

SHORT COMMUNICATION

## Annotated check-list of Pteromalidae (Hymenoptera: Chalcidoidea) of Morocco. Part I

Khadija KISSAYI<sup>1,2,\*</sup>, Souâd BENHALIMA<sup>2</sup> & Mircea-Dan MITROIU<sup>3</sup>

<sup>1</sup>National School of Forestry, Department of Forest Development, B.P. 511, Avenue Moulay Youssef, Tabriquet, 11 000, Salé, Morocco; e-mail: kissayi\_k@yahoo.fr

<sup>2</sup>University Mohammed V, Laboratory of Geo-Biodiversity and Natural Heritage, (GEOBIO), Scientific Institute, Research Center (GEOPAC), Ibn Batouta Avenue, B.P. 703, Agdal, 10 090, Rabat, Morocco; e-mail: benhalima.souad@gmail.com

<sup>3</sup>Alexandru Ioan Cuza, University of Iași, Faculty of Biology, Research Group on Invertebrate Diversity and Phylogenetics, Bd. Carol I 20A, 700 505, Iași, Romania; e-mail: mircea.mitroiu@uaic.ro

\*corresponding author

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**Abstract.** A two-part annotated check-list of Pteromalidae (Hymenoptera: Chalcidoidea) of Morocco aims to present updated information on this rather neglected group of parasitoid wasps. The first part includes 113 species belonging to 65 genera from 11 subfamilies – Asaphinae, Cerocephalinae, Cleonyminae, Eunotinae, Macromesinae, Miscogastrinae, Ormocerinae, Pireninae, Pteromalinae, Spalangiinae, and Sycoryctinae. One species, *Cleonymus longigaster* Mitroiu sp. nov., is described as new, and three species (*Notanisus versicolor* Walker, 1837 and *Miscogaster maculata* Walker, 1833 and *Gastrancistus* aff. *vagans* Westwood, 1833) are newly recorded for the fauna of Morocco. For each species, its distribution in Morocco and hosts are presented.

**Key words.** Hymenoptera, Pteromalidae, distribution, hosts, new species, new record, Morocco, Palearctic Region

**Zoobank:** <http://zoobank.org/urn:lsid:zoobank.org:pub:2FB533BC-F01E-40D5-A4EA-4CD525850432>

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### Introduction

The family Pteromalidae is one of the most taxonomically and biologically diverse groups of the superfamily Chalcidoidea, with more than 4,000 described species in over 600 genera of 33 subfamilies distributed worldwide (NOYES 2018).

The species composition of this family is poorly known in most parts of Morocco. The first species records of this family were provided by DE LÉPINEY (1929, 1930), followed by the works of DE LÉPINEY & MIMÉUR (1932), JOURDAN & RUNGS (1934), RUNGS (1936), and BLÉTON & FIEUZET (1939). Later, DELUCCHI (1962a, b) and VAGO (2002) described several new species from northern Morocco, and BOUČEK (1972), BENAZOUN (1988), MOUNA (2013), BENYAHIA (2016) and some others provided additional distributional records.

The objective of this project is to provide a synthesis of all species of Pteromalidae known from Morocco with new data on their distribution. The results presented will be published in two parts, mainly based on the number of species identified in Morocco, especially in recent years, during a research project carried out for the first time on the parasitic

wasps in the cork oak forest Maâmora. This first part of the survey includes the subfamilies Asaphinae, Cerocephalinae, Cleonyminae, Eunotinae, Macromesinae, Miscogastrinae, Ormocerinae, Pireninae, Spalangiinae, and Sycoryctinae.

### Material and methods

The new material presented in this paper was collected in three sites within the Maâmora forest which constitutes a natural habitat located in the region of Rabat-Salé-Kénitra in central Morocco. This area is defined from two scientific points of view: as a botanical unit (the largest cork oak forest in Morocco and probably in the world) and as a geological-geomorphological unit (Fig. 1):

**Taïcha** (Locality 1): located near Taïcha Forest Station in Western Maâmora, canton A, commune Sidi Taïbi, 34°13'29.5"N, 6°39'04.8"W, 36 m a.s.l.;

**Al Maha** (Locality 2): located in a private reserve in South Eastern Maâmora, canton D, commune Aïn Johra, 34°06'34.2"N, 6°19'04.0"W, 175 m a.s.l.;



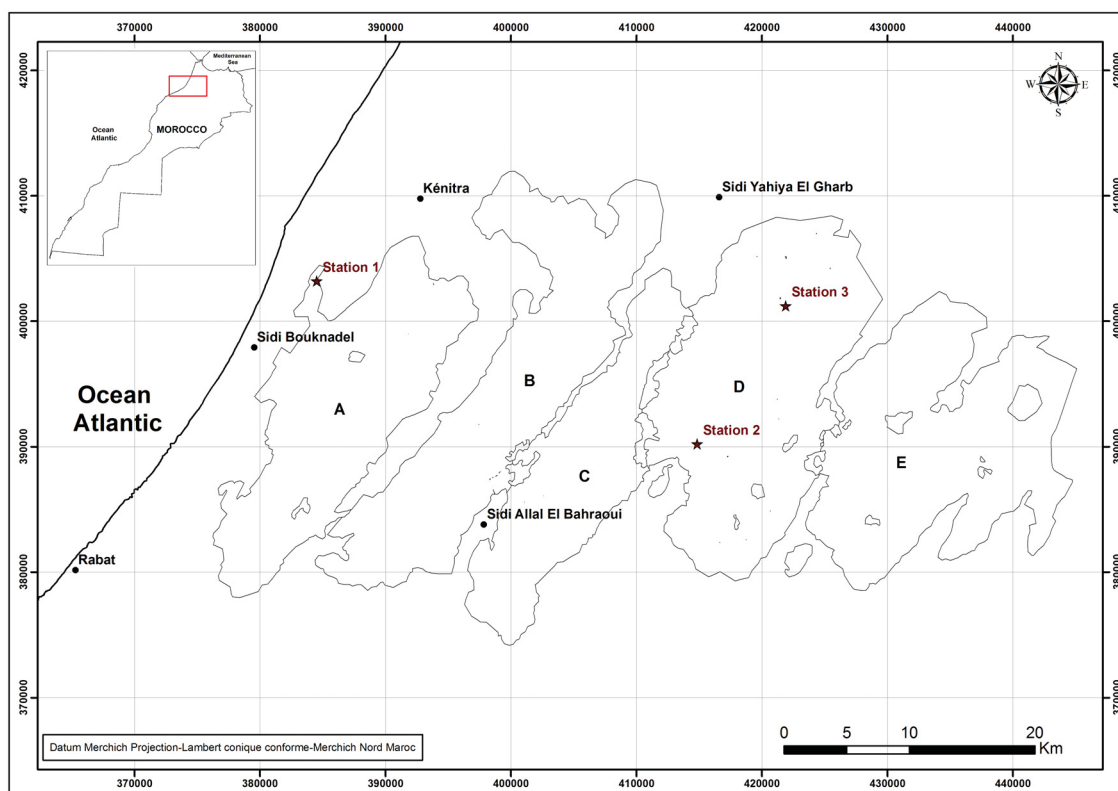


Fig. 1. Study sites (★) and location of sampling traps in Maâmora forest with different cantons (A, B, C, D and E) using the coordinates in the Merchich geographical reference system.

**Aïn Assou** (Locality 3): located near the Aïn Assou forestry station in North Eastern Maâmora, canton D, commune Kceïbia,  $34^{\circ}12'07.9''N$ ,  $6^{\circ}15'10.8''W$ , 84 m a.s.l..

The climate of the Maâmora forest is subhumid in the first locality and semi-arid in the other two (MÉTRO & SAUVAGE 1955). Geographical positions are given using coordinates in the Merchich geographic reference system.

Samples were taken once a week using Malaise traps in three periods: 26.vi.–8.x.2012, 24.v.–23.ix.2013 and 27.xi.2013 to 14.vi.2014. Once the specimens were sorted, they were kept in 70° alcohol and some were later mounted on cards. Genera and species were identified mainly using the keys of BOUČEK (1972, 1988), BOUČEK & RASPLUS (1991), GIBSON (2009), GIBSON & VIKBERG (1998), GRAHAM (1969), MITROIU (2010), and MITROIU & ANDRIESCU (2008).

The specimens mentioned in this paper are deposited in the following institutions:

BMHN	Natural History Museum, London, United Kingdom;
MNHN-ISc	National Museum of Natural History, Scientific Institute, Mohammed V University, Rabat, Morocco;
UAIC	Faculty of Biology, Alexandru Ioan Cuza of Iași, Romania (Mircea-Dan Mitroiu Collection);

We use the following abbreviations of morphological structures in the text:

F1–F7	funicular segments 1–7;
gt1–gt7	gastral tergites 1–7;
M	marginal vein;
OOL	ocello-ocular line;
POL	postocellar line;
PV	postmarginal vein;
SMV	submarginal vein;
SV	stigmatal vein.

## Results

For each species we provide its known distribution in Morocco (as Morocco when no exact locality is available), insect hosts and general distribution. New data are marked with an asterisk.

### Family Pteromalidae Dalman, 1820

Subfamily Asaphinae Ashmead, 1904

#### Genus *Asaphes* Walker, 1834

##### *Asaphes suspensus* (Nees, 1834)

**Distribution in Morocco.** Rabat, ♀ (VAGO 2002: 95).

**Insect hosts.** Hymenoptera: Braconidae; Diptera: Agromyzidae and Cecidomyiidae; Hemiptera: Aphididae (DE SANTIS 1967, SHADRINA & GORBUNOV 1995, NOYES 2018).

**General distribution.** Palaearctic Region, Canada, Chile, India, Mexico, Nepal, the United States of America (NOYES 2018).

##### *Asaphes vulgaris* Walker, 1834

**Material examined.** Maâmora forest, commune Sidi Taïbi (Locality 1), 1 ♀, 8.v.2014, leg. K Kissayi (MNHN-ISc).

**Distribution in Morocco.** The Atlantic coastal region, but the species is also very common in the interior of the country, from plains to mountains, in late winter and in spring (DELUCCHI 1962b: 13); around Azrou (VAGO 2002: 96); Rabat (DE LÉPINEY & MIMÉUR 1932: 62).

**Insect hosts.** Coleoptera: Curculionidae; Diptera: Agromyzidae, Cecidomyiidae, Syrphidae; Hemiptera: Aphididae, Coccidae, Diaspididae, Pseudococcidae, Psyl-

lidae; Hymenoptera: Cynipidae, Braconidae (THOMPSON 1958, PECK 1963, HERTING 1972, DE SANTIS 1980, FRY 1989). Adults of this species are recognized in Morocco as hyperparasitoids of *Aphis gossypi* Glover, 1877 and *Hyalopterus* sp. (Hemiptera: Aphididae) (DE LÉPINEY & MIMEUR 1932).

**General distribution.** Palaearctic, Nearctic, and Neotropical Region (NOYES 2018).

**Genus *Hyperimerus* Girault, 1917**

***Hyperimerus pusillus* Walker, 1833**

**Distribution in Morocco.** Fir forest of Talassemtane National Park (BENYAHIA 2016: 173).

**Insect hosts.** Hemiptera: Pseudococcidae, Psyllidae (HUANG & XIAO 2005, DZHANOKMEN 1978, GHARI et al. 2010).

**General distribution.** Palaearctic Region, Canada (NOYES 2018).

Subfamily Cerocephalinae Gahan, 1946

**Genus *Cerocephala* Westwood, 1832**

***Cerocephala eccoptogastri* Masi, 1921**

**Distribution in Morocco.** Region of Taroudant and Beni Mellal (BENAZOUN 1988: 97).

**Insect hosts.** Coleoptera: Curculionidae: Scolytinae (HERTING 1973, MENDEL 1986, LOZANO & CAMPOS 1993, FRY 1989).

**General distribution.** Palaearctic Region, Congo (NOYES 2018).

**Genus *Theocolax* Westwood, 1832**

***Theocolax elegans* (Westwood, 1874)**

**Distribution in Morocco.** Essaouira, ♀ (VAGO 2002: 99).

**Insect hosts.** Coleoptera: Anobiidae, Bostrychidae, Bruchidae, Cucujidae, Curculionidae, Dryophthoridae; Lepidoptera: Gelechiidae (THOMPSON 1958, PECK 1963, HERTING 1973, FLINN et al. 1996, MITROIU 2001a).

**General distribution.** Australia, Indo-Malay, Afrotropical, Palaearctic, Nearctic, and Neotropical Region (NOYES 2018).

Subfamily Cleonyminae Walker, 1837

**Genus *Cleonymus* Latreille, 1809**

***Cleonymus laticornis* Walker, 1837**

**Material examined.** Maâmora forest, commune Sidi Taïbi (Locality 1), 1 ♂, 2.iv.2014; 1 ♂, 12.iii.2014, leg. K. Kissayi (MNHN-ISc).

**Distribution in Morocco.** Tangier (BOUČEK 1972: 274).

**Insect hosts.** Coleoptera: Anobiidae, Cerambycidae, Curculionidae, Scolytidae; Lepidoptera: Gracillariidae (THOMPSON 1955, GRAHAM 1969, YANG 1996, DZHANOKMEN 1978, HERTING 1973).

**General distribution.** Palaearctic Region and the United States of America (NOYES 2018).

**\**Cleonymus longigaster* Mitroiu sp. nov.**

(Figs 2–6)

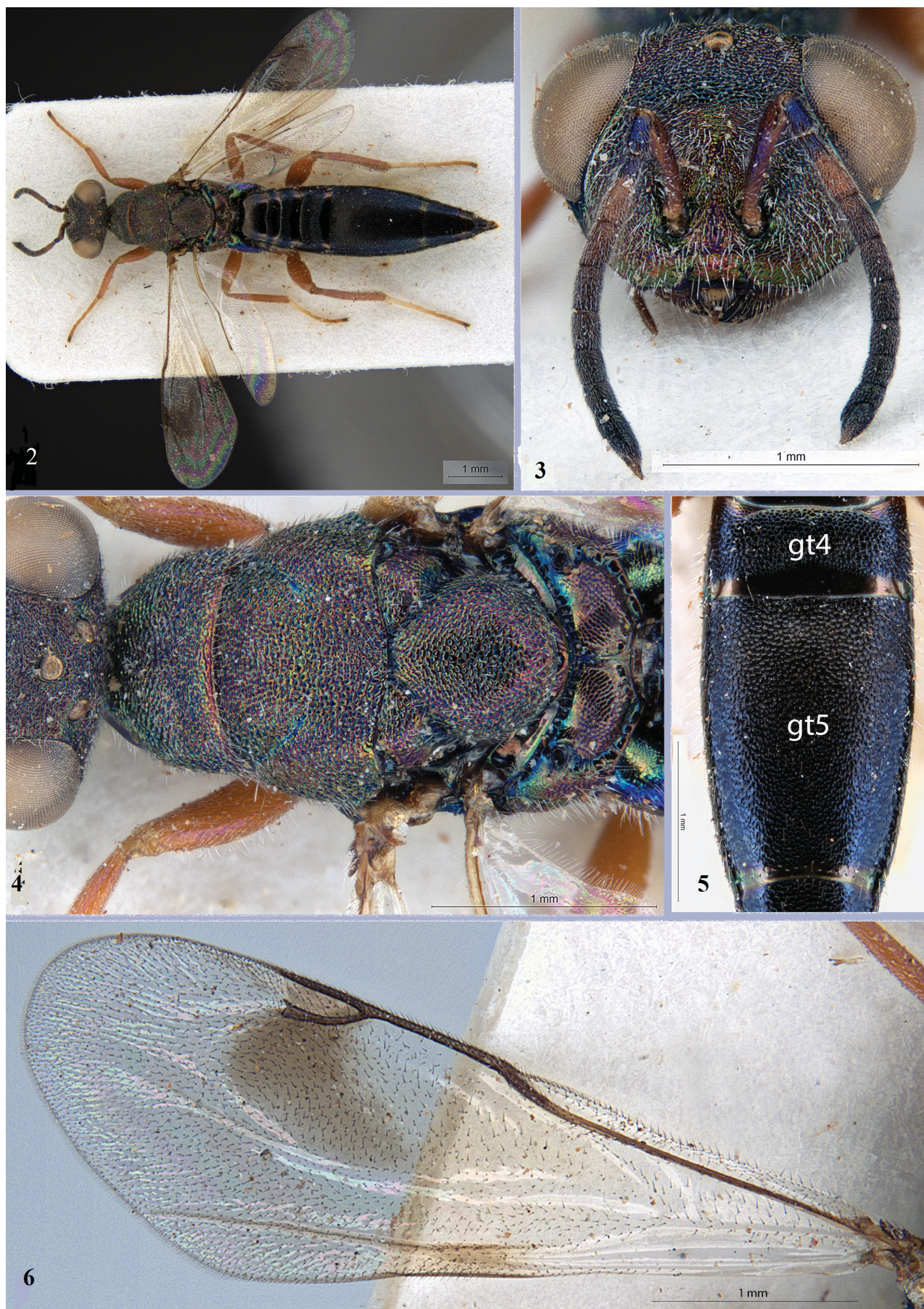
**Type material.** HOLOTYPE: ♀, “Maroc NW – Sud Nador, Mechra Hamadi, leg. G. Sama”, “ex larva *Tetraclinis articulata* (Vahl) Masters, 15.vi.1989”, “*Lucasianus levaillanti* Lucas, leg. G. Sama” (UAIC).

**Description.** Body length. 8.5 mm (Fig. 2).

**Colour.** Head with face golden green near mouth and gradually becoming reddish-violet between eyes; clypeus with golden and reddish reflections; interantennal region reddish-violet between toruli and becoming mainly golden green on scrobes; vertex violet; eyes and ocelli pale orange; antenna with scape reddish-brown, with distinct blue-violet reflections; pedicel and anellus blue-violet; funicular segments gradually changing from reddish-brown to blackish; clava blackish, tip lighter; mandibles brown, teeth dark brown. Mesosoma dorsally violet with golden-green and bronze reflections mainly on anterior part of pronotum, central lobe of mesoscutum, inner part of axillae and central part of scutellum; notauli turquoise; propodeum bronze violet, with some blue and golden reflections anteriorly; legs with fore and middle coxae as mesosoma; hind coxae laterally bronze, dorsally green, blue and violet; trochanters, femora and tibiae uniformly reddish-brown; tarsi paler basally and with dark brown tips; fore wing hyaline, with two brownish maculae: large macula below postmarginal and stigmal veins and reaching middle of wing disc, and smaller macula between middle of cubital fold and hind margin of wing; hind wing hyaline; tegula reddish-brown; venation brown. Gaster black, with some bronze and violet reflections. Body setation white, except for brown setae on distal gastral tergites; wing setation brown.

**Head** (Fig. 3). Frons and vertex densely reticulated, alveoli clearly defined by smooth raised walls; clypeus shallowly striate-reticulate; scrobes conspicuous, punctuate-reticulate; gena almost smooth posterior to malar sulcus. Clypeal margin straight. Interantennal crest triangular, broad. Toruli below lower eye margin. Eyes in frontal view strongly divergent in lower part, inner margin sinuous. In dorsal view temples absent and occiput slightly convex. Antenna (Fig. 3) with all funicular segments longer than broad; clava clearly overpassing laminar process of F7. Setation conspicuous, dense. Relative measurements: length: 31; width: 69; height: 47; minimum distance between eyes: 29; POL: 12; OOL: 4; diameter of lateral ocellus: 6; eye height: 32; eye length 25; malar space: 18; mouth width: 30; scape length: 28; pedicel plus flagellum: 70; F1 length: 9; F1 width: 5; F7 length (including laminar process): 9; F7 width: 5.5.

**Mesosoma** (Fig. 4). Pronotal collar striate-reticulate. Mesoscutum, axillae and scutellum densely reticulated. Central part of scutellum about as densely reticulated as central lobe of mesoscutum. Notauli reaching about middle of mesoscutum. Dorsellum almost smooth. Propodeum with median carina straight and thin, crenulated groove at anterior and posterior margins, and conspicuous crenulated spiracular sulci; central area and callus finely reticulated, hence appearing shinier than scutellum. Prepectus, most parts of mesopleura, and metapleura



Figs 2–6. *Cleonymus longigaster* sp. nov., holotype female. 2 – habitus in dorsal view; 3 – head in frontal view; 4 – mesosoma in dorsal view; 5 – gastral tergites 4 and 5; 6 – fore wing.

densely reticulated. Setation of mesosoma less conspicuous than on head, except on sides of pronotal collar, propodeal callus and dorsal side of hind coxae where setae are longer.

**Fore wing** (Fig. 6) with basal cell setose except for narrow band distally below SMV; speculum as narrow band below parastigma and proximal half of MV; costal cell with a few rows of setae along its entire length; distal half of SV virtually parallel with PV. Relative measurements: length: 105; width: 61; mesoscutum length: 36; scutellum length: 35; scutellum width: 34; propodeum median length: 12; fore wing length: 200; fore wing width: 68; costal cell length: 83; costal cell width: 8; MV: 35; SV: 17; PV: 20.

**Gaster** (Figs 2, 5) flattened dorsally, with gt 5 slightly convex. Gt1–6 punctuate and with a smooth band posteriorly; gt7–8 almost smooth. Lateral sides of tergites with long pilosity. Ovipositor sheaths slightly protruding in dorsal view. Relative measurements (tergites measured along median line): length: 220; width: 60; gt1 length: 25; gt2 length: 13; gt3 length: 16; gt4 length: 25; gt5 length: 80; gt5 width: 60; gt6 length: 35; gt7 length: 8; gt8 length: 13.

**Differential diagnosis.** The new species differs from all described Palaearctic species of *Cleonymus* mainly as follows. From *C. canariensis* Hedqvist, 1983 it differs mainly in having denser reticulation on dorsal side of mesosoma and gaster; different colour of flagellum (gradually changing from reddish-brown to blackish *versus* uniformly dark brown), mesosoma (violet with golden-green and bronze reflections *versus* green with bronze reflections), hind femur (uniformly reddish-brown *versus* with dark brown macula distally), and fore wing (large macula extending posteriorly to middle of wing *versus* extending much further, to distal end of cubital fold); funicular segments longer than wide *versus* quadrate to slightly transverse; different sculpture of propodeum (with crenulated groove at both anterior and posterior margins *versus* with crenulated groove only at anterior margin; median area reticulated *versus* almost smooth); POL 3× OOL *versus* 2×; MV 2.05× SV *versus* 1.2–1.3×; larger size (8.5 mm *versus* 5.0 mm); and quite different host associates (large Cerambycidae in trees *versus* Anobiidae in *Lavandula*).

From *C. balcanicus* Bouček, 1972 it differs mainly in the colour of fore wing (large macula present only below PV and SV *versus* large macula extending to parastigma); POL 3× OOL *versus* 1.7×; combined length of pedicel plus flagellum about equal to head width *versus* about 0.8× head width; funicular segments longer than wide *versus* moderately transverse; MV 1.75× PV *versus* 1.18×; gaster about 1.6× as long as head plus mesosoma *versus* 1.1–1.2×; gaster length 3.6× width *versus* 2.6×; gt5 length 1.3× width *versus* 0.89–0.95×; larger size (8.5 mm *versus* 4.4–5.6 mm).

From *C. brevis* Bouček, 1972, *C. laticornis* Waker, 1837 and *C. obscurus* Walker, 1837 it differs in many character states, especially the sculpture of frons (reticulated *versus* rugulose), the colour of fore wing (without any

white setae *versus* with at least some dense white setae on the hyaline spot below MV), shape and sculpture of gt5 (much longer than broad and distinctly sculptured *versus* broader than long and with weaker sculpture), and in smaller ocelli (diameter of lateral ocellus 1.5× POL *versus* 1.15×). The new species also differs from the two described Afrotropical species of *Cleonymus* (*C. albomaculatus* Hedqvist, 1960 and *C. viridicyaneus* Risbec, 1952) in many aspects, especially colouration of the head, antenna, mesosoma and fore wing, and the shape of antenna and gastral tergites.

**Etymology.** The name of the species refers to its long gaster; noun in apposition.

**Insect hosts.** The new species was reared from *Lucasianus levaillanti* (Lucas, 1849) (Coleoptera: Cerambycidae) on the sandarac tree (Barbary tuja) *Tetraclinis articulata* (Vahl) Masters (Cupressaceae) near Mechraa Hammadi (Eastern Morocco).

**General distribution.** Morocco (this paper).

### Genus *Heydenia* Förster, 1856

#### *Heydenia pretiosa* Förster, 1856

**Distribution in Morocco.** Ras El Ma, Azrou, Ain Kahla (MOUNA 2013: 9).

**Insect hosts.** Coleoptera: Buprestidae, Cerambycidae, Curculionidae (HERTING 1973, NOYES 2018). In Morocco this species was obtained from beetles consuming cedar wood, mainly Curculionidae (MOUNA 2013).

**General distribution.** Palaearctic Region (NOYES 2018).

### Genus *Notanisis* Walker, 1837

#### *Notanisis oulmesiensis* (Delucchi, 1962)

**Distribution in Morocco.** Oulmès, Middle Atlas, 1 250 m, (DELUCCHI 1962b: 11, holotype and 8 paratypes).

**Insect hosts.** Coleoptera: Buprestidae, Curculionidae (GIBSON 2003, 2015; GHAHARI & HUANG 2012; MITROIU & ANDRIESCU 2008).

**General distribution.** Palaearctic Region (NOYES 2018).

#### \**Notanisis versicolor* Walker, 1837

**Material examined.** 1.3 km WSW from Dardara, 1 ♀, det. G.A.P. Gibson (BMNH).

**Distribution in Morocco.** New record.

**Insect hosts.** Hymenoptera: Eurytomidae (BOUČEK 1988, MITROIU & ANDRIESCU 2008).

**General distribution.** Afrotropical and Palaearctic Region, India (NOYES 2018).

### Genus *Oodera* Westwood, 1874

#### *Oodera circularicollis* Wermner & Peters, 2018

**Distribution in Morocco.** Moulouya Farm, Kebdana (WERNER & PETERS 2018: 85, holotype and 2 ♀♀ paratypes).

**Insect hosts.** The data on the label indicates an association with *Punica* (WERNER & PETERS 2018).

**General distribution.** Morocco (NOYES 2018).

Subfamily Eunotinae Ashmead, 1904

**Genus *Moranila* Cameron, 1883**

***Moranila californica* (Howard, 1881)**

**Distribution in Morocco.** Gharb; Rabat; Oujda region; Casablanca; Essaouira (SMIRNOFF 1956: 18).

**Insect hosts.** Hemiptera: Asterolecaniidae, Coccidae, Eriococcidae, Pseudococcidae; Neuroptera: Sympherobiidae (BOUČEK 1988, GRAHAM 1969, XIAO & HUANG 2001, PECK 1963).

**General distribution.** Afrotropical, Nearctic, and Palaearctic Region, Australia, India (NOYES 2018).

**Genus *Scutellista* Motschulsky, 1859**

***Scutellista caerulea* (Fonscolombe, 1832)**

**Distribution in Morocco.** Rabat (JOURDAN & RUNGS 1934: 213; VAGO 2002: 96); regions of Rabat and Gharb, Tiznit region (SMIRNOFF 1956: 18).

**Insect hosts.** Hemiptera: Cerococcidae, Coccidae, Diaspididae, Pseudococcidae (AVASTHI & SHAFEE 1978, THOMPSON 1958, HAYAT et al. 2003, BURKS 1979, FRY 1989, PROKOPENKO & MOKROUSOVA 1981, HERTING 1972, BÉNASSY & BILIOTTI 1963, MONASTERO 1962, PRINSLOO 1984, BADARY & ABD-RABOU 2011, RASPI & BRAVIN 1996, DE SANTIS 1980, 1989, BOUČEK 1988, MCCOY & SELHIME 1971, ABDELKHALEK 1985, ABD-RABOU 2001).

**General distribution.** Afrotropical, Palaearctic, Neotropical, and Nearctic Region, Australia (NOYES 2018).

***Scutellista nigra* Mercet, 1910**

**Distribution in Morocco.** Aïn Karia, not far from Moulay Idriss Zerhoun (EL HORMITI & LARAICHI 1979: 76).

**Insect hosts.** Hemiptera: Coccidae, Lecanodiaspididae (GARRIDO TORRES & NIEVES-ALDREY 1999, HERTING 1972, THOMPSON 1958).

**General distribution.** North Africa, Croatia, Spain, Greece (NOYES 2018).

***Scutellista obscura* (Förster, 1878)**

**Distribution in Morocco.** Region of Ouezzan; Ifrane forest (JOURDAN & RUNGS 1934: 211).

**Insect hosts.** Hemiptera: Coccidae, Eriococcidae (MITROIU 2005).

**General distribution.** Palaearctic Region (NOYES 2018).

Subfamily Macromesinae Graham, 1959

**Genus *Macromesus* Walker, 1848**

***Macromesus africanus* Ghesquière, 1963**

**Distribution in Morocco.** Ifrane (GHESQUIÈRE 1963: 89).

**Insect hosts.** Coleoptera: Curculionidae (Scolytinae) (ASKEW & SHAW 2001).

**General distribution.** Endemic species of Morocco (NOYES 2018).

Subfamily Miscogastrinae Walker, 1833

**Genus *Ammeia* Delucchi, 1962**

***Ammeia pulchella* Delucchi, 1962**

**Material examined.** Maâmora forest, canton D, Aïn Johra commune, Al Maha, 1 ♂, 3.vii.2012, leg. K. Kissayi (MNHN-ISc).

**Distribution in Morocco.** El Koudia (Rabat-Sidi Bettache road) about 30 km south-west of Rabat (DELUCCHI 1962b: 10, ♀ holotype).

**Insect hosts.** Unknown.

**General distribution.** Palaearctic Region, Australia (NOYES 2018).

**Genus *Halticoptera* Spinola, 1811**

***Halticoptera* sp.**

**Distribution in Morocco.** Rabat (JOURDAN & RUNGS 1934: 212).

**Insect hosts.** This genus has the following reported hosts: Diptera: Agromyzidae, Anthomyiidae, Chloropidae, Ephydriidae, Tephriidae; Hemiptera: Aphididae, Lepidoptera: Gracillariidae, Nepticulidae (THOMPSON 1958, HERTING 1975, 1978; OATMAN 1985; GARRIDO TORRES & NIEVES-ALDREY 1999).

**Genus *Harrizia* Delucchi, 1962**

***Harrizia mira* Delucchi, 1962**

**Distribution in Morocco.** Berrechid (Chaouia region, Oulad Harriz at 30 km SE from Casablanca) (DELUCCHI 1962a: 117, ♀ holotype and paratypes); Rabat (DELUCCHI 1962a: 117, allotype; VAGO 2002: 96).

**Insect hosts.** Diptera: Agromyzidae (ASKEW et al. 2001).

**General distribution.** Palaearctic Region (Spain, Canary Islands, Morocco) (NOYES 2018).

**Genus *Miscogaster* Walker, 1833**

***Miscogaster elegans* Walker, 1833**

**Distribution in Morocco.** Region of Berrechid (DELUCCHI 1962a: 122).

**Insect hosts.** Diptera: Agromyzidae (DZHANOKMEN 1978, GRAHAM 1969, HANSSON 1987, HERTING 1978).

**General distribution.** Palaearctic Region (NOYES 2018).

**\**Miscogaster maculata* Walker, 1833**

**Material examined.** Maâmora forest, commune Sidi Taïbi, canton A, Taïcha, 1 ♀, 16.iv.2014, leg. K. Kissayi (MNHN-ISc).

**Distribution in Morocco.** New record.

**Insect hosts.** Diptera: Agromyzidae, Psilidae (HANSSON 1978, BOUČEK 1977, ASKEW et al. 2001, GRAHAM 1969, HERTING 1978, DZHANOKMEN 1978).

**General distribution.** Palaearctic Region (NOYES 2018).

**Genus *Rhinocelesia* Graham, 1956*****Rhinocelesia impar* (Walker, 1836)**

**Distribution in Morocco.** Mechraa Bel Ksiri (Gharb), a single ♀ Holotype, 9.iii.1961 (DELUCCHI 1962b: 9), Rabat, ♀, 23.xii.1992 (VAGO 2002: 98).

**Insect hosts.** Unknown.

**General distribution.** Palaearctic Region (NOYES 2018).

Subfamily Ormocerinae Walker, 1833

**Genus *Systasis* Walker, 1834*****Systasis encyrtoides* Walker, 1834**

**Distribution in Morocco.** Harcha (JOURDAN & RUNGS 1934: 213), Ifrane (DELUCCHI 1962a: 123), Rabat (VAGO 2002: 99).

**Insect hosts.** Coleoptera: Apionidae, Bruchidae, Curculionidae; Diptera: Agromyzidae, Cecidomyiidae, Tephritidae; Lepidoptera: Tortricidae (HERTING 1973, 1978; MITROIU 2001; ANDRIESCU & MITROIU 2003; BOUČEK 1977; D'AGUILAR & COUTIN 1967; TUDOR et al. 1978; DEL BENE & LANDI 1993; PLASTUN 1978; SOLINAS 1965, 1996).

**General distribution.** Palaearctic Region (NOYES 2018).

\*Subfamily Pireninae Haliday, 1844

**\*Genus *Gastrancistrus* Westwood, 1833****\**Gastrancistrus* aff. *vagans* Westwood, 1833**

**Material examined.** Maâmora forest, commune Sidi Taïbi, canton A, Taïcha, 1 ♀, 26.iii.2014, leg. K. Kissayi (MNHN-ISC).

**Distribution in Morocco.** New record.

**Insect hosts.** Unknown.

**General distribution.** Palaearctic Region (NOYES 2018).

**Genus *Macroglenes* Westwood, 1832*****Macroglenes chalybeus* (Haliday, 1833)**

**Distribution in Morocco.** Talasoltane Rif (MITROIU 2010: 14).

**Insect hosts.** Diptera: Cecidomyiidae (ANDRIESCU & MITROIU 2003; DZHANOKMEN 1978, 1993; HERTING 1978).

**General distribution.** Palaearctic Region (NOYES 2018).

Subfamily Spalangiinae Haliday, 1833

**Genus *Spalangia* Latreille, 1805*****Spalangia cameroni* Perkins, 1910**

**Distribution in Morocco.** Atlas: Reraia (BOUČEK 1963: 457); Rabat (VAGO 2002: 98).

**Insect hosts.** Diptera: Anthomyiidae, Calliphoridae, Chloropidae, Muscidae, Otitidae, Sarcophagidae, Syrphidae, Tephritidae; Lepidoptera: Bombycidae (HERTING 1978, BURKS 1979, FRY 189, GIBSON 2009, MARCHIORI et al. 2012).

**General distribution.** Afrotropical, Australian, Indo-Malay, Nearctic, Neotropical, and Palaearctic Region (NOYES 2018).

***Spalangia drosophilae* Ashmead, 1887**

**Distribution in Morocco.** Essaouira (VAGO 2001: 98).

**Insect hosts.** Diptera: Chloropidae, Drosophilidae, Lau-xaniidae, Muscidae, Sarcophagidae, Sepsidae, Tachinidae, Tephritidae; Hymenoptera: Cynipidae, Diapriidae, Figitidae; Lepidoptera: Gelechiidae, Pyralidae (THOMPSON 1958, BOUČEK 1963, BURKS 1979, GIBSON 2009).

**General distribution.** Nearctic, Neotropical, and Palaearctic Region (NOYES 2018).

***Spalangia endius* Walker, 1839**

**Distribution in Morocco.** Middle Atlas (BOUČEK 1963: 460); Rabat (VAGO 2002: 98).

**Insect hosts.** Diptera: Anthomyiidae, Calliphoridae, Drosophilidae, Muscidae, Otitidae, Sarcophagidae, Tachinidae, Tephritidae; Lepidoptera: Bombycidae, Pyralidae (THOMPSON 1958, PECK 1963, HERTING 1978, FAROOQI & SUBBA RAO 1986, FRY 1989, BURKS 1979, DE SANTIS 1979, SERENO & NEVES 1993, GIBSON 2009).

**General distribution.** Afrotropical, Australian, Indo-Malay, Nearctic, Neotropical, and Palaearctic Region (NOYES 2018).

***Spalangia fuscipes* Nees, 1834**

**Distribution in Morocco.** Rabat (VAGO 2001: 98).

**Insect hosts.** Diptera: Cecidomyiidae, Chloropidae (THOMPSON 1958, BOUČEK 1963, GRAHAM 1969, SERENO & NEVES 1993, DE SANTIS 1979, GARRIDO TORRES & NIEVES-ALDREY 1999, ANDRIESCU & MITROIU 2001, TODOROV 2011).

**General distribution.** Palaearctic Region (NOYES 2018).

***Spalangia nigroaenea* Curtis, 1839**

**Distribution in Morocco.** Rabat (VAGO 2002: 99).

**Insect hosts.** Diptera: Anthomyiidae, Calliphoridae, Muscidae, Otitidae, Phoridae, Sarcophagidae, Sepsidae, Syrphidae, Tachinidae; Lepidoptera: Pyralidae (BOUČEK 1963, BURKS 1979, SERENO & NEVES 1993, TUDOROV 2011).

**General distribution.** Australian, Indo-Malay, Afrotropical, Nearctic, Neotropical, and Palaearctic Region (NOYES 2018).

***Spalangia subpunctata* Förster, 1850**

**Distribution in Morocco.** Fes (BOUČEK 1963: 475); Rabat (VAGO 2002: 99).

**Insect hosts.** Diptera: Anthomyiidae, Calliphoridae, Muscidae, Sarcophagidae, Syrphidae (BOUČEK 1963, 1977; GRAHAM 1969; URSU & TUDOR 1975; ROBINSON 1977; TODOROV 2011).

**General distribution.** Palaearctic Region (NOYES 2018).

Subfamily Sycoryctinae Wiebes, 1966

**Genus *Philotrypesis* Förster, 1878**

*Philotrypesis caricae* (Linnaeus, 1762)

**Distribution in Morocco.** Ain Taoujtate (MAMOUNI 2002: 44).

**Insect hosts.** Hymenoptera: Agaonidae (THOMPSON 1958, PECK 1963, HERTING 1977).

**General distribution.** Palaearctic Region, the United States of America (NOYES 2018).

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### References

- ABDELKHALEK L. 1985: Data on the biology and ecology of the olive tree scale insect *Saissetia oleae* (Oliv.) (Hom. Coccoidea) in the region of Fes. Integrated pest control in olive-groves. Pp. 152–159. In: CAVALLORO R. (ed.): *Integrated Pest Control in Olive Groves*. CRC Press, Rotterdam & Boston, 528 pp.
- ABD-RABOU S. 2001: Parasitoids attacking the Mediterranean black scale, *Saissetia oleae* (Hemiptera: Coccidae) on olive in Egypt. *Entomologica* **33**: 169–172.
- ANDRIESCU I. & MITROIU M. D. 2001: Contributions to the knowledge of the pteromalids (Hymenoptera, Chalcidoidea, Pteromalidae) from David's Valley field natural reserve, Iasi (II). *Analele Stiintifice ale Universitatii "Al. I. Cuza" din Iasi (Serie Noua) (Biologie Animala)* **47**: 21–28.
- ASKEW R. R. & SHAW M. R. 2001: An annotated list of *Macromesur* Walker and a British host record for *M. amphiretus* Walker (Hym., Pteromalidae). *Entomologist's Monthly Magazine* **137**: 227–231.
- AVASTHI R. K. & SHAFEE S. A. 1978: *Cerococcus hibisci* Green (Homoptera: Asterolecaniidae) and its chalcid parasites. *Journal of the Bombay Natural History Society* **74**(2): 374–376.
- BADARY H. & ABD-RABOU S. 2011: Role of pteromalid parasitoid *Scutellista caerulea* (Fonscolombe) (Hymenoptera: Pteromalidae) for biological control of the soft scale insects (Hemiptera: Coccidae) in Egypt. *Egyptian Academic Journal of Biological Sciences & Entomology* **4**(1): 49–58.
- BÉNASSY C. & BILIOTTI E. 1963: *Ceroplastes rusci* L. (Homoptera, Coccoidea, Lecaninae) an interesting example for the study of population dynamics. *Entomophaga* **8**(3): 213–217.
- BENAZOUN A. 1988: *Etudes Bioécologiques sur le scolyte de l'amandier: Scolytus (Ruguloscolytus) amygdali* Guerin (Col., Scolytidae) au Maroc. Thèse de Doctorat, Université Pierre et Marie Curie, Paris 6, France, 208 pp.
- BENYAHIA Y. 2016: *Inventaire de la Biodiversité entomologique (Coléoptères et Hyménoptères) pour une gestion patrimoniale de la sapinière du Parc National de Talassemtane (Rif, Maroc)*. Thèse Doctorat, Faculté des Sciences Ben M'Sik, Casablanca, Maroc, 176 pp.
- BOUČEK Z. 1963: A taxonomic study in Spalangia Latr. (Hymenoptera, Chalcidoidea). *Acta Entomologica Musei Nationalis Pragae* **35**: 429–512.
- BOUČEK Z. 1972: On European Pteromalidae (Hymenoptera): a revision of *Cleonymus*, *Eunotus* and *Spaniopus*, with descriptions of new genera and species. *Bulletin of the British Museum (Natural History) (Entomology)* **27**(5): 267–315.
- BOUČEK Z. 1977: A faunistic review of the Yugoslavian Chalcidoidea (Parasitic Hymenoptera). *Acta Entomologica Jugoslavica* **13**(Supplement): 1–145.
- BOUČEK Z. 1988: *Australasian Chalcidoidea (Hymenoptera). A biosystematic revision of genera of fourteen families, with a reclassification of species*. CAB International, Wallingford, Oxon, U.K., Cambrian News Ltd; Aberystwyth, Wales, 882 pp.
- BOUČEK Z. & RASPLUS J.-Y. 1991: *Illustrated Key to West-Palaearctic genera of Pteromalidae (Hymenoptera: Chalcidoidea)*. Institut National de la Recherche Agronomique, Paris, 140 pp.
- BURKS B. D. 1979: Torymidae (Agaoninae) and all other families of Chalcidoidea (excluding Encyrtidae). Pp. 748–1043. In: KROMBEIN K. V., HURD P. D. JR, SMITH D. R. & BURKS B. D. (eds.): *Catalog of Hymenoptera in America North of Mexico. Vol. 1*. Smithsonian Institution Press, Washington, D.C., 1224 pp.
- D'AGUILAR J. & COUTIN R. 1967: A cecidomyiid on lentil, new to France, *Contarinia lentis* (Dipt. Cecidomyiidae). *Annales de la Société Entomologique de France (Nouvelle Série)* **3**(3): 673–679.
- DEL BENE G. & LANDI S. 1993: Natural enemies of *Dasineura glanditchiae* (O.S.) (Diptera, Cecidomyiidae) in Italy. *Redia* **76**(1): 1–16.
- DE LÉPINEY J.-M. 1929: Lutte biologique contre *Lymantria dispar* L. *Bulletin de la Société des Sciences Naturelles du Maroc* **9**: 12–13.
- DE LÉPINEY J.-M. 1930: Contribution à l'étude du complexe biologique de *Lymantria dispar* L. *Mémoires de la Société des Sciences Naturelles du Maroc* **23**: 1–100.
- DE LÉPINEY J.-M. & MIMÉUR J. 1932: Notes d'entomologie agricole et forestière du Maroc. *Mémoires de la Société des Sciences Naturelles du Maroc* **31**: 1–195.
- DELUCCHI V.-L. 1962a: Hymenoptera chalcidiens du Maroc. I. Pteromalidae. *Al Awamia* **2**: 113–135.
- DELUCCHI V.-L. 1962b: Hymenoptera chalcidiens du Maroc. II. Pteromalidae. *Al Awamia* **4**: 7–25.
- DE SANTIS L. 1967: *Catálogo de los Himenópteros Argentinos de la Serie Parasítica, incluyendo Bethyloidea*. Comisión de Investigación Científica, La Plata, 337 pp.
- DE SANTIS L. 1980: *Catálogo de los Himenópteros Brasileños de la serie Parasítica incluyendo Bethyloidea*. Editora da Universidade Federal do Paraná, Curitiba, 395 pp.
- DE SANTIS L. 1989: *Catálogo de los Himenópteros Calcidoideos (Hymenoptera) al sur de los Estados Unidos, segundo suplemento. Catálogo de los Chalcidoidea (Hymenoptera) de América south of the United States, second supplement. Acta Entomologica Chilena* **15**: 1–12.
- DZHANOKMEN K. A. 1978: Hymenoptera III. Chalcidoidea 5. Pteromalidae. Pp. 57–223. In: MEDVEDEV G. S. (ed.): *Opređeliteli Nasekomykh Evropeyskoy Chasti SSSR. [Keys to the insects of the European part of the USSR. Vol. 3(2). Hymenoptera]*. Nauka, Leningrad, 1341 pp.
- DZHANOKMEN K. A. 1993: A new pteromalids (Hymenoptera, Chalcidoidea, Pteromalidae) from Asia. *Proceedings of the Zoological Institute, Russian Academy of Sciences, St. Petersburg* **251**: 101–107.
- EL HORMITI M. & LARAICHI M. 1979: Note sur la bioécologie de *Saissetia oleae* (Olivier) (Homoptera, Coccoidea, Coccidae) dans la région de Moulay Idriss du Zerhoun. *Al-Awamia* **57**: 73–82.
- FAROOQI S. I. & SUBBA RAO B. R. 1986: Family Pteromalidae. Pp. 279–306. In: SUBBA RAO B. R. & HAYAT M. (eds.): *The Chalcidoidea (Insecta: Hymenoptera) of India and the adjacent countries (Part II.)*. *Oriental Insects* **20**: 1–430.
- FLINN P. W., HAGSTRUM D. W. & McGAUGHEY W. H. 1996: Suppression of beetles in stored wheat by augmentative release of parasitic wasps. *Environmental Entomology* **25**(2): 505–511.
- FRY J. M. 1989: *Natural enemy databank, 1987. A catalogue of natural enemies of arthropods derived from records in the CIBC Natural Enemy Databank*. CAB International, Wallingford, Oxford, UK, viii + 185 pp.
- GARRIDO TORRES A.M. & NIEVES-ALDREY J. L. 1999: Pteromalids from the Autonomus Community of Madrid (CAM) (Spain): faunistics and catalogue (Hymenoptera: Chalcidoidea: Pteromalidae). *Graellsia* **55**: 9–147.
- GHAHARI H. & HUANG J. 2012: A study of the Pteromalidae (Hymenoptera: Chalcidoidea) from Western and Northwestern Iran. *Archives of Biological Sciences* **64**(1): 353–357.
- GHAHARI H., HUANG J., OSTOVAN H. & RASTEGAR J. 2010: Notes on the Iranian fauna of Pteromalidae (Hymenoptera). *Efflatounia* **10**: 21–25.



- GHESQUIÈRE J. 1963: Le genre *Macromesus* Walker nouveau pour la faune africaine (Hymenoptera, Chalcidoidea, Pteromalidae). *Revue de Zoologie et de Botanique Africaines* **67**: 81–90.
- GIBSON G. A. P. 2003: Phylogenetics and classification of Cleonyminae (Hymenoptera: Chalcidoidea: Pteromalidae). *Memoirs on Entomology, International* **16**: 1–339.
- GIBSON G. A. P. 2009: Revision of new world Spalanginae (Hymenoptera: Pteromalidae). *Zootaxa* **2259**: 1–159.
- GIBSON G. A. P. 2015: The presence of *Notanisus* Walker (Hymenoptera: Pteromalidae) in North America and revision of the *oulmesiensis* species group. *Zootaxa* **3948(3)**: 422–450.
- GIBSON G. A. P. & VIKBERG V. 1998: The species of *Asaphes* Walker from America north of Mexico, with remarks on extralimital distributions of taxa (Hymenoptera: Chalcidoidea, Pteromalidae). *Journal of Hymenoptera Research* **7(2)**: 209–256.
- GRAHAM M. W. R. DE V. 1956: A revision of the Walker types of Pteromalidae (Hym., Chalcidoidea). Part I (including descriptions of new genera and species). *Entomologist's Monthly Magazine* **92**: 76–98.
- GRAHAM M. W. R. DE V. 1969: The Pteromalidae of north-western Europe (Hymenoptera: Chalcidoidea). *Bulletin of the British Museum (Natural History) (Entomology), Supplement* **16**: 1–908.
- HANSSON C. 1987: New records of Swedish Eulophidae and Pteromalidae (Hymenoptera: Chalcidoidea), with data on host species. *Entomologisk Tidskrift* **108(4)**: 167–173.
- HAYAT M., NARENDRAN T. C. & REMADEVIO K. 2003: Parasitoids (Hymenoptera: Chalcidoidea; Ceraphronoidea) reared mainly from Coccoidea (Homoptera) attacking sandal wood, *Santalum album* L. *Oriental Insects* **37**: 309–334.
- HERTING B. 1972: *Homoptera. A catalogue of parasites and predators of terrestrial arthropods. Section A. Host or Prey/Enemy*. 2. Commonwealth Agricultural Bureaux, Slough, England, 210 pp.
- HERTING B. 1973: *Coleoptera to Strepsiptera. A catalogue of parasites and predators of terrestrial arthropods. Section A. Host or Prey/Enemy*. 3. Commonwealth Agricultural Bureaux, Institute of Biological Control, UK, 3 + 185 pp.
- HERTING B. 1977: *Hymenoptera. A catalogue of parasites and predators of terrestrial arthropods. Section A. Host or Prey/Enemy*. 4. Commonwealth Agricultural Bureaux, Institute of Biological Control, UK, 206 pp.
- HERTING B. 1978: *Neuroptera, Diptera, Siphonaptera. A catalogue of parasites and predators of terrestrial arthropods. Section A. Host or Prey/Enemy*. 5. Commonwealth Agricultural Bureaux, Commonwealth Institute of Biological Control, UK, iv + 156 pp.
- HUANG D. W. & XIAO H. 2005: *Hymenoptera Pteromalidae. Fauna Sinica. Insecta* **42**. Science Press, Beijing, China, 388 pp.
- JOURDAN M. -L. & RUNGS CH. 1934: Observations sur quelques Hyménoptères du Maroc. *Bulletin de la Société des Sciences Naturelles du Maroc* **14**: 204–213.
- LOZANO C. & CAMPOS M. 1993: Preliminary study about entomofauna of the bark beetle *Leperesinus varius* (Coleoptera, Scolytidae). *Redia* **74(3, Appendix)**: 241–243.
- MARCHIORI C. H., BESSA L. A. & RIBEIRO A. L. 2012: Parasitoids of *Ornidia obesa* Fabricius (Diptera: Syrphidae) collected in chicken feces in Brazil. *Arquivo Brasileiro de Medicina Veterinaria e Zootecnia* **64(1)**: 228–230.
- McCOY C. W. & SELHIME A. G. 1971: Influence of some natural enemies black scale, *Saissetia* spp. in Florida. *Journal of Economic Entomology* **64**: 213–217.
- MENDEL Z. 1986: Hymenopterous parasitoids of bark beetles (Scolytidae) in Israel: host relation, host plant, abundance and seasonal history. *Entomophaga* **31(2)**: 113–125.
- MÉTRO A. & SAUVAGE C. 1955: *Flore des végétaux ligneux de la Mamora*. La nature au Maroc. La Société des sciences naturelles et physiques du Maroc, Rabat, 498 pp.
- MITROIU M.-D. 2001: Revision of the Chalcidoidea: Pteromalidae (Hymenoptera) collections of the Belgian Royal Institute of Natural Sciences and the discovery of 31 new species for Belgium. *Bulletin de la Société Royale Belge d'Entomologie* **137**: 91–97.
- MITROIU M.-D. 2010: Revision of Palaearctic species of *Macroglenes* Westwood (Hymenoptera: Pteromalidae). *Zootaxa* **2536**: 1–34.
- MITROIU M.-D. & ANDRIESCU I. 2003: Contributions to the knowledge of the pteromalids (Hymenoptera, Chalcidoidea, Pteromalidae) from David's Valley hay fields natural reserve, Iasi (III). *Analele Stiintifice ale Universitatii "Al. I. Cuza" Iasi (Biologie Animala)* **49**: 63–70.
- MITROIU M.-D. & ANDRIESCU I. 2008: A faunistic review of *Notanisus* Walker (Hymenoptera: Pteromalidae) in Romania, with a key to the European species. *North-Western Journal of Zoology* **4(2)**: 311–319.
- MONASTERO S. 1962: The coccids of Citrus in Sicily (*Lepidosaphes beckii*, *Parlatoria ziziphus*, *Coccus hesperidum*, *Pseudococcus adonidum*, *Saissetia oleae*, *Ceroplastes rusci* (3rd note)). *Bollettino dell'Istituto di Entomologia Agraria e dell'Osservatorio di Fitopatologia di Palermo* **28**: 1–87.
- MOUNA M. 2013: Les insectes du cèdre de l'Atlas (*Cedrus atlantica* Manetti) dans le Nord de l'Afrique. *Travaux de l'Institut Scientifique, Série Zoologie* **48**: 1–81.
- NOYES J. S. 2018: *Universal Chalcidoidea Database*. Available from: <http://www.nhm.ac.uk/our-science/data/chalcidoids/database/listChalcids.dsml> (accessed July 2018).
- OATMAN E. R. 1985: Parasites associated with lepidopterous leaf miners on apple in northeastern Wisconsin. *Journal of Economic Entomology* **78(5)**: 1063–1066.
- PECK O. 1963: A catalogue of the Nearctic Chalcidoidea (Insecta; Hymenoptera). *Canadian Entomologist, Supplement* **95(30)**: 5–1092.
- PLASTUN I. M. 1978: Natural enemies and their effect on the population dynamics of lucerne gall-midges. *Zashchita Roslin* **24**: 29–36.
- PRINSLOO G. L. 1984: An illustrated guide to the parasitic wasps associated with citrus pests in the Republic of South Africa. *Science Bulletin, Department of Agriculture, Republic of South Africa* **402**: 1–119.
- PROKOPENKO A. I. & MOKROUSOVA L. A. 1981: Scutellista as a biological controller of the Japanese wax scale. *Zashchita Rastenii* **12**: 43.
- RASPI A. & BRAVIN P. 1996: *Saissetia oleae* (Oliv.) and *Lichtensia viburni* Sign. antagonists in olive groves in the coastal area of Tuscany. Pp. 473–485. In: LOMBARDO N., IANNOTTA N. & BATTI C. B. (eds): *Atti del convegno l'olivicultura mediterranea: stato e prospettive della coltura e della ricerca*. Istituto Sperimentale per l'Olivicoltura, Rende, Cosenza, Italy, 747 pp.
- ROBINSON J. 1977: *Spalangia subpunctata* Förster (Hym., Pteromalidae) parasitizing *Hydrotaea irritans* Fall. (Dipt., Muscidae). *Entomologist's Monthly Magazine* **112**: 137.
- RUNGS CH. 1936: Observations sur quelques hyménoptères du Maroc. *Bulletin de la Société des Sciences Naturelles du Maroc* **16**: 15–31.
- SERENO F. T. P. S. & NEVES D. P. 1993: Microhymenopterous parasitoids of Diptera (Muscidae, Otitidae) at a dairy cattle farm in Iguarape, State of Minas Gerais, Brazil. *Revista Brasileira de Entomologia* **37(3)**: 563–567.
- SHADRINA N. F. & GORBUNOV N. N. 1995: *Liriomyza congesta* and its parasites in pea crops. *Sibirskii Ekologicheskii Zhurnal* **2(5)**: 462–465.
- SMIRNOFF W. A. 1956: Observations sur les prédateurs et parasites des Cochenilles nuisibles du Maroc et sur leurs ennemis. *Travaux originaux n° 11, Service de la Défense des Végétaux, Ministère de l'Agriculture et des Forêts* **11**: 1–60.
- SOLINAS M. 1965: Studies on cecidomyiids. II. *Jaapiella medicaginis* and *Anabremia inquilina* sp.n. *Entomologica* **1**: 211–281
- SOLINAS M. 1966: Studies on cecidomyiids. III. *Diplosiola bursaria* gen. et sp. n. *Entomologica* **2**: 55–92.
- THOMPSON W. R. 1955: *A catalogue of the parasites and predators of insect pests. Section 2. Host parasite catalogue, Part 3. Hosts of the Hymenoptera (Calliceratid to Evantiid)*. Commonwealth Agricultural Bureaux, The Commonwealth Institute of Biological Control, Ottawa, 320 pp.
- THOMPSON W. R. 1958: *A catalogue of the parasites and predators of insect pests. Section 2. Host parasite catalogue, Part 5*. Commonwealth Agricultural Bureaux, Commonwealth Institute of Biological Control, Ottawa, 611 pp.
- TUDOR C., VOICU M. C. & SAPUNARU T. 1978: Role of the species *Systasis encyrtoides* Wik. (Hymenoptera – Chalcidoidea – Pteromalidae) as a factor limiting mass multiplication of the pest *Contarinia medicaginis* Kieff. (Diptera - Itonididae). *Studii si Cercetari de Biologie (Seria Biologie Animala)* **30(2)**: 167–170.

- TODOROV I. 2011: Contribution to the Bulgarian pteromalid fauna (Chalcidoidea: Pteromalidae). *Acta Zoologica Bulgarica* **63**: 151–156.
- URSU A. & TUDOR C. 1975: The parasitisation of the synanthropic Diptera by hymenopterous chalcidoids. *Travaux du Muséum d'Histoire Naturelle 'Grigore Antipa', Bucaresti* **16**: 179–186.
- VAGO J.-L. 2002: Contribution à la connaissance des Pteromalidae du Maroc, avec la description de deux espèces nouvelles du genre *Pteromalus* Swederus, 1795 (Hymenoptera, Chalcidoidea). *Notes Fauniques de Gembloux* **44**: 95–107.
- WERNER J. & PETERS R. S. 2018: Taxonomic revision of the genus *Oodera* Westwood, 1874 (Hymenoptera, Chalcidoidea, Pteromalidae, Cleonyminae), with description of ten new species. *Journal of Hymenoptera Research* **63**: 73–123.
- XIAO H. & HUANG D. W. 2001: A review of Eunotinae (Hymenoptera: Chalcidoidea: Pteromalidae) from China. *Journal of Natural History* **35(11)**: 1594–1605.
- YANG Z. Q. 1996: *Parasitic wasps on bark beetles in China (Hymenoptera)*. Science Press, Beijing, 367 pp.