

# Rediscovery of *Ecdyonurus codinai* Navás, 1924 in Portugal [Insecta: Ephemeroptera : Heptageniidae]

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*Ecdyonurus codinai* Navás, 1924 has been rediscovered in Portugal for the first time since its original description from Ciudad Real (Spain). Male and female are described in detail. This species appears related to *E. ifranensis* Vitte & Thomas, 1988 from North Africa. *Ecdyonurus codinai* is unique by the special coloration patterns of its abdomen, the long teeth on the forceps base in male, and maybe also by the strong reticulation at the tip of forewing. The larva remains unknown.

**Redécouverte d'*Ecdyonurus codinai* Navás, 1924 au Portugal [Insecta : Ephemeroptera : Heptageniidae]**

Mots clés : *Ecdyonurus*, redécouverte, systématique, morphologie, adultes.

*Ecdyonurus codinai* Navás, 1924 a été redécouvert au Portugal, ce pour la première fois depuis sa description originale de Ciudad Real (Espagne). Mâle et femelle sont décrits en détail. Cette espèce est proche d'*E. ifranensis* Vitte & Thomas, 1988 d'Afrique du Nord. *E. codinai* est unique par la coloration particulière des maculations abdominales, par les longs denticules du stylogère pour le mâle, et peut-être aussi par le fort réseau de nervures transverses à l'apex de l'aile antérieure. La larve demeure inconnue.

## Introduction

*Ecdyonurus codinai* has been described after a single male from southern Spain by Navás in 1924. Although the holotype was preserved in the Museo de Zoología del Ayuntamiento, Barcelona, and was briefly redescribed in 1968 by the senior author, no further records have been published up to now. In 1988, Dr. da Terra collected in Portugal several males and some females of a species he sent to one of us (A.T.). Recently, during a short workshop in Toulouse on several *Ecdyonurus* species from the southwestern mediterranean area, we recognised it as the Navásian species. This is the first in a short series of papers dealing with *Ecdyonurus* species from this area.

In contrast to Central Europe, in Mediterranean regions, medium sized species of the genus *Ecdyonurus* with yellowish coloration of the abdomen, blackish lateral stripes, and, often blackish tinged crossveins in forewings, predominate (e.g. *E. aurantiacus*, *E. codinai*, *E. cortensis*, *E. ifranensis*, *E. rothshildi* and others). Furthermore, the shape of the penis is similar in all these species

in having lobes with relatively short lateral expansions. Therefore, in addition to a description of the male genitalia, detailed descriptions of : 1) the coloration (especially of the abdomen), 2) the size and shape of the eyes, and 3) the wing venation, appear much more important than in Central European species where, as a rule, the shape of the penis lobes is generally characteristic.

## *Ecdyonurus codinai* Navás, 1924

### STUDY MATERIAL

Portugal (L.S. Whytton da Terra leg.) :

10 males, 5 females, 14-IV-1988, Rio Arade - Foz de Ribeiro ; commune : Silves; province Algarve ; 37°18'N - 8°14'W ; elevation : 125 m. N. b. : capture of the type by Navás on 8-VI-1923. The material is deposited as follows : coll. A. Haybach : 2 males, 1 female ; coll. A. Thomas, provisionally in Toulouse : 6 males, 2 females ; Naturhistorisches Museum, Vienna : 2 males, 2 females.

The material is preserved in 70 % alcohol.

### MALE IMAGO

General coloration : yellowish-brown.

#### Size

Forewings : 11.2-13.1 mm ; body length : 11.8-13.4 mm ; cerci : 27.5-33.7 mm.

#### Head

Eyes medium sized, separated dorsally by a small gap (Fig. 1m) ; coloration not well preserved : grey laterally with two faint darker stripes.

#### Thorax

Pronotum yellowish brown ; mesonotum lighter, largely yellowish ; more intensively sclerotised parts of mesothorax (grooves for instance) : medium brown ; metathorax and first abdominal segment brown dorsally. Pleurae more whitish with some red and violet stripes; propleura in particular with a dark and broad longitudinal violet strip. Stripes in direct prolongation of the forewings only weakly pigmented, in contrast to the anterior margin of mesotergum, dark pigmented with violet (Fig. 2). Basisternum and furcasternum of mesothorax brown.

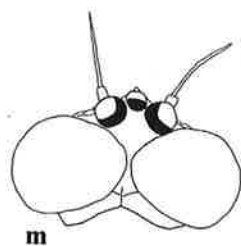
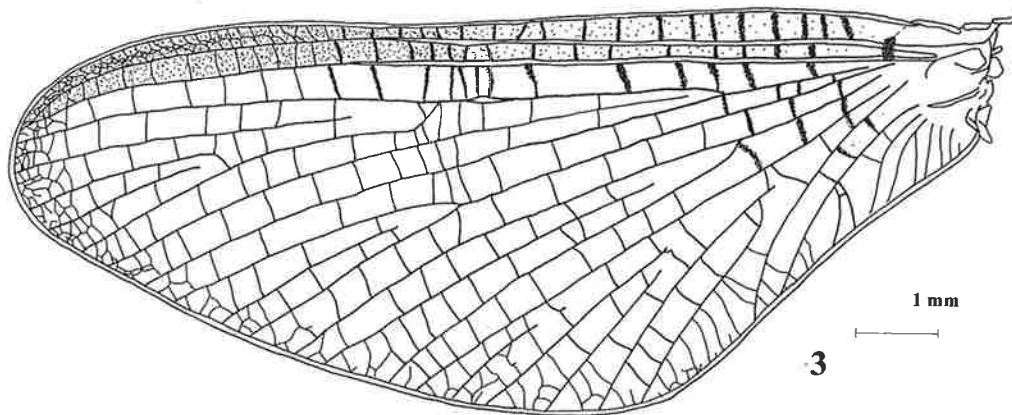
Wings transparent, hyaline. Forewing (Fig. 3) : pterostigma especially distal, the bulla brownish opaque. Longitudinal veins brown in fore wings, lighter and more yellowish in hind wings. In the pterostigma, as well as at the tip of forewing, there are numerous crossveins making a dense reticulation ; crossveins distinctly tinged blackish in the basal part and in costal, subcostal and radial 1 areas at least up to the bulla. Hind wing : Fig. 4.

Legs : foreleg brown ; coxa and trochanter of middle and hind legs yellowish, femur yellowish at base, and brown distally, as are tibia and tarsus.

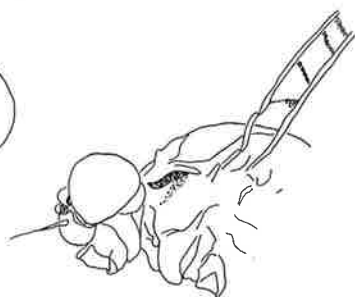
#### Abdomen

Tergites yellow with conspicuous lateral stripes violet to black (Fig. 5m) ; on tergites III-VI there are red spots, more or less distinctly mushroom-shaped (Fig. 6m). Sternites : ganglionic chain markedly spotted with violet (Fig. 7m), the ganglia being especially conspicuous against the yellow-whitish colour of the sternites. Sternites II-VIII with black spots on their posterior corners. In lateral view, these spots appear situated in prolongation of the lateral stripes of tergites (Fig. 5m).

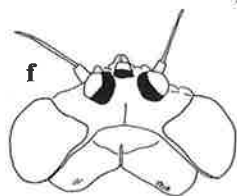
Cerci : brown in basal third, a little darker by the joints ; distal part yellowish without conspicuous annuli.



1



2



4

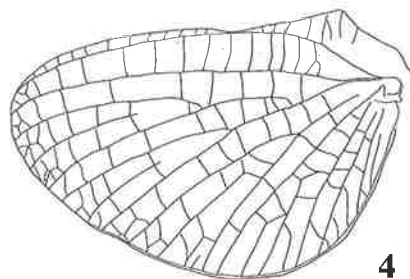


Fig. 1. Head of *E. codinai*, dorsal view : m = male ; f = female.  
 Fig. 2. Pigmentation of the prothorax of *E. codinai*, lateral view.  
 Fig. 3 and 4. Left wings of *E. codinai* : anterior (3), posterior (4).  
 Fig. 1. Tête d'*E. codinai*, vue dorsale : m = mâle ; f = femelle.  
 Fig. 2. Pigmentation du prothorax d'*E. codinai*, vue latérale.  
 Fig. 3 et 4. Ailes gauches d'*E. codinai* : antérieure (3), postérieure (4).

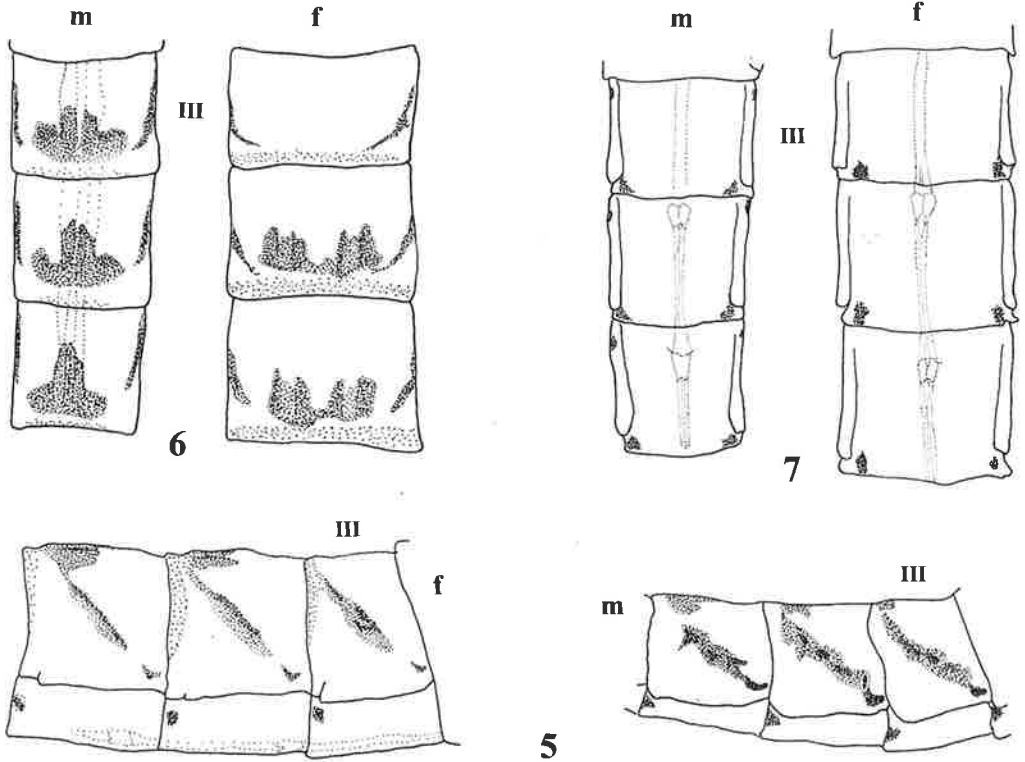


Fig. 5 to 7. Abdominal segments III to V of *E. codinai* in : lateral view (5), dorsal view (6) and ventral view (7) ; m = male; f = female.

Fig. 5 à 7. Segments abdominaux III à V d'*E. codinai* en vues : latérale (5), dorsale (6) et ventrale (7) ; m = mâle; f = femelle.

### Genitalia

Whole forceps base yellowish (Fig. 8), as well as the first segment of forceps, whereas segments two to four are brown. Shape of the teeth of forceps-base narrow, quite prominent and hence quite typical of this species. See also THOMAS (1968b) for a comparison with the type specimen. Basal part of the second segment markedly swollen at inner side (Fig. 9).

Penis (Fig. 10) with moderately expanded side-lobes. Shape showing some variations : from lateral sclerites rectangular with parallel sides to a more rounded penis with slightly bent lateral sclerites. As in many mediterranean species (e.g. *E. aurantiacus*, *E. ifranensis*, *E. cortensis*, *E. corsicus* or *E. moreae*), in dorsal view the basal sclerite covers part of the base of the lateral sclerite or comes very close to it : see THOMAS (1968a) and BELFIORE (1987). Also the inner part of the apical sclerite is not very distinct and hence difficult to distinguish from the inner end of the lateral sclerite.

### FEMALE IMAGO

N. b. : The identity of the female imagoes has not been proved with safety by rearing of specimens but is supposed by the fact that females were caught within a swarm of males, as well as they share some typical features with the males, as described below.

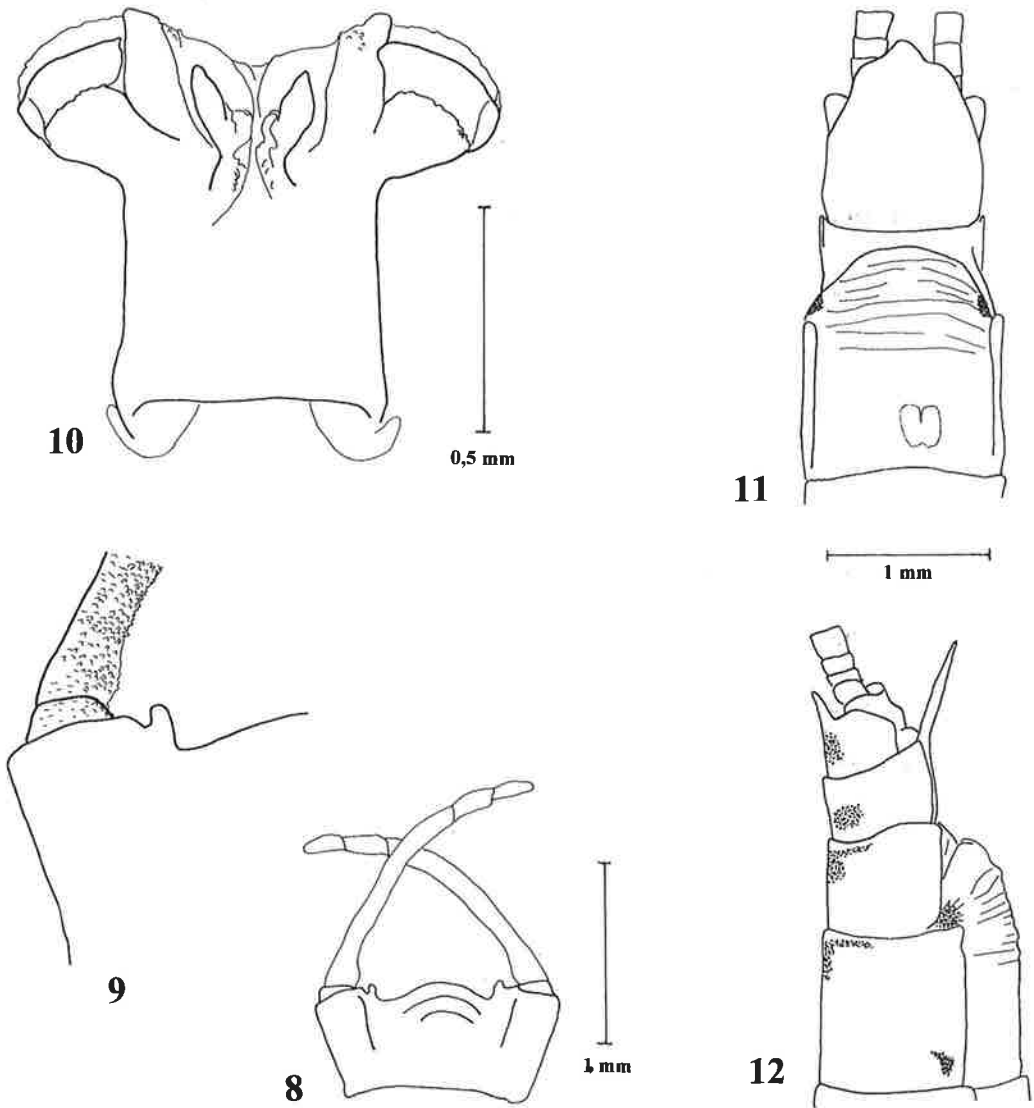


Fig. 8 to 10. Genitalia of the male imago. Forceps base and forceps (8) in ventral view ; right proximal part of forceps (9) in ventral view ; penis in dorsal view (10).

Fig. 11 and 12. Terminalia of the female imago : ventral view (11) and lateral view (12).

Fig. 8 à 10. Genitalia de l'imago mâle. Sternite IX et forceps en vue ventrale (8) ; partie proximale droite des forceps (9) en vue ventrale ; pénis en vue dorsale (10).

Fig. 11 et 12. Terminalia de l'imago femelle : vues ventrale (11) et latérale (12).

The female was unknown.

Material preserved in 70% alcohol.

Forewings : 13.4-15.3 mm ; body length : 11.6-13.8 mm ; cerci : 23.7-27 mm.

General coloration of head, thorax and wings as in the male. Head : Fig. 1f.

Legs : fore coxa light brown, rest of fore leg darker brown ; coxa and trochanter of middle and hind legs yellowish with an additional red patch ; femur and tibia yellow, tarsi brown.

Abdomen yellowish. The black lateral stripes, as well as the black posterior spots of sternites are visible on abdominal segments II-VII (Fig. 5f). Segments III, IV, V, IX (especially IV and V) may show dorsally a red paramedian patch (Fig. 6f), and in contrast to the male, the median part, e.g. the "stem of the mushroom" is missing ; the whole patch shows a great variability and was not observed at all in two specimens. Ganglionic chain distinctly spotted with violet (Fig. 7f). Central part of the seventh sternite sometimes with a reddish spot. Subgenital plate (Fig. 11 and 12) relatively large, and bent. Cerci similar to the male ; brown coloration extending to the proximal half, distal half brighter. As in the male, annulation is restricted to the basal half.

LARVA

Unknown.

## Discussion

*E. codinai* appears allied to *E. ifranensis* Vitte & Thomas, 1988 from North Africa. Beyond differences on the morphology of male genitalia, the two species can be separated by the main following characters :

- in the male imago of *ifranensis*, the gap between the eyes is larger, not inferior to the diameter of the median ocellus ;
- in male and female imagoes, the sterna of *ifranensis* are devoid of caudal black spots ; the lateral stripes, rather brownish than blackish violet, are not so conspicuous as in *codinai* and may be faint, as is often the case in *E. forcipula* sensu Thomas (1968a).

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