Charipinae Dalla Torre & Kieffer, 1910 (Hymenoptera: Cynipoidea: Figitidae) from the Mercantour National Park (Alpes-Maritimes, France), with descriptions of three new species

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ABSTRACT
Charipinae Dalla Torre & Kieffer, 1910 material collected during the ATBI of the Mercantour National Park in the Alpes-Maritimes (France) has been studied. Based on the study of 362 specimens, 35 species in four genera have been identified from: 23 Alloxysta Förster, 1869; 10 Phaenoglyphis Förster, 1869; one Apocharips Fergusson, 1986 and one Dilyta Förster, 1869. Of these, 19 species are recorded from France for the first time: Alloxysta abdera Fergusson, 1986; Alloxysta arcuata (Kieffer, 1902); Alloxysta brachycera Hellén, 1963; Alloxysta brevis (Thomson, 1962); Alloxysta fracticornis (Thomson, 1862); Alloxysta mullensis (Cameron, 1883); Alloxysta pilipennis (Hartig, 1840); Alloxysta postica (Hartig, 1841); Alloxysta proxima Belizin, 1962; Apocharips trapezoidea (Hartig, 1841); Phaenoglyphis abbreviata (Thomson, 1877); Phaenoglyphis americana Baker, 1896; Phaenoglyphis calverti Andrews, 1978; Phaenoglyphis evenhuisi Pujade-Villar & Paretas-Martínez, 2006; Phaenoglyphis fuscicornis (Thomson,
KEY WORDS
Alloxysta, Alps, Taxonomy, ATBI, new species.

INTRODUCTION
Charipinae Dalla Torre & Kieffer, 1910 (Cynipoidea: Figitidae) are very small wasps characterized by a very shiny and smooth body, but very few diagnostic features (Ferrer-Suay et al. 2012a). These peculiarities and the great number of species described over the years have led to the current chaotic taxonomic state of this subfamily. Charipinae are all secondary parasitoids of aphids via Aphidinae Haliday, 1833 (Hymenoptera: Aphidinae Haliday, 1833 (Hymenoptera: Aphidinae), and parasitoids of psyllids via Encyrtidae Walker, 1837 (Hymenoptera: Chalcidoidea).

During the course of the ATBI Mercantour project 362 Charipinae specimens have been collected in Malaise traps. They represent 35 species, of which 19 are recorded for the first time from France and three are new for science. We describe and illustrate here all these species and provide a key to the Charipinae species recorded in the Mediterranean Alps.

MATERIAL AND METHODS
The specimens examined here were collected in the framework of the “Terrestrial Invertebrates fieldwork module” of the ATBI Mercantour project. The Mediterranean Alps (Mercantour/Alpi Marittime) lie at a crossroads of climatic and biogeographical factors (continental, Alpine, Mediterranean and Ligurian), and encompasses a wide diversity of altitudes, exposures, geological formations and pedological substrates (Deharveng et al. 2015, this volume).

Insect collection was performed between 2009 and 2011 using a pair of standard (black and white) Malaise traps set up less than 100 m from each other at each sampling site.

RÉSUMÉ

L'étude de 362 Charipinae Dalla Torre & Kieffer, 1910 collectés dans le Parc national du Mercantour (Alpes-Maritimes, France) dans le cadre de l'ATBI Mercantour a permis l'identification de 35 espèces dans quatre genres : 23 Alloxysta Förster, 1869 ; 10 Phaenoglyphis Förster, 1869 ; un Apocharips Fergusson, 1986 et un Dilyta Förster, 1869. 19 d'entre elles sont nouvelles pour la faune de France : Alloxysta abderna Fergusson, 1986 ; Alloxysta arcuata (Kieffer, 1902) ; Alloxysta brachycerca Hellén, 1963 ; Alloxysta brevis (Thomson, 1962) ; Alloxysta fraxicornis (Thomson, 1862) ; Alloxysta mullensis (Cameron, 1883) ; Alloxysta pilipennis (Hartig, 1840) ; Alloxysta postica (Hartig, 1841) ; Alloxysta proxima Belzín, 1962 ; Apocharips trapesioides (Hartig, 1841) ; Phaenoglyphis abbreviata (Thomson, 1877) ; Phaenoglyphis americana Baker, 1896 ; Phaenoglyphis calverti Andrews, 1978 ; Phaenoglyphis evenhuis Pujade-Villar & Paretas-Martínez, 2006 ; Phaenoglyphis fuscicornis (Thomson, 1877) ; Phaenoglyphis gutierezi Andrews, 1978 et Phaenoglyphis longicornis (Hartig, 1840). Toutes les espèces recensées sont décrites brièvement et comparées entre elles. Trois espèces nouvelles : Alloxysta alpina Ferrer-Suay & Pujade-Villar, n. sp. ; Alloxysta franca Ferrer-Suay & Pujade-Villar, n. sp. et Alloxysta pilae Ferrer-Suay, n. sp. font l'objet d'une description détaillée et leurs principaux caractères morphologiques sont illustrés. Une clé d'identification des espèces de Charipinae présentes dans le Parc national du Mercantour est également fournie.

RÉSUMÉ

L'étude de 362 Charipinae Dalla Torre & Kieffer, 1910 collectés dans le Parc national du Mercantour (Alpes-Maritimes, France) dans le cadre de l'ATBI Mercantour a permis l'identification de 35 espèces dans quatre genres : 23 Alloxysta Förster, 1869 ; 10 Phaenoglyphis Förster, 1869 ; un Apocharips Fergusson, 1986 et un Dilyta Förster, 1869. 19 d'entre elles sont nouvelles pour la faune de France : Alloxysta abderna Fergusson, 1986 ; Alloxysta arcuata (Kieffer, 1902) ; Alloxysta brachycerca Hellén, 1963 ; Alloxysta brevis (Thomson, 1962) ; Alloxysta fraxicornis (Thomson, 1862) ; Alloxysta mullensis (Cameron, 1883) ; Alloxysta pilipennis (Hartig, 1840) ; Alloxysta postica (Hartig, 1841) ; Alloxysta proxima Belzín, 1962 ; Apocharips trapesioides (Hartig, 1841) ; Phaenoglyphis abbreviata (Thomson, 1877) ; Phaenoglyphis americana Baker, 1896 ; Phaenoglyphis calverti Andrews, 1978 ; Phaenoglyphis evenhuis Pujade-Villar & Paretas-Martínez, 2006 ; Phaenoglyphis fuscicornis (Thomson, 1877) ; Phaenoglyphis gutierezi Andrews, 1978 et Phaenoglyphis longicornis (Hartig, 1840). Toutes les espèces recensées sont décrites brièvement et comparées entre elles. Trois espèces nouvelles : Alloxysta alpina Ferrer-Suay & Pujade-Villar, n. sp. ; Alloxysta franca Ferrer-Suay & Pujade-Villar, n. sp. et Alloxysta pilae Ferrer-Suay, n. sp. font l'objet d'une description détaillée et leurs principaux caractères morphologiques sont illustrés. Une clé d'identification des espèces de Charipinae présentes dans le Parc national du Mercantour est également fournie.

INTRODUCTION
Charipinae Dalla Torre & Kieffer, 1910 (Cynipoidea: Figitidae) are very small wasps characterized by a very shiny and smooth body, but very few diagnostic features (Ferrer-Suay et al. 2012a). These peculiarities and the great number of species described over the years have led to the current chaotic taxonomic state of this subfamily. Charipinae are all secondary parasitoids of aphids via Aphidinae Haliday, 1833 (Hymenoptera: Braconidae) and Aphelininae Haliday, 1833 (Hymenoptera: Aphelinidae) or secondary parasitoids of psyllids via Encyrtidae Walker, 1837 (Hymenoptera: Chalcidoidea) (Menke & Evenhuis 1991). They are economically very important in being able to counteract the biological control performed by primary parasitoids.

Charipinae have been recorded in all biogeographic regions. They have a wide continental and insular distribution, mainly in temperate areas, ranging from above the Arctic Circle (Lapland and Alaska) to 47º S in Argentina; some representatives have been found at 2750 m a.s.l. (Andrews 1978). In this wide range, however, their distribution is restricted to areas where aphids and primary parasitoids are present.

Eight valid genera are currently recognized in Charipinae: Alloxysta Förster, 1869 (cosmopolitan), Apocharips Fergusson, 1986 (cosmopolitan, but not recorded from Australia), Dilapothor Paretas-Martínez & Pujade-Villar, 2006 (Australia), Dilyta Förster, 1869 (cosmopolitan), Lobopterocharips Paretas-Martínez & Pujade-Villar, 2007 (Nepal), Lytoxysta Kieffer, 1909 (North America), Phaenoglyphis Förster, 1869 (cosmopolitan), and Thorsetutana Girault, 1930 (Australia). Alloxysta and Phaenoglyphis are the most speciose and widespread genera within the subfamily, respectively containing 111 and 31 currently valid species (Ferrer-Suay et al. 2012a).

During the course of the ATBI Mercantour project 362 Charipinae specimens have been collected in Malaise traps. They represent 35 species, of which 19 are recorded for the first time from France and three are new for science. We describe and illustrate here all these species and provide a key to the Charipinae species recorded in the Mediterranean Alps.
Sampling site locations varied from year to year, but in a given valley two sites were always selected: one between 1400-1500 m and the other at about 2000 m a.s.l. These paired sampling sites were located in the Saint-Martin-de-Vésubie and Saint-Delmas-le-Selvage districts (Alpes-Maritimes) in 2009 (4 sampling sites), in the Saorgue district (Alpes-Maritimes) in 2010 (2 sampling sites) (Fig. 1) and finally in the Meyronnes and Larche districts (Alpes-de-Haute-Provence) in 2011 (2 sampling sites) but these samples were not taken into account in this study. Traps were emptied every two weeks from about June to October, along a number of weeks varying from year to year depending on the climatic conditions (mainly snowfall) at the beginning and end of the sampling period (Deharveng et al. 2015, this volume).

The Charipinae studied here come only from the 2009 and 2010 samples. All samples collected from a given Malaise trap were labelled using a coding system where “M” refers to Mercantour, “9” or “10” indicates the sampling year, “BOR”, “SES” or “CAI” the sampling area, “1400/1500 or 2000” the sampling altitude, T1 to T8 the sequence of the successive sampling periods and “M1 or M2” the different Malaise traps of each pair. Detailed information on the trap locations and geographic coordinates, the sampling periods and the main vegetation present at the sampling sites are given in Table 1. The codes and corresponding dates of the successive sampling periods for each sampling site are given in Table 2.

**Table 1.** — Sample codes and general information on the location of the sampling sites (all in Alpes-Maritimes, 06), their main vegetation and the sampling period.

<table>
<thead>
<tr>
<th>Sample codes</th>
<th>Year</th>
<th>Sampling period</th>
<th>District</th>
<th>Sample site</th>
<th>Vegetation</th>
<th>Altitude</th>
<th>Longitude</th>
<th>Latitude</th>
<th>Nb of samples</th>
</tr>
</thead>
<tbody>
<tr>
<td>M09-BOR1400-T1/T8-M1</td>
<td>2009</td>
<td>11.VI-15.X</td>
<td>St-Martin-de-Vésubie</td>
<td>Le Boréon</td>
<td>Meadows and spruce forest</td>
<td>1540</td>
<td>7.2871439</td>
<td>44.1146875</td>
<td>8 (T1-T8)</td>
</tr>
<tr>
<td>M09-BOR1400-T1/T8-M2</td>
<td>2009</td>
<td>11.VI-15.X</td>
<td>St-Martin-de-Vésubie</td>
<td>Le Boréon</td>
<td>Meadows and spruce forest</td>
<td>1549</td>
<td>7.2890533</td>
<td>44.1143415</td>
<td>8 (T1-T8)</td>
</tr>
<tr>
<td>M09-BOR2000-T1/T8-M1</td>
<td>2009</td>
<td>10.VI-15.X</td>
<td>Valdeblore</td>
<td>Col de Salèse</td>
<td>Meadows, rhododendrons, larch and spruce forest</td>
<td>2058</td>
<td>7.23698</td>
<td>44.13734</td>
<td>8 (T1-T8)</td>
</tr>
<tr>
<td>M09-BOR2000-T1/T8-M2</td>
<td>2009</td>
<td>10.VI-15.X</td>
<td>Valdeblore</td>
<td>Col de Salèse</td>
<td>Larch forest</td>
<td>2032</td>
<td>7.2358237</td>
<td>44.138598</td>
<td>8 (T1-T8)</td>
</tr>
<tr>
<td>M09-SES1400-T1/T8-M1</td>
<td>2009</td>
<td>9.VI-15.X</td>
<td>St-Dalmas-le-Selvage</td>
<td>Vallon de St-Dalmas: La Buisse</td>
<td>Meadows, broadleaved and larch forest</td>
<td>1437</td>
<td>6.8875257</td>
<td>44.2848357</td>
<td>8 (T1-T8)</td>
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<tr>
<td>M09-SES1400-T1/T8-M2</td>
<td>2009</td>
<td>9.VI-15.X</td>
<td>St-Dalmas-le-Selvage</td>
<td>Vallon de St-Dalmas: La Buisse</td>
<td>Meadows, broadleaved and larch forest</td>
<td>1421</td>
<td>6.8867683</td>
<td>44.2850731</td>
<td>8 (T1-T8)</td>
</tr>
<tr>
<td>M09-SES2000-T1/T8-M1</td>
<td>2009</td>
<td>8.VI-15.X</td>
<td>St-Dalmas-le-Selvage</td>
<td>Bois de Sestrière</td>
<td>Larch forest</td>
<td>1966</td>
<td>6.8240421</td>
<td>44.2927562</td>
<td>8 (T1-T8)</td>
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<tr>
<td>M09-SES2000-T1/T8-M2</td>
<td>2009</td>
<td>8.VI-15.X</td>
<td>St-Dalmas-le-Selvage</td>
<td>Bois de Sestrière</td>
<td>Larch forest</td>
<td>2011</td>
<td>6.8228732</td>
<td>44.292519</td>
<td>8 (T1-T8)</td>
</tr>
<tr>
<td>M10-CAI1400-T1/T7-M1</td>
<td>2010</td>
<td>1.VII-15.X</td>
<td>Saorge</td>
<td>Forêt de Caïros: Vallasserre</td>
<td>Fir forest</td>
<td>1379</td>
<td>7.45615</td>
<td>44.00338</td>
<td>7 (T1-T7)</td>
</tr>
<tr>
<td>M10-CAI1400-T1/T7-M2</td>
<td>2010</td>
<td>1.VII-15.X</td>
<td>Saorge</td>
<td>Forêt de Caïros: Vallasserre</td>
<td>Fir forest</td>
<td>1387</td>
<td>7.45692</td>
<td>44.00343</td>
<td>7 (T1-T7)</td>
</tr>
<tr>
<td>M10-CAI2000-T1/T7-M1</td>
<td>2010</td>
<td>30.VI-15.X</td>
<td>Saorge</td>
<td>Tête de la Poudrière</td>
<td>Larch forest</td>
<td>1953</td>
<td>7.42407</td>
<td>44.01454</td>
<td>7 (T1-T7)</td>
</tr>
</tbody>
</table>

**Table 2.** — Codes and dates of the successive sampling periods for each sampling site.

<table>
<thead>
<tr>
<th>Site</th>
<th>Year T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
<th>T5</th>
<th>T6</th>
<th>T7</th>
<th>T8</th>
</tr>
</thead>
</table>
Morphological terms follow Paretas-Martínez et al. (2007). Measurements and abbreviations include F1-F12: first and subsequent flagellomeres. Measurements in anten- nal formulae are given as length (width): from pedicel to F4 (F4-F12 are subequal in these species). Measurements were made with the microscope, using an ocular micrometer. The width of the forewing radial cell is measured from the margin of the wing to the base of Rs vein. The transfacial line is the distance between the inner margins of the compound eyes, measured across the face through the antennal sockets. The malar space is the distance from the mandible basis to the ventral margin of the compound eye. Females and males have the same morphology, unless otherwise indicated.

RESULTS

Species are presented in alphabetical order. Sample code numbers are used to indicate the collection details of the non Type material examined. The reader is referred to Tables 1 and 2 for the corresponding data.

SYSTEMATICS

Subphylum HEXAPODA Blainville, 1816
Class INSECTA Linnaeus, 1758
Order HYMENOPTERA Linnaeus, 1758
Suborder APOCRITA Latreille, 1810
Superfamily CYNIPIDAE Billberg, 1820
Family FIGITIDAE Thomson, 1862
Subfamily CHARIPINAE Dalla Torre & Kieffer, 1910
Genus Allloxysta Förster, 1869

Allloxysta abdera Fergusson, 1986
(Figs 2A; 3A)


Material examined. — (5♀). M10-CAI2000-T1-M1: 3♀; M10-CAI2000-T5-M2: 2♀. 3♀ deposited at MNHN and 2♀ at UB.


Hosts. — Unknown.
**DIAGNOSIS.** — *Alloxysta abdera* is characterized by its completely open radial cell, being 2.2 × longer than wide in both male and female; pronotal and propodeal carinae present; female antenna with rhinaria beginning from F4, F1 longer than pedicel and subequal to F2, F2 longer than F3, F3 slightly longer than F4 (Fig. 2A); male antenna with rhinaria beginning from F2, F2 curved, F1 longer than pedicel and F2, F2 shorter than F3, F3 subequal to F4. Similar to *Alloxysta pallidicornis* (Curtis, 1838), but the two species can be differentiated by: 1) flagellomere proportions in female: F2 longer than F3, F3 slightly longer than F4 in *A. abdera*, whereas F2-F4 are subequal in length in *A. pallidicornis*; 2) shape of propodeal carinae: forming a plate with apical setae and sides slightly curved in *A. abdera*, whereas the two well defined carinae are basally joined and apically separated in *A. pallidicornis* and 3) the proportions of the radial cell: 2.2 × longer than wide in *A. abdera* (Fig. 3A), versus 2.6 × in *A. pallidicornis*.

**Alloxysta alpina**

Ferrer-Suay & Pujade-Villar, n. sp.

**(Fig. 4)**


**ETYMOLOGY.** — The new species is named after the mountain range where it was first found.

**DISTRIBUTION.** — France.

**HOSTS.** — Unknown.

**DIAGNOSIS.** — *Alloxysta alpina* Ferrer-Suay & Pujade-Villar, n. sp. is characterized by a completely open radial cell 3.8 × longer than wide, pronotal carinae present, propodeal carinae absent, female antenna with rhinaria beginning from F4, and F2 longer than F1 and F3. It is similar to *Alloxysta mara* Paretas-Martínez & Pujade-Villar, 2005, but the two species can be differentiated by flagellomere proportions: F2 longer than F1 and F3 in *A. alpina* Ferrer-Suay & Pujade-Villar, n. sp., but F1-F3 subequal in length in *A. mara*.

**DESCRIPTION**

**Length**

Female (Fig. 4D): 0.9-1.2 mm. Male unknown.

**Coloration**

Head, mesosoma and metasoma yellowish brown. Antenna yellow, darkening towards apex. Legs yellow and veins yellowish brown.

**Head**

Transversely ovate, smooth and shiny, slightly wider than high in front view. Setae dense on face below and between toruli, scattered above toruli and on vertex. Transfacial line 1.1 × height of compound eye. Malar space 0.4 × height of compound eye.

**Antenna**

Female: 13-segmented, filiform. All antennomeres covered with sparse setae. F1-F3 smooth and thinner than remaining flagellomeres; F4-F11 with rhinaria, club shaped. Antennal formula: 2.0 (1.1); 2.8 (0.6); 3.0 (0.6); 2.8 (0.6); 3.1 (0.9) (Fig. 4C).
Mesosoma
Pronotum with two lateral carinae, densely setose with distolateral corners less hairy (Fig. 4E). Mesoscutum smooth and shiny, round in dorsal view with few scattered setae and two lines of setae on both sides. Scutellum smooth and shiny with scattered setae more abundant apically. Height of mesopleural triangle along anterior margin 1.5 × the height of mesopleuron. Propodeum densely setose and without carinae (Fig. 4B).

Forewing
Longer than body, 1.7 × longer than mesosoma and metasoma together, densely setose; marginal setae present (Fig. 4A). Radial cell open, 3.8 × longer than wide (Fig. 4A). R1 short and slightly curved; Rs long and slightly curved.

Metasoma
Proximal part with an incomplete ring of setae, glabrous centrally and wider laterally. Rest of metasoma smooth and shiny, with terga clearly visible.

Alloxysta arcuata (Kieffer, 1902)
(Figs 2B; 3B; 5A; 6A)

Allotria (Allotria) arcuata Kieffer, 1902a: 12.

Material examined. — (23♀). M09-BOR1400-T4-M1: 1♀; M09-BOR2000-T4-M1: 2♀; M09-SES1400-T2-M1: 1♀; M09-SES1400-T5-M1: 1♀; M09-SES1400-T1-M2: 5♀; M09-SES1400-T2-M2: 1♀; M09-SES1400-T3-M2: 1♀; M09-SES2000-T5-M2: 1♀; M10-CAI1400-T2-M1: 1♀; M10-CAI1400-T1-M2: 2♀; M10-CAI1400-T2-M2: 1♀; M10-CAI1400-T7-M1: 2♀; M10-CAI2000-T1-M1: 1♀; M10-CAI2000-T4-M1: 2♀; M10-CAI2000-T6-M2: 1♀. Material deposited at UB except for 8♀ deposited at MNHN.


Diagnosis. — Alloxysta arcuata is characterized by: small closed radial cell, 2.3 × longer than wide (Fig. 3B), pronotal carinae present (Fig. 5A), propodeal carinae forming a plate (Fig. 6A), female antenna with rhinaria beginning from F3; F1 subequal to pedicel and longer
FIG. 4. — Alloxysta alpina Ferrer-Suay & Pujade-Villar, n. sp.: A, Forewing; B, propodeum; C, antennae; D, body; E, pronotum. Scale bars: 50 μm.
than F2, F2 subequal to F3 (Fig. 2B), male antenna with rhinaria beginning from F2, F2 slightly curved, F1 longer than pedicel, F1 subequal to F2, F2 shorter than F3. It is similar to *Alloxysta ramulifera* (Thomson, 1862), but the two species can be differentiated by: rhinaria beginning from F3 in *A. arcuata* and from F4 in *A. ramulifera*; pronotal carinae well defined and visible in *A. arcuata*, rather than small and sometimes difficult to see under the pubescence in *A. ramulifera*; radial cell 2.3 × longer than wide in *A. arcuata* (Fig. 3B), but only 2.0 × in *A. ramulifera*; propodeal carinae with curved sides in *A. arcuata*, but with straight sides in *A. ramulifera*.

*Alloxysta brachycera* Hellett, 1963
(Figs 2C; 3C)


**Material examined.** — (1♀). M09-BOR1400-T3-M1: 4♀; M09-BOR1400-T5-M1: 1♂; M09-BOR2000-T4-M1: 2♂; M09-SES2000-T3-M1: 1♀; M09-SES2000-T5-M1: 1♂; M10-CAI2000-T1-M1: 1♀; M10-CAI2000-T3-M1: 1♀. Material deposited at MNHN, except for 4♂ deposited at UB.

**Distribution.** — Previously known from Finland (Hellett 1963). First record from France.

**Hosts.** — Unknown.

**Diagnosis.** — *Alloxysta brachycera* is characterized by: a completely open radial cell, 2.7 × longer than wide (Fig. 3C), pronotal carinae present, propodeal carinae absent, female antenna with rhinaria beginning from F4, F1 longer than pedicel and F2, F2 longer than F3, F3 shorter than F4 (Fig. 2C). Male unknown. Similar to *Alloxysta nigrita* (Thomson, 1862), but the two species can be differentiated by: F2 longer than F3 in *A. brachycera* (Fig. 2C), whereas F2 is shorter than F3 in *A. nigrita* (Fig. 2N); proportions of radial cell: 2.7 × longer than wide in *A. brachycera* (Fig. 3C), versus 2.9 × in *A. nigrita* (Fig. 3N).

*Alloxysta brevis* (Thomson, 1862)
(Figs 2D; 3D; 5B)

*Alloxysta brevis* Thomson, 1862: 408.

**Material examined.** — (2♀). M09-BOR1400-T1-M1: 1♀; M09-BOR1400-T3-M1: 1♀; M09-BOR1400-T5-M1: 1♀; M09-BOR2000-T3-M1: 1♀; M09-BOR2000-T5-M2: 1♀; M09-SES1400-T3-M1: 1♀; M09-SES1400-T5-M1: 1♀; M09SES1400-T5-M2: 1♀; M09-SES2000-T3-M1: 1♀; M09-SES2000-T5-M1: 1♀; M09-SES2000-T5-M2: 1♀; M09-SES2000-T6-M1: 1♀; M09-SES2000-T6-M2: 1♀; M09-SES2000-T5-M2: 1♀; M09-SES2000-T6-M2: 1♀; M09-SES2000-T6-M1: 1♀; M09-SES2000-T6-M2: 1♀. Material deposited at MNHN except for 10♀ deposited at UB.

**Distribution.** — Previously known from the Palearctic (Ferrer-Suay et al. 2012b). First record from France.

**Hosts.** — See Charipinae Worldwide Catalogue (Ferrer-Suay et al., 2012a).
F1 subequal to F2, F2 shorter or subequal to F3 in *A. circumscripta* (Fig. 2F), versus F1 longer than F2, F2 subequal to F3 in *A. consobrina* (Fig. 2I); proportions of radial cell: 2.5 × longer than wide in *A. circumscripta* (Fig. 3F) but 2.7 in *A. consobrina* (Fig. 3I).

*Alloxysta citripes* (Thomson, 1862)
(Figs 2G; 3G; 6F)

*Alloxysta citripes* Thomson, 1862: 410.

**Material examined.** — (11♀). M9-BOR1400-T2-M1: 1♀; M9-SES1400-T1-M2: 1♀; M9-SES1400-T2-M2: 1♀; M9-SES1400-T3-M2: 1♀; M9-SES1400-T4-M2: 1♀; M9-SES1400-T6-M2: 1♀; M9-SES2000-T4-M1: 2♀; M9-SES2000-T2-M2: 2♀; M10-CAI2000-T4-M1: 1♀. Material deposited at MNHN except for 9♀ deposited at UB.


**Diagnosis.** — *Alloxysta citripes* is characterized by its partially open and small radial cell being 2.1 × longer than wide (Fig. 3G), pronotal carinae present, propodeal carinae present forming a plate but not protruding, female antenna with rhinaria beginning from F4, F1 subequal to pedicel and longer than F2, F2-F4 subequal in length (Fig. 2G), male antenna with rhinaria beginning from F1, pedicel-F3 subequal, F3 slightly shorter than F4 (Fig. 2I), propodeal carinae absent, male and female antenna with rhinaria absent, propodeal carinae present forming a plate in *A. postica*; proportions of radial cell: 2.1 × longer than wide in *A. citripes* (Fig. 3G), versus 2.5 × in *A. postica* (Fig. 3Q).

*Alloxysta consobrina* (Zetterstedt, 1838)
(Figs 2I; 3I)

*Cynips consobrina* Zetterstedt, 1838: 410.

**Material examined.** — (16♀). M9-BOR1400-T4-M1: 1♀; M9-SES1400-T4-M2: 1♀; M9-SES1400-T2-M2: 2♀; M9-SES1400-T3-M2: 2♀; M9-SES1400-T4-M2: 2♀; M9-SES1400-T6-M2: 2♀; M9-SES2000-T4-M1: 1♀; M9-SES2000-T2-M2: 1♀; M9-SES2000-T3-M1: 1♀. Eight ♀ deposited at MNHN and 8♀ at UB.

**Distribution.** — Cosmopolitan. Previously cited from France by Kieffer 1902a: 16 and De Gaulle (1908: 26). *Alloxysta consobrina* was previously cited in France as *Alloxysta fuscicornis* (Hartig, 1841), a well-known cosmopolitan species. These two homonymous species were recently synonymized by Ferrer-Suay et al. (2013).


**Diagnosis.** — *Alloxysta consobrina* is characterized by: radial cell 2.7 × longer than wide (Fig. 3D), pronotal carinae present, propodeal carinae absent, male and female antenna with rhinaria beginning from F4, F2 longer than F3, F3 shorter than F4 (Fig. 2I), F1–F3 bowed in male. Similar to *A. circumscripta*, but the two species can be differentiated by the proportion between flagellomeres: F1 longer than F2, F2 subequal to F3 in *A. consobrina* (Fig. 2I), versus F1 subequal to F2, F2 shorter or subequal to F3 in *A. circumscripta* (Fig. 2F); proportions of radial cell: 2.7 × longer than wide in *A. consobrina* (Fig. 3I) but 2.5 × in *A. circumscripta* (Fig. 3F).

*Alloxysta fracticornis* (Thomson, 1862)
(Figs 2H; 3H)

*Alloxysta fracticornis* Thomson, 1862: 408.

**Material examined.** — (2♂ & 8♀). M9-BOR1400-T4-M1: 1♂; M9-SES1400-T3-M2: 2♀; M9-SES1400-T6-M2: 1♀; M9-SES2000-T2-M1: 1♂; M9-SES2000-T4-M1: 1♂; M9-SES2000-T5-M1: 2♀; M9-SES2000-T3-M1: 1♀. Material deposited at MNHN except for 1♂ & 4♀ deposited at UB.

**Distribution.** — Previously known from the Palaearctic region (Ferrer-Suay et al. 2012a). First record from France.

**Hosts.** — Unknown.

**Diagnosis.** — *Alloxysta fracticornis* is characterized by its closed radial cell being 2.2 × longer than wide (Fig. 3H), pronotal carinae absent, propodeal carinae present, male and female with rhinaria beginning from F3, F1–F3 subequal in length (Fig. 2H), F3 curved in male. Similar to *Alloxysta mullensis* (Cameron, 1883), but the two species can be differentiated by the ratio between F1 and pedicel: F1 longer than pedicel in *A. fracticornis* (Fig. 2H), versus F1 subequal to pedicel in *A. mullensis* (Fig. 2M); F1–F3 subequal in length in *A. fracticornis* (Fig. 2H) but F1 longer than F2 and F2 subequal.
to F3 in *A. mullenis* (Fig. 2M); male antenna with F3 curved in *A. fracticornis* but without any curved flagellomere in *A. mullenis*.

**Alloxysta franca**
Ferrer-Suay & Pujade-Villar, n. sp.  
(Fig. 7)

**TYPE MATERIAL.** — (1♀). Holotype ♀ deposited at MNHN with the following labels: M09-BOR2000-T1-M1, Valdeblore, Col de Salèse, larch forest, Alt: 2058 m, 10-24.VI.2009.

**ETYMOLOGY.** — The new species is named after the country where it was first found, France.

**DISTRIBUTION.** — France.

**HOSTS.** — Unknown.

**DIAGNOSIS.** — *Alloxysta franca* Ferrer-Suay & Pujade-Villar, n. sp. is characterized by its completely open radial cell being 2.4 × longer than wide, pronotal carinae absent, propodeal carinae forming a plate, female antenna with rhinaria beginning from F4, F1 longer than F2, F2 subequal in F3, F3 shorter than F4. Similar to *Alloxysta pilae* Ferrer-Suay n. sp., but the two species can be differentiated by the pronotal carinae: absent in *A. franca* Ferrer-Suay & Pujade-Villar, n. sp., but present in *A. pilae* Ferrer-Suay, n. sp.; proportions of radial cell: 2.4 × longer than wide in *A. franca* Ferrer-Suay & Pujade-Villar, n. sp., vs 2.2 × in *A. pilae* Ferrer-Suay, n. sp.

**DESCRIPTION**

**Length**
Female (Fig. 7E): 0.9 mm. Male unknown.

**Coloration**
Head, mesosoma and metasoma yellowish brown. Scape, pedicel, F1-F3 dark yellow, F4-F11 yellowish brown. Legs yellow and veins yellowish brown.

**Head**
Transversely ovate, smooth and shiny, slightly wider than high in front view. Face densely hairy; setae present below and between toruli. Frons and vertex glabrous. Transfacial line 1.4 × height of compound eye. Malar space 0.6 × height of compound eye.

**Antenna**
Female: 13-segmented, filiform. All antennomeres covered with sparse setae. F1-F3 smooth and thiner than remaining flagellomeres; F4-F11 with rhinaria and club shaped. Antennal formula: 2.5 (1.4); 2.3 (0.9); 1.7 (0.9); 1.8 (1.0); 2.8 (1.5) (Fig. 7B). Male unknown.

**Mesosoma**
Pronotum hairy, setae less abundant on distolateral corners, pronotum without carinae (Fig. 7D). Mesoscutum smooth and shiny, round in dorsal view, with few scattered setae and two lines of setae on both sides. Scutellum smooth and shiny with scattered setae, setae more abundant at scutellum apex. Height of mesopleural triangle along anterior margin 1.3 × height of mesopleuron. Propodeum densely hairy, with two carinae present forming a plate and few setae on top (Fig. 7F).

**Forewing**
Longer than body, 1.5 × longer than mesosoma and metasoma together. Covered with dense pubescence; marginal setae present (Fig. 7A). Open radial cell 2.4 × longer than wide (Fig. 7C). R1 short and slightly curved; Rs long and straight.

**Metasoma**
Proximal part with an incomplete ring of setae, glabrous in the centre and wider laterally. Rest of metasoma smooth and shiny with terga clearly visible.

**Alloxysta longipennis** (Hartig, 1841)
(Figs 2J; 3J)

**Xystus longipennis** Hartig, 1841: 352.

**MATERIAL EXAMINED.** — (1♂ & 5♀). M09-BOR1400-T3-M1: 1♂; M09-BOR1400-T5-M1: 1♂; M09-SES1400-T3-M1: 1♂; M09-SES2000-T3-M1: 1♂; M09-SES2000-T6-M2: 1♂; M10-CAI1400-T7-M2: 1♀. Material deposited at MNHN except for 2♂ deposited at UB.

**DISTRIBUTION.** — Previously known from Germany (Ferrer-Suay et al. 2012a). First record from France.

**HOSTS.** — Unknown.

**DIAGNOSIS.** — *Alloxysta longipennis* is characterized by: partially open radial cell, 2.6 × longer than wide (Fig. 3), pronotal and propodeal carinae present, forming a plate with straight sides, female with rhinaria beginning from F3, F1 longer than pedicel and F2, F2 subequal to F3 to F3 shorter than F4 (Fig. 2J). Male unknown. Similar to *Alloxysta melanogaster* (Hartig, 1840), but the two species can be differentiated by the proportions between flagellomeres in female: F1 longer than pedicel and F2, F2 subequal to F3 in *A. longipennis* (Fig. 2J), whereas pedicel-F3 subequal in *A. melanogaster* (Fig. 2L); and by the size of radial cell: 2.6 × longer than wide in *A. longipennis* (Fig. 3J), versus 2.3 × in *A. melanogaster* (Fig. 3L).

**Alloxysta macrophadna** (Hartig, 1841)
(Figs 2K; 3K)

**Xystus macrophadna** Hartig, 1841: 352.


**DISTRIBUTION.** — Species known from the Palaearctic region (Ferrer-Suay et al. 2012a). Previously cited from France by Kieffer (1902a: 10) and De Gaulle (1908: 26).
Fig. 6. — Types of propodea: A, A. arcuata (Kieffer, 1902); B, A. victria (Westwood, 1833); C, P. villosa (Hartig, 1841); D, A. trapezoidea (Hartig, 1841); E, D. sub-clavata Förster, 1869; F, A. citripes (Thomson, 1862). Scale bars: 50 μm.
HOSTS. — See Charipinae Worldwide Catalogue (Ferrer-Suay et al., 2012a).

DIAGNOSIS. — *Alloxyta macrophadna* is characterized by: a large, partially open radial cell, 3.0 × longer than wide (Fig. 3K), pronotal carinae present, propodeal carinae absent, female antenna with rhinaria beginning from F4, F1 longer than pedicel and F2, F2 shorter than F3, F3 shorter than F4 (Fig. 2H); proportion between flagellomeres: F1 subequal to F2, F2 subequal to F3 in *A. mullensis* (Fig. 2O) while F1 longer than pedicel and subequal to F2, F2 longer than F3, F3 longer than F4 (Fig. 2N), male antenna with F1 longer than pedicel and subequal to F2, F2-F3 subequal in length in both male and female antenna with rhinaria beginning from F4, F1 longer than pedicel and subequal to F2, F2-F3 subequal in length in *A. longipennis* (Fig. 2L); size of radial cell 2.9 × longer than wide in *A. nigrita* (Fig. 3N) but 2.7 × in *A. longipennis* (Fig. 3J).

*Alloxyta melanogaster* (Hartig, 1840)
(Figs 2L; 3L)

*Xystus melanogaster* Hartig, 1840: 200.


DISTRIBUTION. — Species previously known from the Palaearctic region (Ferrer-Suay et al. 2012b). First record from France.


DIAGNOSIS. — *Alloxyta mullensis* is characterized by: a closed radial cell, 2.2 × longer than wide (Fig. 3M), pronotal carinae absent, propodeal carinae present forming a plate, male and female with the rhinaria beginning from F4, F1 longer than F2, F2 subequal to F3, F3 shorter than F4 (Fig. 2M). Similar to *A. fracticornis*, but the two species can be differentiated by their antennae; ratio between F1 and pedicel: F1 subequal to pedicel in *A. mullensis* (Fig. 2M) while F1 longer than pedicel in *A. fracticornis* (Fig. 2H); proportion between flagellomeres: F1 longer than F2 and F2 subequal to F3 in *A. mullensis* female (Fig. 2M) but F1-F3 subequal in length in *A. fracticornis* female (Fig. 2H); without any curved flagellomere in *A. mullensis* male but with F3 curved in *A. fracticornis* male.

*Alloxyta nigrita* (Thomson, 1862)
(Figs 2N; 3N)

*Allotria nigrita* Thomson, 1862: 409.


DIAGNOSIS. — *Alloxyta nigrita* is characterized by: a completely open radial cell, 2.9 × longer than wide in both male and female (Fig. 3N), pronotal carinae present, propodeal carinae absent, female antenna with rhinaria beginning from F4 in both male and female, female antenna with F1 longer than pedicel and F2, F2 shorter than F3, F3 longer than F4 (Fig. 2N), male antenna with F1 longer than pedicel and subequal to F2, F2 longer or subequal to F3, F3 shorter than F4. Similar to *A. brachycera*, but the two species can be differentiated by the ratio between F2 and F3: F2 shorter than F3 in *A. nigrita* (Fig. 2N) while F2 longer than F3 in *A. brachycera* (Fig. 2C); proportions of radial cell 2.9 × longer than wide in *A. nigrita* (Fig. 3N) but 2.7 × in *A. brachycera* (Fig. 3C).

*Alloxyta obscurata* (Hartig, 1840)
(Figs 2O; 3K)

*Xystus obscuratus* Hartig, 1840: 200.

MATERIAL EXAMINED. — (3♀). M9-BOR2000-T6-M1: 1♀; M9-BOR2000-T3-M1: 1♀; M9-BOR1400-T2-M1: 1♀. 2♀ deposited at MNHN and 1♀ at UB.

DISTRIBUTION. — Species known from the Holarctic region (Ferrer-Suay et al. 2012a). Previously cited from France by Kieffer (1904: 597) and De Gaulle (1908: 26).

DIAGNOSIS. — *Alloxysta obscurata* is characterized by: partially open radial cell, 2.7 × longer than wide (Fig. 3O); pronotal carinae present, propodeal carinae absent; female antenna with rhinaria beginning from F3; F1 longer than pedicel and F2, F2 shorter than F3, F3 shorter than F4 (Fig. 2O); male antenna with rhinaria beginning from F4, F2 slightly curved, F1 longer than pedicel and F2, F2 longer than F3 and F3 longer than F4. Similar to *A. macrophadna*, but the two species can be differentiated by the shape and proportion between flagellomeres: F1 longer than F2, F2 shorter than F3 and F3 shorter than F4 in *A. obscurata* (Fig. 2O), versus F1 subequal to F2, F2 longer than F3 and F3 subequal to F4 in *A. macrophadna* (Fig. 2K); male antenna without any curved flagellomere in *A. obscurata* but with F2 and F3 strongly curved in *A. macrophadna*; proportions of radial cell 2.7 × longer than wide in *A. obscurata* (Fig. 3O) but 3.0 × in *A. macrophadna* (Fig. 3K).


ETYMOLOGY. — The new species is dedicated to the mother of the first author, to thank her for her constant support.

DISTRIBUTION. — France.

HOSTS. — Unknown.
**Diagnosis.** — *Alloxysta pilae* Ferrer-Suay, n. sp. is characterized by: a completely open radial cell, 2.2 × longer than wide; prontal and propodeal carinae present; female antenna with rhinaria beginning from F4, F1 longer than F2, F2 subequal to F3, F3 shorter than F4. Similar to *A. franca* Ferrer-Suay & Pujade-Villar, n. sp., but the two species can be differentiated by the pronotal carinae: present in *A. pilae* Ferrer-Suay, n. sp., versus absent in *A. franca* Ferrer-Suay & Pujade-Villar, n. sp.; proportions of radial cell 2.2 × longer than wide in *A. pilae* Ferrer-Suay, n. sp., versus 2.4 × in *A. franca* Ferrer-Suay & Pujade-Villar, n. sp.

**Description**

**Length**
Female: 0.9 mm. Male unknown.

**Coloration**
Head, mesosoma and metasoma yellowish brown. Scape, pedicel, F1-F3 dark yellow, F4-F11 yellowish brown. Legs yellow and wing venation yellowish brown.

**Head**
Transversely ovate, smooth and shiny, slightly wider than high in front view. Vertex glabrous, face hairy. Setae present below, between and a few above toruli. Transfacial line 1.1 × height of compound eye. Malar space 0.6 × height of compound eye.

**Antenna**
Female: 13-segmented, filiform. All flagellomeres sparsely setose. F1-F3 smooth and thinner than remaining flagellomeres; F4-F11 club shaped and with rhinaria. Antennal formula: 2.5 (1.5); 3.1 (0.9); 2.5 (0.9); 2.5 (0.9); 3.4 (1.3) (Fig. 8D).

**Mesosoma**
Proximal sparsely setose, with two thick latero-median carinae (Fig. 8C). Mesoscutum smooth and shiny, rounded in dorsal view, with few scattered setae, and two setiferous lines on both sides. Scutellum smooth and shiny, with scattered setae more abundant at scutellum apex. Height of mesopleural triangle along anterior margin 1.4 × the height of mesopleuron. Propodeum densely setose; with two carinae present forming a plate with lateral sides slightly curved and few setae antero-medially (Fig. 8F).

**Forewing**
Longer than body, 1.6 × longer than mesosoma and metasoma together; covered with dense pubescence; marginal setae present (Fig. 8A). Open radial cell 2.2 × longer than wide (Fig. 8B). R1 short and slightly curved; Rs long and slightly curved.

**Metasoma**
Proximal part with an incomplete ring of setae, glabrous medially and wider laterally. Rest of metasoma smooth and shiny with terga clearly visible.
DISTRIBUTION. — Species previously known from the Palaearctic (Ferrer-Suay et al. 2012a). First record from France.

HOSTS. — Unknown.

DIAGNOSIS. — *Alloxysta proxima* is characterized by: a completely open radial cell, 2.3 × longer than wide (Fig. 3R); pronotal carinae and propodeal carinae absent; female antenna with rhinaria beginning from F4, F1 longer than pedicel, F2 longer than F1, F2 longer than F3, F3 subequal to F4 (Fig. 2R). Male unknown. This combination of features is not known in any other species of *Alloxysta*.

*Alloxysta pilae* Ferrer-Suay, n. sp. (Figs 2S; 3S)

**FIG. 8.** — *Alloxysta pilae* Ferrer-Suay, n. sp.: A, forewing; B, radial cell; C, pronotum; D, antennae; E, body; F, propodeum. Scale bars: 50 μm.

**Allotria (Allotria) pusilla** Kieffer, 1902a: 13.

MATERIAL EXAMINED. — (1♀). M9-SES1400 T2-M2: 1♀. Deposited at MNHN.

DISTRIBUTION. — Species known from the Palaearctic (Ferrer-Suay et al. 2012a). Previously cited from France by Kieffer (1902a: 13) and De Gaulle (1908: 26).
**DISTRIBUTION**

Posited at MNHN, except for 15 male and female with rhinaria beginning from F3, F1 longer than bearing propodeal carinae in other Charipinae species (Fig. 6B), propodeum without carinae and lacking setae on longitudinal areas radial cell, 3.0 × longer than wide (Fig. 3T); pronotal carinae present, **DIAGNOSIS**

CAI2000-T2-M1: 2 ♀

M10-CAI2000-T1-M1: 1 ♀

M1: 1 ♀

SES2000-T2-M1: 1 ♀

Material examined.

Allotria victrix

DISTRIBUTION

 HOSTS


**DIAGNOSIS.** — Alloxyta pusilla is characterized by: a closed radial cell, 2.7 × longer than wide in female (Fig. 3S) and 2.4 × in male, pronotal and propodeal carinae present, forming a plate; female antenna with rhinaria beginning from F3, F1 longer than pedicel and F2, F2 shorter than F3, and F3 shorter than F4 (Fig. 25); male antenna with rhinaria beginning from F1, pedicel-F3 subequal in length, F4 longer than F3, F1-F3 slightly curved. Similar to A. pilipennis, but the two species can be differentiated by the proportions between flagellomeres in both male and female: F2 shorter than F3 in A. pusilla female (Fig. 25), versus F2 subequal to F3 in A. pilipennis female (Fig. 25); F1-F3 subequal in length and slightly curved in A. pusilla male, versus F1-F3 distinctly unequal and with all flagellomers uncurred in A. pilipennis male; proportions of radial cell 2.7 × longer than wide in A. pusilla female (Fig. 3S), versus 2.4 × in A. pilipennis female (Fig. 3P).

**Alloxyta victrix** (Westwood, 1833)

(Figs 2T; 3T; 6B)

Allotria victrix Westwood, 1833: 495.


**DISTRIBUTION.** — Cosmopolitan (Ferrer-Suay et al. 2012a). Previously cited from France by Kieffer (1902a: 15; 16; 1902b: 70; 1904: 600) and De Gaulle (1908: 26).


**DIAGNOSIS.** — Alloxyta victrix is characterized by: a large closed radial cell, 3.0 × longer than wide (Fig. 3T); pronotal carinae present, propodeum without carinae and lacking setae on longitudinal areas bearing propodeal carinae in other Charipinae species (Fig. 6B), male and female with rhinaria beginning from F3, F1 longer than pedicel and F2, F2-F4 subequal (Fig. 2T), F1-F3 curved in male. Similar to A. consobrina, but the two species can be differentiated by the proportions between flagellomeres: F2-F4 subequal in length in A. victrix (Fig. 2T), versus F2 subequal to F3 and F3 shorter than F4 in A. consobrina (Fig. 2T); proportions of radial cell 3.0 × longer than wide in A. victrix (Fig. 3T), versus 2.7 × in A. consobrina (Fig. 2T); and the propodeal pubescence: with two longitudinal glabrous areas in A. victrix, as opposed to entirely and densely setose in A. consobrina the propodeum.

*Genus Apocharips* Fergusson, 1986

*Apocharips trapezoidea* (Hartig, 1841)

(Figs 6D; 9A; 10A)

**Yxystus trapezoideus** Hartig, 1841: 352.

**MATERIAL EXAMINED.** — (1♂). M9-SES2000-T4-M1: 1♂. Deposited at MNHN.

**DISTRIBUTION.** — Previously known from the Palaearctic region (Ferrer-Suay et al. 2012a). First record from France. Currently the only species of *Apocharips* known from the Mediterranean Alps.


**DIAGNOSIS.** — Apocharips trapezoidea is mainly characterized by; a completely open radial cell, 1.0 times as long as wide (Fig. 9A); pronotal and propodeal carinae present (Fig. 6D); apex of scutellum with M-shaped carinae; female antenna with rhinaria beginning from F5, F1 longer than pedicel and F2, F2 subequal to F3, F3 shorter than F4 (Fig. 10A); male antenna with rhinaria beginning from F1, F1 longer than pedicel and F2, F2-F4 subequal in length. It is easily differentiated from the other *Apocharips* species by its radial cell completely open with parallel R1 and Rs veins (Fig. 9A). The most similar *Apocharips* species is *Apocharips hansoni* Menke, 1993, but they can be readily separated by the presence of radial carinae around the clypeus in *A. hansoni*, which are lacking in *A. trapezoidea.*

*Genus Dilyta* Förster, 1869

*Dilyta subclavata* Förster, 1869

(Figs 9B; 10B)

**Dilyta subclavata** Förster, 1869: 338.

**MATERIAL EXAMINED.** — (1♂ & 2♀). M09-BOR1400-T6-M1: 1♀; M09-SES1400-T2-M2: 1♂; M10-CAI1400-T2-M1: 1♂. Material deposited at MNHN, except for 1♀ deposited at UB.

**DISTRIBUTION.** — Known from Palaearctic region (Ferrer-Suay et al. 2012a). Previously cited from France by De Gaulle (1908: 26) and Dalla Torre & Kieffer (1910: 255). Currently the only species of *Dilyta* genus present in the Mediterranean Alps.


**DIAGNOSIS.** — *Dilyta subclavata* is mainly characterized by: a completely open radial cell, 1.8 × longer than wide (Fig. 9B); pronotum and propodeal carinae present; apex of scutellum with n-shaped carina; female antenna with rhinaria beginning from F6, F1 slightly shorter or subequal to pedicel, F2 subequal to F3, F4 longer than F3 (Fig. 10B); male antenna with rhinaria beginning from F4, F1 slightly
longer than pedicel, sometimes slightly arched, F2 shorter than F1 and F3, F3 shorter than F1, F1 subequal to F4. This species is easily differentiated from the other Dilyta species by the punctuation present on the distal part of its metasoma, F1 slightly shorter or subequal to pedicel, F2 subequal to F3, and F4 longer than F3 (Fig. 10B).

**Genus *Phaenoglyphis* Förster, 1869**

*Phaenoglyphis abbreviata* (Thomson, 1877) (10C)

*M. abbreviata* Thomson, 1877: 812.

**Material Examined.** — (1 ♀), M09-SES1400-T3-M1: 1 ♀. Deposited at MNHN.

**Distribution.** — Previously known from the Palaearctic region (Ferrer-Suay et al. 2012a). First record from France.


**Diagnosis.** — *Phaenoglyphis abbreviata* is characterized by: a closed radial cell, 2.5 x longer than wide; pronotal and propodeal carinae present; notauli present and rounded; scutellar foveae separated by a small and well defined carina; female antenna with rhinaria beginning from F3, F1 subequal to pedicel, F1 longer than F2, F2 shorter than F3, F3 subequal to F4 (Fig. 10B). It is similar to *Phaenoglyphis moldavica* Ionescu, 1969, but the two species can be differentiated by the proportions between flagellomeres: F1 longer than F2, F2 shorter than F3 in *P. abbreviata*, versus F1-F3 subequal in length in *P. moldavica*; shape of scutellar foveae: small, rounded and separated by a wide carina in *P. abbreviata*, but large and separated by a fine carina in *P. moldavica*.

*Phaenoglyphis americana* Baker, 1896


**Material Examined.** — (2 ♀), M09-SES2000-T4-M1: 1 ♀; M09-SES2000-T6-M2: 1 ♀. 1 ♀ deposited at MNHN and 1 ♀ at UB.

**Distribution.** — Previously known from the Nearctic and Neotropical regions (Ferrer-Suay et al. 2012a). First record from France.

**Phaenoglyphis calverti** Andrews, 1978


**MATERIAL EXAMINED.** — (♀). M09-SES1400-T6-M2: 1♀. Deposited at MNHN.

**DIAGNOSIS.** — *Phaenoglyphis calverti* is characterized by: a closed radial cell, 2.7 × longer than wide; prontal and propodeal carinae present; notauli absent; scutellum with two rounded foveae separated by a carina and open basally; female antenna with rhinaria beginning from F1, flagellum thickened from F2, F1 longer than pedicel, F1-F4 subequal in length, width and shape (Fig. 10D); male antenna with rhinaria and flagellum thickening beginning from F2, F1 curved, longer than pedicel and F2, F2 shorter than F3, F3 subequal to F4 (Fig. 10E); male antenna with rhinaria and flagellum thickening beginning from F2, F1 longer than pedicel and F2, F2 slightly shorter than F3, F3 subequal to F4 (Fig. 10L), male antenna thickened from F3 and rhinaria beginning from F5, F1 curved, F1 longer than pedicel and F2, F2 subequal to F3, F3 slightly shorter than F4. Similar to *Phaenoglyphis fuscicornis* (Thomson, 1877) (Fig. 10L) and from F2 in *P. americana*, whereas the thickening begins from F3 and the rhinaria from F5 in *P. fuscicornis*.

**Phaenoglyphis evenhuisi** is easily distinguished from the other *Phaenoglyphis* species present in the Mediterranean Alps because it is the only species whose pronotum and mesoscutum are not smooth but entirely covered by a fine reticulate sculpture.

**Phaenoglyphis fuscicornis** Thomson, 1877

(Fig. 10L)

*Allotria (Auloxysta) fuscicornis* Thomson, 1877: 813.

**MATERIAL EXAMINED.** — (♀). M09-SES1400-T3-M1: 1♀. Deposited at MNHN.

**DIAGNOSIS.** — *Phaenoglyphis fuscicornis* is characterized by: a closed radial cell, 2.8 × longer than wide in both male and female; prontal and propodeal carinae present; notauli present, scutellum with two oval scutellar foveae separated by a carina and not delimited basally; female antenna thickened from F3 and with rhinaria beginning from F1, F1 longer than pedicel, F1 slightly longer than F2, F2 slightly shorter than F3, F3 subequal to F4 (Fig. 10L), male antenna thickened from F3 and rhinaria beginning from F5, F1 curved, F1 longer than pedicel and F2, F2 subequal to F3, F3 slightly shorter than F4. Similar to *P. americana*, but the two species can be differentiated by: the thickening of female flagellum beginning from F3 in *P. fuscicornis* (Fig. 10L) and from F2 in *P. americana* (Fig. 10D); shape of notauli: deeply excavated anteriorly and weakly posteriorly in *P. fuscicornis*, as opposed to clearly marked along their entire length in *P. americana*; presence of rhinaria and flagellum thickening in male: thickening begins from F3 and rhinaria from F5 in *P. fuscicornis*, whereas both begin from F2 in *P. americana*.

**Phaenoglyphis gutierrezi** Andrews, 1978

(Fig. 10G)


**MATERIAL EXAMINED.** — (♂). M09-BOR2000-T5-M2: 1♂. Deposited at MNHN.

**DIAGNOSIS.** — *Phaenoglyphis gutierrezi* is characterized by: a closed radial cell, 2.8 × longer than wide; prontal and propodeal carinae present; notauli present, scutellum with two oval scutellar foveae separated by a carina and not delimited basally; female antenna thickened from F3 and with rhinaria beginning from F1, F1 longer than pedicel, F1 slightly longer than F2, F2 subequal to F3, F3 slightly shorter than F4 (Fig. 10G). Similar to *Phaenoglyphis salicis* (Cameron, 1883), but the two species can be differentiated by: the ratio between flagel-lomeres: F2-F4 subequal in length in *P. gutierrezi* (Fig. 10G), versus very gibbous in *P. salicis*.
Phaenoglyphis longicornis (Hartig, 1840)
(Fig. 10H)

Xystus longicornis Hartig, 1840: 199.

Material examined. — (3♀). M09-SES1400-T2-M2: 1♀; SES2000-T5-M1: 1♀; M09-BOR1400-T3-M1: 1♀. 2♀ deposited at MNHN and 1♀ at UB.

Distribution. — Previously known from the Palaearctic region (Ferrer-Suay et al. 2012a). First record from France.

Hosts. — Unknown.

Diagnosis. — *Phaenoglyphis longicornis* is characterized by: a closed radial cell, 2.7 × longer than wide; pronotal, propodeal carinæ and notauli present; oval scutellar foveae with straight lateral margins, separated by a carina and not delimited basally; female antenna with rhinaria beginning from F1, F1 longer than pedicel and F2, F2 subequal to F3 and F3 shorter than F4 (Fig. 10H). Similar to *Phaenoglyphis stricta* (Thomson, 1877), but the two species can be differentiated by the beginning of rhinaria: from the base of F1 in *P. longicornis* and from the second quarter of F1 in *P. stricta*; shape of scutellar foveae: not delimited basally in *P. longicornis*, whereas in *P. stricta* they are not delimited apically and basally; proportions of radial cell 2.7 × longer than wide in *P. longicornis*, versus 2.4 × in *P. stricta*.

Phaenoglyphis salicis (Cameron, 1883)
(Fig. 10K)

Allostria salicis Cameron, 1883: 367.

Material examined. — (1♀). M09-SES2000-T6-M2: 1♀. Deposited at MNHN.


Diagnosis. — *Phaenoglyphis salicis* is characterized by: a closed radial cell, 2.5 × longer than wide; pronotal and propodeal carinæ present; notauli barely distinct; scutellar foveae oval, completely defined and
with two apical lines; female antenna with rhinaria beginning from F3, F1 longer than pedicel and F2, F2 shorter than F3, F3 subequal to F4 (Fig. 10K). Similar to *Phaenoglyphis stenos* (Hartig, 1841), but the two species can be differentiated by the antennae with rhinaria beginning from F2 in *P. stenos*, as opposed to from F3 in *P. heterocera*; ratio of pedicel/F1 in female: F1 longer than pedicel in *P. stenos*, but shorter than pedicel in *P. heterocera*; shape of propodeal carinae: slightly curved in *P. stenos*, versus straight in *P. heterocera*; proportions of radial cell 2.9 × longer than wide in *P. stenos*, versus 2.7 × in *P. heterocera*.

*Phaenoglyphis villosa* (Hartig, 1841) (Figs 6C; 9C; 10J)

*Xystus villosus* Hartig, 1841: 353.

**Material examined.** — (1♀ & 4♂). M09-SES1400-T6-M2: 1♀; M09-SES2000-T4-M1: 1♂; M09-BOR2000-T4-M1: 1♀; M10-CAI2000-T3-M1: 1♀. Material deposited at MNHN, except for 2♂ deposited at UB.

**Distribution.** — Cosmopolitan (Ferrer-Suay et al. 2012a). Previously cited from France by Kieffer (1902a: 11, 12, 13; 1904a: 595, 597) and De Gaulle (1908: 26).


**Discussion.** — *Phaenoglyphis villosa* is characterized by: a partially open radial cell, 2.1-2.7 × longer than wide (Fig. 9C); pronotal (Fig. 6C) and propodeal carinae present (Fig. 6C); notauli absent, scutellum with two deep oval foveae more or less separated by a carina or completely fused; female antenna with rhinaria beginning from F3, F1 as long as pedicel or slightly longer, F1 subequal to F2, F2 shorter than F3, F3 shorter than F4 (Fig. 10J); male antenna with rhinaria beginning from F3, F1 subequal to F2, F2 shorter than F3. At the moment *P. villosa* is easily differentiated from the other *Phaenoglyphis* species because it is the only one having a partially open radial cell.

As aphid hyperparasitoids, Charipinae can have a significant economic impact, hence the importance of improving our knowledge of this group. Our studies of the Charipinae type material and their fauna from different parts of the world (Ferrer-Suay et al. 2012, 2013) has been very useful to determine the real limits between species and better know which are the most common, especially in Europe.

In addition to the three new species described here, the study of Charipinae from the Mercantour National Park led to add to the French fauna 19 other species. While most of them were already known from the Palearctic or Holarctic regions, four have been previously recorded only in the Neartic region (*Phaenoglyphis gutierezzi* and *P. calverti*) or in the Neartic and Neotropical regions (*P. americana* and *P. stenos*) (Table 3).

It is thus imperative to continue the study of Charipinae from different areas of the world, especially the most poorly studied areas, such as Africa, Australia and the Oriental regions. Large field samplings performed during the course of All Taxa Biodiversity Inventories like that of the Mercantour National Park provide a good opportunity to collect small, poorly studied taxa and thus contribute to reduce the shortfall in their taxonomy.
### Key to the Charipinae Dalla Torre & Kieffer, 1910

Species recorded in the Mercantour National Park

<table>
<thead>
<tr>
<th>Key</th>
<th>Species</th>
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<tbody>
<tr>
<td>1. Metasoma with a single visible tergal plate or, if two, with basal tergite much shorter than second along middorsal line (Fig. 11D)</td>
<td>Phaenoglyphis abbreviata (Thomson, 1877)</td>
</tr>
<tr>
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<tr>
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</tr>
<tr>
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</tr>
<tr>
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</tr>
<tr>
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</tr>
<tr>
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</tr>
<tr>
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<tr>
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</tr>
<tr>
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<td>Phaenoglyphis americana (Baker, 1896)</td>
</tr>
<tr>
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<tr>
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<td>Phaenoglyphis villosa (Hartig, 1841)</td>
</tr>
<tr>
<td>— Antenna equal to or shorter than body</td>
<td>Phaenoglyphis villosa (Hartig, 1841)</td>
</tr>
<tr>
<td>7. Rhinaria and flagellum thickening begin from different flagellomeres</td>
<td>Phaenoglyphis villosa (Hartig, 1841)</td>
</tr>
<tr>
<td>— Rhinaria and flagellum thickening begin from the same flagellomere</td>
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<tr>
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</tr>
<tr>
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<tr>
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<tr>
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<tr>
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</tr>
<tr>
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</tr>
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<td>Phaenoglyphis villosa (Hartig, 1841)</td>
</tr>
<tr>
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</tr>
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</tr>
<tr>
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<td>Phaenoglyphis villosa (Hartig, 1841)</td>
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31. Head yellowish; F2-F4 subequal in length (Fig. 2T); radial cell 3.0 × longer than wide (Fig. 3T); propodeum without setae in the longitudinal area where the carinae are present in other Charipinae (Fig. 6B). ................................................................. *Alloxysta victoria* (Westwood, 1833)
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