ANOTATED CHECK-LIST OF PTEROMALIDAE (HYMENOPTERA: CHALCIDOIDEA) OF MOROCCO. PART II

Khadija Kissayi1,*, Mircea-Dan Mitroiu2 & Latifa Rohi3

1 National School of Forestry, Department of Forest Development, B.P. 511, Avenue Moulay Youssef, Tabriquet, 11 000, Salé, Morocco. Email: Kissayi_k@yahoo.fr – ORCID iD: https://orcid.org/0000-0003-3494-2250
2 Alexandru Ioan Cuza, University of Iași, Faculty of Biology, Research Group on Invertebrate Diversity and Phylogenetics, Bd. Carol I 20A, 700 505, Iași, Romania. Email: mircea.mitroiu@uaic.ro – ORCID iD: https://orcid.org/0000-0003-1368-7721
3 University Hassan II, Faculty of Sciences Ben M’sik, Laboratory of ecology and environment, Avenue Driss El Harti, B.P. 7955, Casablanca, 20 800 Morocco. Email: rohilatifa@yahoo.fr / or rohilatifa@gmail.com – ORCID iD: https://orcid.org/0000-0002-4180-1117
* Corresponding author: Kissayi_k@yahoo.fr

ABSTRACT

In this second part, we present the subfamily Pteromalinae in Morocco, which includes 86 species belonging to 50 genera. Fifteen genera and 37 species are listed for the first time in the Moroccan fauna, among which 9 have been newly identified, 24 have been found in the bibliography and 4 deposited in natural history museums. An updated list of Moroccan species is given, including their distribution by regions, their general distribution and their hosts.

Keywords: Pteromalinae; distribution; hosts; new record; Morocco; Palaearctic Region.

RESUMEN

Lista comentada de Pteromalidae (Hymenoptera: Chalcidoidea) de Marruecos. Parte II

En esta segunda parte, presentamos la subfamilia Pteromalinae en Marruecos, que incluye 86 especies pertenecientes a 50 géneros. Quince géneros y 37 especies se enumeran por primera vez en la fauna marroquí, de las cuales 9 han sido recientemente identificadas, 24 se han encontrado en la bibliografía y 4 están depositadas en museos de historia natural. Se proporciona una lista actualizada de especies marroquíes, incluida su distribución por regiones, su distribución general y sus huéspedes.

Palabras clave: Pteromalinae; distribución; hospedadores; nuevo registro; Marruecos; Región Palaeártica.

Introduction

The Pteromalidae is a speciose and very diverse family of mostly parasitoid wasps (the number was greater, but many species and genera have been reduced to synonymy in recent years) (Gibson et al., 1999). The subfamily-level divisions are highly contentious and unstable, and the family is unquestionably artificial, composed of numerous, distantly related groups (polyphyletic) (Carpenter, 1992; Török & Abraham, 2002; Munro et al., 2011).

Accordingly, their life histories range over nearly the entire possible spectrum within the Chalcidoidea, though the majority of the species are larval or pupal parasitoids attacking many orders across Insecta. They can be categorized into many groups i.e. endoparasitoids and ectoparasitoids; hyperparasitoids; primary or secondary parasitoids; solitary or gregarious species;
inquilines or kleptoparasitoids of a wide variety of insects and arachnids, or phytophagous gall-formers (Parker & Thompson, 1925; Kerrich & Graham, 1957; Szczepanski, 1960; Bouček, 1963, 1977, 1988; Parnell, 1964; Askew, 1965; Graham, 1969; Burks, 1979; Bouček & Rasplus, 1991; Ghabari & Huang, 2012; Mitroiu, 2012, 2017; Noyes, 2020).

The second part of our contribution to the Pteromalidae fauna of Morocco follows the first part (treating the subfamilies Asaphinae, Cerocephalinae, Cleonyminae, Eunotinae, Macromesinae, Miscogastrinae, Ormocerinae, Pireninae, Spalangiinae and Sycoryctinae) (Kissayi et al., 2019) and includes only the subfamily Pteromalinae Dalman, 1820.

**Material and methods**

This work has been carried out in several stages. The first stage devoted to the compilation of all the available literature, was supplemented by visiting national and international museums and consulting databases devoted to Chalcidoidea, notably the richest national and international museums and consulting available literature, was supplemented by visiting

**Abbreviations used in the text**

CIRAD Center for International Cooperation in Agricultural Research for Development, Montpellier, France;

ETHZ Entomological Institute of E.T.H., Zurich, Switzerland;

MCHN Museo Civico di Storia Naturale, Genova;

NMBE Natural History Museum Berne, Switzerland;

RBINS Royal Belgian Institute of Natural Sciences, Brussels, Belgium.

**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.

Subfamily **Pteromalinae** Dalman, 1820

Genus **Anisopteromalus** Ruschka, 1912

**Anisopteromalus calandrae** (Howard, 1881)

**Distribution in Morocco.** Essaouira, 2 ♀♀ (Vago, 2002: 95); Rabat, 1 ♀, 15.VI.1963 (ETHZ) (Baur et al., 2014: Annexe S1: 5).

**Insect hosts.** Coleoptera: Anobiidae (De Santis, 1979, 1980; Bouček, 1988), Anthribidae (Goncalves et al., 1976), Apionidae (Herting, 1973), Bostrichidae (Ahmed & Kabir, 1995; Helbig, 1998), Bruchidae (Yoshida & Hidaka, 1979; Haeselbarth, 1985; Asl et al., 2009), Curculionidae (Farooqi & Subba Rao, 1986), Dermestididae (Nutting & Gerhardt, 1964), Dryophthoridae (Williams & Floyd, 1971; Mitroiu, 2001), Nitidulidae (Thompson, 1958), Silvanidae (Ahmed, 1996), Tenebrionidae (Sureshan & Narendran, 2003); Hymenoptera: Pteromalidae (Rabat, 1 ♀, 29.IV.1992 (Vago, 2002: 96)).

**General distribution.** Afrotropical, Nearctic, Neotropical, and Palaearctic Regions.

Genus **Caenocrepis** Thomson, 1878

**Caenocrepis arenicola** (Dalman, 1820)

**Distribution in Morocco.** Haouta el Kasdir (about 15 km S of Chauen, Jbelala), 1850 m, 1 ♀, 4.-11.VII.1961 (Delucchi, 1962b: 13); Rabat, 1 ♀, 29.IV.1992 (Vago, 2002: 96).

**Insect hosts.** Coleoptera: Curculionidae (Haeselbarth, 1989; Mitroiu, 2012).

**General distribution.** Palaearctic Region.

Genus **Callitula** Spinola, 1811*

**Callitula bicolor** (Orobanche, 1878)*

**Distribution in Morocco.** Fez Region; Meknes region, many ♀ and ♂ (Klein, 1995: abstract only).

**Insect hosts.** Diptera: Cecidomyiidae (Askev et al., 2001), Chloropidae (Bouček, 1964), Opomyzidae (Vidal, 1997).

In Morocco, this species has been reared from *Phytomyza orobanchia* Kaltenbach, 1864 (Diptera, Agromyzidae) parasite of *Orobanche* spp. (Orobanchaceae) (Klein & Kroeschel, 2002).

**General distribution.** Palaearctic and Nearctic Region.

Genus **Catolaccus** Thomson, 1878

**Catolaccus crassiceps** (Masi, 1911)

**Distribution in Morocco.** Rabat; 1 ♀, 25.VII.1993; 1 ♂, 31.VII.1993; 10 km S Azrou, 1 ♀, 9.VIII.1993 (Vago, 2002: 96), Province of Tata: Tichekji, 29°54′36″N 8°31′48″W, Sidi Moulay Cherif, 30°39′36″N 6°33′36″W; Taroudant, 30°29′24″N 8°51′W (Stefanescu et al., 2012: 91).

**Insect hosts.** Coleoptera: Curculionidae (Farooqi & Subba Rao, 1986); Hymenoptera: Cynipidae (Dehdar & Madjdzadeh, 2013); Lepidoptera: Gelechiidae (Ahmed & Kabir, 1995); Bruchidae (Yoshida & Hidaka, 1979; Haeselbarth, 1998); Dryophthoridae (Williams & Floyd, 1971; Mitroiu, 2001), Nitidulidae (Thompson, 1958), Silvanidae (Ahmed, 1996), Tenebrionidae (Sureshan & Narendran, 2003); Hymenoptera: Pteromalidae (Rabat, 1 ♀, 29.IV.1992 (Vago, 2002: 96)).

**General distribution.** Afrotropical, Nearctic, Neotropical, and Palaearctic Regions.

Genus **Cecidostiba** Thomson, 1878

**Cecidostiba fungosa** (Thomson, 1878)

**Distribution in Morocco.** Taza, 2 ♀♀, 1 ♂, between 12.II. and 19.III.1951, V. Delucchi leg. (Delucchi, 1962b: 13).

**Insect hosts.** Hymenoptera: Cynipidae (Thompson, 1958; Graham, 1969; Herting 1977; Dzhankokmen, 1978; Tudor & Caruntu, 1980; Garrido Torres & Nieves-Aldrey, 1999; Melika et al., 2002; Askew et al., 2013; Doğanlar, 2014).

**General distribution.** Palaearctic Region.
Genus *Cheiropachus* Westwood, 1829

*Cheiropachus quadrum* (Fabricius, 1787)

**Distribution in Morocco.** Taroudant; Douar Aguerd-Oudad; Tasserrit; Béni Mellal; Béni Ayat; Timouliit (Benazoun, 1988: 97); Tadla (Graf, 1977: only abstract); Ras El Ma; Azrou; Ain Kahla (Mouna, 2013: 9).

**Insect hosts.** Coleoptera: Bostrichidae (Thompson, 1958), Cerambycidae (Hertz, 1973, Curculionidae (Boucé, 1977; Burks, 1979; Mendel, 1986; Yang, 1989; Öncüer, 1991; Campos & Lozano, 1994; Mitroiu, 2001; Buhroo et al., 2002; Oleneci et al., 2015); Lepidoptera: Cossidae (Tawfik & Ramadan, 2006), Erebidae (Hertz, 1976). In Morocco, this species was reared from *Scolytus amygdauli* Guérin-Meneville, 1847 (= *Scolytus (Rugulosocylistes) amygdauli* Guérin-Meneville, 1847) (Coleoptera: Curculionidae: Scolytinae) living on almond trees (Benazoun, 1988) as well as on *Hylesinus oleipera* (Fabricius, 1792) (Coleoptera: Curculionidae: Scolytinae) living on olive trees (Graf, 1977). Also, this species has been reported as a parasitoid of wood-consuming beetles, mainly the Curculionidae (Mouna, 2013).

**General distribution.** Nearctic, Neotropical, Palearctic Regions and India.

Genus *Cyclogastrella* Förster, 1856*¹

*Cyclogastrella simplex* (Walker, 1834)*¹

**Distribution in Morocco.** Sidi Bette, 1 ♂, 1 ♀, 21.II.1961; Oued Cherrat, 3.IV.1961; Mechna Belksiri, 6.IV.1961; Sidi Slimane, 18.IV.1961, V. Delucchi leg. (Delucchi, 1962a: 124).

**Insect hosts.** Coleoptera: Curculionidae (Coles & Puttler, 1963; Clancy, 1969; Flanders, 1972; Bouček, 1961); Hemiptera: Coccidae (Herting, 1972). Lepidoptera: Arctiidae (Boriani, 1994; Garrido Torres & Nieves-Aldrey, 1999), Geometridae (Dzhankomken, 1978), Noctuidae (Grijpma, 1988), Tortricidae (Graham, 1969; Askew, 1980).

**General distribution.** Palearctic Region, United States of America.

Genus *Conomorium* Masi, 1924

*Conomorium pityocampae* Graham 1992*¹

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

**Insect hosts.** Lepidoptera: Notodontidae especially the genus *Thaumetopoea* Hübner, 1820 (Graham, 1992; Vidal, 1997; Garrido Torres & Nieves-Aldrey, 1999; Askew et al., 2001).

In Morocco, this species has been reported as a parasitoid of the pupae of *Thaumetopoea pityocampa* (Lepidoptera: Notodontidae) (Mouna, 2013).

**General distribution.** Palearctic Region.

Genus *Cratomus* Dalman, 1820*¹

*Cratomus megacephalus* (Fabricius, 1793)*¹

**Material examined.** Maâmora Forest, canton D, commune Ain Jofra, Al Maha, 1 ♀, 15.V.2014, K. Kissayi leg.

**Insect hosts.** Hymenoptera: Sphecidae (Ghahari & Huang, 2012).

**General distribution.** Palearctic Region and United States of America.

Genus *Cyclogastrella* Bukovskii, 1938

**Cyclogastrella clupealis** Boucé, 1965

**Distribution in Morocco.** Morocco (Baur, 2000: 172).

**Insect hosts.** Unknown.

**General distribution.** Palearctic Region.

Genus *Cyclogastrella* Forster, 1856

*Cyclogastrella simplex* (Walker, 1834)

**Distribution in Morocco.** The plain of Gharb: Mechna Belksiri, 1 ♂, 15.II.1961, V. Delucchi leg. (Delucchi, 1962a: 123); Ain Kahla, Azrou, Ras El Ma (Mouna, 2013: 9).

**Insect hosts.** Lepidoptera: Gelechiidae (Thompson, 1958), Tortricidae (Garrido Torres & Nieves-Aldrey, 1999). In Morocco, this species was obtained as a secondary parasitoid of pupae of *Acleris undulana* (Walsingham, 1900) (Lepidoptera: Tortricidae) (Mouna, 2013).

**General distribution.** Nearctic and Palearctic Regions.

Genus *Cyrtogaster* Walker, 1833

*Cyrtogaster vulgaris* Walker, 1833

**Distribution in Morocco.** Ifrane, 1 600 m, Middle Atlas, 1 ♂, 1 ♀, 24.V.1960; the surroundings of Rabat, 1 ♀, 1 ♂, 30.XI.1960, 10.II.1961; Mechna Belksiri, 1 ♂, 1 ♀, 15.II.1961; Lalla Mimouna, 1 ♂, 1 ♀, 15.II.1961; along the road between Kenitra and Souk et Tleta (Gharb) a month later; Kenitra, 1 ♂, 1 ♀, between 11-31.11.1962; Berrechid (south of Casablanca), 1 ♂, 1 ♀, 6.III.1961 (Delucchi, 1962b: 14); Rabat, 1 ♀, 21.XII.1992 (Vago, 2002: 96).

**Insect hosts.** Coleoptera: Bostrichidae (Andriescu & Mitroiu, 2001); Diptera: Agromyzidae (Boucé, 1961; Graham, 1969; Dzhankomken, 1978; Godfray, 1985; Fry, 1989; Trandem, 1996; Askew et al., 2001; Mitroiu, 2001), Chloropidae (Askew, 1965; Garrido Torres & Nieves-Aldrey, 1999), Drosophilidae, Lonchaeidae, Lonchopteridae (Herting, 1978), Omyzidae, Syrphidae (Vidal, 1997), Tephritidae (OILB, 2001); Hemiptera: Aphididae (Heydon, 1989); Hymenoptera: Sphecidae (Ghahari & Huang, 2012), Lasiocampidae (Celli, 1964), Geometridae (Herting, 1976).

**General distribution.** Palearctic Region, Canada and United States of America.

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¹ Please note: The asterisk (*) indicates that the species may be new to science or have not been previously recorded from Morocco. Further research is needed to confirm their distribution and hosts in Morocco.
Genus *Cyrtoptrix* Delucchi, 1956

*Cyrtoptrix lichtensteini* (Masi, 1922)

**Distribution in Morocco.** The lower valley of Moulouya; Guerif, 1 ♂, 1 ♀, during the year 1960; J.J. Drea leg., B.D. Burks det.; region of Fez (Delucchi, 1962a: 123).

**Insect hosts.** Coleoptera: Curculionidae (Graham, 1969; Herting, 1973; Dzhanokmen, 1978); Diptera: Tephritidae (Amini et al., 2014); Lepidoptera: Pyralidae (Herting, 1975; De Santis, 1983).

**General distribution.** North Africa, France, Iran, Kazakhstan, China, Puerto Rico, United States of America.

Genus *Dibrachys* Kurdjumov, 1913

*Dibrachys affinis* (Forster, 1841)

**Distribution in Morocco.** Rabat, 1 ♀, 21.IV.1992 (Vago, 2002: 96).

**Insect hosts.** Coleoptera: Curculionidae (Thompson, 1958; Peck, 1963; Graham, 1969; Herting, 1973; Bouček, 1977; Dzhanokmen, 1978; Burks, 1979); Hemiptera: Coreidae, Tettigoniidae (Oncier, 1991).

**General distribution.** Canada, United States of America and Palaearctic Region.

Genus *Dibrachys* Förster, 1856

*Dibrachys lignicola* Graham, 1969

**Distribution in Morocco.** Mammora, 2 ♂, 1 ♀ (under *D. Cavus* (Walker, 1835)] (Peters & Baur, 2011: 25); Ras El Ma; Azrou; Ain Kahla (Mouna, 2013: 9).

**Insect hosts.** Diptera: Calliphoridae (Graham, 1969); Lepidoptera: Gelechiidae (Oncier, 1991), Erebidae (Herting, 1976, 1977), Sesiaidae (Herting, 1975), Tortricidae (LoLB, 1971; Haeselbarth, 1989; Baur, 2005), Yponomeutidae (Thompson, 1958).

**General distribution.** Palaearctic Region.

*Dibrachys microgastris* (Bouché, 1834)

**Material examined.** Maâmora Forest, canton D, commune Kcèibia, Ain Assou, 1 ♀, 29.VIII.2012; Maâmora Forest, canton A, commune Sidi Taïbi, Taïcha, 1 ♀, 14.V.2014, K. Kissayi leg.; Maâmora Forest, 3 ♀, [under *Dibrachys boucheanus* (Ratzelberg, 1844)].

**Distribution in Morocco.** Maâmora forest (De Lépiney, 1927: 161), Middle Atlas [under *D. boarmiae* (Walker, 1863)] (Peters & Baur, 2011: 20); Ras El Ma; Azrou; Ain Kahla (Mouna, 2013: 9).

**Insect hosts.** Coleoptera: Anobiidae, Bruchidae (Peck, 1963), Cerambycidae (Thompson, 1958), Coccinellidae (Burks, 1979), Cucujidae (Thompson, 1958), Curculionidae (Boucek & Sedivy, 1954; Yang, 1996), Dryophthoridae (Burks, 1979), Trogossitidae (Peters & Baur, 2011); Dermaptera: Forficulidae (Herting, 1971); Diptera: Agromyzidae (Herting, 1978), Calliphoridae, Hippoboscidae (Peters & Baur, 2011), Muscidae (Floate et al., 1999), Tephritidae (Peck, 1963); Hemiptera: Pseudococcidae (Thompson, 1958); Hymenoptera: Apidae (Oncier, 1991), Cephidae (Peters & Baur, 2011), Diprionidae (Herting, 1977), Sphingidae (Vago, 2006), Tenthringidae (De Santis, 1983), Vespidae (Baur, 2005); Lepidoptera: Arctiidae (Boucek, 1954), Bucculatricidae (Myartseva et al., 1999), Choreutidae, Coleophoridae (Peters & Baur, 2011), Erebidae (Haeselbarth, 1983), Gelechiidae (Vidal, 1993), Geometridae (Konno et al., 2002), Glyphipterigidae (Burks, 1979), Gracillariidae (Gorka-Drabik & Napiorkowski-Kowalik, 2009), Lasiocampidae (Herting, 1978), Lyonetiidae (Vidal, 1993), Noctuidae, Notodontidae (Burks, 1979), Nymphalidae (Askew, 1970), Oecophoridae, Pieridae (Peters & Baur, 2011), Psychidae (Kalman, 1965), Pterophoridae (Herting, 1975), Pyralidae (Kamijo, 1983; Mitrou, 2001), Saturniidae (Peck, 1963), Sesiaidae (Dobroserdov, 1971), Tineidae (Mejmehaj, 2003), Tortricidae (Oatman et al., 1983), Yponomeutidae (Unruh et al., 1993), Zygaenidae (Herting, 1976); Neuroptera: Chrysopidae (Herting, 1978), Hemerobiidae (Peters & Baur, 2011), Sympheroboridae (Burks, 1979) and Araneae: Araneidae, Thomisidae (Burks, 1979). In Morocco, this species was obtained from the parasitoid complex of *Lymnantria dispar* (Lepidoptera: Erebidae: Lymnantriinae) (De Lépiney, 1927), so it was bred from larva (?) of *Thaumetopoea pityocampa* (Lepidoptera: Notodontidae) on Cedrus atlantica (Endl.) G. Manetti ex Carrière, (Pinaceae) (De Lépiney, 1927), as well as on chrysalis of *Thaumetopoea pityocampa* (Lepidoptera: Notodontidae) (Mouna, 2013).

**General distribution.** Australian, Indo-Malay, Afrotropical, Palaearctic, Neartic and Neotropical Regions.

Genus *Dinarmus* Thomson, 1878

*Dinarmus acutus* (Thomson, 1878)

**Distribution in Morocco.** Ifrane, 1 ♀, 24.VII.1960, V. Delucchi leg. (Delucchi, 1962a: 123).

**Insect hosts.** Coleoptera: Bruchidae (Peck, 1963; Graham, 1969; Dzhanokmen, 1978; Burks, 1979; Boe et al., 1989; Abdul-Rassoul, 1990; Thöroczy, 1990; Garrido Torres & Nieves-Alfrey, 1999); Hemiptera: Coccidae (OILB, 1971; Oncier, 1991); Hymenoptera: Pteromalidae (Herting, 1973).

**General distribution.** Afrotropical, Neartic and Palaearctic Regions.
**Pteromalidae of Morocco II**

**Erythromalus** Gahan, 1956*

**Material examined.** Maâmora Forest, canton D, Kceïbia commune, Ain Assou, 1 ♀, 22.VIII.2012; 1 ♂, 29.VIII.2012; 2 ♂♂, 14.VIII.2012, K. Kissayi leg.

**Insect hosts.** Coleoptera: Apionidae, Brentidae (Herting, 1973), Bruchidae (Peck, 1963; Bouček, 1974; Burks, 1979; Dzhanokmen, 1978), Dermentidae (Farooqi & Subba Rao, 1986; Sureshan & Narendran, 2003).

**General distribution.** Afrotropical, Indo-Malay, Nearctic, Neotropical and Palaearctic regions.

Genus **Dinotiscus** Ghesquière, 1946*

**Dinotiscus eupterus** (Walker, 1836)*

**Distribution in Morocco.** Aïn Kahlia; Azrou; Ras Al Ma (Mouna, 2013: 9).

**Insect hosts.** Coleoptera: Curculionidae (Thompson, 1958; Graham, 1969; Herting, 1973; Garrido Torres & Nieves-Aldrey, 1999; Hougaard & Gregoire, 2001). In Morocco, this species was obtained as a parasitoid of saproxylophagous insects on the Atlas cedar (Mouna, 2013).

**General distribution.** New Zealand, Nearctic and Palaearctic regions.

Genus **Erythromalus** Gahan, 1956*

**Erythromalus sp.*

**Material examined.** Maâamora Forest, Canton A, Sidi Taïbi commune, Taïcha, 1 ♀, 2.IV.2014, K. Kissayi leg.

**Remarks.** The specimen could be a new species for science and, if confirmed, it will be published later.

Genus **Fedelia** Delucchi, 1962

**Fedelia nebulosa** Delucchi, 1962

**Distribution in Morocco.** Tarfaya: Oued Namoussa, 10 km southeast of El Khaloua, 2 ♀♂, 30.IV.1961, Mesbahie leg. (Delucchi, 1962a: 115).

**Insect hosts.** Unknown.

**General distribution.** Palaearctic Region (Algeria, Canary Islands and Morocco).

Genus **Hobbya** Delucchi, 1957*

**Hobbya stenonota** (Ratzeburg, 1848)*

**Distribution in Morocco.** Region of Taza, 4 ♀♂, 5 ♂♂, between 26.III. and 6.IV.1951 (Delucchi, 1962b: 14).

**Insect hosts.** Hymenoptera: Cynipidae (Thompson, 1958; Graham, 1969; Dzhanokmen, 1978; Garrido Torres & Nieves-Aldrey, 1999; Melika et al., 2002; Gómez et al., 2006; Vago, 2006; Askew et al., 2013).

**General distribution.** Palaearctic Region.

Genus **Homoporus** Thomson, 1878

**Homoporus budensis** Erdős, 1953*

**Distribution in Morocco.** Haouta el Kasdir, in Jebela, 15 km southeast of Chauen, 1 ♀, 4.-11.VII.1961 (Delucchi, 1962b: 14-15).

**Insect hosts.** Hymenoptera: Cynipidae (Graham, 1969; Askew et al., 2006, 2013).

**General distribution.** Palaearctic Region (Hungary, Morocco, Moldova, Slovakia, Sweden).

**Homoporus destructor** (Say, 1817)

**Distribution in Morocco.** Chaouia, VII.1932, Bouhélier leg. (Jourdan & Rungs, 1934: 213), coastal region of El Jadida, since 1932 (Jourdan, 1937: 53); Bouznika, many ♀♂, 6.IV.1961; Oued Cherrat arbororum, 20.II. and 3.IV.1961; Rabat, 28.III. and 12.IV.1961; in the plain of Gharb: Sidi Slimane, 18.IV.1961 (Delucchi, 1962a: 121-122).

**Insect hosts.** Diptera: Cecidomyiidae (Thompson, 1958; Dzhanokmen, 1978; Schuster & Lidell, 1990), Chloropidae (Graham, 1969; Garrido Torres & Nieves-Aldrey, 1999); Hymenoptera: Cephidae (Dubbert et al., 1998), Eurytomidae (Vidal, 1997); Lepidoptera: Erebidiae (Peck, 1963).

**General distribution.** Palaearctic Region, Canada, United States of America.

**Homoporus fulviventris** (Walker, 1835)*

**Distribution in Morocco.** Fir forest of Talassannte National Park, Y. Benyahia leg. (Benyahia, 2016: 167).

**Insect hosts.** Hymenoptera: Cynipidae (Askew et al., 2001; Gómez et al., 2006), Eurytomidae (Thompson, 1958; Bouček, 1966; Herting, 1977).

**General distribution.** Palaearctic Region.

**Homoporus gibbonis** (Thomson, 1878)*

**Material examined.** Maâmora forest, Sidi Taïbi commune, Taïcha, 1 ♀, 08.V.2014; 1 ♂, 26.VI.2012; 2 ♀♂, 03.VII.2012; Maâmora forest, Aïn Jhore commune, Al Maha, 2 ♀♂, 14.V.2014; 1 ♀, 02.IV.2014; 2 ♀♂, 14.V.2014; 1 ♀, 26.IX.2012; Maâmora forest, Kceïbia commune, Ain Assou, 1 ♂, 17.IV.2014, K. Kissayi leg.

**Distribution in Morocco.** The surroundings of Rabat, 1 ♀, 1 ♂, 28.III.1961 (Delucchi 1962a: 121).

**Insect hosts.** Unknown.

**General distribution.** Palaearctic Region.

**Homoporus nypsius** (Walker, 1839)*

**Distribution in Morocco.** Atlantic Morocco: Bouznika, 1 ♀, 5.IV.1961 (Delucchi, 1962a: 122); Rabat, 1 ♂, 29.IV.1992 (Vago 2002: 96).

**Insect hosts.** Coleoptera: Curculionidae (Thompson, 1958); Diptera: Cecidomyiidae (Garrido Torres & Nieves-Aldrey, 1992, 1999; Askew et al., 2001); Hymenoptera: Eurytomidae (Graham, 1969; Dzhanokmen, 1978; Burks, 1979), Torymidae (Peck, 1963; Mitroui & Andreescu, 2003).

**General distribution.** Nearctic and Palaearctic Regions.

**Homoporus rungsi Delucchi, 1962**

**Distribution in Morocco.** Western Morocco, Arboretum Oued Cherrat (plateau) on the national road Rabat-Casablanca, 1 ♀ holotype, 1 ♂ allotype, 3.IV.1961, Bouznika, on the same road, a few kilometers further south-west, 1 ♀, 4.IV.1961 (Delucchi, 1962a: 121).
**Insect hosts.** Unknown.

**General distribution.** Endemic species of Morocco.

*Homoporus silvanus* Delucchi, 1962

**Distribution in Morocco.** Haouela el Kasdir, 1850 m, 15 km southeast of Chauen, in Jebala, 1 ♀, 4.—11.VII.1961 (Delucchi, 1962b: 15).

**Insect hosts.** Unknown.

**General distribution.** Endemic species of Morocco.

*Homoporus succinus* Delucchi, 1962

**Distribution in Morocco.** Rabat, ♀ Type unique, 28.III.1961 (Delucchi, 1962a: 120).

**Hosts.** Unknown.

**General distribution.** Endemic species of Morocco.

Genus *Ischyroptyx* Delucchi, 1956

*Ischyroptyx ligusticus* (Masi, 1921)

**Distribution in Morocco.** Rabat, 1 ♂, 2.VIII.1993; Essaouira, 1 ♀, X.1983; 39, 42, 43, 61); Meknes, many ♀♀, 24.VII.1960; Ifrane, Rabat, ♀ Type unique, 28.III.1961 (Delucchi, 1962a: 120).

**Insect hosts.** Unknown.

**General distribution.** Palaearctic Region.

Genus *Lariophagus* Crawford, 1909

*Lariophagus distinguendus* (Förster, 1841)

**Distribution in Morocco.** Tangier; Iglí; Larache; Essaouira; Gharb; Rabat; Marrakesh; Taroudant; Beni Msar; Oujda; Casablanca and region (De Lépine & Meinre, 1932: 29, 39, 42, 43, 61); Mechidi shores of Lake Sidi Boughaba, 1 ♀, VIII.1994 (Vago 2002: 97).

**Insect hosts.** Unknown.

**General distribution.** Palaearctic Region.

Genus *Mesopolobus* Westwood, 1833

*Mesopolobus gemellus* Baur & Muller, 2007*

**Distribution in Morocco.** Fir forest of Talasssemtane National Park, 31.VII.2014, Y. Benyahia leg. (Benyahia, 2016: 173).

**Insect hosts.** Diptera: Cecidomyiidae (Graham, 1969; Askew et al., 2006; Askev et al., 2013); Lepidoptera: Erebidae (Lymantriinae) (Haeselbarth, 1983).

**General distribution.** Palaearctic Region.

*Mesopolobus amacenus* (Walker, 1834)*

**Distribution in Morocco.** Fir forest of Talasssemtane National Park, Y. Benyahia leg. (Benyahia, 2016: 173).

**Insect hosts.** Diptera: Cecidomyiidae (Graham, 1969; Askew et al., 2006; Askev et al., 2013); Lepidoptera: Erebidae (Lymantriinae) (Haeselbarth, 1983).

**General distribution.** Palaearctic Region.

*Mesopolobus diffinis* (Walker, 1834)*

**Distribution in Morocco.** Haouela el Kasdir, in Jebala, 15 km southeast of Chauen, 1 ♀, 1 ♂, H. von Rosen det. (Delucchi, 1962b: 16); Fir forest of Talasssemtane National Park, Y. Benyahia leg. (Benyahia, 2016: 173).

**Insect hosts.** Diptera: Cecidomyiidae (Graham, 1969; Herting, 1977; Garrido Torres & Nieves-Aldrey, 1999; Gómez et al., 2006; Askew et al., 2013); Lepidoptera: Erebidae (Lymnantrinae) (Haeselbarth, 1983).

**General distribution.** Palaearctic Region.

*Mesopolobus gemellus* Baur & Muller, 2007*

**Distribution in Morocco.** Fir forest of Talasssemtane National Park, Y. Benyahia leg. (Benyahia, 2016: 173).

**Insect hosts.** Coleoptera: Curculionidae (Baur et al., 2007).

**General distribution.** Palaearctic Region.

*Mesopolobus inculatus* (Walker, 1834)*

**Distribution in Morocco.** Talasssemtane, Rif, 1850 m, 4 ♀♀, 4. and 11.VII.1961, collected by sweeping, (NMBE) (Baur et al., 2007: 393).

**Insect hosts.** Coleoptera: Apionidae (Askew et al., 2001; Boucèk, 1966), Curculionidae (Graham, 1969; Herting, 1973; Garrido Torres & Nieves-Aldrey, 1992); Diptera: Agromyzidae, Cecidomyiidae (Herting, 1978); Hymenoptera: Eurytomidae (Herting, 1977).

**General distribution.** Palaearctic Region, Canada, and New Zealand.

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**Mesopolobus morys** (Walker, 1848)*

*Distribution in Morocco.* Haouta el Kasdir, 1850 m, 15 km south-east of Chauen, in Jebra, (Delucchi, 1962b: 16); Fir forest of Talassartane National Park, Y. Benyahia leg. (Benyahia, 2016: 168).

*Insect hosts.* Coleoptera: Apionidae (OILB, 1971; Mitroiu, 2005), Cercyonidae (Peck, 1963; Boucek, 1977; Burks, 1979; Baur et al., 2007); Diptera: Cecidomyiidae (Herting, 1978; Askew et al., 2001).

*General distribution.* Nearctic and Palaearctic Region.

**Mesopolobus teliformis** (Walker, 1834)*

*Material examined.* Maâmora Forest, Canton A, Sidi Taïbi commune, Taïcha, 1 ♀, 14.V.2014, Maâmora forest, Canton D, Ain commune Jhora, Al Maha, 1 ♀, 8.V.2014, K. Kissayi leg.

*Distribution in Morocco.* Fir forest of Talassartane National Park (Benyahia, 2016: 173).

*Insect hosts.* Coleoptera: Apionidae (Herting, 1973).

*General distribution.* Palaearctic Region, United States of America and New Zealand.

**Mesopolobus spermotrophus** Hussey, 1960*

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

*Insect hosts.* Hymenoptera: Torymidae [Megastigmus spermotrophus] Wachtl, 1893 (Boucek, 1971; Herting, 1977; Baur, 2005). In Morocco, this species has been reported as a secondary parasitoid of pupae of *Acleris undulana* (Lepidoptera: Tortricidae) (Mouna, 2013).

*General distribution.* Western Palaearctic Region, New Zealand and United States of America.

**Mesopolobus tibialis** (Westwood, 1833)*

*Distribution in Morocco.* Haouta el Kasdir, 1850 m, 15 km southeast of Chauen, in Jebra, 1 ♀, 4. and 11.VII.1960 (Delucchi, 1962b: 16-17).

*Insect hosts.* Diptera: Cecidomyiidae (Herting, 1978); Hymenoptera: Cynipidae (Boucek, 1977; Mitroiu, 2001; Gómez et al., 2006; Askew et al., 2013; Lepidoptera: Tortricidae (Thompson, 1958; Askew, 1961).

*General distribution.* Palaearctic Region.

**Mesopolobus xanthocerus** (Thomson, 1878)*

*Distribution in Morocco.* Haouta el Kasdir, 1850 m, 15 km southeast of Chauen, in Jebra, 4. and 11.VII.1961, Oued Yquem (between Rabat and Casablanca), a few kilometers from its mouth, 4.VII.1960 (Delucchi, 1962b: 17).

*Insect hosts.* Hymenoptera: Cynipidae (Garrido Torres & Nieves-Aldrey, 1999; Gómez et al., 2006; Askew et al., 2013), Eulophidae (Askew, 1961).

*General distribution.* Palaearctic Region.

**Metacolus Morys** Förster, 1856*

*Distribution in Morocco.* Bir Charef, 24.IV.1992, P. Graf leg. (CIRAD) (Delvare, com. pers., 2019).

*Insect hosts.* Coleoptera: Cerambycidae (Mendel, 1986), Cercyonidae (Boucek, 1957; Graham, 1969; Herting, 1973; Dzhanokmen, 1978; Fry, 1989; Paanzavolta & Tiberi, 2010; Ghahari & Huang, 2012). In Morocco, this species was reared on *Pityogenes* sp. (Coleoptera: Cercyonidae: Scolytinae) (Delvare, com. pers., 2019).

*General distribution.* India, Afrotropical and Palaearctic Regions.

**Muscidifurax Girault & Sanders, 1910**

*Distribution in Morocco.* Essaouira, 1 ♀, VI.1983 (Vago, 2002: 97).

*Insect hosts.* Diptera: Anthomyiidae (Dzhanokmen, 1978), Calliphoridae (Burks, 1979; Peck, 1963), Muscidae (Graham, 1969; Herting, 1978), Sarcophagidae (Turner et al., 1968), Sepsidae (Marchiori et al., 2000), Syrphidae (Fry, 1989), Tephritididae (Podolet & Mendl, 1977).

*General distribution.* Australian, Afrotropical, Nearctic, Neotropical and Palaearctic Regions.

**Nasonia Ashmead, 1904**

*Distribution in Morocco.* Essaouira, 1 ♀, VI.1983 (Vago, 2002: 97).

*Insect hosts.* Hymenoptera: Torymidae (Herting, 1973), Hymenoptera: Cynipidae (Boucek, 1977; Mitroiu, 2001; Gómez et al., 2006; Askew et al., 2013), Lepidoptera: Tortricidae (Thompson, 1958; Askew, 1961).

*General distribution.* Palaearctic Region, United States of America and New Zealand.

**Norbanus Walker, 1843**

*Distribution in Morocco.* Doukkala, Haouz, Moulouya, Gharb, Kénitra, Tadla, Loukkos, Tangier, Tetouan (Brémond, 1938: 7).

*Insect hosts.* Hymenoptera: Cynipidae (Garrido Torres & Nieves-Aldrey, 1999; Gómez et al., 2006; Askew et al., 2013), Eulophidae (Askew, 1961).

*General distribution.* Palaearctic Region.
**INSECT HOSTS.** Coleoptera: Curculionidae (Herting, 1973; Bouček, 1977; Önçüer, 1991; Hasani et al., 2011). The species is known in Morocco as an ectophagous parasite of larvae of *Lixus junci* Boheman, 1838, *L. scabricollis* Boheman, 1842 and *L. brevirrostris* Boheman, 1835 (Coleoptera: Curculionidae) (Brémond, 1938; Delucchi, 1962b).

**General distribution.** Palaearctic Region.

**Genus Notoglyptus** Masi, 1917

*Notoglyptus scutellaris* (Dodd & Girault, 1915)

**Distribution in Morocco.** Surroundings of Rabat, 6 ♀, 1 ♂, 12.11.1961, 29.11.1961, from 14. to 20. VI.1961 (Delucchi, 1962a: 17).

**Insect hosts.** Unknown.

**General distribution.** Australian, Indo-Malay, Afrotropical, Palaearctic Region, and Canada.

**Genus Novitzkyanus** Bouček, 1961

*Novitzkyanus cryptogaster* Bouček, 1961

**Material examined.** Maâmora Forest, canton A, Sidi Taïbi commune, Taïcha, 1 ♀, 03.VII.2012; 1 ♀, 26.VI.2013; 1 ♂, 21.11.2013; 1 ♂, 12.IX.2012, K. Kissayi leg.

**Distribution in Morocco.** Along the road that leads from Rabat to Sale aerodrome, ♀ type unique, 26.VI.1960 (Delucchi, 1962a: 119); garden of Agronomic Research of Rabat, allotype and paratype (ETHZ), 2 ♀, 1 ♂, between 13-20.VI.1961 (Delucchi, 1962b: 17).

**Insect hosts.** Diptera: Sarcophagidae (Baker et al., 2000) and Mollusca: Helicidae (Coupland & Baker, 1994).

**General distribution.** Palaearctic Region.

**Genus Oxysychus** Delucchi, 1956

*Oxysychus regnieri* (Masi, 1934)

**Distribution in Morocco.** Oasis of Tazzougert, 26.V.1933; 6.V.1933 (Jourdan & Rungs, 1934: 211); Tazzougert Moroccan Sahara, ♀, Regnier leg. (Masi, 1934: 98).

**Insect hosts.** Coleoptera: Cerambycidae, Curculionidae (Graham, 1969).

**General distribution.** Endemic species of Morocco.

**Genus Pachycrepoideus** Ashmead, 1904

*Pachycrepoideus vindemmiae* (Rondani, 1875)

**Distribution in Morocco.** Fez, 21.X.1935 (Rungs, 1936: 19); same locality, VIII.1938 (Bléon & Fieuzet, 1939: 61); Rabat, 1 ♀, 30.X.1928, 1 Mimeur leg., MCHN (Graham, 1969: 847); Rabat region; Gharb; Zemmour; Berkane; Oujda; Nador; Figue; Casablanca; Mohammedia; Bouznika; Benslimane; Azemmour; El Jadida; Settat; Berrechid; Marrakech; Safi; Essaouira; Souss Valley; Agadir; Biougra; Larache; Tangier; Ouazzane; Al Hoceïma; Béni Mellal; Khouribga; Khénifra; Tadla; Demnate; Azilal (De Lépiney & Mimeur, 1932: 106).

**Insect hosts.** Diptera: Anthomyiidae (Dzhanokmen, 1978), Calliphoridae (Burks, 1979; Graham, 1969; Marchiori et al., 2012), Cecidomyiidae (Farooqi & Subba Rao, 1986), Drosophilidae (Bouček, 1961), Lonchaeidae (Thompson, 1958), Muscidae (Herting, 1978), Phoridae (Reina & Vasta, 2003), Piophilidae (Bouček, 1961; Peck, 1963), Sarcophagidae (Marchiori et al., 2003), Sphaeroceridae (Marchiori et al., 2002), Stratioptiomyidae (Pickens et al., 1975), Syrphidae (Marchiori et al., 2012), Tephritidae (De Santis & Fidalgo, 1994); Hymenoptera: Coccidae (Herting, 1978); Hymenoptera: Apidae (Miteiu, 2001); Lepidoptera: Bombycidae (Kumar & Mitroiu, 2003), Sphingidae (Marchiori et al., 2009), Lycaenidae (Askew et al., 2001), Hemiptera: Auchenorrhyncha (Marchiori et al., 2009), Hymenoptera: Encyrtidae (Xiao et al., 2009), Tortricidae (Gibson, 2001).

**General distribution.** Australian, Nearctic and Palaearctic Regions.
of *Chilocorus bipustulatus* Linnaeus, 1758 (Coleoptera: Coccinellidae) (Smirnoff, 1956).

**General distribution.** Palaearctic Region.

**Pachyneuron formosum** Walker, 1833

**Distribution in Morocco.** Rabat, 3 ♀, IV.1993 (Vago, 2002: 97); Fir forest of Talassemtane National Park, Y. Benyahia leg. (Benyahia, 2016: 168).

**Insect hosts.** Diptera: Syrphidae (Thompson, 1958; Graham, 1969; Dzhankonenko, 1978; Garrido Torres & Nieves-Aldrey, 1999); Hemiptera: Aphididae (Oncüer, 1991), Pseudococcidae (OILB, 1971); Lepidoptera: Lasiocampidae, Pieridae (Xiao et al., 2009).

**General distribution.** Palaearctic Region.

**Pachyneuron groenlandicum** (Holmgren, 1872)*

**Distribution in Morocco.** Fir forest of Talassemtane National Park (Benyahia, 2016: 168).

**Insect hosts.** Diptera: Chloropidae (Graham, 1969), Psilidae (OILB, 1971), Syrphidae (Kamijo, 1983); Hemiptera: Aphididae, Coccidae (Kamijo & Takada, 1973); Lepidoptera: Lasiocampidae, Pieridae (Xiao et al., 2009), Noctuidae (Vidal, 1993); Neuroptera: Hemerobiidae (Gupta & Poorani, 2008).

**General distribution.** Palaearctic Region and Yemen.

**Pachyneuron muscarum** (Linnaeus, 1758)*

**Material examined.** Rabat, 3 ♀, 27.VII.1949, W. Smirnoff leg., Ghesquière det. (RBINS, Brussels, Belgium) (pers. obs., 2018).

**Insect hosts.** Coleoptera: Coccinellidae (Graham, 1969), Curculionidae (Bächi, 1993); Diptera: Agromyzidae (Thompson, 1958), Cecidomyiidae (OILB, 1971), Chloropidae (Garrido Torres & Nieves-Aldrey, 1999); Hemiptera: Aphididae (Oncüer, 1991), Coccidae, Diaspididae (Mendel et al., 1984), Eriococcidae (Viggiani, 1990; Andriescu & Mitrou, 2004), Kermsidae (OILB, 1971), Pseudococcidae (Baur, 1973), Psyllidae (Olszak & Jaworska, 2003); Hymenoptera: Pseudococcidae (Benedek, 1969), Lepidoptera: Lasiocampidae, Pieridae (Xiao et al., 2009), Noctuidae (Vidal, 1993); Neuroptera: Hemerobiidae (Gupta & Poorani, 2008).

**General distribution.** Palaearctic Region and Yemen.

**Genus Peridesmia** Förster, 1856

**Peridesmia discus** (Walker, 1835)

**Distribution in Morocco.** 10 km from Kénitra (bifurcation of Tangier Road and Sidi Kacem), 1 ♀, 31.II.1962 (Delucchi, 1962b: 18).

**Insect hosts.** Coleoptera: Curculionidae (Burs, 1979; Bouček, 1977; Mitrou, 2007).

**General distribution.** United States of America and Palaearctic Region.

**Genus Plutothrix** Förster, 1856*

**Plutothrix sp.***

**Distribution in Morocco.** Mamora (Oued Tiflet), 11.XI.1933, cited as *Trigonoderus* sp., near *T. acuminatus* (Thomson, 1878) (Jourdan & Rungs, 1934: 213).

**Insect hosts.** In Morocco, this specimen was collected by rearing larvae of *Scardia boletella* (Fabricius, 1794) (= *Scardia boleti* Fabricius, 1798) (Lepidoptera: Tineidae) living on the polypore of *Inonotus tamariscis* (Pat.) Maire (= *Xanthochrous tamariscis* Pat.) (Hymenochaetaceae) (Jourdan & Rungs, 1934).

**Genus Pseudocatolaccus** Masi, 1908

**Pseudocatolaccus nitescens** (Walker, 1834)

**Distribution in Morocco.** A few kilometers from the mouth of Oued Cherrat, 1 ♀, 7.IV.1961; Haouta el Kasdir, 1850 m, 15 km south-east of Chauen, Jebala, 1 ♀, between 4. and 11.VII.1961 (Delucchi, 1962b: 18); Rabat, 1 ♀, 27.XII.1992 (Vago, 2002: 97).

**Insect hosts.** Coleoptera: Bruchidae, Curculionidae (Herting, 1973); Diptera: Cecidomyiidae (Graham, 1969; Garrido Torres & Nieves-Aldrey, 1992; Askew et al., 2001; Vago, 2006).

**General distribution.** Palaearctic Region.

**Genus Pteromalus** Swederus, 1795

**Pteromalus bifoveolatus** Förster, 1861

**Distribution in Morocco.** Rabat, syntypes, 3 ♀, 3 ♂, MCHN (Graham, 1969: 490).

**Insect hosts.** Lepidoptera: Erebidae (Bouček, 1966, 1977), Lasiocampidae (Garrido Torres & Nieves-Aldrey, 1999), Notodontidae (Thompson, 1958), Saturniidae (Oncüer, 1991; Graham, 1969; Dzhankonenko, 1978).

**General distribution.** Palaearctic Region.

**Pteromalus chrysos** Walker, 1836

**Distribution in Morocco.** Maâmora (Villemant & Fraval, 1993: 94); same locality; Zaër Forest (De Lépiney & Mimeur, 1932: 56); Maamora forest; Machraâ El Kettane; Bled Dendoun (De Lépiney, 1927: 161); Ain Kahla; Azrou; Ras-Al-Ma (Mouna, 2013: 9).

**Insect hosts.** Coleoptera: Chrysomelidae (Haeselbarth, 1989); Diptera: Tephritidae (Thompson, 1958); Hymenoptera: Lepidoptera: Erebidae (Herting, 1977), Tenthredinidae (Haeselbarth, 1983); Lepidoptera: Arctiidae, Gracillariidae (Vidal, 1997), Erebidae (Bouček, 1977), Gelechiidae (Vidal, 1993), Geometridae (Haeselbarth, 1985), Notodontidae (Graham, 1969), Pieridae (Herting, 1976, 1977), Tortricidae (Herting, 1975), Yponomeutidae (OILB, 1971). This species was obtained in Morocco as part of the parasitoid complex of *Lymantria dispar* (Lepidoptera: Erebidae: Lymantriinae) (De Lépiney, 1927; Villemant & Fraval, 1993). Also, it was obtained as a secondary parasitoid of *Acleris undulana* and *Dichelia numidica* Chambon, 1990 (Lepidoptera: Tortricidae) and *Thaumetopoea pityocampa* (Lepidoptera: Notodontidae) (Mouna, 2013).

**General distribution.** Palaearctic Region.

**Pteromalus delvarei** Vago, 2002

**Distribution in Morocco.** Road Ouarzazate-Errachidia, 30 km W Goulmima, holotype ♀, 28.V.1992; road Ouarzazate-
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General distribution. Endemic species of Morocco.

Pteromalus lichi (Sarra, 1924)

**Distribution in Morocco.** Doukkala, Haouz, Moulouya, Gharb, Kénitra, Tadla Loukkos, Tangier, Tetouan (Brémond, 1938: 8).

**Insect hosts.** Coleoptera: Cerambycidae (Bin, 1973), Curculionidae (Herting, 1973; Isart, 1970). In Morocco, this species has been observed to contribute to the reduction of *Lixus junci* (Coleoptera: Curculionidae) attacking sugar beet *Beta vulgaris* Linnaeus, 1753 (Chenopodiaceae) (Brémond, 1938).

**General distribution.** Palaearctic Region (Spain, Italy and Morocco).

Pteromalus platyphilus Walker, 1874*

**Distribution in Morocco.** Morocco, 1 ♀ (NMBE) (Baur, 2527), Z. Bouéch det. in 1996 (Baur, 2015: 57).

**Insect hosts.** Hemiptera: Aphididae (*Écocide* (Lancis, 1991) and Araneae: Dictynidae (Bouéch, 1977; Askew *et al.*, 2001; Dzhanokmen, 2001).

**General distribution.** Palaearctic Region.

Pteromalus puparum (Linnaeus, 1758)*

**Distribution in Morocco.** Taroudant region; south of Agadir; Oued Souss (Stefanescu *et al.*, 2011: 20, 24); Tadla; Béni Moussa; Béni Amer; Demnat; Azilal; Nador; Oujda; Figuig (Le Gall, 1961: 88, 93; De Lépény & Mimeur, 1932: 61); Meknes; Azrou; Marrakech; Marrakech: high valley of the Reraia; Imintanout; Safi; Essaouira; Rabat; Maiàmora forest; Tangier; Errachidia; Erfoud; Midelt; Rissani (De Lépény & Mimeur, 1932: 61, 68; Jourdan & Rungs, 1934: 213; Douïet, 14.VI.2001, S. Amazouz leg. (CIRAD) (Delvare, com. pers., 2019).

**Insect hosts.** Coleoptera: Bruchidae (Herting, 1973), Curculionidae (Gibson *et al.*, 2006); Diptera: Chloropidae (Thompson, 1958); Hemiptera: Diaspididae (OILB, 1971); Hymenoptera: Braconidae (Askew & Shaw, 1997), Cynipidae (Tudor & Căruntu, 1980), Sphecidae, Vespidae (Peck, 1963); Lepidoptera: Arctiidae (Gospodinov, 1963), Coleophoridae (Peck, 1963), Erebidae, Geometridae, Hesperidae, Lasiocampidae (Burks, 1979), Lycaenidae (Ahmed, 1995), Noctuidae, Tortricidae, Zygaenidae (Askew, 1970; Askew & Shaw, 1997). In Morocco, this species was obtained on *Pieris brassicae* (Linnaeus, 1758) (Lepidoptera: Pieridae) feeding on Brassica oleracea (Linnaeus, 1753) (Brassicaceae) (Delvare, com. pers., 2019).

**General distribution.** Australian, Indo-Malay, Afrotropical, Nearctic, Neotropical and Palaearctic Regions.

Pteromalus ridens Vago, 2002

**Distribution in Morocco.** Rabat, ♀ Holotype, 26.XII.1992, ♂ Allotype, 26.XII.1992, 2 ♂ Paratype, 26.XII.1992 (Vago, 2002: 100).

**Hosts.** Unknown.

**General distribution.** Endemic species of Morocco.

Pteromalus semotus (Walker, 1834)*

**Distribution in Morocco.** Province of Tata: Tichekji, 29°54’36”N 8°31’48”W; Region of Souss-Massa: Sidi Moulay Cherif, 30°39’36”N 6°33’36”W; Taroudant, 30°29’24”N 8°51’32”W (Stefanescu *et al.*, 2012: 91).

**Insect hosts.** Coleoptera: Anobiidae (Herting, 1973), Apionidae (Graham, 1969), Chrysomelidae (Miczulski, 1994), Curculionidae (Onècier, 1991); Hymenoptera: Diprionidae (Graham, 1969), Lepidoptera: Coleophoridae (Bouéch, 1988), Erebidae (Herting, 1976), Gelechiidae (Vidal, 1993; Askew *et al.*, 2001), Geometridae (Haeselbarth, 1989; Gracillariidae (Gorksa-Drabik & Napiorkowlik-Kowalik, 2009), Lyconidae (Galetolarth, 1989), Noctuidae (Kamio, 1982), Notodontidae, Pieridae (Thompson, 1958; Herting, 1976, 1977), Tischeridae (Gorksa-Drabik & Napiorkowlik-Kowalik, 2009), Tortricidae (Graham, 1991), Yponomeutidae (OILB, 1971; Baur, 2005), Zygaenidae (Graham, 1969). In Morocco, this species was obtained as secondary parasitoids of painted lady butterfly, Vanessa cardui (Linnaeus, 1758) (Lepidoptera: Nymphalidae) (Stefanescu *et al.*, 2012).

**General distribution.** India, Mexico, New Zealand and Palaearctic Region.

Pteromalus vibulenus (Walker, 1839)*

**Distribution in Morocco.** Ain Kahla, Azrou, Ras El Ma (Mouna, 2013: 9, 76).

**Insect hosts.** Coleoptera: Chrysomelidae (Haeselbarth, 1989), Curculionidae (Vidal, 1993); Hymenoptera: Cynipidae (Askew *et al.*, 2006); Lepidoptera: Gelechiidae (Vidal, 1993), Pieridae (Garrido Torres & Nieves-Aldrey, 1999), Pyralidae, Tortricidae, Zygaenidae (Graham, 1969). In Morocco, this species has been reported as a parasitoid of caterpillars and pupae of Acleris undulana (Lepidoptera: Tortricidae) (Mouna, 2013).

**General distribution.** Palaearctic Region.

Genus Rhaphitetus Walker, 1834*

**Rhaphitetus maculatus** Walker, 1834*

**Distribution in Morocco.** Rabat, 20.IV.1935, Brémond leg. (Rungs, 1936: 19); Tafrouat region: Douar Aguer-Oudad; Tasserirt, 1981 (Benazoun, 1988: 96).

**Insect hosts.** Coleoptera: Curculionidae (Peck, 1963); Herting, 1973); Lepidoptera: Cossidae (Tawfiq & Ramadan, 2006). In Morocco, this species was obtained from Scolytus amygdali (Coleoptera: Curculionidae: Scolytinae) (Benazoun, 1988); also, this species was noted as a parasite of Scolytus rugulosus (Müller, 1818) (= Eccoptogaster rugulosus Ratzeburg, 1837)

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Genus **Roptrocerus** Ratzeburg, 1848*

**Roptrocerus aff. brevicornis** Thomson, 1878*

**Distribution in Morocco.** Bir Charef, 24.IV.1991, P. Graf leg. (CIRAD) (Delvare, com. pers., 2019).

**Insect hosts.** Coleoptera: Curculionidae (Herting, 1972, Bouček, 1977, Vidal, 1993). In Morocco, this species was reared on *Pityogenes* sp. (Coleoptera: Curculionidae: Scolytinae) (Delvare, com. pers., 2019).

**General distribution.** Palaearctic Region.

Genus **Sphegigaster** Spinola, 1811

**Sphegigaster aff. cuscutae** Ferrière, 1959*

**Distribution in Morocco.** Region of Fez, region of Meknes, many individuals ♀ and ♂ (Klein, 1995, abstract only).

**Remarks.** The specimens have affinities with *Sphegigaster cuscutae* Ferrière with some differences. This is probably a new species for science according to Dr. O. Klein and was obtained as a parasitoid on *Orobanche crenata* Forsskål, *O. aegyptiaca* Persoon and *O. foetida* (Poiret) (Orobanchaceae) (Klein, 1995).

Genus **Stenomalina** Ghesquière, 1946

**Stenomalina gracilis** (Walker, 1834)

**Distribution in Morocco.** Rabat, ♀, 11.VIII.1983 (Vago, 2002: 99).

**Insect hosts.** Coleoptera: Curculionidae (Gibson et al., 2006); Diptera: Agromyzidae (Vidal, 1993; Askew et al., 2001); Calliphoridae (Herting, 1978); Cecidomyiidae (Ghahari et al., 2010); Chloropidae (Dzhanokmen, 1978); Tephritidae (Vidal, 1997); Hymenoptera: Cynipidae (Mitroiu, 2001); Lepidoptera: Tortricidae (Herting, 1975).

**General distribution.** Canada and Palaearctic Region.

Genus **Stenoselma** Delucchi, 1956

**Stenoselma nigrum** Delucchi, 1956

**Distribution in Morocco.** Coastal and sub costal region between Rabat and Casablanca, many individuals ♀ and ♂: Bouznika, VI.1960, 5.IV.1961; Sidi Bettache, 21.II.1961; Oued Cherrat, 17.IV.1961; Rabat, 29.III.1961 (Delucchi, 1962: 122); Rabat, 2 ♂, 22.IV.1992; ♀, 27.II.1993; ♀, 29.IV.1992; ♂, 21.XII.1992; ♀, 26.XII.1992; Khirrate, ♀, 26.VII.1991 (Vago, 2002: 99).

**Insect hosts.** Coleoptera: Buprestidae (Askew et al., 2001); Hymenoptera: Cynipidae (Vidal, 1993); Lepidoptera: Sesiididae (Garrido Torres & Nieves-Aldrey, 1999).

**General distribution.** Palaearctic Region.

Genus **Stinopus** Thomson, 1878

**Stinopus etearchus** (Walker, 1848)

**Distribution in Morocco.** Rabat, ♂, 29.IV.1992 (Vago, 2002: 99).

**Insect hosts.** Hymenoptera: Cynipidae (Mitroiu, 2001); Lepidoptera: Sesiidae (Garrido Torres & Nieves-Aldrey, 1999).
Trichomalus gynetelus (Walker, 1935)*
**Distribution in Morocco.** Haouta el Kasdir 1 850 m, 15 km southeast of Chauen in Jebala, 1 ♀, between 4. and 11.VII.1961 (Delucchi, 1962b: 19).
**Insect hosts.** Coleoptera: Apionidae (Askew et al., 2001), Curculionidae (Müller et al., 2007).
**General distribution.** Palaearctic Region.

Trichomalopsis microptera (Lindeman, 1887)
**Distribution in Morocco.** Morocco (Herting, 1978: 24-25).
**Insect hosts.** Coleoptera: Chrysomelidae (Haeselbarth, 1989); Diptera: Cecidomyiidae (Dzhanokmen, 1978), Chloropidae (Thompson, 1958).
**General distribution.** United States of America and Palaearctic Region.

Genus Trichomalus Thomson, 1878
**Trichomalus bracteatus** (Walker, 1935)*
**Distribution in Morocco.** Haouta el Kasdir, 1 850 m, in Jebala, 15 km SE of Chauen, 1 ♀, between 4 and 11.VII.1961 (Delucchi, 1962b: 18).
**Insect hosts.** Coleoptera: Curculionidae (Thompson, 1958); Hymenoptera: Cynipidae (Herting, 1977; Nieves-Aldrey et al., 2007).
**General distribution.** Palaearctic Region.

**Trichomalus campestris** (Walker, 1834)*
**Distribution in Morocco.** Haouta el Kasdir, 1 850 m, in Jebala, 15 km S of Chauen, 30 ♂ and ♀, between 4. and 11.VII.1961 (Delucchi, 1962b: 18).
**Insect hosts.** Coleoptera: Apionidae (OILB, 1971; Askew et al., 2001), Curculionidae (Müller et al., 2007).
**General distribution.** Palaearctic Region.

**Discussion**
In Morocco, Pteromalidae is the most diverse family of Chalcidoidea with 117 binomial species divided into 71 genera placed in 11 subfamilies: Asaphinae (2 genera /3 species), Cerocephalinae (2 genera /2 species), Cleonyminae (4 genera /6 species), Eunotinae (2 genera /4 species), Macromesinae (1 genus/1 species), Miscogastrinae (5 genera /5 species), Ormocerinae (1 genus/1 species), Pireninae (2 genera/ 1 species), Spalangiinae (1 genus/7 species), Sycoryctinae (1 genus /1 species) (Part I) and the most diverse Pteromalinae (50 genera /86 species) (Fig. 1). Of these 10 species are endemic to Morocco.
Among the Pteromalinae fauna, 9 species were collected and identified for the first time in Morocco: *Cratomus megacephalus* (Fabricius, 1793), *Dinarmoides spilopterus* Masi, 1924, *Dinarus basalis* (Rondani, 1877), *Homoporus fulviventris* (Walker, 1835), *Mesopopus amaenus* Walker, 1834, *Mesopolobus gemellus* Baur and Muller, 2007, *Mesopolobus nobilis* (Walker, 1834), *Nasonia vitripennis* Walker, 1836 and *Pachyneuron groenlandicum* (Holmgren, 1872); and 4 previously unreported species were found to be deposited in various natural history museums: *Metacolus unifasciatus* Förster, 1856, *Pachyneuron muscarum* (Linnaeus, 1758), *Roptrocerus aff. brevicornis* Thomson, *Roptrocerus xylophagorum* (Ratzburg, 1844).

However, by comparison with the catalogue of Noyes (2020), the entomofauna of Pteromalidae has been increased for Morocco by 1 subfamily, 19 genera and 29 species that we found in bibliography but have never been catalogued as Moroccan chalcids. In addition, we have identified at least 2 species that are probably new for science: *Erythromalus* sp., and *Gastancistrus* aff. *vagans* Westwood, 1833. If confirmed, their descriptions will be published in a later paper. However, a list composed of all the genera and species recorded in Morocco so far are presented in the Appendix.

Knowing that Morocco is one of the world’s hotspots (Secretary of State for the Environment Morocco, 2009), despite the fact that entomological studies are rare, this research is of considerable importance in providing information that helps researchers discover, maintain and act to protect the country’s biodiversity and environment. These insects play an important role in the biological control of serious agricultural and forest pests and many of them are employed successfully in biological control programs all over the world (Bouček & Rasplus, 1991; Sureshan & Narendran, 2003). For this reason, determining the species diversity in different regions of Morocco and their conservation are necessary. In this sense the present research has been carried out and should serve as a pilot study that could be extended to other parts of the kingdom.

**Acknowledgements**

We would like to thank Dr Gérard Delvare (CIRAD, Montpellier, France) for identification and validation of the species, and also for his great hospitality and sharing his expertise in Chalcidoidea taxonomy during the training of Ms. Khadija Kissayi during her stay at CIRAD. Our sincere thanks go to Mrs. Claire Villemant, responsible for the collection of Hymenoptera at the Museum of Natural History in Paris (France), and Wouter Dekoninck curator of collection, Museum of the Royal Institute of Natural Sciences in Brussels (Belgium) for his great hospitality and for facilitating Mrs. Khadija Kissayi’s consultations on Hymenoptera in the museums. Also, our thanks go to the peer-reviewers for the critical reading of this work.

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**Appendix.— List of all genera and species of Pteromalidae present in Morocco (*: found in literature and in museums visited but never previously cataloged; **: newly identified).**

**Apéndice.— Lista de los géneros y especies de Pteromalidae presentes en Marruecos (*: citas bibliográficas y ejemplares de museos visitados pero nunca antes catalogados; **: recién identificados).**
Genus **Notogyptus** Masi, 1917
  Notogyptus scutellaris (Dodd & Girault, 1915)
Genus **Notitzkyanus** Bouček, 1961
  Notitzkyanus cryptogaster Bouček, 1961
Genus **Oxyyschus** Delucchi, 1956
  Oxyyschus regnieri (Masi, 1934)
Genus **Pachyrhopioides** Ashmead, 1904
  Pachyrhopioides vindemiae (Rondani, 1875)
Genus **Pachyneuron** Walker, 1893
  Pachyneuron aphidis (Bouček, 1934)
  Pachyneuron coccoreum (Linnaeus, 1758)
  Pachyneuron formosum Walker, 1833
  Pachyneuron groenlandicum (Holmgren, 1872)*
  Pachyneuron muscarum (Linnaeus, 1758)*
Genus **Peridesmia** Förster, 1856
  Peridesmia discus (Walker, 1835)
Genus **Plutothris** Förster, 1856*
  Plutothris sp.*
Genus **Pseudocatolaccus** Masi, 1908
  Pseudocatolaccus nitescens (Walker, 1834)
Genus **Pteromalus** Swederus, 1795
  Pteromalus bifoveolatus Förster, 1861
  Pteromalus chrysos Walker, 1896
  Pteromalus delvarei Vago, 2002
  Pteromalus lixi (Sarra, 1924)
  Pteromalus platypilus Walker, 1874*
  Pteromalus puparinum (Linnaeus, 1758)*
  Pteromalus ridens Vago, 2002
  Pteromalus semotus (Walker, 1834)*
  Pteromalus vibulenus (Walker, 1839)*
Genus **Rhaphitelus** Walker, 1834
  Rhaphitelus maculosus Walker, 1834*
Genus **Riptrocerus** Ratzeburg, 1848*
  Riptrocerus aff. brevicornis Thomson, 1878*
  Riptrocerus xylphagorum (Ratzeburg, 1844)*
Genus **Sedma** Bouček, 1991
  Sedma dispar Bouček, 1991
Genus **Sphegigaster** Spinola, 1811
  Sphegigaster aff. cuscutae Ferrière, 1959*
  Sphegigaster stepicola Bouček, 1966
Genus **Stenomalina** Ghesquière, 1946
  Stenomalina gracilis (Walker, 1834)
Genus **Stenoselma** Delucchi, 1956
  Stenoselma nigrum Delucchi, 1956
Genus **Stinoplus** Thomson, 1878
  Stinoplus etearchus (Walker, 1848)
Genus **Syntomopus** Walker, 1833*
  Syntomopus thoracicus Walker, 1833*
Genus **Toxeumorpha** Girault, 1915
  Toxeumorpha nigricola (Ferrière, 1936)
Genus **Trichomalopsis** Crawford, 1913
  Trichomalopsis hemiptera (Walker, 1835)
  Trichomalopsis microptera (Lindeman, 1887)
Genus **Trichomalus** Thomson, 1878
  Trichomalus bracteatus (Walker, 1935)*
  Trichomalus campestris (Walker, 1834)*
  Trichomalus gynetelus (Walker, 1935)*
  Trichomalus sufflatus Delucchi, 1962
Subfamily **Spalangiinae** Haliday, 1833
Genus **Spalangia** Latreille, 1805
  Spalangia cameroni Perkins, 1910
  Spalangia drosophilae Ashmead, 1887
  Spalangia endius Walker, 1839
  Spalangia fusiceps Nees, 1834
  Spalangia gemina Bouček, 1963*
  Spalangia nigroaenea Curtis, 1839
  Spalangia subpunctata Förster, 1850
Subfamily **Sycoryctinae** Wiebes, 1966
Genus **Philotrypesis** Förster, 1856
  Philotrypesis sp.*
Genus **Pseudocatolaccus** Masi, 1908
  Pseudocatolaccus nitescens (Walker, 1834)
Genus **Pteromalus** Swederus, 1795
  Pteromalus bifoveolatus Förster, 1861
  Pteromalus chrysos Walker, 1896
  Pteromalus delvarei Vago, 2002
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