

# **APODACRA CYPRICA RONDANI (DIPTERA: SARCOPHAGIDAE) BRED FROM EUODYNERUS VARIEGATUS (FABRICIUS) (HYMENOPTERA: EUMENIDAE) IN SPAIN**

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## **ABSTRACT**

*Apodacra cyprica* Rondani (Diptera: Sarcophagidae) bred from *Euodynerus variegatus* (Fabricius) (Hymenoptera: Eumenidae) in Spain.

*Apodacra cyprica* Rondani, 1859 is newly recorded from the Iberian peninsula. The first breeding record is provided, with one male and one female bred from nests of *Euodynerus variegatus* (Fabricius, 1793). The biology of *Apodacra* Macquart, 1854 is briefly reviewed.

**Key words:** *Apodacra cyprica*, *Euodynerus variegatus*, kleptoparasitism, first record, Monegros, Spain.

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## **RESUMEN**

Se da cuenta del hallazgo en la Península Ibérica de la especie *Apodacra cyprica* Rondani, 1859. Se proporciona por primera vez información sobre su reproducción, con un macho y una hembra emergidos de nidos de *Euodynerus variegatus* (Fabricius, 1793). Se revisa brevemente la biología del género *Apodacra* Macquart, 1854.

## **INTRODUCTION**

During a continued invertebrate survey carried out by JB-Z in Retuerta de Pina (Pina de Ebro, Zaragoza, Monegros), the miltogrammine fleshfly *Apodacra cyprica* Rondani, 1859 was bred from nests of the eumenid wasp *Euodynerus variegatus* (Fabricius, 1793). This represents the first record from the Iberian peninsula of *A. cyprica* as well as the first breeding record of this species. Breeding records for species of *Apodacra* Macquart, 1854 are few and we take this opportunity to review what is currently known.

Material was obtained from nests built in simple paper tubes (length: 15 cm, diameter: 1 cm) placed horizontally between the stones in the walls and under the tiles of the roof of an old building within a wood of juniper (*Juniperus thurifera* L.). Paper tubes were left in the field from 4 March 1994 until 8 September 1994, after which date they were harvested and kept indoors at room temperature. Most nests (about 90) were inhabited by the megachilid bee *Osmia latreillei* (Spinola, 1806), but six tubes were inhabited by *Euodynerus variegatus*,

and from these nests emerged two specimens of *Apodacra cyprica* (1 ♀ on 30 May 1995; 1 ♂ on 17 July 1995). No miltogrammine flies emerged from the bee nests.

## RESULTS

*Euodynerus variegatus* is common in the area and was recorded by CASTRO (1992) who gave information about phenology and nesting sites. No information is available on the prey provided for the wasp offspring, but other species of *Euodynerus* Dalla Torre are known to catch lepidopteran caterpillars (L. Castro, pers. comm.).

*Apodacra cyprica* was given by SÉGUY (1941:254; as *A. bembicisequax* Pandellé, 1895) as «guettant les *Bembex*» (observing wasps of the genus *Bembix* Fabricius, 1775), but mere «observing» is not here considered evidence for a direct host relationship.

*Apodacra cyprica* has previously been recorded from Cyprus, Egypt, France and Tunisia (PAPE, 1996), which with the present record indicates a circum-Mediterranean distribution. According to the small number of specimens in museums (TP personal observation), the species may be classified as uncommon or local.

The genus *Apodacra* with currently 43 valid species (PAPE, 1996) is restricted to the Old World. The diversity is highest in the semiarid and arid parts of the Palaearctic Region, and only few species have been recorded from the Afrotropical and Oriental Regions. Apart from the present record, little is known of the biology of the included species, as is summarized below:

SÉGUY (1941) listed *Apodacra algiralis* Séguy, 1941 as a parasite of *Eumenes dimidiatipennis* [= *Delta dimidiatipenne* (Saussure, 1852)] in Algeria, which here is taken as indicating kleptoparasitism.

MYARTZEVA (1972) recorded two unidentified species of *Apodacra* as bred from a nest of *Tachysphex pompiliformis* (Panzer, 1804) in Turkmenia (prey: acridid and sometimes tettigoniid grasshoppers according to BOHART & MENKE [1976]); and *Apodacra pseudoxygona* Rohdendorf, 1925 as bred from *Ammophila occipitalis* Morawitz, 1890 (prey of *Ammophila* Kirby: various caterpillars according to BOHART & MENKE [1976]).

VERVES (1979) described *Apodacra ceylonica* «from nest of *Gastrosericus* sp.» in Sri Lanka, but this appears not to be a true breeding record. KROMBEIN & PULAWSKI (1986:7) stated that «an adult female *Apodacra* (*Parapodacra*) *ceylonica* Verves, 5 mm long, perched on a small plant adjacent to one nest that was being excavated by the wasp (= *Gastrosericus asilivorus* Pulawski, 1986)». All miltogrammines bred from nests of this wasp, however, were *Metopia nudibasis* (Malloch, 1930). Judging from the collection data, the perching female is identical to the female holotype of *A. ceylonica*.

HOLSTEIN & RUDZINSKI (1994) recorded the breeding of *Apodacra dispar* Villeneuve, 1916 in Spain from an acridid grasshopper found dead on the ground. This was taken as evidence that *Apodacra dispar*, at least occasionally, could be acting more like a true parasitoid than a kleptoparasite. SPOFFORD & KURCZEWSKI (1992), however, described prey abandonment as a counter-kleptoparasitic sphecid strategy, and they noted that «some abandoned prey which have been larviposited upon will produce miltogrammines» (p. 1008).

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## REFERENCES

- BOHART, R. M. & MENCKE, A. S., 1976. *Sphexid wasps of the world*. Berkeley; University of California Press. 695 pp.
- CASTRO, L., 1992. Sobre los Euménidos (*Hym., Vespoidea*) del Valle medio del Ebro. *ZAPATERI Revta. aragon. ent.*, 1: 21-34.
- HOLSTEIN, J. & RUDZINSKI, H.-G., 1994. A remarkable record of *Apodacra dispar* Villeneuve, 1916 (Diptera, Sarcophagidae, Miltogrammatinae) from southeast of Spain. *Stud. dipterol.*, 1: 114-121.
- KROMBEIN, K. V. & PULAWSKI, W. J., 1986. Biosystematic studies of Ceylonese wasps, XVI: A revision of *Gastrosericus* Spinola (Hymenoptera: Sphecoidea: Larridae). *Smith. contr. zool.*, 436: iii + 20 pp.
- MYARTZEVA, S. N., 1972. [The parasites and predators of the sphexoid wasps in Turkmenia.] Pp. 101-115 in: TOKGAEV, T., MYARTZEVA, S.N. (eds). [*The Insects of southern Turkmenia, Ashkhabad.*] Akad. Nauk Turkmen.; Ashkhabad. [In Russian.]
- PAPE, T., 1996. A Catalogue of the Sarcophagidae of the world (Insecta: Diptera). *Mems Entomol. Int.*, 8 [in press].
- SÉGUY, E., 1941. Études sur les mouches parasites. 2. Calliphorides, calliphorines (suite), sarcophagines et rhinophorides de l'Europe occidentale et méridionale. *Encycl. ent. (Sér. A)*, 21: 1-436.
- SPOFFORD, M. G. & KURCZEWSKI, F. E., 1992. Counter-cleptoparasitic behaviours of species of Sphecidae (Hymenoptera) in response to Miltogrammini larviposition (Diptera: Sarcophagidae). *J. Nat. Hist.*, 26: 993-1012.
- VERVES, Yu. G., 1979. Review of the subfamily Miltogrammatinae (Diptera, Sarcophagidae) of Sri Lanka. *Entomol. Obozr.*, 58(4): 883-897. [In Russian, English translation in *Ent. Rev., Wash.*, 58: 159-173.]