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The penultimate and ultimate larvae instars of *Ictinogomphus ferox* (Rambur, 1842) Odonata: Gomphidae from Igbara-oke, southwestern, Nigeria

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Abstract

Ictinogomphus ferox (Rambur, 1842): Common Tiger tail larva was collected at the littoral section of River Owena dam in Igbara-Oke, Nigeria. The penultimate and ultimate instars of the larva was described with the morphological character of the species and was compared with Gomphidia which is also in Nigeria. There is similarity in the general appearance of *Ictinogomphus* larva and that of the *Gomphidia*. But the *Ictinogomphus* is bigger than the *Gomphidia* both as larvae or Adults. This study is describing the larvae of *Ictinogomphus forex* from Nigeria for the first time.

Keywords: Odonata, Gomphidae, *Ictinogomphus ferox*, Penultimate and Ultimate larva

Introduction

Ictinogomphus ferox (Rambur, 1842) is one of the species of Gomphidae, and known to be widespread across Africa [4]. The adult was originally described by Rambur in 1842. Gomphidae have been widely investigated and described as an adult and larvae [5, 6, 2], and [10]. About 90 genera and 1000 species of this family are known worldwide, while less than a sixth of this are found in Africa [7]. However, it was expected that being one of the largest anisopteran the description and identification manual of larvae of this family should readily be available.

Some larvae of dragonfly were brought from the field (River Owena Dam) to the laboratory for rearing to teneral adult purposely for ease of identification. After emergence, followed by its identification (the teneral adult) as *Ictinogomphus ferox*. The onus of describing the larva becomes inevitable, since there was a dearth of information pertaining to the description of the larva in West Africa and Nigeria in particular with no evidential documentation of *Ictinogomphus*.

There was a description of a specimen of the species collected from East Africa [5] which is of a different region in Africa. Some similarities in the appearance of *Ictinogomphus* larva and that of the *Gomphidia* was observed. Though, the *Ictinogomphus* is bigger than the *Gomphidia* both as larvae or Adults. The larvae of three African species of *Gomphidia* was described by Muller *et al.* [8]. This study is describing the larvae of *Ictinogomphus forex* from Nigeria for the first time.

Previously the adult stage of *Ictinogomphus* have been described and identification keys published among them are *I. dundoensis*, *I. forex*, *I. fraseri* and *I. regisalberti*. Studies have shown that *I. forex*, are likely to be found in Nigeria since the country is within the biogeographic range [3, 7]. This study has confirmed in certainty that the species can be found in Nigeria. The aim of this paper is to describe the larvae of *I. ferox* and also report for the first time that *I. ferox* occur in Nigeria. This also is the first description of the larva in West Africa. This report is based on the penultimate and ultimate larvae collected at the littoral section of River Owena dam in Igbara-Oke, Nigeria.

2. Materials and Methods

Larvae of dragonfly were collected using D frame dip net and kick net at the River Owena dam in Igbara-oke (7°20'37.61" N, 5°00'32.50"E). Among the odonates larvae sampled were those with oval-shaped abdominal segments which were sorted out from the rest and

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transported alive inside a well aerated container to the laboratory. Four larvae (penultimate and ultimate) and 2 exuviae of *Ictinogomphus ferox* were used for description of this species. Each of the larvae were reared inside a plastic container containing dechlorinated water at room temperature (with stick inside each container for support when it emerges). Two of the reared larvae emerged into teneral adults, while those that died before emergence were preserved in 70% ethanol. The preserved larvae (penultimate and ultimate instars) and the exuviae of the emerged teneral adults were used for the identification and description of the species. All the specimens were morphologically examined and documented using Digital Microscope (10X – 200X) model VP EYE 6.6 Aeromax 090828.

Emerged teneral adults from the larvae were allowed to be hardened before identification. The identification of the teneral adult was based on standard identification manual which include [7,9].

2.1 Description

The larvae of *Ictinogomphus ferox* (Rambur, 1842) can be

found in all manners of freshwater; ranging from lentic to lotic water [7, 9]. However the larva prefers marshes, ponds, lakes and calm rivers [7]

I. ferox larvae have the tendency of feigning dead when frightened but become active again when the water is not disturbed. The cuticle of *I. ferox* is hard and serves as a strong shield for the insect when maneuvering and burrowing in and around bottom sediments of water bodies (Figure 1). The length of the larva specimen is 25 mm, with extended labium, the length is 29 mm.

The head of *I. ferox* is sub-pentagonal in shape (Figure 2) when viewed dorsally. The antenna is short with four segments, the first segment of the antenna the scape (S 1) protrude from the snout of the insect, it is short and wider than other segments of the antenna, the pedicel (S 2) is of the same shape with the scape but smaller and shorter, the third segment (S 3) which is the longest segment of the antenna is cylindrical with a tiny fourth segment at the distal end of the antenna.. The compound eye is large protruding posterior-laterally.



Fig 1A): Penultimate instar of *Ictinogomphus ferox*.



Fig 1B): of exuvia of *Ictinogomphus ferox*



Fig 2: The head of *I. ferox*, showing the short antenna and compound eye.



Fig 3: The mentum with the labia palp (lateral lobe and hook) of *I. ferox*

The mentum is 4mm (Figure 3), it is broader anteriorly and slightly taper posteriorly. The width measurement (3.5mm) was taken at the anterior part of the mentum. The mid lobe is teathed likewise the ventral part of the lateral lobe which has a movable hook.

Thorax: The head is wider than the thorax, while the synthorax is wider than the prothorax, the wing sheath extends to S 6, both fore and hind wing cases are of the same length (9mm). The hind legs have a length of 18.5mm, the mid legs (12.2mm) is slightly longer than the fore legs (12mm). The hind leg is longer than the abdominal segments

(14.5mm). The tarsal of the legs (hind, mid and fore) end in a pair of pretarsus. The femur of the hind legs is longer than the tibia. The tibia has spines at its ventral side, this is also common to all other legs.

Abdomen: the larva has a nearly circular or ovate posterior view with segment 6 (S 6) of 14.5mm as the widest of the abdomen segment. There are black spots on each of the abdominal segments from S3- S9. The abdomen which light-brown is flattened dorsally. The ventral view is brownish with central notch (spine) that is observable from S 3 forming ridges which increase in size from S 3 - S 8. The spine in S 9 is greatly reduces. The Caudal appendages length is 1.2mm.



Fig 4A: Lateral spines and the black spot on the abdominal segments of *Ictinogomphus forex*



Fig 4B: B. Caudal appendages of *Ictinogomphus forex*

Habitat: *Ictinogomphus forex* can be found in all manners of freshwater bodies especially calm water e.g marches, ponds, lakes and still reaches of rivers with abundance of grasses and twigs on which it can perch.



Fig 5A: Teneral Adult (newly emerged)



Fig 5 A: Adult of *Ictinogomphus ferox* (male)

3. Discussion

The larva of *I.ferox* look similar to *Ictinogomphus rapax* found in India and in United Kingdom (Butler 2007). The larva of *I.forex* also resembles the *Gomphidia* larvae which have been recorded in several parts of Africa include, Ivory Coast, Cameroon, Tanzania, Namibia and Kenya (Muller *et al.*, 2005). However *I. forex* (29mm) is longer than the larvae of most *Gomphidia*, for instance *G. bredoi* and *G. gamblesi* are of the same length of 19.4mm, while *G. quarrei* is 19.9mm. Also, Adult *Gomphidia* is smaller in size when compared with adult *Ictinogomphus*. The mentum of *I.ferox* and that of the species of *Gomphidia* described in Muller *et al.* [6] are similar in shape, but *I.forex* has bigger mentum. The mentum length of the described species are 3.3mm for *G.bredoi*, 3.4mm for both *G. gamblesi* and *G. quarrei*, while the mentum for the *I.ferox* is 4mm and the width is 3.5mm. the width of mentum for *G.bredoi* and *G. gamblesi* is 3.3mm while *G. quarrei* has 3.1 mm.

4. Conclusion

In conclusion, it has been established that *Ictinogomphus ferox* is actually present in Nigeria as earlier predicted based on regional occurrence, and the larva described in this study is from Igbara-Oke, Nigeria. After its description in East Africa, the larva has not been identified and described elsewhere in Africa. The larva earlier described was from a lake, similarly the material (larva) described here is from the reaches of River Owena dam which is an artificial lake. This report also confirmed that *I.forex* inhabit reaches of lakes and rivers.

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