

Article

First record of *Dicranota (Paradicranota) reitteri* Mik, 1882 in France with notes on its ecology and an original sampling method (Diptera, Pediciidae)

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Reçu le 14 juin 2026 - Accepté le 31 juillet 2026 - Publié le 8 octobre 2026

ABSTRACT

Dicranota (Paradicranota) reitteri Mik, 1882, a rare alpine species previously known only from Germany, Austria and Italy, is recorded from France for the first time following surveys conducted in the Romanche Valley (Isère) and along the Durance and Séveraise rivers (Hautes-Alpes). The occupied sites are associated with nival or nival-glacial rivers characterised by high sediment dynamics. Insects were observed exclusively on the undersides of boulders resting on exposed gravel bars in the immediate vicinity of the active channel. Photographs of the adults and male interbases are provided for the first time.

Keywords: Brachyptery; Pediciinae; Alps; Isère and Hautes-Alpes departments; new record; faunistic list

Première mention de *Dicranota (Paradicranota) reitteri* Mik, 1882 pour la France et notes sur son écologie et un original mode de collecte (Diptera, Pediciidae)

RÉSUMÉ

Dicranota (Paradicranota) reitteri Mik, 1882, espèce alpine rare connue jusqu'à présent d'Allemagne, d'Autriche et d'Italie, est signalée pour la première fois de France à la suite de prospections menées dans la vallée de la Romanche (Isère) ainsi que sur la Durance et la Séveraise (Hautes-Alpes). Les localités occupées sont associées à des cours d'eau à régime nival ou nivo-glaciaire présentant une forte dynamique sédimentaire. Les insectes ont été observés sous des blocs reposant sur des bancs de galets exondés à proximité immédiate du chenal actif. Des photographies des imagos, brachyptères et holoptères, et des interbases mâles sont présentés pour la première fois.

Mots-clés : brachyptérisme; Pediciinae; Alpes; départements de l'Isère et des Hautes-Alpes; citation nouvelle; liste faunistique

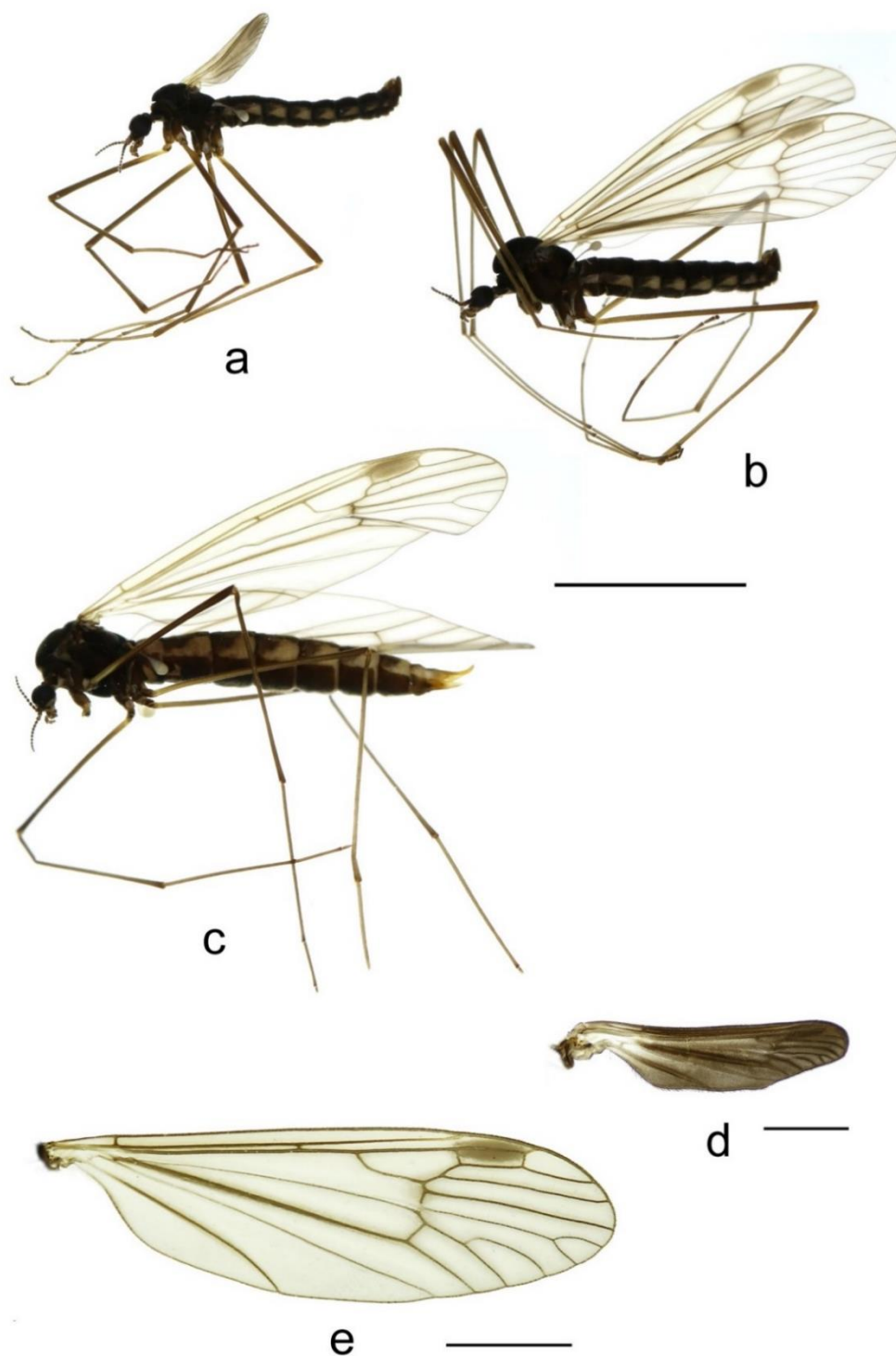


Figure 1. *Dicranota (Paradicranota) reitteri* Mik, 1882, habitus and wings. a: brachypterous male; b: holopterous male; c: holopterous female; d: wing of brachypterous male; e: wing of holopterous male. Scale bars: a-c, 0.5 mm; d, 0.1 mm; e, 0.2 mm (photographs by Pierre Tillier).

Figure 1. *Dicranota (Paradicranota) reitteri* Mik, 1882, habitus et ailes. a : mâle brachyptère ; b : mâle holoptère ; c : femelle holoptère ; d : aile de mâle brachyptère ; e : aile de mâle holoptère. Barres d'échelle : a-c, 0,5 mm ; d, 0,1 mm ; e, 0,2 mm (clichés Pierre Tillier).



Figure 2. *Dicranota (Paradicranota) reitteri* Mik, 1882, brachypterous and holopterous imagines on an overturned stone, Séveraisse River, April 2026 (photograph by Adrien Chassa).

Figure 2. *Dicranota (Paradicranota) reitteri* Mik, 1882, imagos brachyptères et holoptères sous une pierre retournée, au bord de la Séveraisse, 04-2026 (cliché Adrien Chassa).

1. Introduction

The Pediciidae Osten-Sacken, 1860 constitute a small family of Nematocerous Diptera comprising 502 species worldwide, more than half of which belong to the genus *Dicranota* Zetterstedt, 1838 (OOSTERBROEK 2026). This genus includes 39 species distributed across five subgenera in the Western Palaearctic region (OOSTERBROEK *ibid.*). Among these, a few species are characterised by a more or less pronounced reduction of the wings. All of these species have very restricted distribution ranges: *Dicranota (Paradicranota) parviuncinata* Savchenko, 1983, known only from the Caucasus (Azerbaijan, Georgia and Russia); *Dicranota (Dicranota) polaris* (Riedel, 1919), recorded only from northern Siberia; *Dicranota (Paradicranota) lackschewitziana* Mendl, 1988 and *Dicranota (Paradicranota) reitteri* Mik, 1882, reported from a few Alpine massifs (Austria, Italy and Switzerland for the former; Germany, Austria and Italy for the latter) (OOSTERBROEK 2026). We report below the first records of this latter species from France.

2. Material and methods

On 3 March 2026, a daytime entomological survey was conducted on the Romanche River shortly before its confluence with the Drac, in the municipality of Saint-Barthélemy-de-Séchilienne (Isère) (Fig. 3). The initial objective was the collection of Plecoptera. As no individuals were observed in flight, the survey consisted of active visual searching on exposed gravel bars, mainly by turning over cobbles and coarse woody debris located close to the waterline, a method known to be effective for collecting Plecoptera imagos (RUFFONI 2024). This led to the discovery of several Tipulomorpha, most of which exhibited marked brachyptery. Around twenty individuals were observed on the underside of stones located within three metres of the active channel. A subset of specimens was collected for study.

On the same day, a second site located approximately 2 km upstream was surveyed using the same protocol, although under more favourable weather conditions (sunny afternoon).



Figure 3. Collection site of Dicranota (Paradicranota) reitteri Mik, 1882 on the Romanche River, March 2026 (photograph by Adrien Chassa).

Figure 3. Site de collecte de Dicranota (Paradicranota) reitteri Mik, 1882 au bord de la Romanche, 03-2026 (cliché Adrien Chassa).



Figure 4. Collection site of Dicranota (Paradicranota) reitteri Mik, 1882 on the Durance River, March 2026 (photograph by Pierre Clévenot).

Figure 4. Site de collecte de Dicranota (Paradicranota) reitteri Mik, 1882 au bord de la Durance, 03-2026 (cliché Pierre Clévenot).



Figure 5. Collection site of *Dicranota* (*Paradicranota*) *reitteri* Mik, 1882 on the Séveraisse River, April 2026 (photograph by Adrien Chassa).

Figure 5. Site de collecte de *Dicranota* (*Paradicranota*) *reitteri* Mik, 1882 au bord de la Séveraisse, 04-2026 (cliché Adrien Chassa).

Again, several brachypterous Tipulomorpha were detected exclusively beneath riparian stones.

All material was identified as belonging to a species previously unrecorded in France: *Dicranota* (*Paradicranota*) *reitteri* (see below).

Following this discovery, a targeted sampling programme was implemented on several Alpine rivers with comparable hydromorphological characteristics. Surveys were conducted on braided river reaches (or systems with similar hydrological functioning), on exposed gravel bars close to the waterline, by turning over cobbles and coarse stones (sensu MALAVOI & SOUCHON 1989). This method was applied on the Var (Alpes-Maritimes), the Asse (Alpes-de-Haute-Provence), the Durance and the Séveraisse (Hautes-Alpes). Specimens of *D. (Paradicranota) reitteri* were observed and collected on the Durance (Fig. 4) and the Séveraisse (Fig. 5), on unvegetated or sparsely vegetated exposed gravel

bars regularly reshaped by morphogenic discharges during spring snowmelt and autumn floods. Imagines were observed under the same conditions, on the underside of cobbles or coarse stones located at the immediate edge of the active channel. In contrast, surveys on the Var and Asse were unsuccessful.

3. Result and discussion

Material examined

Isère (38): Saint-Barthélemy-de-Séchilienne (38364), 45.049508°N, 5.790549°E, 312 m a.s.l., Romanche River, 03.III.2026, 2 ♂ brachypterous + 1 ♀ holopterous; same locality, 45.054985°N, 5.807593°E, 330 m a.s.l., 6 ♂ brachypterous + 2 ♀ holopterous (leg. A. Chassa & P. Clévenot, det. and collection P. Tillier).

Hautes-Alpes (05): La Roche-de-Rame (05122), 44.7339°N, 6.580159°E, 920 m a.s.l., Durance River, 18.III.2026, 1 ♂ brachypterous + 4 ♂ holopterous + 5 ♀ holopterous (leg. A. Chassa

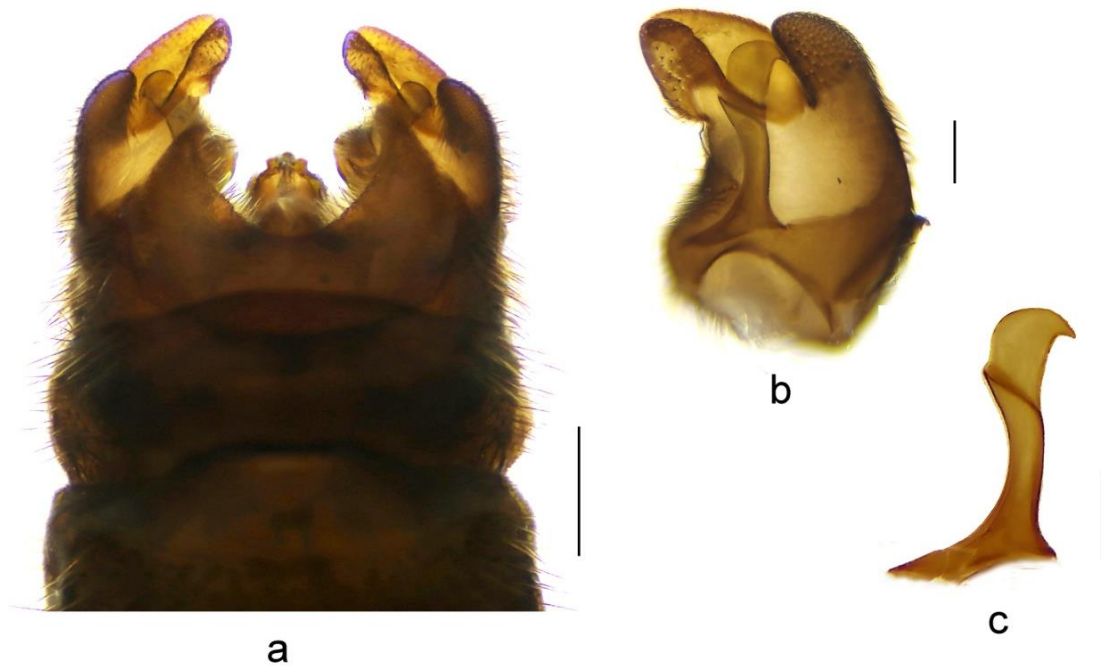


Figure 6. *Dicranota* (*Paradicranota*) *reitteri* Mik, 1882. a: hypopygium, dorsal view; b: hypopygium, internal view; c: interbase. Scale bars: a, 0.25 mm; b, 0.1 mm; c, 0.1 mm (photographs by Pierre Tillier).

Figure 6. *Dicranota* (*Paradicranota*) *reitteri* Mik, 1882. a : hypopygium, vue dorsale ; b : hypopygium, vue interne ; c : interbase. Barres d'échelle : a, 0,25 mm ; b, 0,1 mm ; c, 0,1 mm (clichés Pierre Tillier).

& P. Clévenot, det. and collection P. Tillier); Saint-Firmin (05142), 44.77579°N, 5.989988°E, 781 m a.s.l., Séveraisse River, 02.IV.2026, 11 ♂ brachypterous + 10 ♀ holopterous (leg. A. Chassa, det. and collection P. Tillier).

Additional surveyed sites (species not recorded)

Alpes-de-Haute-Provence (04): Entrages (04074), 44.0087°N, 6.266983°E, 619 m a.s.l., Asse River, 12.III.2026 (A. Chassa surveys).

Alpes-Maritimes (06): Touët-sur-Var (06143), 43.945015°N, 7.009354°E, 310 m a.s.l., Var River, 12.III.2026 (A. Chassa surveys).

The collected specimens were identified using the revision of MENDL (1988). The examined males, both holopterous and brachypterous (Fig. 1), display all diagnostic characters of *Dicranota* (*Paradicranota*) *reitteri* Mik, 1882, in particular the structure of the hypopygium and the shape of the interbases. In this species, the interbases are

narrow at the base, bear a weakly developed median lobe, and terminate in a slender apical point (Fig. 6). By contrast, in *D. (P.) lackschewitziana* they are distinctly broader at the base, possess a well-developed dorsal median lobe, and end in a relatively broad apex. The gonostyli also correspond to those illustrated by MENDL (1988) for the type material of *D. (P.) reitteri* (Fig. 6). Finally, abdominal segment 9 is densely covered with short setae (Fig. 6), whereas it is almost glabrous in *D. (P.) lackschewitziana*.

Across the four sampling sites, the vast majority of males collected were brachypterous. A few holopterous males were captured at only one site. In contrast, only holopterous females were collected (Fig. 4). Brachyptery in Tipulomorpha is a well-documented phenomenon (BYERS 1969, DUFOUR & BRUNHES 1984, MANI 1968). It mainly concerns species inhabiting biotopes exposed to extreme environmental conditions (cold, wind), particularly in Arctic, insular, or high-mountain regions. For another *Dicranota* species showing

comparable wing polymorphism, *D. (P.) parvuncinata*, SAVCHENKO & PARKHOMENKO (1983) and LANTSOV (2012) hypothesised that the emergence of brachyptery may be related to the advantages of a ground-bound lifestyle, allowing completion of the life cycle under the unfavourable conditions of high-altitude torrential environments.

It is noteworthy that no holopterous individuals of *D. (P.) reitteri* were observed in flight. All specimens were found on the underside of stones near the interface between exposed gravel bars and the torrent (Fig. 2). Neither brachypterous nor holopterous individuals exhibited any escape behaviour when stones were overturned or when approached with entomological forceps. This highly original sampling method for Tipuloidea should facilitate future detection of the species at additional sites. Notably, during the same surveys and using the same method, a Limoniidae species new to France, *Molophilus (Molophilus) fluviatilis* Bangerter, 1947, was also discovered (TILLIER et al. 2026).

Dicranota (Paradicranota) reitteri was originally described from specimens collected in Italy, in the Trentino-Alto Adige region (MIK 1882). Subsequently, LACKSCHEWITZ (1940) reported additional records from Italy (Friuli-Venezia Giulia and Trentino-Alto Adige) and Austria. However, MENDL (1988) demonstrated that Lackschewitz's specimens differed from Mik's type material and therefore described a new species: *Dicranota (Paradicranota) lackschewitziana* Mendl, 1988. In the same work, MENDL also reported *D. (P.) reitteri* from Germany (Bavaria) and Austria (Carinthia). Since then, no new records have been published, and the species has only been cited in recent literature based on historical data STARY & OOSTERBROEK (1996) for Italy; REUSCH & OOSTERBROEK 2000, SCHACHT 2005, 2010 for Germany). *D. (P.) reitteri* is thus known from only a few European localities in Germany, Austria and Italy (Fig. 7).

For France, the species was cited in the *Catalogue of Palaearctic Diptera* (SAVCHENKO et al.

1992). However, QUINDROIT (2025) demonstrated that this resulted from a transcription error in the original manuscript (as for several other Limoniidae species) and removed it from the French fauna. The discovery of *D. (P.) reitteri* in the departments of Isère and Hautes-Alpes therefore represents the first confirmed records of the species in France and is of particular interest, as the species remains poorly known throughout its Alpine range. The occurrence of three distinct populations of *D. (P.) reitteri* around the Écrins massif indicates that the species is well established in the Western Alps, where it appears to be associated with cool, well-oxygenated, multi-channel river systems (Fig. 7).

Historical records of *D. (P.) reitteri* are reported only at the municipality level, without any description of the collection sites. An examination of potential collecting habitats within the corresponding municipal territories using Google Earth makes it possible to formulate hypotheses regarding these sites.

Two Italian localities are known. The first (holotype locality) is associated with the municipality of Arco, in the Autonomous Province of Trento. The main river within the municipality is the Sarca River, a nival-glacial river whose source lies beneath the Mandrone Glacier, one of the largest glaciers in the Italian Alps (RANZI et al. 2010). Recent aerial photographs show a channelised river with no possibility for lateral expansion, but CAROLLI et al. (2021) demonstrated that the morphological alterations affecting this river post-date the 1950s and are mainly linked to hydroelectric developments, which have profoundly modified sediment dynamics as well as longitudinal and lateral channel processes. It is possible that, at the time the specimens were collected (1882), these watercourses displayed a fluvial dynamics more similar to that currently observed at the French sites.

The second Italian records originate from the municipality of Bolzano. Bolzano is the principal city of South Tyrol and is situated at the confluence of three major Alpine rivers: the Isarco, the

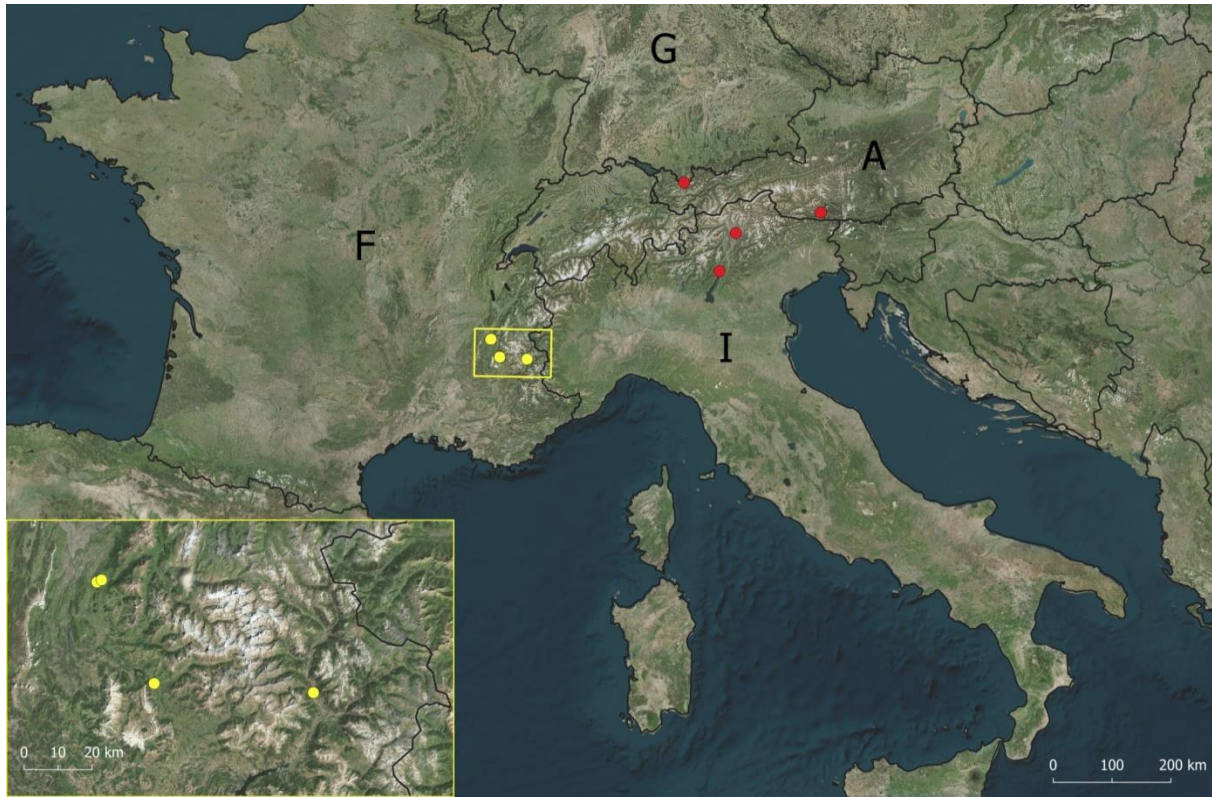


Figure 7. Distribution of known records of *Dicranota* (*Paradicranota*) *reitteri* Mik, 1882. Red dots: historical records; yellow dots: new records. A : Austria ; F : France, G : Germany, I : Italy.

Figure 7. Distribution connue de *Dicranota* (*Paradicranota*) *reitteri* Mik, 1882. Points rouges : données de la littérature ; points jaunes : nouvelles citations. A : Autriche ; F : France, G : Allemagne, I : Italie.

Talfer and the Adige, the second-longest river in Italy. Originating in the Italian Alps, these rivers are typical of nival hydrological regimes. Their present-day morphology is characterised by a single channel, but aerial photographs reveal an Alpine fluvial style indicative of high bedload transport, with alternating mobile exposed gravel bars. SCORPIO et al. (2018) showed that, historically, the Adige, Talfer and Isarco exhibited a variety of fluvial styles, including meandering, wandering, braided and even anabranching patterns.

Observations made within the municipalities corresponding to the Austrian and German localities point in the same direction. The Stillach is the only river flowing through Bergsau (Germany) and resembles a mountain torrent characterised by substantial coarse sediment transport

and alternating exposed gravel bars. The Gössering is the principal river of Gitschtal (Austria); it displays a nival-pluvial hydrological regime, with high snowmelt discharges and significant sediment transport (MACHER 2012).

Although the torrents to which we attribute the historical localities of *D. (P.) reitteri* remain hypothetical, these assumptions appear consistent with the regional hydromorphological characteristics. Current observations of the rivers presumed to harbour *D. (P.) reitteri* all indicate at least a nival, and in some cases nival-glacial, hydrological regime, substantial sediment transport, channel morphology that changes according to sediment movement, and the presence of alternating exposed gravel bars. These observations are consistent with the processes observed at the three French collection sites of *D. (P.) reitteri*.

Consequently, such habitats should be preferentially targeted in future surveys in order to improve our knowledge of the species' distribution in Europe, where it is probably endemic to the Alps. In particular, the species should be searched for in piedmont rivers characterised by high sediment dynamics throughout the Alpine countries, especially in Switzerland and Slovenia.

5. Conclusion

The discovery of several populations of *D. (P.) reitteri* in Isère and Hautes-Alpes represents the first confirmed records of this species in France and considerably extends its known distribution (Fig. 7). The four newly documented sites indicate that the species is established in the French Alps, at least around the Écrins massif. Available data suggest a strong association between *D. (P.) reitteri* and Alpine rivers with high sediment dynamics. Imagines were observed exclusively on active gravel bars, beneath stones located close to the channel margin. This ecological specialisation and behavioural pattern may explain the apparent rarity of the species in collections and its absence from many entomological surveys relying on conventional sampling methods. Targeted surveys in similar habitats are expected to considerably improve knowledge of its distribution across the Alpine arc.

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