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Notes on *Xylocopa caffra* (A LINNÉ, 1767) (Hymenoptera: Apidae) and its parasitoid *Coelopencyrtus* sp. (Hymenoptera: Chalcidoidea: Encyrtidae) in the Republic of Seychelles, with an annotated catalogue of the genus *Coelopencyrtus* TIMBERLAKE, 1919 of the Ethiopian region

Emilio GUERRIERI, Gerald HÖLZLER & Michael MADL

Abstract

The encyrtid genus *Coelopencyrtus* TIMBERLAKE, 1919 is recorded from the Republic of Seychelles for the first time. *Coelopencyrtus* sp. is a parasitoid of the carpenter bee *Xylocopa caffra* (A LINNÉ, 1767). Biological observations are reported. A commented catalogue of the Ethiopian species of the genus *Coelopencyrtus* is added.

Key words: *Xylocopa*, defense behaviour, *Coelopencyrtus*, first record, foraging behaviour, adult dispersal, Seychelles

Zusammenfassung

Die Erzwespen-Gattung *Coelopencyrtus* TIMBERLAKE, 1919 (Hymenoptera: Encyrtidae) wird erstmals für die Republik Seychellen nachgewiesen. Dort parasitiert *Coelopencyrtus* sp. die Holzbiene *Xylocopa caffra* (A LINNÉ, 1767). Beobachtungen zur Biologie werden mitgeteilt. Ein kommentierter Artenkatalog der Gattung *Coelopencyrtus* aus der äthiopischen Faunenregion ist beigefügt.

Introduction

The genus *Coelopencyrtus* TIMBERLAKE, 1919 (Encyrtidae) is distributed worldwide and is represented in the Ethiopian region by seven species. Whenever their hosts are known, the species are parasitoids of bees (Apidae and Colletidae). To date, four species are known as parasitoids of carpenter bees, *Xylocopa* spp. (Apidae) (PRINSLOO 1983: 7; GRISSELL 2007: 258, 259). A key to genera of Ethiopian Encyrtidae is presented by PRINSLOO & ANNECKE (1979).

In the course of a survey in the Republic of Seychelles an undescribed species has been collected at Hotel La Roussette in Anse aux Pins on Mahé, the main island of the Inner Seychelles or Seychelles proper, during a stay in March 2011.

Figs. 1 - 4 : (1) *Coelopencyrtus* sp. above the nest entrance of of *Xylocopa caffra*, trying to enter the nest. (2) Freshly emerged imagines of *Coelopencyrtus* sp. near the nest of *Xylocopa caffra*. (3) Infested larva in the entrance of the nest. (4) Salticid spider hunting imagines of *Coelopencyrtus* sp. (Photos: M. Madl).

Coelopencyrtus sp. near *krishamurtii* (Mahdihassan, 1957)

Material examined: Mahé, Anse aux Pins (Hotel La Roussette), 31.X.2011 leg. M. Madl, 1 ♀.

Host: *Xylocopa caffra* (a Linné, 1767). The host is widely distributed in the Ethiopian region. In the Inner Seychelles it is known from Mahé, Chauve Souris (near Mahé), Conception, Thérése, Silhouette, Ile du Nord, Praslin, Cousin, Cousine, Curieuse, La Digue, Félicité, Grande Sœur, Marianne, Aride, Denis, and Bird.

Distribution: Inner Seychelles: Mahé.

Comments: This represents the first record of *Coelopencyrtus* in the Republic of Seychelles. The female specimen collected in October 2011 (further specimens were lost) could not be assigned to any known species, although it appears near to *Coelopencyrtus*

krishamurtii (Mahdihassan, 1957), a species recorded as parasitoid of *Xylocopa tenuiscapa* Westwood, 1840 in India.

Biological observations (Madl, personal observations): *Coelopencyrtus* sp. has been observed running up and down the columns of the bungalows searching for *Xylocopa caffra* nests. The penetration of guarded nests is not easy (Fig. 1). During a successful case the female parasitoid was thrown out of the nest three times by a *Xylocopa* female. The duration in the nest usually depends on the numbers of tunnels and guarding *Xylocopa* females and maybe also of males. The longest stay was about 12 minutes in a nest with several tunnels. After a successful stay the parasitoid always flew away from the column.

The emergence of *Coelopencyrtus* sp. was observed on 26 March 2011. At the beginning of the observations (11:54) a great number (about 120 specimens) of freshly emerged imagines were running on the column mainly above the infested nest (Fig. 2), which was inhabit by a single *Xylocopa* female. Some of them tried to enter the nest again. The *Xylocopa* female was busy throwing out parasitoids. After having driven out emerging or returning parasitoids, the female blocked the entrance hole for a short time with her abdomen. Then she started to raspel in the upwards directed tunnel. At 11:56 sawdust was falling from the entrance hole for the first time and some minutes later (12:01) the infested larva with still emerging parasitoids (Fig. 3). Now some imagines of *Coelopencyrtus* sp. tried to enter the nest again, whereas the *Xylocopa* female continued her activities in the upwards directed tunnel. At 12:07 the female moved the infested larva shortly upwards and threw it out. After this event the imagines of *Coelopencyrtus* sp. began to leave the nest area gradually by running before flying away, whereas the *Xylocopa* female started to restore the nest in the upwards directed tunnel. At 12:22 it removed the last sawdust from the entrance hole. Other parasitoids were still emerging from the larva on the ground, but they immediately started flying off.

A predator of *Coelopencyrtus* sp. is a salticid spider (Fig. 4). During my observations it caught imagines of *Coelopencyrtus* sp. twice. It seems, that the spider prefers this prey, because no other insects of the same size, e.g. ants, were attacked. The spider spent the night hidden in crevices on columns near nests of *Xylocopa caffra*.

Annotated catalogue of the genus *Coelopencyrtus* Timberlake, 1919 in the Ethiopian region

Abbreviations: biol. – biology; cat. – catalogue; descr. – description; fig. (figs.) – figure(s); tax. – taxonomy.

Coelopencyrtus bekiliensis (Risbec, 1952)

Coccidoxenus bekiliensis n. sp.: Risbec 1952: 30 (descr. ♀, Madagascar), 31 (figs. 9a-d).

Coccidoxenus bekiliensis Risbec, 1952: Annecke 1964: 390 (tax.).

Coelopencyrtus bekiliensis (Risbec, 1952): Annecke 1968: 249 (tax., Madagascar); Annecke & Insley 1971: 10 (tax., cat.), 38 (tax., Madagascar); Noyes & Prinsloo 1998: 81 (tax., Madagascar), 94 (tab. 2: tax.).

Host: Unknown.

Distribution: Endemic in Madagascar.

Coelopencyrtus callainus Annecke, 1968

Coelopencyrtus callainus spec. nov.: Annecke 1968: 250 (figs. 2-5), 251 (descr. ♂ ♀, biol., Mozambique, South Africa, Zimbabwe).

Coelopencyrtus callainus Annecke, 1968: Annecke & Insley 1971: 10 (cat.); Prinsloo 1983: 7 (host-parasite cat.); Eardley 1987: 2 (host-parasite cat.), 5 (host-parasite cat. (two host species)), 8 (host-parasite cat.); Grissell 2007: 258 (host-parasite cat.); Eardley & Urban 2010: 341 (host-parasite cat.), 346 (host-parasite cat.), 347 (host-parasite cat.), 353 (host-parasite cat.), 547 (app. 2: parasite cat.).

Giraultella sp.: Annecke & Doutt 1961: 198 (tax., biol., South Africa); Taylor 1961: 221 (biol., South Africa).

Hosts: *Xylocopa caffra* (a Linné, 1767), *Xylocopa flavicollis* (DeGeer, 1778) (syn.: *Xylocopa divisa* Klug, 1807), *Xylocopa flavorufa* (DeGeer, 1778), *Xylocopa inconstans* Smith, 1874.

Distribution: Mozambique, South Africa, Zimbabwe.

Coelopencyrtus cyprius Annecke, 1968

Coelopencyrtus cyprius spec. nov.: Annecke 1968: 255 (figs. 11-15), 256 (descr. ♂ ♀, biol., South Africa, Zimbabwe).

Coelopencyrtus cyprius Annecke, 1968: Annecke & Insley 1971: 10 (cat.); Prinsloo 1983: 7 (host-parasite cat.); Grissell 2007: 258 (host-parasite cat.).

Host: *Xylocopa scioensis* Gribodo, 1884. Eardley (1983: 35) identified the host record *Xylocopa* sp. by Annecke (1968: 256) as *Xylocopa scioensis* Gribodo, 1884. This host record is not mentioned by Eardley (1987: 12) and Eardley & Urban (2010: 363, 547).

Distribution: South Africa, Zimbabwe.

Coelopencyrtus nothylaei Annecke, 1968

Coelopencyrtus nothylaei spec. nov.: Annecke 1968: 242 (descr. ♂ ♀, biol., South Africa), 253 (figs. 6-10).

Coelopencyrtus nothylaei Annecke, 1968: Prinsloo 1983: 7 (host-parasite cat.), Grissell 2007: 258 (host-parasite cat.); Eardley & Urban 2010: 30 (host-parasite cat.), 547 (app. 2: parasite cat.).

Host: *Hylaeus heraldicus* (Smith, 1853) (Colletidae).

Distribution: South Africa.

Coelopencyrtus ivorensis (Risbec, 1953)

Ericydnus ivorensis n. sp.: Risbec 1953: 578 (descr. ♀ (not ♂), Ivory Coast), 579 (figs. 6a-d).

Ericydnus ivorensis Risbec, 1953: Kerrich 1967: 180 (tax., Ivory Coast); Annecke & Insley 1971: 12 (cat.).

Coelopencyrtus ivorensis (Risbec, 1953): Noyes & Prinsloo 1998: 82 (tax., Ivory Coast).

Host: Unknown.

Distribution: Ivory Coast.

Coelopencyrtus taylori (Annecke & Doutt, 1961)

Giraultella taylori new species: Annecke & Doutt 1961: 195 (descr. ♂ ♀, biol., South Africa), 197 (figs. 1-8).

Coelopencyrtus taylori (Annecke & Doutt, 1961): Annecke 1968: 249 (tax., biol., South Africa, Zimbabwe), 250 (fig. 1), 251 (descr. ♂ ♀); Annecke & Insley 1971: 10 (cat.); Prinsloo 1983: 7 (host-parasite cat.); Eardley 1987: 5 (host-parasite cat.); Grissell 2007: 258 (host-parasite cat.); Eardley & Urban 2010: 348 (host-parasite cat.), 547 (app. 2: parasite cat.).

Giraultella n. sp.: Taylor 1961: 220 (biol., South Africa).

Hosts: *Xylocopa caffra* (a Linné, 1767), *Xylocopa flavorufa* (DeGeer, 1778). The host record *Xylocopa flavicollis* by Eardley (1987: 5), Eardley & Urban (2010: 347) and

Noyes (2012) is an error. *Xylocopa caffra* is not mentioned as host by Eardley (1983: 2) and Eardley & Urban (2010: 341).

Distribution: South Africa, Zimbabwe.

Coelopencyrtus watmoughi Annecke, 1968

Coelopencyrtus watmoughi spec. nov.: Annecke 1968: 256 (descr. ♂ ♀, biol., Zimbabwe), 257 (figs. 16-20).

Coelopencyrtus watmoughi Annecke, 1968: Annecke & Insley 1971: 10 (cat.); Prinsloo 1983: 7 (host-parasite cat.); Eardley 1987: 5 (host-parasite cat.); Grissell 2007: 259 (host-parasite cat.); Eardley & Urban 2010: 349 (host-parasite cat.), 547 (app. 2: parasite cat.).

Host: *Xylocopa flavorufa* (DeGeer, 1778).

Distribution: Zimbabwe.

Coelopencyrtus sp. near *krishamurtii* (Mahdihassan, 1957)

Material examined: Seychelles: Inner Seychelles: Mahé: Anse aux Pins.

Host: *Xylocopa caffra* (a Linné, 1767).

Distribution: Seychelles.

Coelopencyrtus sp. 1

Coelopencyrtus sp.: Prinsloo 1983: 7 (biol., without locality); Grissell 2007: 258 (host-parasite cat. partim).

Host: *Xylocopa watmoughi* Eardly, 1983, a species only known from South Africa.

Distribution: South Africa.

Coelopencyrtus sp. 2

Coelopencyrtus sp.: Gess 1981: 32 (biol., South Africa), 76 (fig. 37: biol.).

kleiner Chalcidier: Brauns 1913: 118 (biol., South Africa).

Host: *Xylocopa sicheli* Vachal, 1898.

Distribution: South Africa.

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References

Annecke D.P., 1964: Records and descriptions of African Encyrtidae – 2 (Hymenoptera: Chalcidoidea). – Journal of the Entomological Society of Southern Africa 26(2): 390-410.

Annecke D.P., 1968: Records and descriptions of African Encyrtidae – 4 (Hymenoptera: Chalcidoidea). – Journal of the Entomological Society of Southern Africa 31(2): 249-269.

Annecke D.P. & Doutt R.L., 1961: An interesting encyrtid parasitic in the larvae of carpenter-bees (Hymenoptera: Encyrtidae). – Pan-Pacific Entomologist 37(4): 195-199.

Annecke D.P. & Insley H.P., 1971: Catalogue of Ethiopian Encyrtidae and Aphelinidae. – Entomology Memoir, Department of Agricultural Technical Services, Republic of South Africa 28: 53 pp.

Brauns H., 1913: Biologie südafrikanischer Apiden. – Zeitschrift für Wissenschaftliche Insektenbiologie 9(4): 116-120; (6-7): 190-193.

Eardley C.D., 1983: A taxonomic revision of the genus *Xylocopa* Latreille (Hymenoptera: Anthophoridae) in southern Africa. Republic of South Africa, Department of Agriculture, Entomology Memoir 58: 67 pp.

Eardley C.D., 1987: Catalogue of Apoidea (Hymenoptera) in Africa Part I. The genus *Xylocopa* Latreille (Anthophoridae). – Entomology Memoir, Department of Agriculture and Water Supply, Republic of South Africa 70: 20 pp.

Eardley C. & Urban R., 2010: Catalogue of Afrotropical bees (Hymenoptera: Apoidea: Apiformis). – Zootaxa 2455: 548 pp.

Gess F.W., 1981: Some aspects of an ethological study of the aculeate wasps and bees of a karroid area in the vicinity of Grahamstown, South Africa. – Annals of the Cape Provincial Museums (Natural History) 14(1): 1-80.

Grissell E.E., 2007: Torymidae (Hymenoptera: Chalcidoidea) associated with bees (Apoidea), with a list of chalcidoid bee parasitoids. – Journal of Hymenoptera Research 16(2): 234-265.

Kerrich G.J., 1967: On the classification of the Anagyrine Encyrtidae, with a revision of some of the genera (Hymenoptera). – Bulletin of the British Museum (Natural History), Entomology, 20(5): 143-250.

Noyes J.S., 2012: Universal Chalcidoidea Database. World Wide Web electronic publication. – http://www.nhm.ac.uk/chalcidoids (database last updated: June 2012).

Noyes J.S. & Prinsloo G.L., 1998: A review of the Afrotropical and Malagasy taxa of Encyrtidae (Hymenoptera: Chalcidoidea) described by J. Risbec (1949-1959). – Annales de la Société Entomologique de France, nouvelle série, 34(1): 71-97.

Prinsloo G.L., 1983: A parasitoid-host index of Afrotropical Encyrtidae (Hymenoptera: Chalcidoidea). – Entomology Memoir, Department of Agriculture, Republic of South Africa 63: 35 pp.

Prinsloo G.L. & Annecke D.P., 1979: A key to the genera of Encyrtidae from the Ethiopian region, with descriptions of three new genera (Hymenoptera: Chalcidoidea). – Journal of the Entomological Society of Southern Africa 42(2): 349-382.

Risbec J., 1952: Contribution à l'étude des Chalcidoïdes de Madagascar. – Mémoires de l'Institut Scientifique de Madagascar, Série E, 2: 449 pp.

Risbec J., 1953: Chalcidoïdes et Proctotrupoïdes de l'Afrique occidentale française (2e supplément). – Bulletin de l'Institut Française d'Afrique Noire 15(2): 549-609.

Taylor J.S., 1961: A note on some insects associated with Xylocopidae in the eastern Cape Province, South Africa. – Pan-Pacific Entomologist 37(4): 220-222.

Authors' addresses: Dr. Emilio Guerrieri,
Institute for Plant Protection, National Research Council of Italy,
Via Università 133, 80055 Portici (NA), Italy
E-mail: guerrieri@ipp.cnr.it

Mag. Gerald Hölzler,
Argentinierstraße 54/21, 1040 Vienna, Austria
E-mail: ifabu.hoelzler@gmx.at

Michael Madl (contact author),
2nd Zoological Department, Natural History Museum,
Burgring 7, 1010 Vienna, Austria
E-mail: michael.madl@nhm-wien.ac.atsp.