

## Review of the French species of *Coelopisthia* Förster (Hymenoptera: Pteromalidae) with a rearing record of *C. pachycera* Masi from *Maniola jurtina* (L.) (Lepidoptera: Nymphalidae, Satyrinae)

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### Abstract

Data on *Coelopisthia pachycera*, *C. extenta* and *C. areolata* in France are presented including a rearing record for *C. pachycera* from *Maniola jurtina*. Elsewhere in Europe *C. pachycera* has been reared from pupae of *M. jurtina* and other species of Nymphalidae.

**Key words:** *Coelopisthia pachycera*, *C. extenta*, *C. areolata*, Nymphalidae

### Introduction

Five species of the Holarctic genus *Coelopisthia* Förster (Pteromalinae) are recorded in Europe (Noyes, 2019), but only *Coelopisthia pachycera* Masi, 1924 and *C. extenta* (Walker, 1835) have hitherto been recorded from France. Here we review French records of these species, including details of rearing *C. pachycera*, and add a third species, *C. areolata* Askew, 1980, to the French faunal list. Biological information on *Coelopisthia* is scarce; it appears that gregarious endoparasitism of pupae of Lepidoptera is most usual, but *C. extenta* is reported (Noyes, 2019) as a parasitoid of both Lepidoptera (Arctiidae, Geometridae, Noctuidae, Tortricidae) and curculionid Coleoptera (*Hypera* and *Phytonomus* spp.), and a nearctic species has been recorded from the nest of a *Vespula* species (Hymenoptera) (Burks, 1979).

### *Coelopisthia pachycera* Masi, 1924

*C. pachycera* is widespread in Europe (Noyes, 2019). In France one female was collected in Chermizy-Ailles (Aisne) on 16.viii.2005 (Vago, 2018) and eight females (leg. R. R. Askew) were found in samples from a Malaise trap operated at St Marcel du Périgord, Dordogne in iv and vi.2007, vi.2008 and vi and vii. 2013. Another female was swept at Sadillac, Dordogne on 22.viii.1972. In addition, the first rearing record from France is of a brood which emerged in v.2014 from a pupa of the satyrine nymphalid *Maniola jurtina* (L.) collected at Taradeau (Var).

The site at Taradeau is a small area of slightly disturbed limestone grassland and scrub, surrounded by a mixed dry forest dominated by *Pinus* and *Quercus*. On



**Figs 1, 2.** Female *Coelopisthia pachycera*, Taradeau, 2014.



**Fig. 3.** Emergence hole in host pupa (*Maniola jurtina*), Taradeau, 2014.

10.v.2014, a mature *M. jurtina* caterpillar was collected in a small clump of grass (7 × 7 cm). On 12.v the caterpillar pupated. On 30.v, 31 chalcid wasps (25 ♀, 3 ♂; 3 others escaped) emerged (Figs 1 & 2) through a single emergence hole (Fig. 3). The chalcids were identified by RRA as *C. pachycera*.

In addition to the Taradeau record, the following four broods of reared *C. pachycera* have been seen, at least in part and, with the exception of those reared by M. R. Honey (in NHML), specimens are presently retained in the personal collection of RRA: 22 ♀, 3 ♂ ex *M. jurtina* pupa (det. confirmed RRA), England, Wiltshire, Great Cheverell Hill, [no date], G. R. Else; 30 unsexed ex *M. jurtina* pupa, England, Surrey, Southfields, 1987, M. R. Honey (Honey, 1998); 8 ♀ ex *Argynnis pandora* (Denis & Schiffermüller) pupa, Spain, Zaragoza, Los Monegros, Salada de Chiprana, 1997, J. R. Salas; and 44 ♀, 2 ♂ ex *Lasiommata megera* (Linnaeus) pupa (identified by Mark R. Shaw (NMS, Edinburgh)) through one emergence hole on 3.vii.2016, host pupa collected on 12.vi.2016, England, Norfolk, Hellesdon, S. D. Beavan.

These records show *C. pachycera* to be a gregarious endoparasitoid in pupae of Nymphalidae, and especially Satyrinae (*Maniola* and *Lasiommata*). *Argynnis* is presently placed in the subfamily Heliconiinae.

It is likely that *C. pachycera* utilises the host pupa in a similar manner to a few gregarious species in the large genus *Pteromalus*, of the same family Pteromalidae, such as *P. puparum* (L.), which usually oviposit through the fresh cuticle while it is still soft. The female *P. puparum* often adopts a caterpillar before its pupation, and sits inconspicuously on it until pupation occurs (Shaw, Stefanescu, & van Nouhuys, 2009), and *P. apum* (Retzius) behaves similarly although at times waiting near, rather than on, the host (Shaw, 2002). If *C. pachycera* has the same strategy, it is plausible that the parent female *C. pachycera* from Taradeau was present in the grass with the mature *M. jurtina* caterpillar when collected, but overlooked. Undoubtedly many more satyrine caterpillars than pupae have been collected and reared without finding parasitism by *C. pachycera*, and yet four of the small number collected as pupae have turned out to host *C. pachycera*. This strongly suggests that it is the pupal or pre-pupal stages that are attacked. The development period of *C. pachycera* in the host pupa from Taradeau lasted about 18 days. In Europe no species of Nymphalidae overwinters as a pupa, so it is likely that *C. pachycera* overwinters as an adult, as does *C. extenta* in England as mentioned below.

### ***Coelopisthia extenta* (Walker, 1835)**

This is another widely distributed European species, and it is previously reported from France (Askew, 1980). More recent French records (all leg. R. R. Askew) are Dordogne: St Marcel du Périgord, swept vi.2000 and vi.2011, Malaise trapped vi.2005 and vii.2006; Ste Alvère, Malaise trapped vi.1999; Lalinde, swept vii.2000 and v.2004; Monestier, swept viii. 1982, yellow tray trapped v.1986, Malaise trapped vii. and viii.1985; and Lot-et-Garonne: Bernac, yellow tray trapped v.1986. All of these captures were in summer, but it is very probable that adult *C. extenta* overwinter in France, as they do in England where hibernating females have been collected from *Picea* branches and, in large numbers, from beneath corrugated card bands tied to trunks of *Betula* and *Quercus* (RRA, pers. obs.).

### ***Coelopisthia areolata* (Askew, 1980)**

*Coelopisthia areolata* is recorded from Austria, Czech Republic, Germany, Romania, Sweden, Switzerland and U.K. in Europe, and from China (Noyes, 2019). The following material (all females, leg. R. R. Askew) from France constitute new national records. Dordogne: St Marcel du Périgord, Malaise trapped iii.2013; Ste Alvère, Malaise trapped vii and viii.1999; La Force, swept vi.1995.

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