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IDENTIFICATION AND BIOLOGICAL STUDIES ON NEW RECORD OF (CRUSTACEA-COPEPODA–CALANOIDA) *PRIONODIAPTOMUS COLOMBIENSIS* (THIEBAUD,1912)

Maysaloon Lafta Al-Doori
Dept. of Biology / College of Education for Pure Sciences (Ibn–Al–Haitham) /University of Baghdad/ Republic of Iraq .

ABSTRACT
This study is about a new record in Iraq, *Prionodiaptomus colombiensis* (Thiebaud, 1912) Crustacea Copepoda – Calanoida, This species was taken from freshwater shore lake, its living in small vegetative pools or ponds. The male 0.97mm long, and the female was 1.23mm having a crescent shape in its genital segment. Then we studded the effect of temperature on its development we saw that the optimal is 10ºC , The egg sac carried 16 eggs in this temperature , The species is filter feeding but it could be carnivorous .

KEYWORDS: Crustacea , Calanoida, Diaptomus, Freshwater, Temperature.

INTRODUCTION

The zooplankton are animals that have direct influence in the environment, they are affected by the chemical, physiological factors especially the temperature, PH, salt, predators and the duration of the lighting [1] Iraq, with its fairly vast fresh water resources. A rich fauna of zooplankton which plays an important role in the aquatic food chain as food for fish and other aquatic organisms. The species *Prionodiaptomus colombiensis* (Thiebaud, 1912)/ Crustacea-Copepoda- Calanioda- Diaptomidea is well Known distribution in central and south America , Colombia , Panama and in Nicaragua[2] and now in Iraq – Baghdad.

MATERIALS & METHODS

The samples were collected from a small artificial lake in Baghdad –Iraq, for four months (January, February, and March. April) /2016 by inserted the zooplankton net (35 µm mesh) in the water, left it for 30 second then pulled it vertically to the surface for many times[3] some of the samples (group 1) were placed in (70 % alcohol + glycerin 20 %)[4] to identified them, The others (group 2) were placed in a beaker (1 L.) for the purpose of breeding and conducting biological studies. Water temperature, PH of the lake was measured by using mercury thermometer and PH meter. Transparency was measured by saki disk. Laboratory work : Group 1: The identified of the species depending on [5 ,6], The measurement were done by using the ocular micrometer with compound microscope, we used 30 male, 30 female, 15 female having the egg sac and 10 of female carrying the spermatophore, the pictures were took by mobile camera (Samsung).

Group 2: In beaker (500ml) we placed female carrying egg sac for the purpose of obtaining pure individuals of the same species, after the egg hatching the young were raised to form a farm for the purpose of some biological research.

The effect of temperature

To study the effect of the temperature we used 45 beakers (500ml) with a filtered water lake , Then we put 5+5 from male & female in each one , Each 15 beaker were placed in different thermal temperature (5, 10, 15) ºC. The animals were monitored during their growth to see the effect of temperature on (total length ♀, ♂, number of eggs in each hatch, the period between the hatching)

Reproductive behavior

Five females and five males were placed in a petri dish containing lake water to follow mating behavior using a dissecting microscope.

Nutrition behavior

Specifying the *P. colombiensis* on a microscope drop slide in which we put filtered Water Lake, to follow the behavior of nutrient so we changed the food from Protozoa (*Paramecium*) to Rotifera.

RESULTS & DISCUSSION

The species was white in color, The male 0.97mm in long (Fig. 1) while the female 1.23mm (Fig.2) but [7] found that male =1.01mm, female =1.2mm, The first antenna (A1) with 25 segment which are equal in the female, the right one in the male with spine process on segment 14, it was geniculate in the 21 segment while the antepenultimate segment is long with a dentiform process (Fig.3). A1L. ♂=0.83mm, A1♀ =1.01mm, but this measurement may not terminal because it might be deferent between the same species when they lives in different countries [8], Thoracic wings in the female asymmetrical this agreement with[9]. This species may recognized by its genital segment we found that it has lateral small spine and crescent shape in the ventral side (Fig.4) this corresponds with [10] .

Leg 5 ♀: Left and right is the same, endo. P5♀ cylindrical shape with two short setae laterally above with finny hairs between them, and exopod 3 separated (Fig.5).

Leg 5♂: The left and the right not the same, Left one (L.P5 ♂) exopodate (L.exo.P5 ♂) with lateral forwarded spin, R.P5♂ bearing a claw curved to inside (Fig. 6)

Caudal ramus (male &female) with five well developed setae (Fig.7).

FIGURE 1- Photo. *Prionodiaptomus colombiensis* /Male A = 0.97mm long . , B : Antenna 1 .

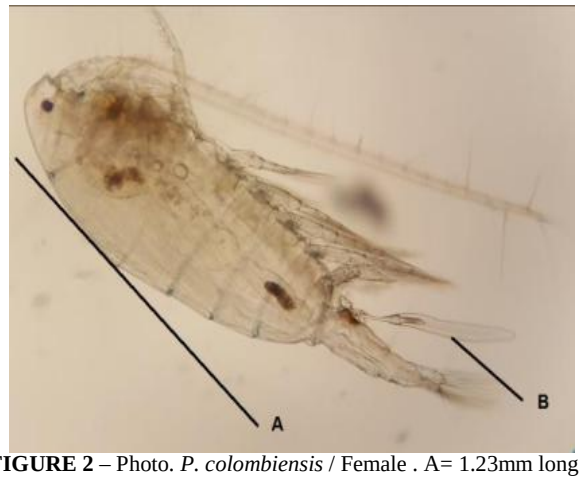

FIGURE 2 – Photo. *P. colombiensis* / Female . A= 1.23mm long , B: Spermatophor

FIGURE 3- Photo. *P. colombiensis* / Male A: Dentiform process

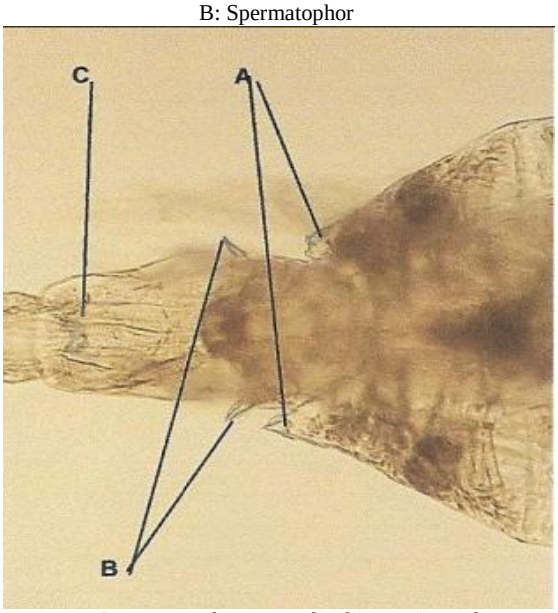

FIGURE 4 – Photo. *P. colombiensis* / Female A: Thoracic wings, B: Lateral spine C: A crescent shape .

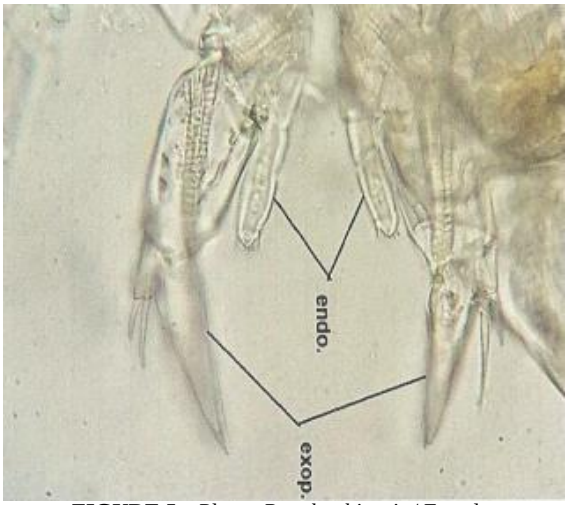

FIGURE 5 – Photo. *P. colombiensis* / Female Leg 5 .

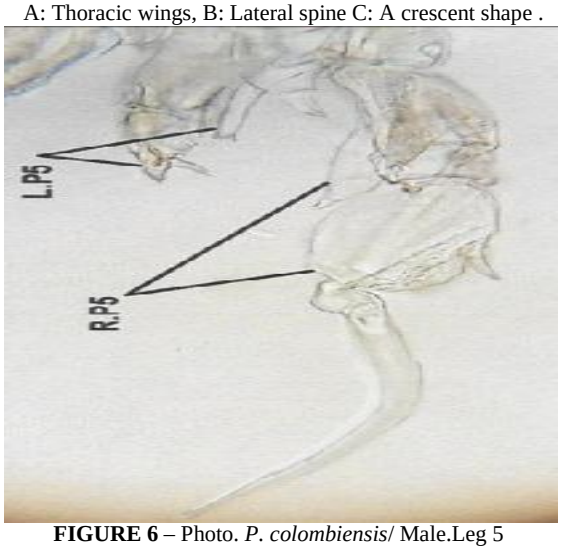

FIGURE 6 – Photo. *P. colombiensis*/ Male.Leg 5

Biological studies

The temperature of the lake was (7-13) ºC, PH=7.3-8.2, transparency = (33-120) cm. These measurements were conducted in the winter months in Iraq/ 2016, these were typical in which the species live [11].

Effect of temperature

At temperature (5, 10, 15) ºC the length of the male were (0.82, 1.01, 0.95) mm, the female (1.01, 1.31, 1.19) mm the number of eggs in each hatch were (13, 16, 11), and the period between the hatching (7.5, 6, 5.5)day, Respectively. This mean that the acceptable temperature is 10ºC this agree with [12], in its environment the species used to carry 16 eggs normally (Fig. 8), We found that the temperature has a significant effected on egg clutch [13] and some of *diaptomus* sp nead 66 days at 10ºC and 15 days at 25ºC for development to the adult[14], This is an evidence of the significant effect of temperature on the reproduction and growth of this species[15] .

Reproductive behavior

When the sexually mature male and female be closely the male will be wraps around the female for 30 second then puts the spermatophore on the genital segment after 60 second and these observations were found to correspond to what found [16].

The nutrition

The species was filter feeding when there is Protozoa , but it can change to carnivorous when we change the food to be Rotifera, This has made it resistant to different nutritional conditions [17].

FIGURE 7 – Photo. *P. colombiensis* / Caudal ramus

FIGURE 8 – Photo. *P. colombiensis* / Female Egg Sac

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