BELKACEM AIMENE BOULAOUAD[a] - OUSSAMA AILAM[b] - MOHAMED BELKACEM[c]
BADIS BAKHOUCHE[d] - BACHIR HARZALLAH[e] - ZAKARIA HOUAIRI[e]
ABDELGHAFOUR BOUDEHANE[e] - SALVATORE BELLA[f]

FLUTTER-WING FLY PALLOPTERIDAE (DIPTERA ACALYPTRATAE) A NEW FAMILY FROM ALGERIA, WITH REPORT OF *PALLOPTERA UMBELLATARUM* (FABRICIUS, 1775) AND *PALLOPTERA MULIEBRIS* (HARRIS, 1780)

[a]*Mohamed El Bachir El Ibrahimi University, SNV-TU Faculty, Department of Agronomy, Bordj Bou Arreridj, Algeria*
[b]*University of M'sila University Pole, Road Bourdj Bou Arreiridj, M'sila 28000, Algeria*
[c]*Laboratory of Biotechnologies and Protection of Agricultural and Natural Ecosystems, Faculty of Natural and Life Sciences and Earth Sciences, University of Bouira, Bouira, Algeria*
[d]*Laboratory of Biological Oceanography and the Marine Environment (LOBEM), Faculty of Biological Sciences, University of Science and Technology of Houari Boumediene (USTHB), BP 32, Algiers 16111, Algeria*
[e]*Algerian Wildlife Watchers Association, Algiers, Algeria*
[f]*Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria (CREA). Council for Agricultural Research and Economics, Acireale (CT), Italy, salvatore.bella@crea.gov.it*
*Corresponding Author: *belkacemaimene.boulaouad@univ-bba.dz*

Boulaouad B. A., Ailam O., Belkacem M., Bakhouche B., Harzallah B., Houairi Z., Boudehane A., Bella S. – Flutter-wing fly Pallopteridae (Diptera, Acalyptratae) a new family from Algeria, with report of *Palloptera umbellatarum* (Fabricius, 1775) and *Palloptera muliebris* (Harris, 1780)

This study presents the first confirmed records of the family Pallopteridae (Diptera: Acalyptratae) from Algeria. Two species, *Palloptera umbellatarum* (Fabricius, 1775) and *Palloptera muliebris* (Harris, 1780), were observed from cedar and pine-oak woodland ecosystems of Sétif and Bordj Bou Arréridj provinces in northeastern Algeria at elevations ranging from 1120 to 1550 m. These records extend the known distribution range of both species into North Africa and provide new ecological data on their habitat preferences. Notes are provided on the general distribution and ecological context of the areas frequented by the two species.

Key Words: Diptera, Pallopteridae, Algeria, first record, North Africa, forest ecosystems.

INTRODUCTION

The Pallopteridae Loew, 1862, are a small family of acalyptrate dipterans belonging to the superfamily Tephritoidea Fallén, 1820, a paraphyletic group that includes over 7800 described species worldwide (Han and Ro, 2016). Globally, the family Pallopteridae comprises 71 species in 12 genera (Evenhuis and Pape, 2026). Thirty-nine species of Pallopteridae are currently recognized in the Palearctic region (Han, 2013; Yaran, 2019). Often referred to as "flutter flies," members of this family are small insects (3-6 mm) that typically exhibit yellow, brown, or black-and-yellow coloration, often covered with dense tomentose giving them a greyish appearance. Many species have patterned wings that vibrate in distinctive patterns, which is the behaviour that gives the group its common name. Pallopterid larvae are probably mostly saprophagous and have been found in diverse microhabitats, including under the bark of deciduous and coniferous trees, in cones, flower heads of Asteraceae, grasses, and stems of Apiaceae (Morge, 1967; Chandler, 1991; Merz, 1997; Rotheray, 2014).

In this paper, we report for the first time the family Pallopteridae from Algeria, based on the identification of two species belonging to the genus *Palloptera* Fallén, 1820.

MATERIALS AND METHODS

As part of the long-term wildlife monitoring project aimed at improving knowledge of Algerian fauna, members of the Algerian Wildlife Watchers Association conducted fieldwork in various regions of the country. Field research, especially in the desert and sub-desert regions, began five years ago and is still ongoing. During the surveys, two species of *Palloptera* were observed in their natural habitats. Specimens were identified using the specific dichotomous keys of Séguy (1934), Morge (1967, 1974) and Ozerov and Krivosheina (2019) based on morphological features. Adult pallopterids were collected in mountainous forest environments in the provinces of Sétif and Bordj Bou Arréridj, northeastern Algeria. Specimens were observed in cedar and pine-oak woodland ecosystems at altitudes ranging between 1120 to 1550 meters. The map of Alge-

Received 13 February 2026 Accepted 28 May 2026

ria was created using QGIS, an open-source geographic information system.

RESULTS

Family **Pallopteridae** Loew, 1862
Subfamily **Pallopterinae** Loew, 1862
Genus **Palloptera** Fallén, 1820

Palloptera umbellatarum (Fabricius, 1775)

Specimens examined: Sétif, Babor Forest, adult observed near *Cedrus atlantica* (Endl.) G. Manetti ex Carrière and *Abies numidica* De Lann. (Pinaceae), 12 September 2023, 36°30'08" N, 5°28'52" E, 1550 m a.s.l. (Fig. II).
Remarks: this species is characterised by a distinctive wing pattern with dark areas at the apex, around both cross-veins, on the stigma (often faintly connected to the apical cloud), and along the anal vein beyond the anal cell. The radio-cubital node is also clearly darkened. Grey thorax and abdomen with orange legs (Morge, 1974). The biology of the species is unknown; larvae have been found under the bark of *Tilia* trunks on the ground (Rotheray, 2014). In Turkey, adults of *P. umbellatarum* were collected in a humid habitat, on the ground in a *Cedrus libani* A. Richard forest (Yaran, 2019).
Global distribution: *Palloptera umbellatarum* is widely distributed across the Western Palaearctic region. It has been recorded in Iceland, Norway, Sweden, Finland, Russia (European part), Ireland, Great Britain, Denmark, France (including Corsica), the Netherlands, Belgium, Luxembourg, Germany, Poland, Ukraine, the Czech Republic, Slovakia, Switzerland, Liechtenstein, Austria, Hungary, Romania, Andorra, Spain, Italy (including Sicily), Slovenia, Bulgaria, and Turkey (Merz, 2011; Petrašiūnas and Weber, 2013; Klasa and Palaczyk, 2016; Yaran, 2019). This is the first record from North Africa.

Palloptera muliebris (Harris, 1780)

Specimens examined: Bordj Bou Arréridj, Colla Forest, adult observed in a mixed forest of *Pinus halepensis* Mill. (Pinaceae) and *Quercus ilex* L. (Fagaceae), 11 October 2022, 36°16'00" N, 4°39'04" E, 1120 m a.s.l. (Fig. III).
Remarks: the wing of *Palloptera muliebris* pattern is highly distinctive, making this species one of the most easily recognisable members of the Pallopteridae (Cannings & Gibson, 2019). The wing markings are interconnected to form a continuous, mottled band of relatively uniform width that extends along the entire costal margin, curves around the wing apex, and returns in a more undulating line along the distal portion of the discal vein. This band continues across the outer cross-vein and beneath vein Cu, reaching the wing base (Morge, 1974). *Palloptera muliebris* larvae have been reported in association with saproxylic beetle larvae, probably feeding on their detritus within galleries or under bark; it has also been suggested that they may be predators of bark beetle (scolytid) larvae (Weddle, 2019). Recent research conducted in southern Italy (Calabria region), between 220 and 1650 m above sea level, has shown that *P. muliebris* is more abundant at lower altitudes (220 m) and is found for a longer period of the year, from May to December, while at higher altitudes, it was only found from June to October (Bonelli *et al.*, 2023).
Global distribution: this species has a broad but discontinuous distribution across the Western Palaearctic and, recently, it was found in the Nearctic region. In Europe, it has been recorded from Ireland, Great Britain, Denmark, France, Portugal, Spain, Italy (including Sicily), Belgium, Germany, Austria, Croatia, Montenegro, Greece, and Lithuania (Merz, 1997; Grosso-Silva and Andrade, 2011; Lutovinovas, 2013; Weddle, 2019; Ebejer and Nicolosi, 2022, Sladonja *et al.*, 2023, Barclay *et al.*, 2025). In the Middle East and North Africa, *P. muliebris* has been recorded in Turkey (Ozerov, 2009), Libya (Managi, 2023), Egypt (Ebrahim, 2009), and most recently in Morocco (El Harym and Korneyev, 2023). Outside the Palaearctic region, its presence has been confirmed in North America, specifically in British Columbia, Canada (Cannings and Gibson, 2019).

DISCUSSION AND CONCLUSION

Dipteran diversity in Algeria remains poorly understood, with most of the available data dating back to studies of the early 20th century, notably those of Séguy (1934). Since then, research on Algerian Diptera has been fragmentary, resulting in considerable taxonomic and faunistic gaps, particularly concerning lesser known acalyptrate families such as Pallopteridae (Dirickx 1994; El-Hawagry *et al.*, 2022; Dekkiche *et al.*, 2025; Djellab *et al.*, 2026). Despite their well-documented presence across Europe, North Africa, and parts of Asia, none of the 39 Palearctic species of this family had previously been reported in Algeria.

This study therefore represents the first record of Pallopteridae family in the country. Two species, *Palloptera umbellatarum* and *Palloptera muliebris*, were collected from montane forest habitats in northeastern Algeria. For *P. umbellatarum*, this also represents the first record for the fauna of North Africa. These findings, in addition to representing new national records, highlight the wildlife potential of the ecosystems of the Algerian highlands, such as those of Sétif and Bordj Bou Arréridj.

In North Africa, current data indicate the presence of the following three species of Pallopteridae: *Palloptera scutellata* and *P. ustulata* in Morocco (Ebejer *et al.*, 2019; El Harym and Korneyev, 2023), and *P. muliebris* in Lybia and Morocco (Managi, 2023; El Harym and Korneyev, 2023). To our knowledge, there are no published records of this family from Tunisia and Egypt. These findings highlight the lack of faunal surveys and the need for further targeted surveys across North Africa to fill knowledge gaps in the North African dipterofauna.

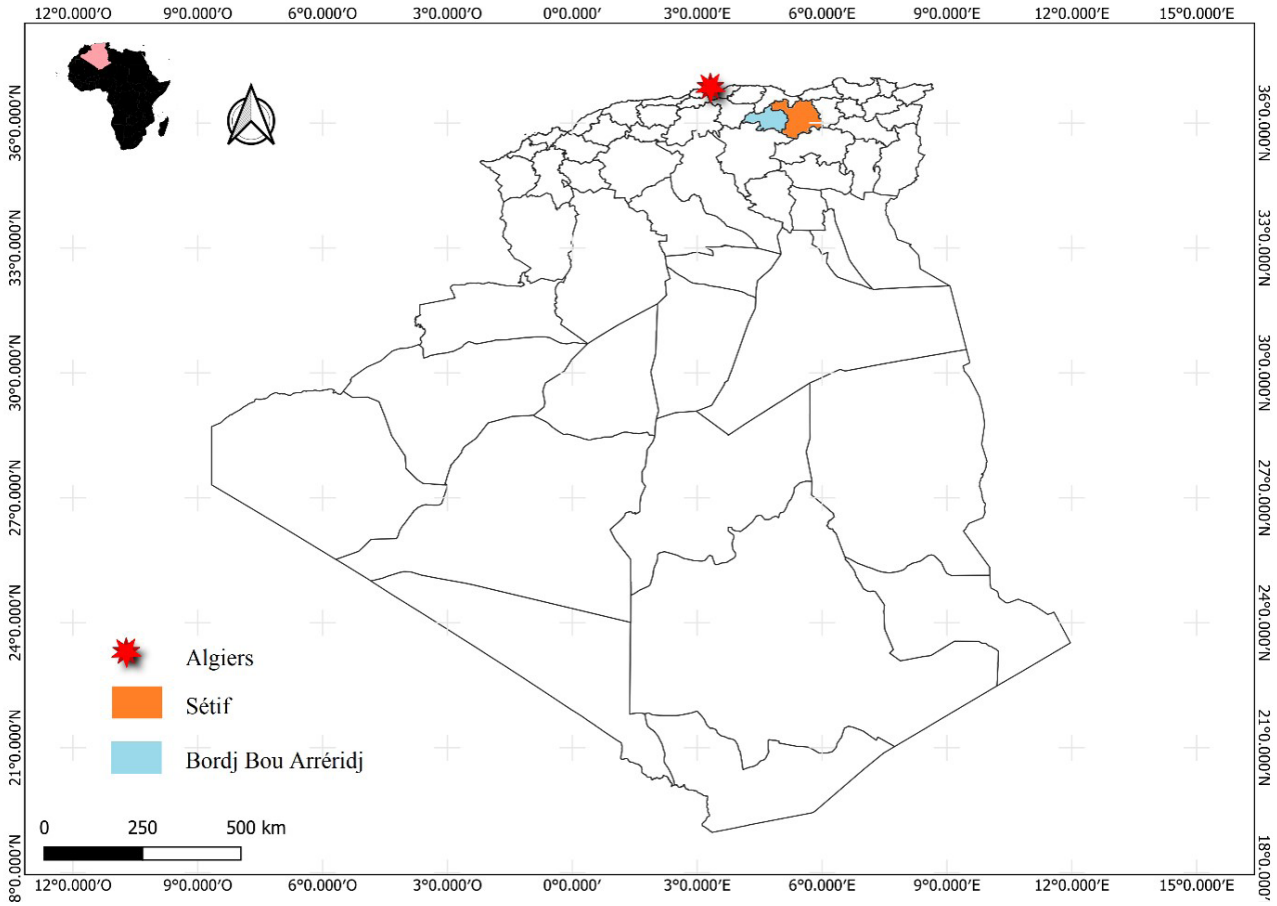

Fig. I - Map of sampling sites in the provinces of Sétif and Bordj Bou Arréridj (northeastern Algeria), where *Palloptera muliebris* and *P. umbellatarum* were found.

Fig. II - Habitat of *Palloptera umbellatarum* (Fabricius). Sétif, Babor Forest, 12.IX.2023.

Fig. III - Habitat of *Palloptera muliebris* (Harris). Bordj Bou Arréridj, Colla Forest, 11.X.2022.

ACKNOWLEDGEMENTS

The authors thank the two anonymous reviewers for their comments received during the revision of the manuscript.

REFERENCES

Barclay M.V.L., Broad G.R., Sivell O., 2025 – *The genome sequence of a pallopterid fly,* Toxonevra muliebris *(Harris, 1780).* - Wellcome Open Research, 10: 55.

Bonelli D., Mendicino F., Carlomagno F., Bonacci T., Munari C., Pezzi M., 2023 – *First report of* Palloptera muliebris *(Harris, 1780) (Diptera: Pallopteridae) in Calabria (Southern Italy)*. - Quaderni

del Museo Civico di Storia Naturale di Ferrara, 11: 95-98.

Cannings R.A., Gibson J.F., 2019 – Toxonevra muliebris *(Harris) (Diptera: Pallopteridae): a European fly new to North America*. - Journal of the Entomological Society of British Columbia, 116: 64-68.

Chandler P.J., 1991 – *Attraction of* Palloptera usta *Meigen (Diptera: Pallopteridae) to recently cut conifer wood and other notes on Pallopteridae*. - British Journal of Entomology and Natural History, 4(2): 85-87.

Dekkiche K., Benatallah A., Marniche F., 2025 – *First comprehensive assessment of dipteran diversity and vectorial potential in northeastern Algeria: Ecological, veterinary, and one health perspectives.* - Comparative Immunology, Microbiology and Infectious Diseases, 126: 102438. https://doi.org/10.1016/j.cimid.2025.102438

Dirickx H.G., 1994 – *Atlas des Diptères syrphidés de la région méditerranéenne.* - Documents de Travail. Institut Royal des Sciences Naturelles de Belgique, Brussels, 314 pp.

Djellab S., Mebarkia N., Mehalaine K., Ricarte A., Samraoui B., 2026 – *An annotated checklist of the Syrphidae (Diptera) of Algeria.* - Zootaxa, 5802(1): 1-34. https://doi.org/10.11646/zootaxa.5802.1.1

Ebejer M.J., Nicolosi G., 2022 – *New records of acalyptrate Diptera from Sicily (Brachycera, Muscomorpha: Asteiidae, Aulacigastridae, Carnidae, Lonchaeidae, Odiniidae, Pallopteridae, Periscelididae, Piophilidae, Sciomyzidae, Ulidiidae).* - Fragmenta entomologica, 54(1): 101-104. https://doi.org/10.13133/2284-4880/766

Ebejer M.J., Kettani K., Gatt P., 2019 – *First records of families and species of Diptera (Insecta) from Morocco*. - Boletín de la Sociedad Entomológica Aragonesa, 64: 143-153.

El Harym Y., Korneyev V., 2023 – *New additions to the fauna of the superfamily Tephritoidea (Diptera) of Morocco*. - Zootaxa, 5360(4): 487-514.

El-Hawagry M.S., Boulaouad B.A., Soliman A.M., Ebrahim A.M., Al Dhafer H.M., 2022 – *New records and an annotated checklist of the thick-headed flies from Algeria (Conopidae, Brachycera, Diptera).* - Egyptian Journal of Biological Pest Control, 32(100) https://doi.org/10.1186/s41938-022-00597-5

Evenhuis N.L., Pape T., 2026 – *Systema Dipterorum. The Biosystematic Database of World Diptera.* http://www.diptera.org/ [accessed 10 May 2026]

Grosso-Silva J.M., Andrade R., 2011 – *The insects of the Gaia Biological Park, northern Portugal (4th note): Preliminary list of the Diptera (Insecta).* - Arquivos Entomolóxicos, 5: 45-49.

Han H.Y., 2013 – *A Checklist of the families Lonchaeidae, Pallopteridae, Platystomatidae, and Ulidiidae (Insecta: Diptera: Tephritoidea) in Korea with notes on 12 species new to Korea*. - Animal Systematics, Evolution and Diversity, 29(1): 56-69.

Han H.Y., Ro K.E., 2016 – *Molecular phylogeny of the superfamily Tephritoidea (Insecta: Diptera) reanalyzed based on expanded taxon sampling and sequence data.* - Journal of Zoological Systematics and Evolutionary Research, 54(4): 276-288.

Klasa A., Palaczyk A., 2016 – *Pallopteridae (Diptera) of the Bieszczady Mountains. Pallopteridae (Diptera) Bieszczadów. DIPTERON*. - Bulletin of the Dipterological Section of the Polish Entomological Society, 32: 32-43.

Lutovinovas E., 2013 – *To the knowledge on the flutter-wing flies in Lithuania (Diptera: Pallopteridae)*. - New and Rare for Lithuania Insect Species, 25: 63-65.

Managi F.A.-M., 2023 – *First Record of Flutter-Wing Fly,* Toxonevra muliebris *(Diptera: Pallopteridae), in Northeastern Libya*. - Libyan Journal of Plant Protection, 13: 32-38.

Merz B., 1997 – *Zur Faunistik der Pallopteridae der Schweiz (Diptera)*. - Mitteilungen der Schweizerischen Entomologischen Gesellschaft, 70: 225-230.

Merz B., 2011 – *Order Diptera, family Tephritidae. Additions and the description of a new species* (pp. 769-779). *In*: Harten A. van (ed.). - Arthropod Fauna of the United Arab Emirate, Vol. 4, Dar Al Ummah Printing, Abu Dhabi, 832 pp.

Morge G., 1967 – *Die Lonchaeidae und Pallopteridae Österreichs und der angrenzenden Gebiete. 2. Teil. Die Pallopteridae*. - Naturkundliches Jahrbuch der Stadt Linz, 13: 141-212.

Morge G., 1974 – *Die Lonchaeidae und Pallopteridae Österreichs und der angrenzenden Gebiete*. - Naturkundliches Jahrbuch der Stadt Linz, 20: 11-88.

Ozerov A.L., Krivosheina M.G., 2019 – *The genus* Toxoneura *Macquart (Diptera, Pallopteridae) of the Oriental Region.* - Zootaxa, 4576(3): 591-595.

Petrašiūnas A., Weber D., 2013 – *Flutter-wing flies (Insecta, Diptera, Pallopteridae) from caves of the Grand Duchy of Luxembourg*. - Ferrantia, 69: 284.

Rotheray G.E., 2014 – *Development sites, feeding modes and early stages of seven European Palloptera species (Diptera, Pallopteridae)*. - Zootaxa, 3900(1): 50-76.

Séguy E., 1934 – *Pallopteridae.* In: *Diptères (Brachycères). Muscidae Acalypterae et Scatophagidae)*. Paris: Édition Faune de France, 28: 67-72.

Sladonja B., Tlak Gajger I., Uzelac M., Poljuha D., Garau C., Landeka N., Barták M., Bacaro G., 2023 – *The impact of beehive proximity, human activity and agricultural intensity on Diptera diversity in a Mediterranean mosaic of agroecosystems, with a focus on pest species.* - Animals, 13(6): 1024.

Weddle R.B., 2019 – Palloptera muliebris *(Diptera: Pallopteridae): a rare Scottish occurrence.* - The Glasgow Naturalist, 27(1): 90-91.

Yaran M., 2019 – *A new Diptera family (Pallopteridae Loew, 1862) for the fauna of Turkey with four new records*. - Turkish Journal of Entomology, 43(4): 451-457.