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## A NEW SPECIES OF *ECHINOGAMMARUS* STEBBING, 1899 (CRUSTACEA, AMPHIPODA) FROM MOROCCAN FRESHWATERS

FATIMA FADIL\* & MOHAMED DAKKI\*\*

\**Faculté des Sciences et Techniques, B. P. 2202, Fès-Saïss, Maroc. E-mail: fatima.fadil@caramail.com*

\*\**Institut Scientifique, av. Ibn Battota, Rabat-Agdal, Maroc. E-mail: dakki@israbat.ac.ma*

### ABSTRACT

Systematic sampling has proved that members of the genus *Echinogammarus* are known from limited areas of Morocco. In this paper, we describe a new species of *Echinogammarus* (Crustacea, Amphipoda): *Echinogammarus oujdae* n. sp. from freshwater of the northeastern region with remarks on its affinities and ecology.

Key words: Amphipoda, *Echinogammarus*, systematics, freshwater, Morocco

### INTRODUCTION

In order to complete our very incomplete knowledge of the freshwater Amphipoda of Morocco, a sampling program was carried out in several localities, particularly in springs and upper courses of streams between March 1997 and April 1998. Material collected in the Middle Atlas (Dakki, 1987) has also been studied.

In spite of our dense sampling, the genus *Echinogammarus* was found in a rather isolated areas in northeastern Morocco. Pinkster (1993) mentioned the existence of three species groups within the genus *Echinogammarus* from North Africa:

*E. pungens*-group (Stock, 1968) included *E. veneris* (Heller, 1865) from Libya, *E. foxi* (Schellenberg,

1928) from Egypt, *E. valedictus* (Pinkster & Platvoet, 1990), *E. reductus* (Pinkster, 1993), and *E. dahli* (Stock, 1968) from Algeria.

The *E. simoni*-group (Pinkster & Stock, 1972) represented by *E. simoni* (Chevreux, 1894) from Tunisia, Algeria. Pinkster & Stock (1972) reported this species also from Morocco but they have not mentioned its distribution. *E. tacapensis* (Chevreux & Gauthier, 1924) and *E. dactylus* (G. Karaman, 1987) are known from some localities in Tunisia.

The *E. berilloni*-group (Pinkster, 1969, 1973) included *E. klaptoczi* (Schäferna, 1908) from Libya, *E. afer* (Stock, 1974) from Libya and Tunisia, and *E. annandalei* (Monod, 1924) from Algeria.

In the present paper a new species is described

from Morocco as *Echinogammarus oujdae* n. sp.

## SYSTEMATIC DESCRIPTION

### ***Echinogammarus oujdae* n. sp.**

Figs. 1-3

**MATERIAL.** - Several specimens, most of them in precopulation, were collected by A. Berrehou on the 4th January 1998 in the province of Oujda (Northeast Morocco) from two localities: the Za river and the Gaffait spring.

The male holotype (length: 10mm) and six paratypes are deposited in the National collection at the Scientific Institut of Rabat, Morocco.

**DESCRIPTION.** - This species is small, the largest male in a sample of about 100 specimens being about 10 mm long. The color of live individuals varies from brown greyish to brown.

Lateral cephalic lobes rounded (Fig. 1A); eyes reniform, more than twice as long as wide, separated from the middorsal line.

First antenna (Fig. 1B) less than half the length of the body length; the first peduncle segment is 1.5 times longer than the second, and more than twice the length of the third segment; the main flagellum is composed of 18-23 segments, the accessory flagellum of 3-4 segments.

Second antenna very stout (Fig. 1C) with a short gland cone; the fourth and fifth peduncle segments are of equal length, armed with 4-5 tufts of long setae; the flagellum is short, 8-10 segmented; calceoli are always present in both sexes. First segment of the mandibular palp unarmed; the second segment bearing more than 10 long setae; the inferior margin of the third segment is armed with a regular, comb-like row of setae, 4-5 long proximal setae and there are 1-2 groups of setae on the outer surface (Fig. 1D).

First and second coxal plates rounded with numerous small setae bordering the distal margin; propodus of the first gnathopod twice as long as wide, the palm oblique with a medial palmar spine and groups of palmar angle spines (Fig. 2A); propodus of the second gnathopod larger, armed with a mid palmar spine, separated from the group of palmar angle spines (Fig. 2B).

Third and fourth pereopods (Figs. 2C, D) characteristic for the species, segments 4 and 5 of pereopod 3 bear 4-6 groups of short setae which

are about as long as the diameter of the segments; in pereopod 4 the setae are always shorter than the diameter of the segments.

Basal segment of the fifth pereopod (Fig. 3A) relatively short, 1.5 times as long as wide, with a backward protruding lobe. The sixth and seventh pereopods are more elongated (Figs. 3B, C), the postero-interior surface of the basal segments bearing a variable number of setae, which are relatively short on the sixth pereopod and long and numerous on the seventh pereopod. The other segments are armed with groups of spines and very few setae.

Second and third epimeral plates with sharp postero-inferior corners, their ventral margins bearing numerous setae (Fig. 3D).

Third metasome segment with a clearly visible keel; urosome segments slightly elevated and armed with a varying number of spines and short setae (Fig. 3D).

Third uropod with a very short inner branch, the outer ramus being much longer and armed with a variable number of spines and long plumose setae (Fig. 3F).

Telson lobes elongated (Fig. 3G) armed with 1-2 distal spines, few setae of the same length in between them, and two lateral setae on the dorsal surface.

**SEXUAL DIMORPHISM.** - *Echinogammarus oujdae* n. sp. shows a marked sexual dimorphism as in the other *Echinogammarus* (Pinkster, 1993); the most important characters are: the setation of the second antenna in female is less developed; the propodus of gnathopods is relatively smaller, without medial palmar spine; plumose setae on the third uropod are absent (Fig. 3E).

**ECOLOGY AND DISTRIBUTION.** - *Echinogammarus oujdae* n. sp. was found only in two localities in the northeastern region of Morocco (Fig. 5), at a temperature of 19°C. It has not been found together with other species of Gammaridae.

**ETYMOLOGY.** The name is derived from the geographical name. The species is exclusively known from the province of Oujda.

**REMARKS AND AFFINITIES.** - *Echinogammarus oujdae*

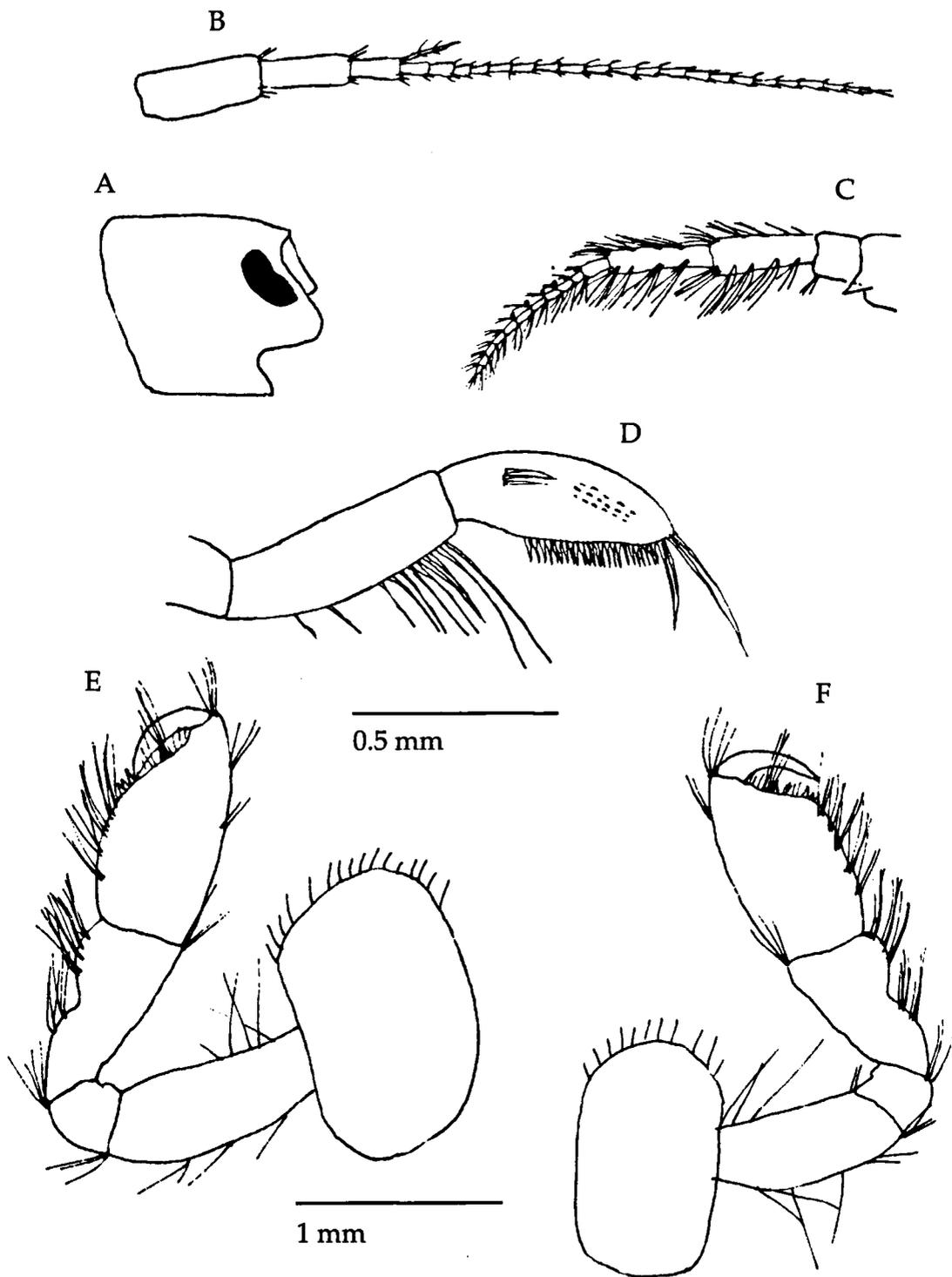


Fig. 1. *Echinogammarus oudjae* n. sp., male from Gaffait spring, Oujda (Morocco). A, head. B, first antenna. C, second antenna. D, mandibular palp. E, first gnathopod. F, second gnathopod.

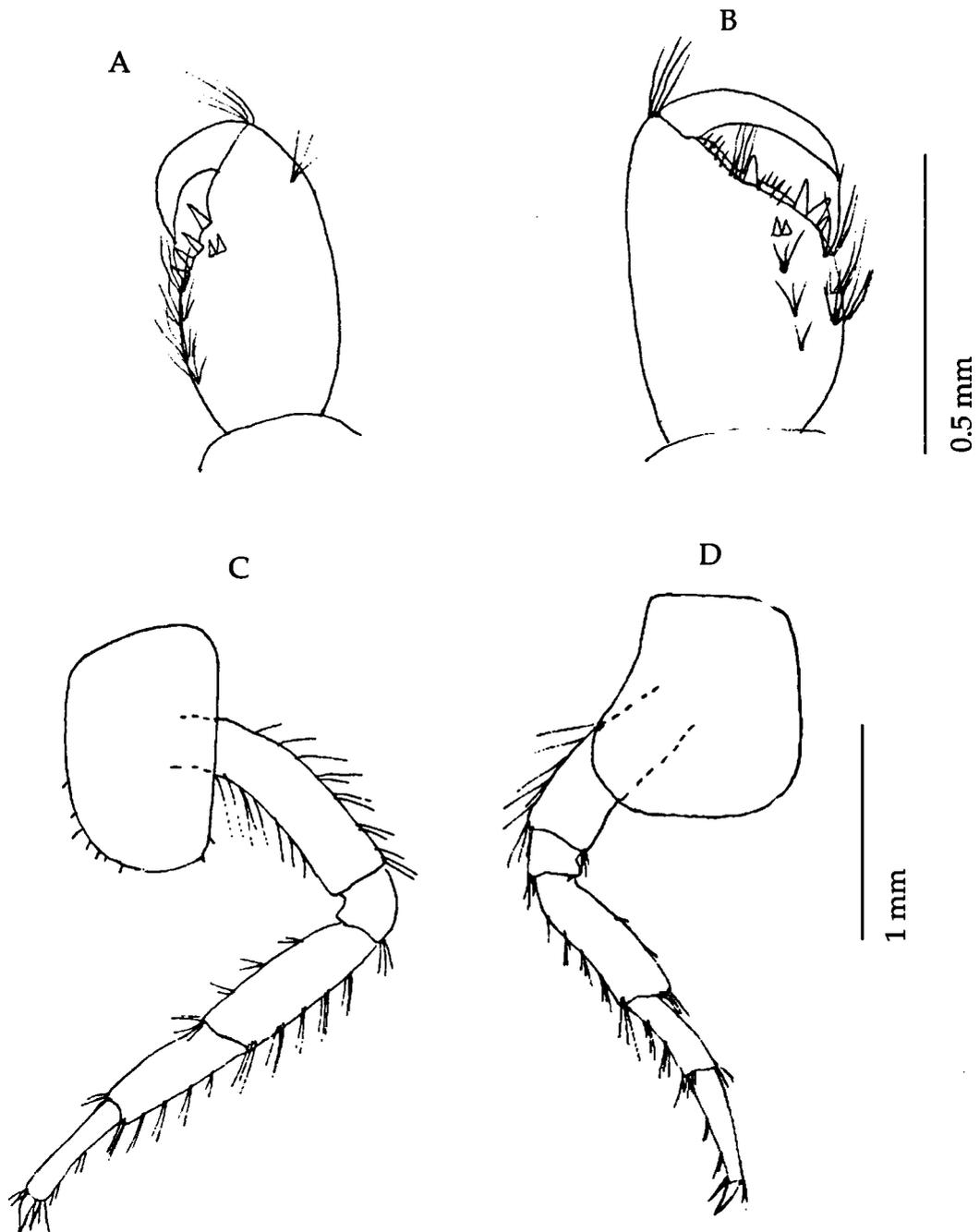


Fig. 2. *Echinogammarus oujdae* n. sp., male from Gaffait spring, Oujda (Morocco). A, first propodus. B, second propodus. C, third pereopod. D, fourth pereopod.

n. sp. is clearly related to the members of *E. pun-gens*-group because of a combination of characters like: the large, elongate eyes; the relative size of the gnathopods; the absence of dorsal armature on metasome segments and the presence of

setules on the inner surface of the basal segments.

*E. oujdae* n. sp. resembles *E. antalyae* (G. Karaman, 1971), *E. thomi* (Schäferna, 1922) and *E. cyrtus* (Pinkster & Platvoet, 1986). The most easily observable differences with the other

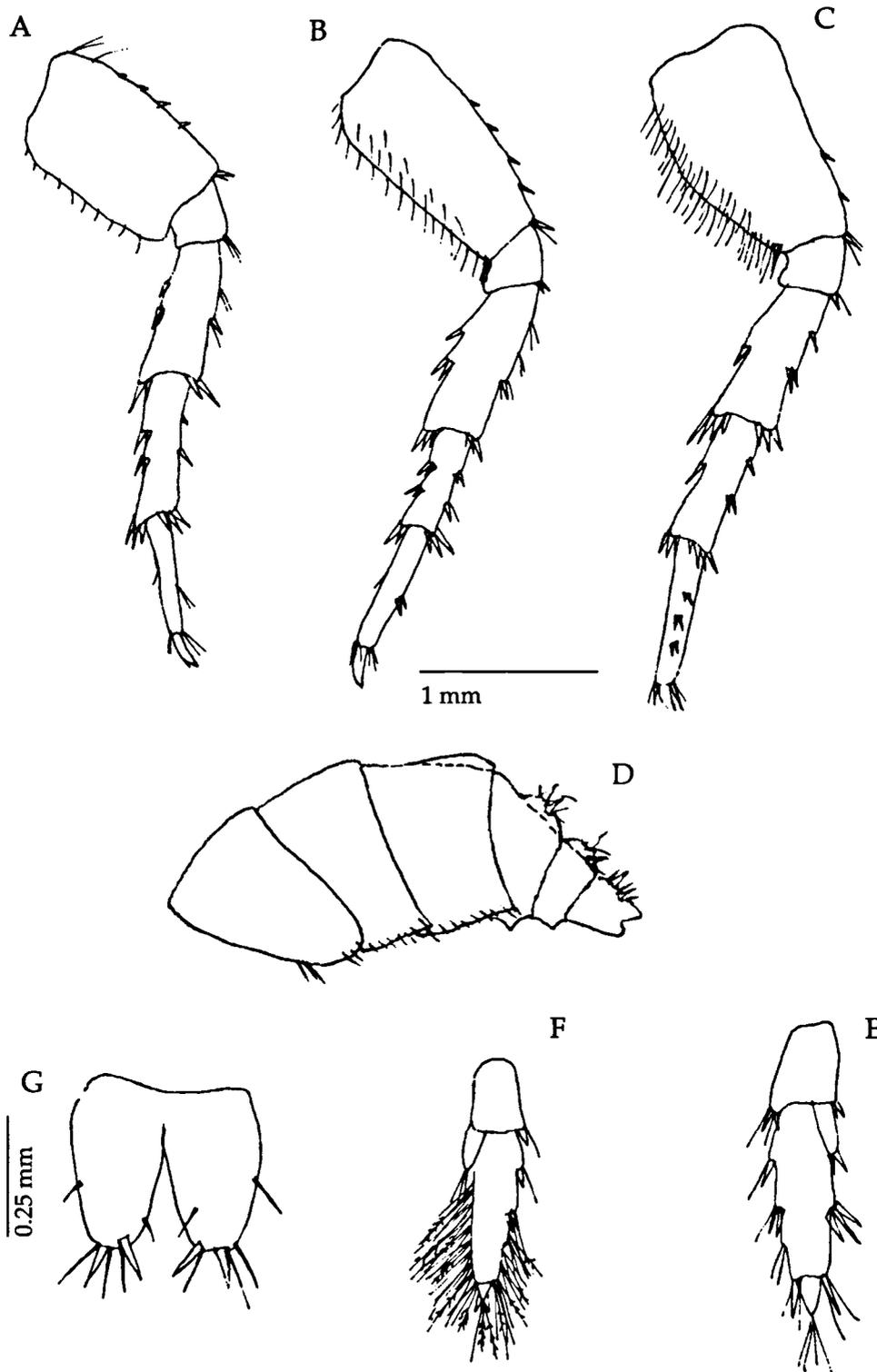


Fig. 3. *Echinogammarus oujdae* n. sp., male from Gaffait spring, Oujda (Morocco). A, fifth pereopod. B, sixth pereopod. C, seventh pereopod. D, meta-urosome. E, third uropod (female). F, third uropod (male). G, telson.

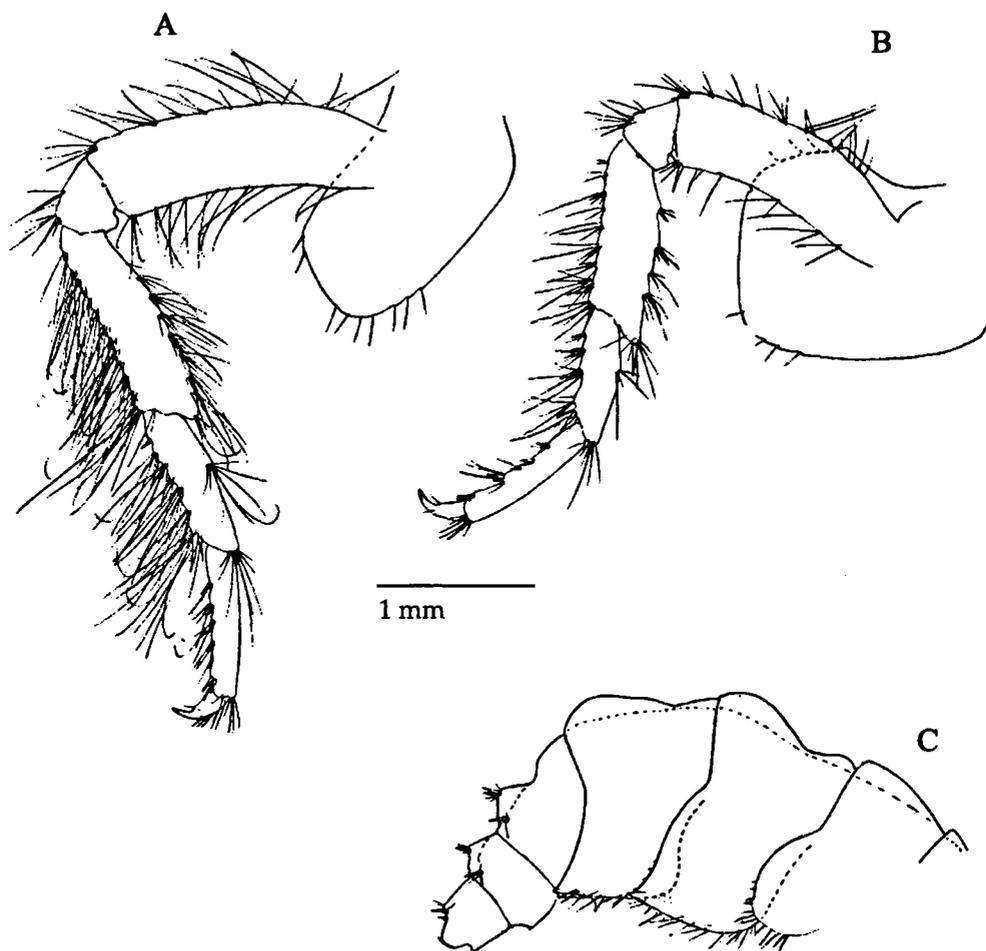


Fig. 4. *Echinogammarus thoni* (Schäferna, 1922). A, third pereopod. B, fourth pereopod. C, meta- and urosome.

species is found in the scarce setation of the third and fourth pereopods; in the three above mentioned species the setae being longer, often curled, varying in length from 1.5 to 3 times as long as the diameter of the segments on which they are implanted (Figs. 4A, B). In *E. thoni* and *E. cyrtus* all metasome segments have a laterally compressed dorsal elevation forming a keel (Fig. 4C). In *E. oujdae* n. sp. and *E. antalyae* this keel is only found in the posterior part of the third metasome segment.

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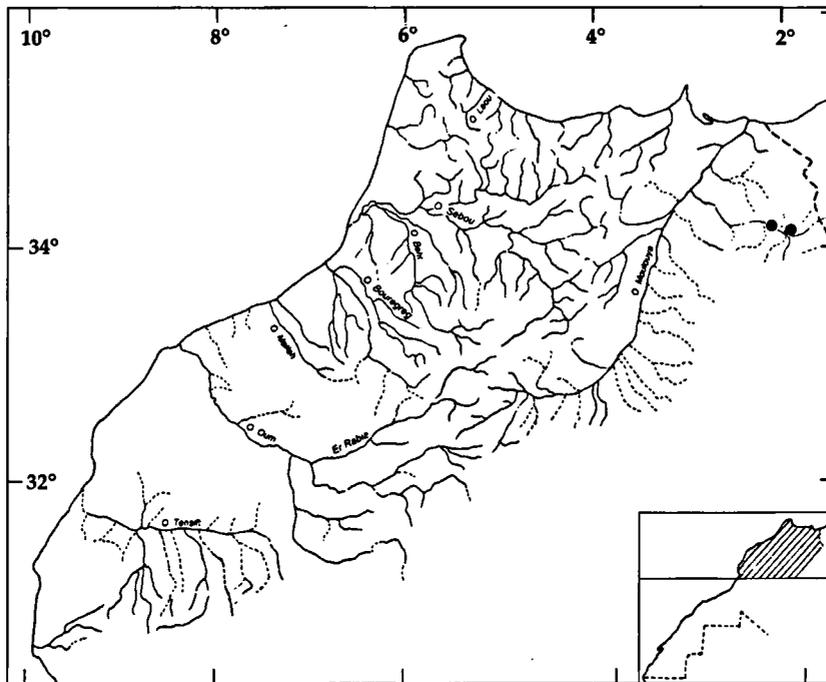


Fig. 5. Distribution of *Echinogammarus oujdae* n. sp. in Morocco.

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