calder & Sands 1985; Madeira et al. 2006; Clarkson et al. 2026). Therefore, although it lies within the expected area of natural occurrence of *C. salviniae*, this study represents the first confirmed, voucher-based record for the state of Minas Gerais.

The presence of natural enemies of *S. auriculata*, such as *C. salviniae* and *Samea multiplicalis* (Guenée, 1854) (Lepidoptera: Pyralidae), in the *Campos das Vertentes* region (see Oliveira et al. 2023; Oliveira & Souza 2023; Oliveira 2024) suggests that this macrophyte is native to the region, although it has been expanding through floodplain ponds of the *Rio das Mortes* (Oliveira 2024).

Regarding the dispersal processes of *C. salviniae*, the literature on biological control and management already mentions flight activity as a potential dispersal pathway. For example, Knutson & Mukherjee (2013) reported that in Australia, individuals may engage in this activity under conditions of food scarcity, i.e., when the quantity and quality of *Salvinia* plants decrease. In addition, Micinski et al. (2016) observed in the United States that *C. salviniae* flight activity occurred continuously from late spring to early autumn. However, these authors emphasize that further studies are needed to better investigate this activity, particularly regarding the factors influencing it, as well as the duration and distances traveled by the weevils. On the other hand, quantitative

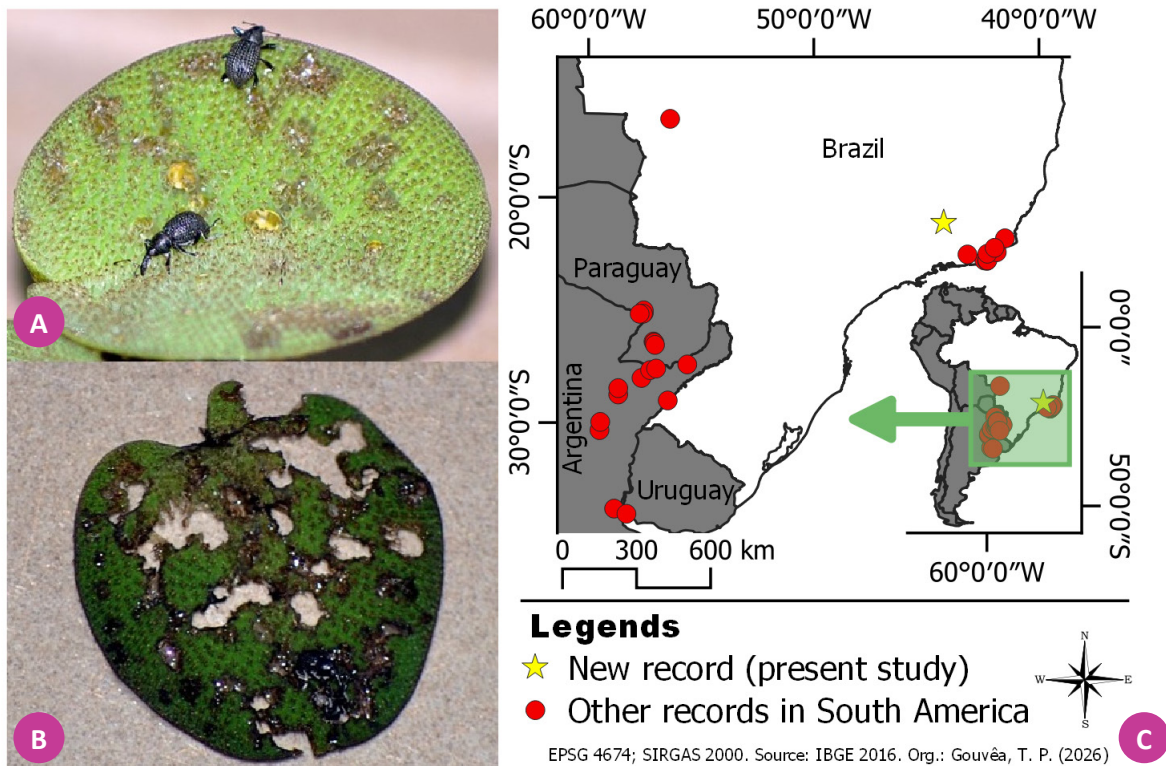


Figure 1. A – Individuals of *Cyrtobagous salviniae* Calder & Sands, 1985 (Coleoptera: Curculionidae) from Ritópolis - MG, on a floating leaf of *Salvinia auriculata*; B – Damage caused by *C. salviniae* to *S. auriculata*; C – Geographic distribution of *C. salviniae* in South America. The yellow star indicates the new record, and the red circles indicate previous records.



Figure 2. A - Mat (dashed circle) and clonal structures and ramets (arrows) of *Salvinia auriculata* Aubl being transported downstream during a flood of the river *Rio das Mortes*, southeastern Brazil; Mat (B) and clonal structures and ramets (C) of *S. auriculata* in detail.

data from the native range are scarce. Thus, our observations constitute a useful case study within the native distribution area, illustrating the potential of these mechanisms.

Floating aquatic macrophytes, e.g., *S. auriculata*, can form plant mats that are carried downstream by water flow (Michelan et al. 2018; Oliveira 2025). These structures can serve as dispersal vectors for aquatic invertebrates and vertebrates (Horwath & Lamberti 1997; Bulla et al. 2007; Battauz et al. 2016), contributing to the geographic expansion of these organisms. As far as we know, there was no information on the dispersal of *C. salviniae* using these structures, although natural expansion of *Cyrtobagous* Hustache, 1929 weevil populations has been

observed in locations where they were introduced for biocontrol (see e.g., Procter 1984; Schlettwein 1985).

Thus, we provide preliminary evidence that extreme events, such as floods, may contribute to the dispersal of *C. salviniae* within its native range on mats of *Salvinia* plants that are displaced downstream during these events. Furthermore, this study extends the natural distribution of *C. salviniae* westward from the southeastern region of Brazil.

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Authors' Contributions

GCSO: Conceptualization, Field collections, Identification of *S. auriculata*, Writing – original draft, Writing, review, and editing; ACMJ: Identification of *C. salviniae*, Writing – original draft, Writing, review, and editing; LV: Writing – original draft, Writing, review, and editing; GRD: Conceptualization, Writing – original draft, Writing, review, and editing.

Conflict of Interest Statement

No conflict of interest to be declared.

Ethical Approval

Not applicable.

Data Availability

All data are available within the manuscript.

Generative AI Statement

No AI was used in the preparation of this manuscript.

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