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# The Alpine-Apenninic species of *Velia* Latreille, 1804: *V. currens* (Fabricius, 1794) and *V. gridellii* Tamanini, 1947 (Gerromorpha, Veliidae) in Switzerland

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## Abstract

Based on the revision of collection material and recent field collecting, the status of the two Alpine-Apenninic species of *Velia* Latreille, 1804: *V. gridellii* Tamanini, 1947 and *V. currens* (Fabricius, 1794) in Switzerland is brought up to date. *Velia gridellii* is recorded for the first time in Switzerland, and the first record of *V. currens* in Switzerland was revised and confirmed after the study of the original specimen collected in 1886.

## Key Words

Aquatic bug, faunistics, Heteroptera, new record, semi-aquatic bug, Ticino, zoogeography

## Introduction

The fauna of aquatic and semi-aquatic Heteroptera (Hemiptera: Nepomorpha and Gerromorpha) of Switzerland is quite well-known: the collections of the main Swiss natural history museums have been revised, with emphasis on some particularly important collections such as that of Nestor Cerutti (1886–1940) (Dethier 1973, 1974) as well as collections of regional importance (collection Peter Wiprächtiger; see Puzoń and Raupach 2025). A total of 60 species are currently recorded in Switzerland (Dethier and Matthey 1977; Mielewcyk 1986; Rotzer and Dethier 1990; Aukema and Rieger 1995; Dethier 2001; Wiprächtiger 2022; Raupach et al. 2024) even if some of them are considered doubtful and in need of confirmation (F. Cianferoni pers. obs.).

*Velia* Latreille, 1804 (Gerromorpha: Veliidae) are medium sized predatory Heteroptera (4.2–9.4 mm for species present in Europe; see Tamanini 1955, 1978). They have a colorful habitus with dark blackish to reddish ground color, silver patches on the pronotum, and orange to red patches on the abdomen. They are typical inhabitants of the shaded areas of small to medium rivers (Poisson 1957), found from sea level up into mountainous areas. They can easily be observed roaming on the water surface, while they are hunting for prey.

Despite their visibility in the environment, the genus *Velia* seems not to have attracted the interest of taxonomists until Tamanini (1947), who revised the genus (*sensu stricto*). He clarified the identity of *V. currens* (Fabricius, 1794), which was at that time the only *Velia* nomen available for the central European specimens of this genus, and described several species, including all the other species occurring in this area. Dethier and Matthey (1977), in their review on the Swiss aquatic Heteroptera, listed three species of *Velia* in Switzerland: *V. caprai* Tamanini, 1947, *V. saulii* Tamanini, 1947 and *V. currens*. The two first species, widespread in Europe

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(Berchi et al. 2017), are also widely distributed in Switzerland. *Velia currens* on the other hand, has a restricted distribution and is only reported in Ticino (Servadei 1967; Dethier and Matthey 1977). A further species of *Velia* is here added to the species list of Switzerland: *Velia gridellii* Tamanini, 1947 (Fig. 1).

## Material and methods

Currently, there is a national project to map the aquatic beetles of Switzerland, with the revision of museum holdings to verify the identity of historical records (see for example: Cosandey et al. 2023, 2024; Chittaro et al. 2025). While searching for aquatic beetles, opportunistic collecting was carried out throughout Switzerland by the first author, and the specimens of *Velia* caught with a net were retained. In parallel, material held in various museums (mainly in Switzerland) was revised. The following abbreviations are used in the Material examined sections: coll. = in the collection of; det. = identified; leg. = collected; revid. = revised.

Material deposited in the following museums was examined (contact person(s) are given in parentheses):

**MHNG** Muséum d'histoire naturelle de Genève, Switzerland (Lionel Monod, John Hollier)

**NMB** Naturhistorisches Museum Bern, Switzerland (Hannes Baur)

**MSNL** Museo cantonale di storia naturale, Lugano, Switzerland (Bärbel Koch, Lucia Pollini Paltrinieri)

**MSNP** Kosmos - Museo di Storia Naturale dell'Università di Pavia, Italy (Stefano Maretti)

## Results

### *Velia currens* (Fabricius, 1794)

**Material examined.** • 1 ♀, Ligornetto, 1886, Pavesi leg., anonymous det., F. Cianferoni revid., MSNP; • 1 ♂, 1 ♀, Lugano, anonymous leg., M. Dethier det., V. Cosandey revid., NMB; • 1 ♀, Bioggio, Tessin, 12.VI.1956, Simonet leg., M. Dethier det., V. Cosandey revid., MHNG; • 1 ♂, 2 ♀, Medeglia, TI, 6.V.1992, Filippo Rampazzi leg., M. Dethier det., V. Cosandey revid., MSNL; • 1 ♂ Stabio, TI, 21.X.2021, V. Cosandey leg., det. & coll.; • 2 ♂, 1 ♀, Alto Malcantone, TI, 3.VI.2024, V. Cosandey leg., det. & coll.


**Figure 1.** *Velia gridellii* Tamanini, 1947. Habitus of **a.** male; **b.** female. Pictures Vivien Cosandey. Scale bar: 5 mm.

**Remark.** The first record of *Velia* in Switzerland was published by De Carlini (1887) who reported *V. currens* from "Lugano, Ligornetto", quoted subsequently by Griffini (1896) and Servadei (1967) in their catalogues. This record is anterior to the revision of Tamanini (1947) and was overlooked by Dethier and Matthey (1977). Therefore, the specimens cited by De Carlini (1887) may also have referred to another congener (and potentially to *V. gridellii*). A single female collected by Pavesi in 1886 ("Ligornetto | Pavesi 86") presumably corresponding to the specimen reported by De Carlini is deposited in the entomological collection of the Natural History Museum of Pavia, Italy (S. Maretti pers. comm.; Fig. 2). This specimen was revised by the second author and does, indeed, belong to *V. currens*.

***Velia gridellii* Tamanini, 1947**

**Material examined.** • 1 ♀. Mendrisio, TI, 21.X.2021, V. Cosandey leg., det. & coll.; • 1 ♂, 1 ♀, Alto Malcantone, TI, 3.VI.2024, V. Cosandey leg., det. & coll.; • 3 ♂, Mendrisio, TI, 4.VI.2021, V. Cosandey leg., det. & coll.; • 2 ♂, 1 ♀, Figino, TI, 4.VI.2024, V. Cosandey leg., det. & coll.

**Remark.** No historical specimen of *Velia gridellii* was found in the collections consulted. Recent collecting produced *V. gridellii* in four localities from southern Ticino (Sottoceneri). It was found in sympatry with *V. currens* in Alto Malcantone (Fig. 3).

# Discussion

The current project on the faunistics of aquatic beetles in Switzerland involving field sampling and the revision of museum collections led to interesting information concerning aquatic and semi-aquatic bugs as well. They substantially increased our knowledge of the Alpine-Apenninic *Velia* species (+85% of specimens, +75% new records).

Even if specimens of *Velia* are very visible in the environment, they have not been the subject of extensive research so far: there are only a limited number of historic specimens of *Velia* collected in Ticino and deposited in the examined collections. Furthermore, amongst the Alpine-Apenninic specimens all belong to *V. currens*: no *V. gridellii* had been collected in Switzerland before this study.

*Velia currens* and *V. gridellii* are considered as Alpine-Apenninic Italian sub-endemic species (Cianferoni and Santini 2012). Both species are distributed mainly in Italy but they also occur in neighboring countries, such as Switzerland. Most of the records of both species are in the Alpine and the Apennine chains, although they can sometimes occur in areas close to the sea, for example where the Apennines reach the coast, in Liguria and Calabria. More sporadically they have been found in continental lowlands but in these cases, it cannot be excluded that specimens were carried down watercourses from higher ground. In the Alps *V. gridellii* is generally found at lower elevations but may be expected to reach increasingly higher altitudes due to climate change.


**Figure 2.** Specimen of *Velia currens* (Fabricius, 1794) from Ligornetto mentioned by De Carlini (1887). **a.** Glass jar containing; **b, c.** Tube with the specimen and the original labels. Pictures Stefano Maretti.

**Figure 3.** Habitat with *Velia currens* (Fabricius, 1794) and *V. gridellii* Tamanini, 1947 in sympatry. Picture Pierre Loria.

In the Apennines it already exceeds 1750 m a.s.l. *Velia currens* pushes further north into the Alpine valleys and reaches higher altitudes (cf. Bacchi and Rizzotti Vlach 2007). Therefore *V. currens* has a more montane distribution than *V. gridellii* which also occurs on Elba Island.

*Velia currens*, in addition to its main range in Italy, has been recorded from the French Maritime Alps (Tamanini 1979, 1981) and the Var department (Poisson 1957), southern Austria, and Slovenia (Cianferoni and Santini 2012). Some old records of *V. currens* anterior to Tamanini's (1947) revision, especially those outside the listed range, could refer to other species of *Velia* and need validation, such as records by A. Puton from the Pyrenees which Poisson (1957) already thought should be verified.

In Switzerland, *Velia currens* is distributed in Ticino and has only been found in the Sottoceneri (southern part of Ticino) so far. The presence of this species in the Aosta Valley (Cerutti 1939; Dethier and Matthey 1977) suggests, as already mentioned by Rotzer and Dethier (1990), that *V. gridellii* could be present in the southern Valais near Simplon, in the Gondo region as well as in parts of the Sopraceneri (northern part of Ticino). The discovery of *V. gridellii* in Ticino is not surprising since it has already been recorded in all the Italian Alpine foothills including those near the Swiss-Italian border (Bacchi and Rizzotti Vlach 2007). It indicates that this species was very likely overlooked in Switzerland and that these new data do not necessarily indicate a recent arrival of the species as a result of climate change. However, it is likely that the species will expand its range to the North in the next years due to warming.

Surveys of *V. gridellii* in Italy have shown that the adults are mainly active between June and November (Cianferoni and Santini 2012; Cianferoni 2013). The individuals collected in Switzerland were found at the beginning of June and at the end of October, which corresponds to the reported start and the end of adult activity.

In contrast to most insects, females of some species of *Velia* are often easier to identify to species than males with external morphological features; whereas species of this genus are well characterized molecularly (Berchi et al. 2017) and by their DNA barcodes (M. Raupach pers. comm.). Females of *Velia gridellii* are easily distinguished from the other *Velia* found in Switzerland by the following features: abdomen, in lateral view, is strongly upwardly-directed, with a typical "saber" shape (Fig. 4), the 9th tergite (observed from behind) is semicircular (not trapezoidal like in *V. currens*), and the 7th connexium segment is truncated (Fig. 4, indicated by the arrow). Males of *V. gridellii* can be distinguished from *V. currens* easily; the latter species has a trapezoidal 9th tergite whose terminal part, truncated and non-circular, is observable in dorsal view even without extracting the tergite. The distinction of the males of *V. gridellii* and those of *V. caprai* and *V. saulii* is more challenging since they have a similar shape of 9th tergite. The observation of the first tergites and abdominal pattern can help to separate these species (Fig. 1a). However, the only certain features are the internal sclerites of endophallus and the parameres (see Tamanini 1947, 1979; Cianferoni 2013; Fig. 5).

With the discovery of *Velia gridellii* in Ticino 61 species of aquatic and semi-aquatic Heteroptera are recorded for Switzerland (37 spp. of Nepomorpha and 22 spp. of Gerromorpha, with the addition of two species which need to be confirmed, one for each infraorder). We hope that faunistic research on aquatic bugs will be encouraged by our results!

**Figure 4.** Abdomen of a female of *Velia gridellii* Tamanini, 1947 in lateral view. Picture Vivien Cosandey. Scale bar: 5 mm.

**Figure 5.** Parameres of *Velia gridellii* Tamanini, 1947 in dorsal view. Picture Vivien Cosandey. Scale bar: 0.1 mm.

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