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How to find *Cheilosia rhodiolae* Schmid, 2000 (Diptera, Syrphidae)

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Schmid, U. (2007): How to find *Cheilosia rhodiolae* Schmid, 2000 (Diptera, Syrphidae). – Volucella 8, 121-122. Stuttgart.

Cheilosia rhodiolae Schmid, 2000 is recorded from the Swiss Alps (canton Ticino), based on observations of the distinctive mines made by the larvae in *Rhodiola rosea* (L.). A particular combination of topography and exposure have to occur where the host plant is growing to make it usable by *Cheilosia rhodiolae*.

Key words: *Cheilosia rhodiolae*; larval development, Swiss Alps, Syrphidae.

Zusammenfassung

Die im Larvalstadium in den Blättern der Rosenwurz *Rhodiola rosea* (L.) minierende hochalpine Schwebfliege *Cheilosia rhodiolae* Schmid, 2000 nutzt ihre Wirtspflanze vermutlich nur in topografisch sehr speziellen Situationen an steilen, sonnenexponierten Hängen und Felswänden, die im Frühjahr schnell ausapern. Ein erster Nachweis für die Schweiz (Kanton Tessin) basiert auf dem charakteristischen Fraßbild der Larven.

Based on observations in the national park Hohe Tauern (Austria, Central Alps), in 1998-2000, I described the life cycle of *Cheilosia rhodiolae*, an alpine hoverfly whose larvae are specialised in mining the leaves of roseroot, *Rhodiola rosea* (L.) (Schmid 2000). Although this plant is not exceptionally rare in the subalpine and alpine non-calcareous zones no further records of *Cheilosia rhodiolae* have been published from other sites. Why not?

On 14th August 2006 I visited Robiei (Switzerland, canton Ticino, Lepontine Alps, 46°26'30"N, 08°30'E), where you can reach the alpine zone easily by aerial cableway from S. Carlo, at the end of the Val Bavona, a side valley of the Valle Maggia. The upper cable-car terminal is situated at 1925 m a.s.l. Walking to the west from the terminal there are extensive alpine heaths and pastures, in places very steep and rocky, but interrupted by boggy plains with or without small brooks or lakes. Here I found at about 2200-2350 m a.s.l. many *Rhodiola* plants, most of them very large. I had a look at hundreds of plants but it was one big disappointment: I found no indication of mines and larvae (imagines of *Cheilosia rhodiolae* cannot be expected in August).

Finally I remembered the situation in the type locality: Two plants of *Rhodiola*, growing in a cleft in a nearly vertical wall of rock, were so heavily infested that there

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was hardly any leaf intact. The plants were entirely brownish and partially withered (figs 47, 51 in Schmid 2000). At the same time many all-green plants of *Rhodiola*, almost completely free of larvae, were growing on the rocky slopes of the cirque below the wall of rock. I have discussed this observation (Schmid l.c.) and found three possible reasons: (1) In June, when the imagines of *C. rhodiolae* are on the wing, the two plants in the cleft were the only ones which were full grown and strewn with flowers by contrast there were only buds on the plants growing on the slopes below; some of them were even then still buried under the snow. As I have shown, *Rhodiola* plays a very important role in the life of this hoverfly species, which feeds almost exclusively on *Rhodiola* and uses the plant as a meeting place for courtship and mating. (2) The snow in this place melts much earlier, not only in spring but also after summer snowfalls, which are common at this altitude. (3) Males of many species of *Cheilosia* (and other Syrphidae) like to hover near landmarks, ridges or peaks. This might be an additional factor concentrating their attention on the most exposed plants.

So I continued my search for larvae in Robiei with binoculars – and found a single brownish looking plant of *Rhodiola* situated in a quite similar situation, in a cleft in a nearly vertical wall exposed to the south, above the slopes which were covered with vital and green looking roseroots. Trying to reach the plant I risked my life but managed to get some stalks. The partially withered leafs show the typical pattern of mines of larvae of *Cheilosia rhodiolae* described in Schmid (2000). In the type locality in the central Alps the larvae have left the leaves by the end of the first ten days in August. In the southern Alps this could happen some days earlier. So there were no larvae left in the few stems I gathered. As I have shown, the larvae pupate in the surrounding soil immediately after leaving the host plant, but unfortunately there was no chance to reach and examine the cleft in which this plant was rooted.

So the first record of *Cheilosia rhodiolae* in Switzerland is based not on observations of larvae or imagines but only on observation of the distinctive mines made by the larvae in the leafs of the host plant. But now we have a strategy for searching and finding this hoverfly species, so I am confident that further records will follow.

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References

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