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A catalogue of the family Eulophidae (Hymenoptera, Chalcidoidea) of Eritrea

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A b s t r a c t : In Eritrea the family Eulophidae is represented by 12 species in four subfamilies. The subfamily Entedoninae is known by three species in the genera *Entedon* DALMAN, 1820 (two species) and *Neochrysocharis* KURDJUMOV, 1912 (one species). The subfamily Entiinae is represented by one species of the genus *Euderus* HALIDAY, 1844 and the subfamily Eulophinae by four species in the genera *Asecodes* FOERSTER, 1856 (one species), *Atoposoma* MASI, 1907 (one species), *Diglyphus* WALKER, 1844 (one species) and *Meruacesa* KOÇAK & KEMAL, 2009 (one species). The subfamily Tetrastichinae is known by four species in the genera *Aprostocetus* WESTWOOD, 1833 (two species) and *Tetrastichus* HALIDAY, 1844 (two species).

K e y w o r d s : Eulophidae, Entedoninae, Entiinae, Eulophinae, Tetrastichinae, catalogue, Eritrea.

Introduction

The species rich family Eulophidae is poorly known in Eritrea. Hitherto only 12 species have been recorded representing the subfamilies Entedoninae (three species in the genera *Entedon* DALMAN, 1820 and *Neochrysocharis* KURDJUMOV, 1912), Entiinae (*Euderus cavasolae* SILVESTRI, 1914), Eulophinae (four species in the genera *Asecodes* FOERSTER, 1856, *Atoposoma* MASI, 1907, *Diglyphus* WALKER, 1844 and *Meruacesa* KOÇAK & KEMAL, 2009) and Tetrastichinae (4 species in the genera *Aprostocetus* WESTWOOD, 1833 and *Tetrastichus* HALIDAY, 1844). Three new genera have been described from Eritrea: *Metriocharis* SILVESTRI, 1914 is a synonym of *Entedon* DALMAN, 1820 (Entedoninae), *Allomphale* SILVESTRI, 1914 is a synonym of *Euderus* HALIDAY, 1844 (Entiinae) and *Teleopteris* SILVESTRI, 1914 is a synonym of *Asecodes* FOERSTER, 1856 (Eulophinae).

Members of the family Eulophidae are primary parasitoids, seldom hyperparasitoids of various orders of Arthropoda and some species are phytophagous. As Eulophidae parasitize leafmining Lepidoptera, Diptera, Hymenoptera, Coleoptera, Thysanoptera and Acari, the family is of economic importance.

Annotated catalogue

Synonyms or misidentifications are marked with an asterisk (*) and printing errors with an exclamation mark (!).

Subfamily *Entedoninae*

Entedon atrocyanea (SILVESTRI, 1914)

Metriocharis atrocyanea sp.n.: SILVESTRI 1914: 216 (description ♀, fig. 17, biology, Nefasit).

Metriocharis atrocyanea SILVESTRI, 1914: SILVESTRI 1915a: 315 (biology, Nefasit).

Metriocharis atrocyanea SILVESTRI, 1914: THOMPSON 1943: 27 (world host-parasitoid catalogue).

Metriocharis atrocyanea SILVESTRI, 1914: THOMPSON 1955: 291 (world parasitoid-host catalogue).

Metriocharis atrocyaneae (!) SILVESTRI, 1914: NARAYANAN & CHAWLA 1962: 459 (world host-parasitoid catalogue), 471 (world host-parasitoid catalogue).

Entedon atrocyanea SILVESTRI, 1914: BOUČEK & ASKEW 1968: 77 (taxonomy).

Metriocharis atrocyanea SILVESTRI, 1914: STIBICK 2004: 39 (tab. 2: world catalogue parasites and predators of Tephritidae: Ethiopia = Eritrea).

Host: Diptera, Tephritidae: probably *Bactrocera oleae* (ROSSIUS, 1790) (SILVESTRI 1914, 1915a).

Distribution: Nefasit.

Entedon atrocyanea is known only from Eritrea.

Entedon viridis (SILVESTRI, 1914)

Metriocharis viridis sp.n.: SILVESTRI 1914: 214 (fig. 16), 215 (typus generis, description ♀, figs. 17.1-10, biology, Nefasit).

Metriocharis viridis SILVESTRI, 1914: SILVESTRI 1915a: 315 (biology, Nefasit).

Metriocharis viridis SILVESTRI, 1914: GAHAN & FAGAN 1923: 88 (world catalogue generotypes Chalcidoidea).

Metriocharis viridis SILVESTRI, 1914: THOMPSON 1943: 27 (world host-parasitoid catalogue).

Metriocharis viridis SILVESTRI, 1914: THOMPSON 1955: 291 (world parasitoid-host catalogue).

Metriocharis viridis SILVESTRI, 1914: NARAYANAN & CHAWLA 1962: 459 (world host-parasitoid catalogue), 471 (world host-parasitoid catalogue).

Entedon viridis (SILVESTRI, 1914): BOUČEK & ASKEW 1968: 77 (taxonomy).

Metriocharis viridis SILVESTRI, 1914: STIBICK 2004: 39 (tab. 2: world catalogue parasites and predators of Tephritidae: Ethiopia = Eritrea).

Host: Diptera, Tephritidae: probably *Bactrocera oleae* (ROSSIUS, 1790) (SILVESTRI 1914, 1915a).

Distribution: Nefasit.

Entedon viridis is recorded only from Eritrea.

Neochrysocharis erythraea (SILVESTRI, 1914)

Achrysocharis formosa erythraea var.nov.: SILVESTRI 1914: 210 (description ♀ ♂, fig. 13, biology, Coazien, Nefasit).

Achrysocharis formosa var. *erythraea* SILVESTRI, 1914: SILVESTRI 1915a: 314 (biology, Coazin, Nefasit).

Achrysocharis formosa erythraea (!) SILVESTRI, 1914: THOMPSON 1943: 26 (world host-parasitoid catalogue).

Achrysocharis formosa var. *erythraea* (!) SILVESTRI, 1914: THOMPSON 1955: 272 (world parasitoid-host catalogue).

Achrysocharella formosa var. *erythraea* (SILVESTRI, 1914): VIGGIANI 1962: 48 (taxonomy, Eritrea (SILVESTRI 1914)).

Achrysocharis formosa var. *erythraea* SILVESTRI, 1914: BOUČEK & ASKEW 1968: 125 (synonym of *Achrysocharella formosa* (WESTWOOD, 1833)).

Chrysonotomyia erythraea (SILVESTRI, 1914): NEUENSCHWANDER 1982: 510 (host-parasitoid catalogue South Africa), 516 (figs 8a, b), 517 (key), 519 (taxonomy (material identified by Z. Bouček), biology, South Africa), 520 (biology, Greece).

Chrysonotomyia sp. near *erythraea* (SILVESTRI, 1914): ABATE 1991: 16 (host-parasitoid catalogue Ethiopia: widely distributed in Ethiopia – Eritrea not mentioned).

Achrysocharis formosa erythraea (!) SILVESTRI, 1914: STIBICK 2004: 38 (tab. 2: world catalogue parasites and predators of Tephritidae: Ethiopia = Eritrea).

H o s t : Diptera, Tephritidae: *Bactrocera oleae* (ROSSIUS, 1790) (SILVESTRI 1914, 1915a).

D i s t r i b u t i o n : Nefasit, Coazien.

Neochrysocharis erythraea is known from the Afrotropical (Eritrea, Ethiopia, South Africa, Sudan) and Palaearctic regions. The taxonomic status should be checked.

Subfamily E n t i i n a e

Euderus cavasolae (SILVESTRI, 1914)

Allomphale Cavasolae sp.n.: SILVESTRI 1914: 217 (fig. 19), 218 (typus generis, description ♀ ♂, 20.1-9, 21, biology, Nefasit), 219 (figs 22.1-6).

Allomphale cavasolae SILVESTRI, 1914: SILVESTRI 1915a: 314 (biology, Nefasit).

Secodella cavasolae (SILVESTRI, 1914): GIRAULT 1917: 37 (taxonomy).

Allomphale cavasolae SILVESTRI, 1914: GAHAN & FAGAN 1923: 9 (world catalogue generotypes Chalcidoidea).

Euderus cavasolae (SILVESTRI, 1914): FERRIÈRE 1931: 134 (taxonomy).

Allomphale cavasolae SILVESTRI, 1914: THOMPSON 1943: 26 (world host-parasitoid catalogue).

Allomphale cavasolae SILVESTRI, 1914: THOMPSON 1955: 273 (world parasitoid-host catalogue).

Euderus cavasolae (SILVESTRI, 1914): NARAYANAN & CHAWLA 1962: 458 (world host-parasitoid catalogue), 471 (world host-parasitoid catalogue).

Euderus cavasolae (SILVESTRI, 1914): BOUČEK 1963: 259 (taxonomy).

Euderus cavasolae (SILVESTRI, 1914): BOUČEK & ASKEW 1968: 73 (parasitoid-host catalogue Palaearctic region).

Euderus cavasolae (SILVESTRI, 1914): CLAUSEN 1978: 329 (biological control).

Euderus (Allomphale) cavasolae (SILVESTRI, 1914): STIBICK 2004: 38 (tab. 2: world catalogue parasites and predators of Tephritidae).

H o s t : Diptera, Tephritidae: *Bactrocera oleae* (ROSSIUS, 1790) (SILVESTRI 1914, 1915a).

D i s t r i b u t i o n : Nefasit.

Euderus cavasolae is recorded only from Eritrea.

Subfamily E u l o p h i n a e

Asecodes notandus (SILVESTRI, 1914)

Teleopteris notandus sp.n.: SILVESTRI 1914: 212 (figs 14, 15.1-9), 213 (typus generis, description ♀, biology, Nefasit).

Teleopteris notandus SILVESTRI, 1914: SILVESTRI 1915a: 315 (biology, Eritrea without exact locality).

Teleopteris notandus SILVESTRI, 1914: GAHAN & FAGAN 1923: 142 (world catalogue generotypes Chalcidoidea).

Teleopteris notandus SILVESTRI, 1914: THOMPSON 1943: 28 (world host-parasitoid catalogue).

Teleopteris notandus SILVESTRI, 1914: THOMPSON 1955: 300 (world parasitoid-host catalogue).

Teleopterus notandus SILVESTRI, 1914: NARAYANAN & CHAWLA 1962: 459 (world host-parasitoid catalogue), 471 (world host-parasitoid catalogue).

Teleopterus notandus SILVESTRI, 1914: VIGGIANI 1967: 140-141 (taxonomy, lectotype designation, biology, Nefasit).

Teleopterus notandus SILVESTRI, 1914: VIGGIANI & PAPPAS 1975: 168-169 (taxonomy, type serie examined (Nefasit), biology (SILVESTRI 1914)), 169 (fig. 1 left).

Asecodes notandus (SILVESTRI, 1914): HANSSON 1996: 162 (taxonomy).

Teleopterus notandus SILVESTRI, 1914: STIBICK 2004: 39 (tab. 2: world catalogue parasites and predators of Tephritidae: Ethiopia = Eritrea).

H o s t : Diptera, Tephritidae: *Bactrocera oleae* (ROSSIUS, 1790) (SILVESTRI 1914, 1915a).

D i s t r i b u t i o n : Nefasit.

Asecodes notandus is known only from Eritrea.

***Atoposoma afra* SILVESTRI, 1914**

Atoposoma variegatum afra v.nov.: SILVESTRI 1914: 208 (description ♀ ♂, biology, Dedda, Nefasit).

Atoposoma variegatum var. *afra* SILVESTRI, 1914: SILVESTRI 1915a: 314 (biology, Dedda, Nefasit).

Atoposoma variegatum afra SILVESTRI, 1914: THOMPSON 1943: 26 (world host-parasitoid catalogue).

Atoposoma variegatum var. *afra* SILVESTRI, 1914: THOMPSON 1955: 274 (world parasitoid-host catalogue).

Atoposoma variegatum var. *afra* SILVESTRI, 1914: BOUČEK 1959: 185 (synonym of *Cirrospilus* (*Zagrammosoma*) *variegatus* (MASI, 1907)).

Zagrammosoma (*Atoposoma*) *variegatum afra* (SILVESTRI, 1914): CLAUSEN 1978: 329 (biological control).

Cirrospilus afer (SILVESTRI (!), 1914): UBAIDILLAH et al. 2003: 261 (tab. 1: taxonomy), 262 (tab. 2: taxonomy), 270 (fig. 42), 276 (taxonomy).

Atoposoma afra SILVESTRI, 1914: PERRY 2020: 365 (taxonomy, world catalogue).

**Cirrospilus* (*Zagrammosoma*) *variegatus* (MASI, 1907): BOUČEK & ASKEW 1968: 39 (parasitoid-host catalogue Palaearctic region partim).

Atoposoma variegatum MASI, 1907: STIBICK 2004: 38 (tab. 2: world catalogue parasites and predators of Tephritidae: Ethiopia = Eritrea).

H o s t : Diptera, Tephritidae: *Bactrocera oleae* (ROSSIUS, 1790) (SILVESTRI 1914, 1915a).

D i s t r i b u t i o n : Dedda, Nefasit.

Atoposoma afra is also recorded from Eritrea, Kenya, Malawi and Tanzania.

***Diglyphis isaea* (WALKER, 1838)**

Diglyphis isaea (WALKER, 1838): BOUČEK & ASKEW 1968: 70 (Eritrea without exact locality, parasitoid-host catalogue Palaearctic region).

D i s t r i b u t i o n : no exact locality.

Diglyphis isaea, which is known from all zoogeographical regions, is also recorded from Ethiopia and the Arabian peninsula (United Arab Emirates, Yemen).

***Meruacesa liriomyzae* (BOUČEK, 1988)**

Meruana liriomyzae sp.n.: BOUČEK 1988: 728 (description ♀ ♂, biology, Taghana (eastern slopes) = Mount Faghenat), 738 (fig. 1077).

Meruacesa liriomyzae (BOUČEK, 1988): NARENDHAN, GHAMH & AHMAD 2012: 29 (key), 30 (taxonomy, biology, Eritrea (BOUČEK 1988)).

Meruacesa liriomyzae (BOUČEK, 1988): PERRY 2020: 460 (world catalogue), 461 (Asmara).

H o s t : Diptera, Agromyzidae: *Chromatomyia horticola* (GOUREAU, 1851) (BOUČEK 1988).

D i s t r i b u t i o n : Asmara, Mount Faghenat.

Meruacesa liriomyzae is known from the Afrotropical (Eritrea, Ethiopia, Kenya, South Africa, Zimbabwe and Malagasy subregion: Mauritius, Réunion), Australian and Palaearctic (Yemen) regions.

Subfamily **Tetrastichinae**

***Aprostocetus gravans* (SILVESTRI, 1915)**

Tetrastichus gravans sp.n.: SILVESTRI 1915a: 257 (biology), 323 (description ♀ ♂, fig. 72, biology, Nefasit), 324 (figs 73.1-6).

Tetrastichus gravans SILVESTRI, 1915: MASI 1940: 315 (key).

Tetrastichus gravans SILVESTRI, 1915: FULMEK 1943: 59 (world host-parasite catalogue: Africa = Eritrea).

Tetrastichus gravans SILVESTRI, 1915: THOMPSON 1944: 53 (world host-parasitoid catalogue).

Tetrastichus gravans SILVESTRI, 1915: RISBEC 1951: 71 (key), 87 (catalogue *Tetrastichus* Afrotropical region).

Tetrastichus gravans SILVESTRI, 1915: THOMPSON 1955: 307 (world parasitoid-host catalogue).

Tetrastichus gravans SILVESTRI, 1915: RISBEC 1958: 27 (key).

Aprostocetus (Aprostocetus) gravans (SILVESTRI, 1915): GRAHAM 1987: 353 (taxonomy).

H o s t : Hemiptera, Coccidae: *Stotzia chrysophyllae* (SILVESTRI, 1915) (SILVESTRI 1915a).

D i s t r i b u t i o n : Nefasit.

Tetrastichus gravans is also known from Tanzania. The record from South Africa (RISBEC 1958: 27) is a printing error.

***Aprostocetus sicarius* (SILVESTRI, 1915)**

Tetrastichus sicarius sp.n.: SILVESTRI 1915a: 263 (biology), 325 (description ♀ ♂, fig. 74, biology, Nefasit), 326 (figs 75.1-11).

Tetrastichus sicarius SILVESTRI, 1915: MASI 1940: 315 (key).

Tetrastichus sicarius SILVESTRI, 1915: FULMEK 1943: 24 (world host-parasitoid catalogue: Africa including Eritrea).

Tetrastichus sicarius SILVESTRI, 1915: RISBEC 1951: 71 (key), 87 (catalogue *Tetrastichus* Afrotropical region).

Tetrastichus sicarius SILVESTRI, 1915: RISBEC 1958: 26 (key).

Aprostocetus (Aprostocetus) sicarius (SILVESTRI, 1915): GRAHAM 1987: 353 (taxonomy).

H o s t : Hemiptera, Diaspididae: *Voraspis olivina* (LEONARDI, 1913) (SILVESTRI 1915a).

D i s t r i b u t i o n : Nefasit.

Aprostocetus sicarius is recorded from the Afrotropical (Eritrea, Mauritius (introduced)) and Palaearctic regions.

***Tetrastichus injuriosus* COMPERE, 1926**

Tetrastichus injuriosus COMPERE, 1926: COMPERE 1931: 250 (biology, Eritrea without exact locality).

Tetrastichus injuriosus COMPERE, 1926: FULMEK 1943: 76 (world host-parasitoid catalogue).

Tetrastichus injuriosus COMPERE, 1926: THOMPSON 1944: 103 (world host-parasitoid catalogue).

Tetrastichus injuriosus COMPERE, 1926: THOMPSON 1955: 307 (world parasitoid-host catalogue).

**Tetrastichus* sp.: SILVESTRI 1915a: 258 (biology – corrected by COMPERE 1931).

P r i m a r y h o s t : Hymenoptera, Encyrtidae: *Diversinervus elegans* SILVESTRI, 1915 (SILVESTRI 1915a).

S e c o n d a r y h o s t : Hemiptera, Coccidae: *Saissetia oleae* (OLIVIER, 1791) (SILVESTRI 1915a, COMPERE 1931).

D i s t r i b u t i o n : no exact locality.

Tetrastichus injuriosus, a hyperparasitoid, is also known from Kenya and South Africa.

***Tetrastichus maculifer* SILVESTRI, 1914**

Tetrastichus maculifer sp.n.: SILVESTRI 1914: 220 (description ♀ ♂, fig. 23, biology, Coazien = Dedda), 221 (figs 24.1-7).

Tetrastichus maculifer SILVESTRI, 1914: SILVESTRI 1915a: 325 (biology, Dedda).

Tetrastichus maculifer SILVESTRI, 1914: MASI 1940: 313 (key).

Tetrastichus maculifer SILVESTRI, 1914: THOMPSON 1943: 28 (world host-parasitoid catalogue).

Tetrastichus maculifer SILVESTRI, 1914: RISBEC 1951: 70 (key), 87 (catalogue *Tetrastichus* Afrotropical region).

Tetrastichus maculifer SILVESTRI, 1914: THOMPSON 1955: 307 (world parasitoid-host catalogue).

Tetrastichus maculifer SILVESTRI, 1914: RISBEC 1958: 20 (key).

Tetrastichus maculifer SILVESTRI, 1914: STIBICK 2004: 39 (tab. 2: world catalogue parasites and predators of Tephritidae: Ethiopia = Eritrea).

H o s t : Diptera, Tephritidae: *Bactrocera oleae* (ROSSIUS, 1790) (SILVESTRI 1914, 1915a).

D i s t r i b u t i o n : Dedda.

Tetrastichus maculifer is also recorded from Egypt.

***Tetrastichus* sp.**

Tetrastichus sp.: SILVESTRI 1915b: 375 (taxonomy, biology, Keren).

Tetrastichus sp.: THOMPSON 1943: 16 (world host-parasitoid catalogue).

Tetrastichus sp.: THOMPSON 1955: 301 (world parasitoid-host catalogue).

Tetrastichus sp.: STIBICK 2004: 45 (tab. 2: world catalogue parasites and predators of Tephritidae).

H o s t : Diptera, Tephritidae: *Carpomyia incompleta* (BECKER, 1903) (SILVESTRI 1915b).

D i s t r i b u t i o n : Keren.

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Zusammenfassung

Die Familie Eulophidae ist in Eritrea mit 12 Arten aus vier Unterfamilien vertreten. Die Unterfamilie Entedoninae ist drei Arten aus den Gattungen *Entedon* DALMAN, 1820 (zwei Arten) und *Neochrysocharis* KURDJUMOV, 1912 (eine Art) nachgewiesen. Die Unterfamilie Entiinae ist mit einer Art aus der Gattung *Euderus* HALIDAY, 1844 vertreten und die Unterfamilie Eulophinae mit vier Arten aus den Gattungen *Asecodes* FOERSTER, 1856 (eine Art), *Atoposoma* MASI, 1907 (eine Art), *Diglyphus* WALKER, 1844 (eine Art) und *Meruacesa* KOÇAK & KEMAL, 2009 (eine Art). Die Unterfamilie Eulophinae ist mit vier Arten aus den Gattungen *Aprostocetus* WESTWOOD, 1833 (zwei Arten) und *Tetrastichus* HALIDAY, 1844 (zwei Arten) nachgewiesen.

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