Discovery in France of a snakefly species previously thought to be endemic to the Iberian Peninsula: *Fibla hesperica* Navás, 1915 (Raphidioptera, Inocelliidae)

Pierre Tillier
Correspondant du Muséum national d'histoire naturelle. 8 rue d'Aire, F – 95660 Champagne-sur-Oise. Auteur correspondant. E-mail: p.tillier.entomo@free.fr

Sophie Clauzon
Département d'enseignement Biologie Écologie, Université de Montpellier, place Eugène-Bataillon, F – 34095 Montpellier Cedex 05.

Marie Ruel
Département d'enseignement Biologie Écologie, Université de Montpellier, place Eugène-Bataillon, F – 34095 Montpellier Cedex 05.

Théo Chassagnard
3 rue du Pioch-de-Boutonnet, F – 34000 Montpellier.

Pierre-Henri Fabre
Département d'enseignement Biologie Écologie, Université de Montpellier, place Eugène-Bataillon, F – 34095 Montpellier Cedex 05 ; Institut des Sciences de l'Évolution de Montpellier, UMR5554, CNRS, EPHE, IRD, Université de Montpellier, place Eugène Bataillon, F – 34095 Montpellier Cedex 05 ; Institut Universitaire de France (IUF), Paris, France.

Benoît Nabholz
Département d'enseignement Biologie Écologie, Université de Montpellier, place Eugène-Bataillon, F – 34095 Montpellier Cedex 05 ; Institut des Sciences de l'Évolution de Montpellier, UMR5554, CNRS, EPHE, IRD, Université de Montpellier, place Eugène Bataillon, F – 34095 Montpellier Cedex 05 ; Institut Universitaire de France (IUF), Paris, France.

Sébastien Puechmaille
Département d'enseignement Biologie Écologie, Université de Montpellier, place Eugène-Bataillon, F – 34095 Montpellier Cedex 05 ; Institut des Sciences de l'Évolution de Montpellier, UMR5554, CNRS, EPHE, IRD, Université de Montpellier, place Eugène Bataillon, F – 34095 Montpellier Cedex 05 ; Institut Universitaire de France (IUF), Paris, France.

(Accepté le 10.X.2025 ; publié en ligne le 5.XII.2025)

Citation. – Tillier P., Clauzon S., Ruel M., Chassagnard T., Fabre P.-H., Nabholz B. & Puechmaille S., 2025. Discovery in France of a snakefly species previously thought to be endemic to the Iberian Peninsula: *Fibla hesperica* Navás, 1915 (Raphidioptera, Inocelliidae). *Bulletin de la Société entomologique de France*, 130 (4) : 345-353. https://doi.org/10.32475/bsef_2400

Abstract. – *Fibla hesperica* Navás, 1915, a species previously thought to be endemic to Spain and Portugal, is reported for the first time in France, in the Hérault department, notably in the Montpellier urban area. The species' identification criteria are illustrated. The origin of this population is discussed. The presence of unidentified *Fibla* specimens in the Bouches-du-Rhône, Var, and Vaucluse departments is confirmed by recent photographs, which may correspond either to *F. hesperica* or to *F. maclachlani* (Albarda, 1891), a species known from Corsica and Italy.

Résumé. – **Découverte en France d'une espèce de raphidioptère auparavant considérée comme endémique de la péninsule Ibérique : *Fibla hesperica* Navás, 1915 (Raphidioptera, Inocelliidae).** *Fibla hesperica* Navás, 1915, une espèce supposée endémique d'Espagne et du Portugal, est signalée pour la première fois de France, dans l'Hérault, notamment dans l'agglomération de Montpellier. Les critères

ISSN : 0037-928X / eISSN : 2540-2641

d'identification de l'espèce sont illustrés. L'origine de cette population est discutée. La présence de *Fibla* non identifiées dans les Bouches-du-Rhône, le Var et le Vaucluse est attestée par des photographies récentes, pouvant correspondre soit à *F. hesperica*, soit à *F. maclachlani* (Albarda, 1891), une espèce connue de Corse et d'Italie.

Keywords. – *Fibla maclachlani*, Hérault, barcoding BOLD, new records.

The Inocelliidae Navás, 1913, constitute a family of snakeflies comprising 45 species worldwide, distributed across five genera (SHEN *et al*., 2022). The majority of these species are found in the Eastern Palaearctic region and the Oriental region (ASPÖCK *et al*., 1991). Around ten species are endemic to the Western Palaearctic and Nearctic regions. In Europe, this family is represented by seven species, belonging to the genera *Fibla* Navás, 1915 (three species) and *Inocellia* Schneider, 1843 (four species) (ASPÖCK *et al*., 2001).

Within the Western Palaearctic Inocelliidae, the genus *Fibla* is characterised by a black head capsule with brown to brown-yellowish markings (fig. 1). All species of this genus have a very restricted geographical distribution: *Fibla hesperica* Navás, 1915 is considered endemic to the Iberian Peninsula, *F. maclachlani* (Albarda, 1891) is only known from France (Corsica) and Italy (Calabria, Sardinia, Sicily, and Tuscany), *F. pasiphae* (H. Aspöck & U. Aspöck, 1971) is endemic to Greece, and *F. peyerimhoffi* (Navás, 1919) is only known from the Maghreb (Algeria, Morocco, Tunisia). Until recently, only one species was known in France, and solely from Corsica.

In 2014, a female of the genus *Fibla* was photographed in the Hérault department, marking the first record of this genus for mainland France (TILLIER *et al*., 2022a). This observation was followed by several new sightings, photographed in the south of France, particularly in Hérault, in 2022, 2023, and 2024 (see Appendix). However, due to the strong morphological similarity between the two Western European species, *F. hesperica* and *F. maclachlani*, it was not possible to reach a definitive identification based solely on photographs. The location in Hérault, situated halfway between the Spanish populations of *F. hesperica* and the Italian populations of *F. maclachlani*,

Fig. 1. – *Fibla* sp., habitus, female (Marseille, 23.IV.2020) *(Photograph by Martin Galli)*.

suggested the presence of one species or the other (Tillier *et al*., 2022a). In 2022, a male was captured in Montpellier, allowing for a species identification and marking the first confirmed record of *F. hesperica* in France. In 2025, a second male was captured in a locality near the 2022 capture site, confirming the existence of a population in Hérault. Below, we present the details of these captures and illustrate the identification criteria for the species. Given current knowledge on the distribution of *F. hesperica* and considering the possibility of anthropogenic transport in Inocelliidae, the origin of this population is discussed.

Materials and methods

A first male specimen was captured in Montpellier (34172), on the Triolet campus of the University of Montpellier, in the Hôpitaux-Facultés district, on 13 April 2022 (see Appendix), as part of the 'Projet Naturaliste' teaching unit (HAV639B) at the University of Montpellier. A leg was excised and placed in a 96-well plate for shipment to the Canadian Centre for DNA Barcoding (CCDB), located within the Centre for Biodiversity Genomics at the University of Guelph (Ontario, Canada). DNA extraction followed a silica membrane-based protocol (Ivanova *et al*., 2006). Amplification of the mitochondrial cytochrome oxidase subunit I (COXI) was performed with the primer cocktail C_LepFolF and C_LepFolR (Hernández-Triana *et al*., 2014). Sequencing was conducted on a PacBio SEQUEL platform (Pacific Biosciences, USA) as described in Hebert *et al*. (2018). Following quality control and sequence validation, consensus barcodes were uploaded to the Barcode of Life Data Systems (BOLD; www.boldsystems.org; Ratnasingham *et al*., 2024), where they are linked to associated specimen and metadata records. The cytochrome oxidase subunit I (COXI) of this male, as well as that of a larva collected in the same district (Triolet campus), was sequenced as part of the University of Montpellier Barcode of Life barcoding project (UM-BOL; specimens UM_ABDC_00094 and UM_ACIG_0066 from the teaching collection of the Department of Biology and Ecology at the University). Sequences were downloaded from the BOLD Systems portal website (https://boldsystems.org/). Alignment was performed using MUSCLE (Edgar, 2004) as implemented in SeaView (Gouy *et al*., 2010) and manually inspected. A maximum likelihood tree was obtained with IQ-TREE v2.0.7 (Minh *et al*., 2020), using the GTR+G4 model, with bootstrap supports generated using the "Ultra-Fast Bootstrap" method of IQ-TREE. Species were molecularly identified based on phylogenetic relationships and uncorrected sequence divergence. We also verified that sequences belonging to different species were assigned to different Barcode Index Numbers (BINs), as determined by the clustering algorithm of BOLD. Sequence analysis confirmed the posterior identification. All COXI sequences generated in this study were deposited in GenBank under accessions PX108169- PX108172. A second male was captured in Monteferrier-sur-Lez (34169) on 28 March 2025 (see Appendix).

Identifications were carried out by the first author following examination of the specimens. The terminology of the male genitalia follows that of Aspöck & Aspöck (2008) and Shen *et al*. (2022).

These two adult specimens are deposited in the collection of the first author. Additional data were obtained from the examination of several photographs uploaded to the iNaturalist server (https://www.inaturalist.org/).

Around twenty specimens of *F. maclachlani*, collected from various locations in Corsica, were examined for comparison (collection of Pierre Tillier).

The distribution maps of the two Western European *Fibla* species were represented using QGIS 3.40.2-Bratislava software. The data came from the following sources:

– bibliographic data (ASPÖCK *et al.*, 1980, 1991; ASPÖCK & ASPÖCK, 2023; GROSSO-SILVA, 2021; LETARDI *et al.*, 2024; LORU *et al.*, 2011; MONSERRAT, 2022; MONSERRAT & PAPENBERG, 2015; NICOLI ALDINI & BAVIERA, 2001);

– unpublished data from Victor Monserrat;

– unpublished data from Roberto Pantaleoni;

– https://www.gbif.org/;

– http://geobrink.uclm.es/Geobrink/ (data corresponding to the distribution map published in MONSERRAT, 2022);

– https://www.biodiversidadvirtual.org/;

– https://www.inaturalist.org/;

– https://www.insecte.org/ (Le Monde des Insectes).

RESULTS AND DISCUSSION

The identification of the two Western European species of *Fibla* is challenging outside their known distribution range. Their habitus and wing venation are indeed very similar. However, there are clear morphological differences at the level of the male genitalia. The fused gonocoxites 11 (= gonarcus) exhibit a distinct terminal projection in *F. hesperica*, whereas it is poorly developed in *F. maclachlani* (fig. 2, 5). It should be noted that this projection is described as bifid in Iberian specimens (ASPÖCK *et al.*, 1980, 1991; MONSERRAT & PAPENBERG, 2015), while it is bifid (in one specimen) or simple (in another, fig. 2) in the French specimens. Furthermore, the gonocoxite-gonapophysis-gonostylus 10 complex shows a bifid process with short and narrow tips in *F. hesperica*, whereas in *F. maclachlani*, it is divided over one-third of its length, with both terminal lobes being broader (fig. 3, 6). Another difference concerns a small un-

Fig. 2-7. – *Fibla* spp., males. – **2–4**, *F. hesperica* Navás (Montpellier, Hérault). – **5–7**, *F. maclachlani* (Albarda) (Corsica). – **2, 5**, Fused gonocoxites 11 (= gonarcus), caudal view (scale bar = 0.2 mm). – **3, 6**, Gonocoxite–gonapophysis–gonostyle 10 complex, caudal view (scale bar = 0.2 mm). – **4, 7**, Serratulum, dorsal view (scale bar = 0.1 mm). *(Photographs by Pierre Tillier).*

paired sclerite, the serratulum (absent in the genus *Inocellia*): this is generally rounded in *F. hesperica*, whereas it is U-shaped in *F. maclachlani* (fig. 4, 7). These subtle but distinctive features made it possible to identify the two male specimens captured in the Montpellier area. Molecular analysis confirms that this species is clearly distinct from *F. maclachlani* of the Corsican and Italian populations (fig. 8). Phylogenetic divergence and uncorrected raw molecular divergence between the two species average 10.8 % and 9.2 %, respectively. Moreover, sequences assigned to *F. maclachlani* belong to BIN BOLD:AEL6557, while those assigned to *F. hesperica* belong to a different BIN, BOLD:AFA0555.

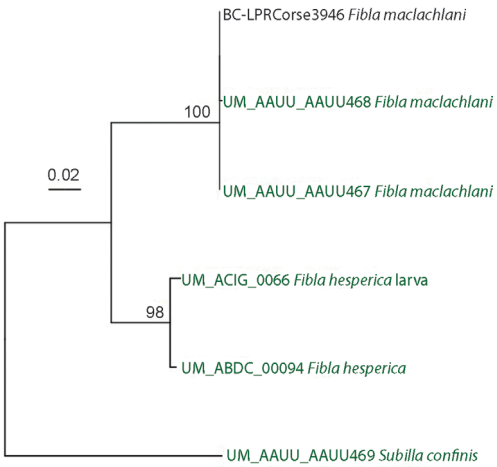

Fig. 8. – Maximum likelihood tree obtained with IQ-TREE v2.0.7 (Minh *et al.*, 2020), using the GTR+G4 model on a nucleotide alignment of COXI (https://www.boldsystems.org/; Ratnasingham *et al.*, 2007). Specimens in green are from the UM-BOL project. Node values represent bootstrap supports generated using the 'Ultra-Fast Bootstrap' method of IQ-TREE.

Additional *Fibla* individuals have been photographed in recent years in the Hérault department, notably within the Montpellier metropolitan area (see Appendix). The proximity of the locations where *Fibla* were photographed to the sites where the two males were captured suggests that all these individuals belong to the species *F. hesperica* (fig. 9).

The presence of this species in Hérault constitutes the first record of *F. hesperica*

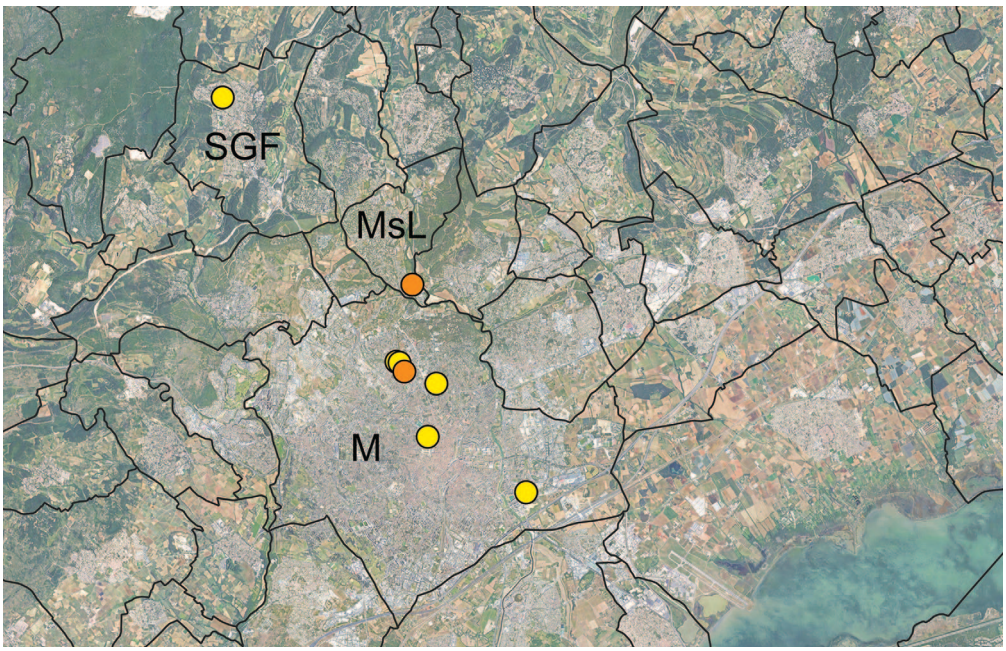

Fig 9. – Distribution map of *Fibla hesperica* Navás in the Hérault department. Orange circles: locations of the two identified males. Yellow circles: other locations (identification based on photographs). LV: Lunel-Vieil, M: Montpellier, MsL: Montferrier-sur-Lez, SGF: Saint-Gély-du-Fesc.

outside the Iberian Peninsula (fig. 10). In many species of Raphidioptera, dispersal capabilities are very limited, and numerous taxa thus exhibit a very restricted distribution (ASPÖCK, 1979; ASPÖCK *et al.*, 1991, 2017; MONSERRAT & PAPENBERG, 2015; PANTALEONI *et al.*, 2019). The hypothesis of anthropogenic introduction of the species at the larval stage via trees or shrubs imported from the Iberian Peninsula must therefore be considered. This hypothesis is supported by two elements: firstly, *Fibla* larvae are bark-dwelling and have been found on various host plants (conifers and deciduous trees) (ASPÖCK *et al.*, 1991; MONSERRAT & PAPENBERG, 2015); secondly, most observations in Hérault have been made in urban environments, such as parks or along recently landscaped avenues. In the Iberian Peninsula, the transport of larvae of this species in firewood has already been recorded (MONSERRAT, 2022). A similar case of anthropogenic dispersal has already been demonstrated for two other species of snakeflies: *Raphidia mediterranea* Aspöck, Aspöck & Rausch, 1977 (ASPÖCK *et al.*, 2017) and *F. maclachlani* (PANTALEONI *et al.*, 2019). In the latter case, an introduction into mainland Italy linked to the cork trade between Sardinia and Tuscany is highly probable. Indeed, most sightings were made around the port of Piombino, and this historically active trade could have enabled the arrival of a sufficient number of larvae to establish a viable population. The absence of *F. hesperica* records between the Iberian Peninsula and the Montpellier region supports the hypothesis of anthropogenic introduction.

However, the hypothesis of a natural presence of the species must also be considered. It is indeed possible that the species went unnoticed in France until 2014. The recent discovery of this species in Hérault could be the result of increased naturalist activity, particularly facilitated by participatory species identification systems. The scenario of speciation in an Iberian refuge followed by expansion outside the peninsula has been proposed for other species of Raphidioptera, such as *Atlantoraphidia maculicollis* (Stephens, 1836) or *Venustoraphidia conviventibus* Monserrat & Papenberg, 2012 (MONSERRAT & PAPENBERG, 2015; TILLIER *et al.*, 2022b). The COI sequences of the

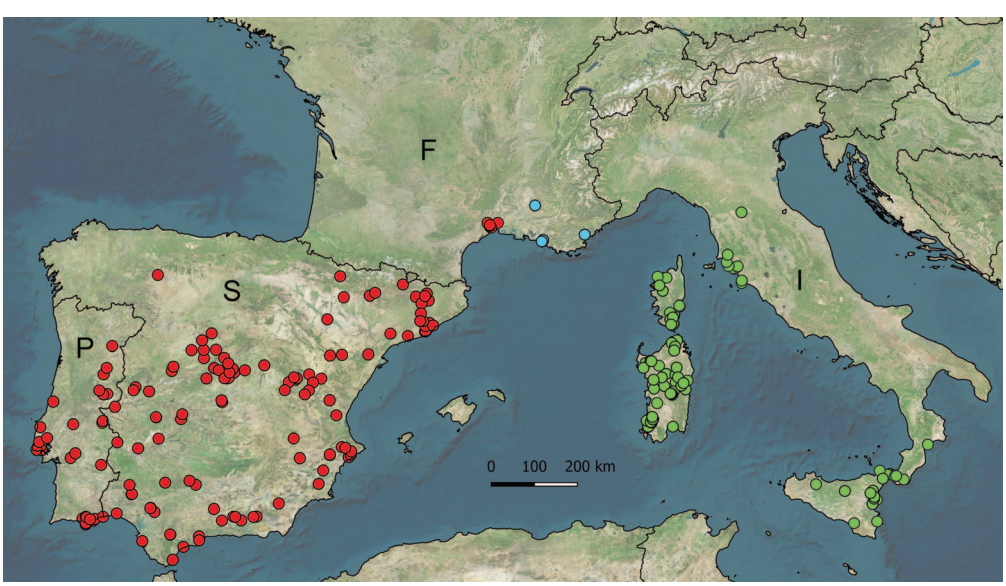

Fig. 10. – Distribution map of the two Western European *Fibla* species. Red circles: *Fibla hesperica* Navás, 1915. Green circles: *Fibla maclachlani* (Albarda, 1891). Blue circles: *Fibla* sp. (S: Spain, F: France, I: Italy, P: Portugal).

two analysed individuals show a 0.9% divergence (Kimura 2-parameter distance), suggesting a degree of —at least mitochondrial— genetic diversity within the Hérault population. This may reflect either a diverse native population or an introduced population originating from multiple introduction events. However, due to the lack of genetic data from Iberian populations, it is currently not possible to distinguish between these two scenarios.

Additional *Fibla* specimens have recently been photographed further east, in the departments of Bouches-du-Rhône, Var and Vaucluse (see Appendix; fig. 10). The proximity of Italian populations of *F. maclachlani* makes the presence of this species in the extreme south-east of France plausible. In Italy, this species is no longer confined to the Piombino area but has recently been photographed as far north as Florence (Pantaleoni *et al*., 2019). In the Provence-Alpes-Côte d'Azur region, only genetic analysis and/or the capture of a male specimen will allow for formal species-level identification to determine the exact identity of the observed individuals.

Conclusion

The discovery of *F. hesperica* in France significantly extends the known distribution range of the species, which was previously considered strictly endemic to the Iberian Peninsula. Although the origin of this population remains uncertain, the recent increase in observations in Hérault, particularly within the Montpellier metropolitan area, suggests that the species does not appear to be rare. If the hypothesis of anthropogenic introduction from the Iberian Peninsula proves correct, the population now seems to be well established.

Further east, in the Provence-Alpes-Côte d'Azur region, the presence of unidentified *Fibla* specimens photographed in several localities raises new questions. These individuals could belong to *F. hesperica*, whose distribution might include all the French Mediterranean departments, or to *F. maclachlani*, in which case these would represent the first records of the species in mainland France outside Corsica.

Acknowledgements. – We thank the "University of Montpellier Barcode Of Life – UM-BOL" project, funded by the University of Montpellier, which enabled the sequencing of COX1 for the specimens illustrated in this manuscript. Our thanks also go to Thibaud Decaëns, Guillaume Papuga, the 'bâtiment 35' team, the validators of the iNaturalist database, and the student naturalists of the University of Montpellier for their enriching entomological exchanges —whether in the field, online, or during laboratory sessions. This manuscript is contribution no. 2025-224 of the *Institut des Sciences de l'Évolution* de Montpellier. The first author expresses his deep gratitude to Horst Aspöck, Víctor Monserrat, and Roberto Pantaleoni for sharing unpublished data and for providing clarifications on certain *Fibla* localities. We also warmly thank Biodiversidad Virtual (https://www.biodiversidadvirtual.org/) for providing detailed data, as well as Martin Galli for kindly allowing the use of his outstanding photograph to illustrate this article.

References

Aspöck H., 1979. – Die Herkunft der Raphidiopteren des extramediterranen Europa – eine kritische biogeographische Analyse (p. 14-22). *In* : *Verhandlung. VII. Internationalen Symposiums über Entomofaunistik in Mitteleuropa. vol. 1*. Meeting 1977, Leningrad.

Aspöck U. & Aspöck H., 2008. – Phylogenetic relevance of the genital sclerites of Neuropterida (Insecta: Holometabola). *Systematic Entomology*, **33** : 97–127. https://doi.org/10.1111/j.1365-3113.2007.00396.x

Aspöck H. & Aspöck U., 2023. − The snakeflies of the Mediterranean islands: review and biogeographical analysis (Neuropterida, Raphidioptera). *Deutsche Entomologische Zeitschrift*, **70** (1) : 175-218.

ASPÖCK H., ASPÖCK U. & HÖLZEL H. 1980. − *Die Neuropteren Europas. Die Neuropteren Europas, Bd. I., II.* Krefeld : Goecke & Evers, 495 + 355 p.

ASPÖCK H., ASPÖCK U. & RAUSCH H., 1991. − *Die Raphidiopteren der Erde. Eine monographische Darstellung der Systematik, Taxonomie, Biologie, Ökologie und Chorologie der rezenten Raphidiopteren der Erde, mit einer zusammenfassenden Übersicht der fossilen Raphidiopteren (Insecta : Neuropteroidea).* Krefeld : Goecke & Evers, 730 + 550 p.

ASPÖCK H., HÖLZEL H. & ASPÖCK U., 2001. − Kommentierter Katalog der Neuropterida (Insecta : Raphidioptera, Megaloptera, Neuroptera) der Westpaläarktis. *Denisia*, **2** : 1-606.

ASPÖCK H., ASPÖCK U., GRUPPE A., SITTENTHALER M. & HARING E., 2017. − Anthropogenic dispersal of a snakefly (Insecta, Neuropterida) – a singular phenomenon or a model case in Raphidioptera? *Deutsche entomologische Zeitschrift*, **64** (2) : 123-131.

EDGAR R. C., 2004. − MUSCLE: a multiple sequence alignment method with reduced time and space complexity. *BMC Bioinformatics*, **5** : 113. https://doi.org/10.1186/1471-2105-5-113

GOUY M., GUINDON S. & GASCUEL O., 2010. − SeaView version 4: a multiplatform graphical user interface for sequence alignment and phylogenetic tree building. *Molecular biology and evolution*, **27** (2) : 221-224. https://doi.org/10.1093/molbev/msp259

GROSSO-SILVA J. M., 2021. − *Fibla* (*Fibla*) *hesperica* Navás, 1915 (Raphidioptera, Inocelliidae) in Portugal. *Arquivos Entomolóxicos*, **24** : 261-264.

GUINDON S., DELSUC F., DUFAYARD J. F. & GASCUEL O., 2009. − Estimating maximum likelihood phylogenies with PhyML. *Methods in Molecular Biology*, **537** : 113-137. https://doi.org/10.1007/978-1-59745-251-9_6

HEBERT P. D. N., BRAUKMANN T. W. A., PROSSER S. W. J., RATNASINGHAM S., DE WAARD J. R., IVANOVA N. V., JANZEN D. H., HALLWACHS W., NAIK S., SONES J. E. & ZAKHAROV E. V., 2018. − A Sequel to Sanger: amplicon sequencing that scales. *BMC Genomics,* **19** : 219. https://doi.org/10.1186/s12864-018-4611-3

HERNÁNDEZ-TRIANA L. M., PROSSER S. W., RODRÍGUEZ-PEREZ M. A., CHAVERRI L. G., HEBERT P. D. N. & RYAN GREGORY T., 2014. − Recovery of DNA barcodes from blackfly museum specimens (Diptera: Simuliidae) using primer sets that target a variety of sequence lengths. *Molecular Ecology Resources*, **14** (3) : 508-518. https://doi.org/10.1111/1755-0998.12208

IVANOVA N. V., DE WAARD J. R. & HEBERT P. D. N., 2006. − An inexpensive, automation-friendly protocol for recovering high-quality DNA. *Molecular Ecology Notes*, **6** (4) : 998-1002. https://doi.org/10.1111/j.1471-8286.2006.01428.x

LETARDI A., BENELLI M., CARRARETTO M. & NAPPINI S., 2024. − Nota su alcuni neurotteri raccolti con trappole attrattive aeree in Sardegna (Raphidioptera, Raphidiidae; Neuroptera, Chrysopidae, Mantispidae, Myrmeleontidae, Nevrorthidae). *Bollettino dell'Associazione Romana di Entomologia (N.S.)*, **5** (1-4) : 1-8.

LORU L., LETARDI A. & PANTALEONI R. A., 2011. − Neuropterida dell'Iglesiente (Sardegna sudoccidentale) (Raphidioptera, Neuroptera). *Conservazione Habitat Invertebrati*, **5** : 759-766.

MINH B. Q., SCHMIDT H. A., CHERNOMOR O., SCHREMPF D., WOODHAMS M. D., VON HAESELER A. & LANFEAR R., 2020. − IQ-TREE 2: New Models and Efficient Methods for Phylogenetic Inference in the Genomic Era. *Molecular Biology and Evolution*, **37** (5) : 1530-1534. https://doi.org/10.1093/molbev/msaa015

MONSERRAT V. J., 2022. – *Los Neuropterida de la Península Ibérica y Baleares.* Zaragoza : Sociedad Entomológica Aragonesa, 718 p.

MONSERRAT V. J. & PAPENBERG D., 2015. – Los rafidiópteros de la península Ibérica (Insecta, Neuropterida: Raphidioptera). *Graellsia*, **71** (1) : 1-90.

NICOLI ALDINI R. & BAVIERA C., 2001. – Nuove acquisizioni sulla neurotterofauna di Sicilia e isole circumsiciliane (Insecta Neuropterida). *Naturalista Siciliano*, **25** (4) : 345-376.

PANTALEONI R. A., COCCO A., FLORIS I., LETARDI A. & LORU L., 2019. – Going overseas: from island to continent colonization in the Mediterranean snakefly *Fibla maclachlani* (Albarda, 1891). *BioInvasion Records*, **8** (2) : 442-451.

Papenberg G. D., 2015. – *Revisión de los rafidiópteros (insectos neuropteroides, raphidiopteros) de la Península Ibérica. Ph.D. dissertation.* Madrid : Universidad Complutense de Madrid, [7] + 252 p.

Ratnasingham S., Wei C., Chan D., Agda J., Agda J., Ballesteros-Mejia L., Boutou H. A., El Bastami Z. M., Ma E., Manjunath R., Rea D., Ho C., Telfer A., McKeowan J., Rahulan M., Steinke C., Dorsheimer J., Milton M. & Hebert P. D. N., 2024. – BOLD v4: A Centralized Bioinformatics Platform for DNA-Based Biodiversity Data (p. 403-441). *In* : DeSalle R. (ed.), *DNA Barcoding: Methods and Protocols*. New York : Springer US.

Shen R., Aspöck H., Aspöck U., Plant J., Dai Y. & Liu X., 2022. – Unraveling the evolutionary history of the snakefly family Inocelliidae (Insecta: Raphidioptera) through integrative phylogenetics. *Cladistics*, **38** : 515-537.

Tillier P., Claude J., Danflous S., Decoin R., Touroult J. & Vincent A., 2022a. – Contribution à la connaissance des Raphidioptères de France (Raphidioptera). *L'Entomologiste*, **78** (4) : 249-268.

Tillier P., Fleury J. & Parmain G., 2022b – Découverte dans le Loiret de la deuxième station mondiale d'une espèce énigmatique de Raphidie : *Venustoraphidia conviventibus* Monserrat & Papenberg, 2012 (Raphidioptera, Raphidiidae). *Bulletin de la Société entomologique de France,* **127** (1) : 5-10. https://doi.org/10.32475/bsef_2227

Appendix. – Summary of *Fibla* records in France (excluding Corsica).

Fibla hesperica Navás, 1915

Hérault (34). – Lunel-Viel (34146), bois de la Devèze, 43°41'53.8"N, 4°05'55.4"E, 5.IV.2021, 1 ♀ (iNaturalist: record 73144808). – Monteferrier-sur-Lez (34169), 28.III.2025, 1 ♂ (Pierre Tillier collection, *leg*. Théo Chassagnard, *det*. PT). – Montpellier (34172), Hôpitaux-Facultés district, 43°37'52.9"N, 3°51'47.3"E, 13.IV.2022, 1 ♂ (Pierre Tillier collection, *leg*. Sophie Clauzon, *det*. PT); 43°38'00.8"N, 3°51'38.4" E, 30.VI.2022, 1 larva (*leg*. Marie Ruel, barcode BIN ID = BOLD:AFA0555). – Montpellier (34172), parc Georges-Charpak, 43°36'03.5"N, 3°54'19.5"E, 14.IV.2023, 1 ♀ (iNaturalist: record 266852802). – Montpellier (34172), avenue du Major Flandre, 43°37'42.0"N, 3°52'27.3"E, 15.IV.2023, 1 ♀ (iNaturalist: record 154950425). – Montpellier (34172), Hôpitaux-Facultés district, 43°38'01.9"N, 3°51'37.3"E, 5.IV.2024, 1 ♂ (iNaturalist: record 205493562). – Montpellier (34172), L'Écusson district, Botanical Garden, 43°36'53.8"N, 3°52'16.5"E, 5.IV.2024, 1 ♀ (iNaturalist: record 205517098). – Montpellier (34172), Hôpitaux-Facultés district, 43°38'00.9"N, 3°51'41.2"E, 5.IV.2024, 1 ♂ (iNaturalist: record 209111443). – Saint-Gély-du-Fesc (34255), 43°42'1.023"N, 3°47'59.99"E, 18.IV.2014, 1 ♀ (Le Monde des Insectes: record 117905).

Fibla sp.

Bouches-du-Rhône (13). – Marseille (13213), la Rose, 43°19'50.0"N, 5°25'22.1"E, 23.IV.2020, 1 ♀ (iNaturalist: record 45056213); Marseille (13203), Aix-Marseille University, 43°18'17.6"N, 5°22'41.1"E, 2.IV.2025, 1 ♀ (iNaturalist: record 268213015); Marseille (13213), Saint-Jérôme, 43°20'08.6"N, 5°25'08.7"E, 29.III.2025, 1 ♂ (iNaturalist: record 267492361).

Var (83). – Roquebrune-sur-Argens (83107), Pont d'Argens, 43°26'57.5"N, 6°37'59.5"E, 26.III.2024, 1 ♂ + 1 ♀ (iNaturalist: record 204712130).

Vaucluse (84). – Mormoiron, (84082), 44°04'06.2"N, 5°11'02.1"E, 6.IV.2024, 1 ♀ (iNaturalist: record 205628248).