English translation of :

Nève, G. , Lair, X. , 2023. Recherches taxonomiques sur les Pelecocera de France, avec discussion de leur répartition et écologie (Diptera, Syrphidae).
Bulletin de la Société entomologique de France 128, 249–264.
https://doi. org/10. 32475/bsef_2260

Summary

Taxonomic researches on *Pelecocera* from France,
with a discussion of their distribution and ecology (Diptera, Syrphidae)

The discovery of a new species of the genus *Pelecocera* led us to revise all the French material of this genus. This revision has been the subject of many twists and turns. We detail them here chronologically, from the discovery of *Pelecocera garrigae* Lair & Nève, 2022, to the understanding of the application of the name *P. lugubris* Perris, 1839, to the French specimens previously identified as *P. lusitanica* Mik, 1898, by several recent authors. An illustrated identification key in French is provided for all the *Pelecocera* species occurring in France. The distribution and ecology of the six species of *Pelecocera* of the French fauna are discussed. The regional phenology of several species depends strongly on the altitude, with the emergence of imagines in spring or autumn according to the species. The imagines occur during favourable conditions of temperature and relative humidity, ensuring them food and necessary conditions for the larvae. These adaptations, very interesting to observe for the understanding of each species, make *Pelecocera* species potential models to understand the phenology of other insects.

Keywords : Phenology, entomological collections, Edouard Perris.

Pelecocera Meigen, 1822, are Diptera in the family Syrphidae. Their imagines measure around half a centimetre in length. They are generally discrete and localised. Entomologists usually encounter single specimens. *Pelecocera* species in France have long been difficult to identify. An initial identification key (Speight & Sarthou, 2015), grouping together five of the six species present in France, has made determinations possible without recourse to reference specimens. The capture of specimens not corresponding to the descriptions given by Speight & Sarthou (2015) led us to carry out a general revision of the *Pelecocera* of France (Lair et al. , 2022). The content of the article by Lair et al. (2022) is limited to the scientific description and does not deal in detail with the history of our research work, which at times resembled detective work. We propose here, for the French-speaking reader, to detail the history of our taxonomic approach and the problems that can arise when searching for the holotype of a species described from France. We also present here a French version of the identification key, revised in its wording and with partially new illustrations. We discuss the ecology of these species, in particular the relationship between altitude and the period of emergence of the imagines.

History. – On 24. IV. 2013, one of us (XL) captured a *Pelecocera* specimen in Sournia (Pyrénées-Orientales). When it was identified, it was easily assigned to the genus *Pelecocera*, but its characteristics did not match to any of the known species of *Pelecocera*, based on the publications available at the time. A photograph taken by Philippe Scolan was provided to Cyrille Dussaix, who placed it on the Syrphidae Europenses website (Dussaix, 2022), under the identification *Pelecocera* nov. sp. , pending the availability of additional information enabling the identification or description of a new species. Having a single specimen of a potentially undescribed species poses the delicate problem of knowing whether it is a new species for science or an aberrant individual belonging to a species that has already been described.

A few years later, at the end of 2017, Lise Ropars, then a student at the University of Aix Marseille, entrusted GN with her diptera captured in the Calanques National Park (Bouches-du-Rhône) for identification. Lise Ropars was working on her thesis on pollination (Ropars, 2020). Among her Syrphidae specimens, two were problematic: having identified them as *Pelecocera*, Speight & Sarthou's key (2015) did not allow a species name to be assigned to the specimens, as none of the alternatives in couplets 7 and 9 matched. A comparison of the habitus was then made with the various species presented on Syrphidae Europenses: the specimens examined corresponded to the habitus of the species presented by the photographs signed "Ph. Scolan, leg. X. Lair". GN then contacted XL, and learned that the specimen photographed had been captured on limestone scrubland in Sournia (Pyrénées-Orientales), the same habitat as the specimens from Marseille.
This strongly suggested that it was a new species. In spring 2018, we actively searched for new individuals both in Sournia and in Marseille, and three additional specimens were captured between 5 April and 7 May 2018, one of which was immediately immersed in 96% ethanol, in order to preserve the DNA as well as possible. For the publication of this discovery, we wished firstly to study in detail the morphology of *Pelecocera* from the fauna of France, in order to highlight the distinctive characters within this difficult genus, and secondly to have the DNA sequence of the

Cytochrome C Oxidase subunit 1 (COI) gene in order to ensure that the different morphotypes correspond to the different species. The detailed results of these analyses, along with the original description of the new species *Pelecocera garrigae*, were published in the journal Zootaxa (Lair et al. , 2022). The molecular data clearly showed that this species is distinct from all the other species identified to date in Europe or Cyprus, where *Pelecocera hederae* van Eck, 2021, which had just been described, lives (van Eck & Mengual, 2021).

XL has systematically examined specimens of the five species of *Pelecocera* of the subgenus *Chamaesyrphus* in his collection and in those of numerous colleagues cited in the acknowledgements, and has noted an important series of morphological characteristics in order to retain only the most stable criteria. In doing so, it became apparent that some of the revised specimens had been misidentified by their collectors, and a new identification was then proposed. All of the revised data for *Pelecocera* in France has now been mapped, providing a better understanding of the ecology of the species. Finally, some of the data cited by Séguy (1961) seem to have very unlikely identifications in view of their localities and altitudes, and these data have been invalidated (Lair et al. , 2022).
The case of *Pelecocera lugubris* Perris, 1839. - The work by Séguy (1961) cites *Pelecocera lugubris*, a species that is absent from the key by Speight & Sarthou (2015). This species is still cited in the list of Diptera of the Palaearctic region by Peck (1988) and in the revision by Kuznetcov (1989), then disappears from works on the Syrphidae. The original description by Perris (1839) is now available at https://gallica. bnf. fr/ark:/12148/bpt6k6344605d/f51. In this text, Perris described *Pelecocera lugubris* based on specimens from Mont-de-Marsan, mentioning that this species is fairly rare and is found on the spring flowers of *Potentilla splendens* (now called *Potentilla montana* Brot.). As was customary at the time, the original description was in Latin : “Niger, nitidus, antennarum primo articulo nigro, secundo nigrescente, tertio flavo, supra obscuro ; proboscide flavâ, mediâ parte exceptâ, nigrâ ; palpis pallidis; pedibus nigris, femoribus tamen, tibiisque basi et apice flavis ; tarsis subtùs flavâ pube vestitis, intermediorum primo articulo flavo, posticorum incrassato ; alis brunneis. Hab. flores, circà Mont-de-Marsan (Landes)”. This could be translated as:”black, shiny, first article of antennae black, second blackish, third yellow with upper part darker; face yellow, except middle part black; mouthparts pale; tarsi black, as well as femora, base and apex of tibiae yellow; underside of tarsi covered with yellow setae, middle articles yellow, hind articles broader; wings brown. Habitat: flowers, near Mont-de-Marsan (Landes)”.
This description, based on a series of females caught in Mont-de-Marsan, is very detailed for its time, although its accuracy and iconography are not up to the expectations of 21st century entomologists. One detail in particular drew our attention: Perris depicted two oblique bands on the forehead that converge towards the base of the antennae. However, of the six species in the French fauna, only one can be described to show such a pattern: *Pelecocera lusitanica* (Mik, 1898). This important detail enabled us to realise that *Pelecocera* females all have a pattern on the forehead that is specific to each species (see below), thus making it possible to avoid using the obviously variable characters previously used in the available keys. However, checking the type series of *P. lugubris* was obviously necessary, in order to establish which name to apply to the taxon found in France. Perris's publication (1839) did not mention the whereabouts of the types, which were implicitly left in the author's collection. So what happened to the collection of Édouard Perris (1808-1878) after his death? According to the information we had at the time, there was no collection bearing the name of Perris at the Muséum National d'Histoire Naturelle in Paris (MNHN). Alexandre Laboulbène's tribute to Perris explicitly stated that "Perris did not write his last wishes; he gave his collection verbally to Dr Gobert" (Laboulbène, 1879). On the basis of this information, we deduced that the Perris collection had been incorporated into that of Dr Émile Gobert (1838-1922), which is held at the MNHN. This information was also confirmed by Dupuis & Matile (1990), in their tribute to the dipterist Eugène Séguy (1890-1985). They wrote “It was during his time, and probably on his initiative, that the very important Pandellé Collection, the Perris Collection and the Dufour Collection, all three bequeathed to the Société entomologique de France by Laboulbène, were entrusted to the Museum's Diptera Department”. It should be noted that, contrary to the assertion of Dupuis & Matile (1990), the Pandellé collection was donated by Dr Gobert to the Société entomologique de France at the same time as his own in 1905 (Léveillé, 1905).
On contacting the MNHN, we learned that the Gobert collection does indeed contain a small series of specimens labelled *Pelecocera lugubris*. This series was examined by the American dipterist F. Christian Thompson (1944-2021) during his visit to the MNHN in 1983, and these three specimens, labelled with the number 603, were identified by Thompson as *Pelecocera lusitanica* (Mik, 1898), as mentioned in his notes dated 10 February 1986, which he kindly communicated to us. The combination of basal wing cells entirely covered with microtrichia, very wide parafaces, a mesanepisternite 1 with hairs in its anterodorsal part, and a very swollen forehead (fig. 1) are characteristic of the female of *P. lugubris*. In this unpublished document, entitled “Rev. European Syrphids”, Thompson suggested the rehabilitation of *P. lugubris* and the designation of types, probably on the basis of the same information as ours, Loïc Matile (1938-2000) being the curator at the time. Thompson wrote : “There are three specimens in the Paris Museum, that are undoubtedly syntypes as they are from Gobert or Saint-Savient Collections. I have labelled these as “syntypes” 1-3, the third syntype is designated lectotype, has the following labels - “3694”, Lectotype, *Pelecocera lugubris* Perris, des. Thompson, 1986, and is associated with the box label of " *Pelecocera lugubris*, St. S Perr.”. That's how we left it.
In our first manuscript, we therefore designated one of the Paris specimens (fig. 1) as the lectotype of the species *Pelecocera lugubris*, in accordance with Thompson's unpublished document, on the assumption that it was one of the

specimens in Perris's original series. During the winter of 2021-2022, while our manuscript was being reviewed by the journal Zootaxa, we learned from Michel Martinez that the Perris collection was not at the MNHN in Paris, but at the CBGP (Centre de Biologie pour la Gestion des Populations), heir to the Montpellier School of Agriculture, which had received it as early as 1878 (Lichtenstein, 1878). Perhaps the CBGP collection does not include all of Perris's specimens? In the absence of precise information, we did not, at that time, modify the designation of the lectotype of *P. lugubris*.
Then, in April 2022, XL and Christophe Lauriaut went to the CBGP and found that the Perris collection was there, along with its collection notebook. It was in this notebook that Perris scrupulously recorded the origins and identifications of his specimens. There can be no doubt: the entry under number 2731 was "*Pelecocera lugubris* mihi Mt Man" (Fig. 2). "Mihi", the Latin word for "me", identified Perris as the certain author of the description, and the labels of the four specimens read "lugubris Perris Mt Man" (Fig. 3).
We had therefore rediscovered the series of Perris syntypes, and were thus able to correct our manuscript at the last minute in order to designate one of these specimens (Fig. 4) as the lectotype of *Pelecocera lugubris*. The specimens in the Gobert collection at the MNHN, with no trace of their origin, as is the case for the whole of this collection, its notebooks being considered lost, therefore have no particular status. It is likely, given the links between Gobert and Perris - Gobert was Perris's doctor, and they were both entomologists - that they came from the Mont-de-Marsan region, where Gobert lived (Anonymous, 1879), but this cannot be ascertained.
Both F. C. Thompson's unpublished notes on Gobert's specimens and Perris's figures, as well as our examination of Perris's types, have shown us that these specimens correspond to the published descriptions of *Pelecocera lusitanica*.
For the French specimens, we have therefore demonstrated that the name *Pelecocera lugubris* Perris, 1839, is the one that should be applied instead of *Pelecocera lusitanica* (Mik, 1898), for the following reasons:

- The name has been used by several authors over the last hundred years;
- It has not been forgotten, and cannot be considered a *nomen oblitum* (forgotten name)
- The series of type specimens has been found
- a lectotype has been designated.

According to the code of zoological nomenclature (International Commission on Zoological Nomenclature, 1999), the first two reasons are sufficient to validate the use of the name *P. lugubris*, at least for specimens from France.

Materials and Methods

For each species, the number of localities or data corresponds to the specimens for which we were able to validate the identification, except for *Pelecocera tricincta* for which identification is easy.
All the French *Pelecocera* data that we have been able to access, as of 30 September 2022, have been put online on Zenodo, at https://doi. org/10. 5281/zenodo. 7129867. The format used is CSV ("comma separated values"), a text format that can easily be imported into any spreadsheet program. The data is presented in an ordered format, with the following columns: collector, identifier, species, total number of individuals, number of females, number of males, locality, any locality details, department number, latitude and longitude coordinates in decimal degrees, altitude, date, individual specimen identifier for types and paratypes.
The presentation of latitude and longitude coordinates in decimal degrees is justified by the fact that latitudes and longitudes are indicated on the maps of the French "Institut Géographique National", and that these coordinates also allow easy pointing with most mapping softwares. The altitudes of the data are either provided by the observers or deduced from the coordinates of the localities with the help of the `geoportail.fr` website. Missing data is indicated by NA ("Not Available"), which is how it is understood by the free software R (R Core Team, 2020).

Results

Identification key for *Pelecocera* from France

The six species of *Pelecocera* from France show intraspecific variations, particularly in the colours of the legs and abdomen. These characters, although useful as a first approach, are insufficient for reliable identification of the specimens. The shape of the arista, the appearance of the lunule, the presence or absence of pilosity on the mesanepisternite 1, the presence or absence of microtrichia on the basal cells of the wings and the width of the paraface are much more reliable criteria.

For females, the most diagnostic feature is the shape of the vertex and forehead (fig. 5). In *P. lugubris* and *P. caledonica*, the forehead is in the continuation of the vertex with no visible fold between these structures, whereas in the other species, the continuation of the vertex on the forehead is interrupted rapidly by a fold in the integument. The distance between the anterior ocelli and this suture is characteristic of each species. Finally, the females of *Pelecocera garrigae* are unusual in not having a transverse pruinose band above the lunule, showing instead a dense punctation that is absent in the other five species.
The French terminology for morphology is that used by Speight & Sarthou (2017). Additional characters are shown in brackets after the main characters.

1. Thick arista positioned at the apex of the third antennal segment (Fig. 6B). Arista composed of three easily distinguishable segments in females, and shorter in males. Mesanepisternite 1, katepisternite and meropleurite of mesopleura partly shiny. (Abdomen with three yellow stripes, sometimes interrupted in the middle) **P. tricincta** Meigen
- Arista thin, positioned dorsally on the third antennal article (fig. 6A). Mesanepisternite 1, katepisternite and meropleurite of mesopleura entirely covered with grey pruinosity. (Abdomen with pairs of orange or greyish spots, or completely black) **2**

2. First (br) and second (bm) basal cells of wings partly without microtrichia. lunule shiny on lateral arms and median triangle (Female: forehead shiny black, swollen and regularly convex, with two parallel lines along the eyes (corresponding to the suture) which join the transverse band of pruinosity above the lunule, without anterior reduction as in *P. lugubris*) **P. caledonica** (Collin)
- First (br) and second (bm) basal wing cells completely covered with microtrichia **3**

3. Mesanepisternite 1 with hairs in anterodorsal part (in *P. garrigae* they are short and few in number). Paraface as wide as or wider than the diameter of the anterior ocelli (figs. 7C and 7D) **4**
- Mesanepisternite 1 without pile. Paraface narrower than the diameter of the anterior ocellus (figs. 7A and 7B) **5**

4. lunule entirely covered with grey pruinosity (fig. 8C). Paraface wider than diameter of anterior ocelli (fig. 7C). (Female: forehead clearly swollen in the continuity of the vertex, forming a large shiny triangle bordered by two oblique lines (sutures) directed towards the lunule; distance between the anterior ocellus and the apex of the triangle about 4 to 5 times the diameter of the anterior ocellus; punctuation on the forehead very fine and sparse; band of pruinosity present above the lunule. Male: forehead with grey pruinosity). **P. lugubris** Perris
- lunule brown or blackish, slightly shiny, without pruinosity (fig. 8D). Paraface as wide as the diameter of the anterior ocelli (fig. 7D). (Female: distance between the anterior ocellus and the suture 2 to 3 times the diameter of the anterior ocellus; anterior part of the forehead heavily punctate, not very shiny, and without a pruinose band as in all other *Pelecocera* species. Male: forehead punctate, slightly shiny) **P. garrigae** Lair & Nève

5. lunule with central triangle of grey pruinosity contrasting with bright lateral arms (fig. 8A). Femora and hind tibiae entirely yellow. (Female: distance between anterior ocellus and suture very short, about the diameter of the anterior ocellus; suture in a straight line on the forehead between the two eyes; in some specimens, not very clear boundary, and regular curvature of forehead. Presence of a band of pruinosity above the lunule) **P. scaevoides** Fallén
- lunule completely covered with pruinosity (Fig. 8B). Femora and hind tibiae yellow with usually a black ring (Female: distance from anterior ocellus to suture about 1. 5 to 2 times the diameter of the anterior ocellus; the few spring specimens available have more contrasting yellow and black legs, and the pairs of yellow spots on the tergites are well marked; in large autumn populations there is great variability in leg and abdomen colouration) **P. pruinosomaculata** Strobl

Ecology and distribution of species in France

A summary of the data presented by Lair et al (2022), updated with an addition and a correction, is presented. The maps show the altitudes at which the captures or observations were made.

Pelecocera caledonica (Collin, 1940)
Six localities in France (fig. 9). *Pelecocera caledonica* was first found in September near the coast in the Manche département in heathland habitats similar to those known in Scotland and Fennoscandia (Lair, 2007). It was then found on the border between the Pyrénées-Orientales and the Aude (Col de Jau), at an altitude of 1,500 m, also on *Calluna* under pine trees. It was caught in the Pyrénées-Orientales but at a lower altitude (500 m), in October on the north facing slopes, still in association with *Pinus* L. and *Calluna* Salisb. , but in habitats otherwise covered with Mediterranean scrubland with rockrose (*Cistus laurifolius* L.). The species can be locally abundant in this habitat. Finally, it has been observed in the open *Quercus suber* L. forests of the Maures plain in the Var, a habitat where *Calluna* and *Pinus pinea* L. and *Pinus pinaster* Ait. are well represented (Association pour l'inventaire de la flore du Var, 2021). *Pelecocera caledonica* is therefore mainly found under a maritime influence, from the mountains to the seaside. Above all, it emerges at the end of the season, which explains why it first appears at altitude in September (Pyrénées-Orientales) and in the north of France (Manche), while the imagines appear in October and November in Mediterranean climates. It is a rare species in France, but new localities should be found with further research into its potential habitats. The species could, for example, be found in the southern Alps (Mercantour), from September at high altitude to November at low altitude

Pelecocera garrigae Lair & Nève, 2022
Four localities (12 records) in France (fig. 9). This species is found in Mediterranean scrubland on limestone (fig. 10). It has been recorded from the Pyrénées-Orientales, Bouches-du-Rhône, Vaucluse and Alpes-de-Haute-Provence (Nève et al. , 2022). An old specimen (1972) from Malaga (Spain), provided by A. van Eck, suggests that its distribution is more extensive. Its flight period is very short, the imagines having been observed only in April and May (fig. 11).

Pelecocera lugubris Perris, 1839
Four localities (11 records) in France (fig. 9). This species has only been confirmed from three departments close to the Atlantic coast in addition to the English Channel. It is found in heather moors, pine forests and dunes. In Barsac (Gironde), *P. lugubris* imagines are observed from March to November, while the only record from the Manche dates from early October.

Pelecocera pruinosomaculata Strobl, 1906
Sixteen localities (30 data) are known from France and all come from the Mediterranean region (Fig. 9). Prior to Speight & Sarthou's (2015) key, this species did not appear in general works on Syrphidae. The revision of the French material has led to the correction of several specimens previously identified, and published, as *P. lusitanica* or *P. scaevoides*. *Pelecocera pruinosomaculata* appears to be more eurytopic than the other *Pelecocera* species, as it has been found on Mediterranean sand dunes, scrubland with *Buxus* L. and *Thymus* L. on limestone or metamorphic schist at 500 m altitude, calcareous grassland with *Juniperus* L. at 700-800 m altitude, heathland with *Erica arborea* L. or *Pinus* and *Cistus laurifolius* L. , *Calluna* heaths at 600 m altitude (Speight, 2020). Depending on the location, the imagines of this species were observed in spring (April-May) or autumn (September-October). Autumn observations may be related to locally abundant populations (stations with Calluna or Odontites luteus (L.) Clairv. , on which the adults feed), whereas spring observations generally involve isolated individuals.
Morphologically, this is the most variable species, probably due to its broad ecological preferences and phenology. Autumn specimens of *P. pruinosomaculata* proved to be morphologically polymorphic, with the abdomen either entirely black or with yellow or grey spots on tergites 2 to 4, or even 5, the forelegs and median legs yellow or with black parts, the third antennal article entirely black or half yellow.

Pelecocera scaevoides (Fallén, 1817)
Known from around thirty localities in France (52 records), *Pelecocera scaevoides* is mainly a mountain species. It has been recorded in the Jura, the Alps (Mercantour, Écrins and Queyras) and the Pyrenees, as well as in Aude, Hérault and Aveyron. The altitudinal range extends from 500 m in the foothills of the Pyrenees to 2,200 m in the Hautes-Alpes (Tissot et al. , 2018). The observation in Verdun (Meuse) at only 380 m is an exception. The old record from the Mediterranean coast cited by Séguy (1961) (in Hyères, Abeille de Perrin leg.) seems highly unlikely in this context, and is probably the result of an erroneous identification.

Pelecocera tricincta Meigen, 1822
The least rare species of the genus, with 46 localities and 77 records in France. This species is found in open areas within coniferous forests and heather moors. It is the most widespread species in France (fig. 9), with records from 19 départements, from 22 May to 28 September (fig. 11).
Correction: the data from Génos (65) cited by Lair et al (2022) involves *P. scaevoides* and not *P. tricincta* (Mael Garrin, pers. comm.). *Pelecocera tricincta* is therefore absent from the French Pyrenees.

Discussion
The phenologies of the six species of *Pelecocera* present in France are quite varied, in the current state of knowledge (fig. 12): *P. caledonica* is an autumn species only, *P. garrigae* is observed only in spring, and *P. pruinosomaculata* in both seasons with an absence in July. The two species for which we have the most data, *P. scaevoides* and *P. tricincta*, are observed from spring to autumn, with a gradual rise in altitude for *P. scaevoides*. In April, *P. pruinosomaculata* and *P. scaevoides* are noted at around 500 m altitude, while from May these species are found at higher altitudes. On a smaller scale, the same pattern is observed in *P. garrigae*, whose highest record (650 m) is at the end of May.
In Japan, larvae of *Pelecocera japonica* (Shiraki 1956) have been shown to feed on basidiomycete fungi of the genus *Rhizopogon* Fr. (Okada et al. , 2021). Since European *Rhizopogon* species are associated with various pine species (Molina & Trappe 1994), it is likely that the link between *Pelecocera* and the presence of *Pinus* in their habitats is also a reflection of a link with *Rhizopogon*. This seems to explain the distribution and flight period of several species of *Pelecocera* at the most locally temperate times (spring/ autumn, with altitudinal shift for some species), because these conditions could correspond to the fruiting of the *Rhizopogon*, on which the *Pelecocera* would be dependent. However, the trophic and specific links between the three genera *Pelecocera*, *Rhizopogon* and *Pinus* are currently completely unknown. We therefore suggest that entomologists record the pine species present in habitats where *Pelecocera* are observed, in order to help answer this question.

Acknowledgements. – Thanks again to all colleagues who contributed to the data used here, or who helped us at various stages of our study: S. Bot, Q. Brémond, R. Bouteloup, S. Cavaillès, J. Claude, A. Cornuel-Willermoz, R. Coulomb, C. Courtial, R. Desvois, O. Durand, C. Dussaix, J. Fleury, O. Gabory, M. Garrin, D. Genoud, H. Gens, B. Geslin, D. Guicheteau, F. Herbrecht, A. Haarto, M. Hauser, C. Kassebeer, S. Kelso, M. Lagarde, C. Lauriaut, T. Lebard, E. Lecointe, A. Livory, M. Martinez, L. Mazanek, E. Minssieux, J. Molto, T. Noblecourt, A. Parret, G. Pétremand, L. Ropars, P. Sagot, J. -P. and V. Sarthou, M. -L. Schultze, A. Serra, J. H. Skevington, G. Ståhls, the late F. C. Thompson, B. Tissot, J. Tourneur, A. Vallet, A. van Eck and GRETIA. J. -C. Streito & É. Pierre from CBGP, INRAE, CIRAD, IRD, Institut Agro Montpellier, Univ Montpellier and C. Daugeron and É. Delfosse, from the National Museum of Natural History kindly provided us with photographs and information on specimens from their collections.