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Studies on the zygopterous dragon fly larval forms from Rewa

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Abstract

The present paper deals with study on Zygopterous dragon fly larva. The purpose of this paper is to demark some of the principal morphological changes and extent of variations occuring during development of three different species of Zygopterous dragon fly larvae the *Pseudagrion decorm*, Rambur; *Ischnura delicate*, Hagen and *Ischnura senegalensis*, Rambur.

Keywords: on Zygopterous dragon fly larva, Morphological characters

Introduction

The life history of dragon flies has been studied in a number of species by various workers. These accounts do not give detailed information in the degree of differentiation of larval instars. In view of this, it is difficult to judge how for the larval instars resemble or differ from one another. Two important reasons for describing the early instars are to provide data for comparative ontogenetic studies and to make possible the identification of small nymphs in the field.[1-4] According to this it is the purpose of this paper to demark some of the principal morphological changes and extent of variations occuring during development of three different species of Zygopterous dragon fly larvae the *Pseudagrion decorm*, Rambur; *Ischnura delicate*, Hagen and *Ischnura senegalensis*, Rambur.

Material and methods[4-6]

This lavrvae used as basis for description were derived from the eggs collected from various habitats near about Rewa. The eggs had been laid on the submerged leaves and stems of aquatic plants. Eggs of Pseudagrion decorum Rambur were laid on the ventral surface of the leaves of *Ipomea aquatica* and those of *Ischnura delicata* Hagen and *Ischnura senegalensis* Rambur, on the stems and leaves of *Ipomea aquatica* and *Scripus articulatus*. The newly deposited eggs are yellowish orange in Pseudagrion decorum Rambur and glassy white in *Ischnura delicata* Hagen and *Ischnura senegalensis* Rambur. The egg are barrel shaped and have an acute anterior and a rounded posterior end. These measure 1 mm. in lngth and 1/2mm. in diameter. Close inspection of the eggs was not possible during hatching. Nymphal instars were isolated from the dish containing the eggs and were reared in separate containers to make life history record. Instar fourteenth was the final larval stage from which imago emerged. Description of instar two to fourteen are based entirely on reared material. Measurements were made upon living material and exuviae were used for descriptions of antenna, labium and the tarsus. The body lengths given represent the distance from the anterior margin of the head to the posterior end of the abdomen. In early instar Cladocera were provided as food; from instar seven onwards, the larvae were fed entirely on small Chironomids.

Development

The first larval instar was not observed. The external morphological changes associated with development are described below.

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Larval instars

In many respects the larvae resemble the mature ones but each instar has fewer changes than the succeeding one in chaetotaxy of the labium, segmentation in the antennae, tarsus segments, and in the presence or absence of the wing buds.

Second instar larva

Head small, antenna three segmented. In labium number of palpal seta is 1+1 Premental seta absent, movable hook present, abdomen ten segmented, tarsus one segmented, caudal lamella linear, hairy and pointed at the tips.

Pseudagrion decorum Rambur - Eyes beed like, colour greenish, body length 2.3mm., head width .5mm abdomen 1mm., caudal lamellae 1.5 mm.

Ischnura delicata Hagen - Eyes peg like, colour yellowish , body length 1.8mm, head width .4mm., abdomen 1.2mm, Caudal lamellae. 1.0mm.

Ischnura senegalensis Rambur - Eyes peg like, colour brownish, body length 2.0mm., head width 0.35mm., abdomen 1.0mm., caudal lamellae 1.2mm.

Third instar larva.

Broader than the second instar larva. Eyes more enlarged and distinct number of segments in Labium, antenna tarrus and palpal seta is the same as in second instar larva movable hook present.

Pseudagrion decorum Rambur - Body length 3.5mm., head width 0.5mm., abdomen 1.5mm. caudal lamella 2.0mm.

Ischnura delicata Hagen. - Body length 2mm., head width 0.45mm., abdomen 1.2mm., Caudal lamella 1.0mm.

Ischnura senegalensis Rambur - Body length 2.0mm., head width 0.42mm., abdomen 1.2mm., caudal lamella 1.0mm.

Fourth instar larva

Antenna four segmented, Palpal seta 2+2, gonapophysis, wing buds absent, tarsus bears one segment.

Pseudagrion decorum Rambur - Body length 4.3mm., head width .6mm., abdomen 2mm., Caudal lamellae 2.5mm.

Ischura delicata Hagen. - Body length 3.3mm., head width 0.5mm., abdomen 1.3mm., caudal lamellae 2.5mm.

Ischnura senegalensis Rambur - Body length 3.3mm., head width 0.45mm., abdomen 1.5mm., caudal lamellae 2mm.

Fifth instar larva

Premental seta appear in *Pseudagrion decorum* larvae In fifth instar larvae the number of antennal segments and palpal seta is the same as in fourth instar larvae tarsus two segmented.

Pseudagrion decorum Rambur - Premental seta 1+1, palpal seta 2+2, caudal lamellae hairy broad and leaf life, body length 4.7mm., head width 0.5mm., abdomen 2mm., caudal lamella 3.0mm.

Ischnura delicata Hagen. - In labium premental seta are absent, palpal seta are 2+2 caudal lamella hairy linear and pointed at the tip, body length 4.3mm, head width 0.6mm, abdomen 2mm. caudal lamella 2.5mm.

Ischnura senegalensis Rambur - In labium premental seta are absent, palpal seta 2+2, caudal lamella hairy linear and pointed at tip, body length 4.3mm., head width .5mm, abdomen 2.0mm., caudal lamella 2.5mm.

Sixth instar larva

The number of segments in antenna which were four in fifth instar stage now become five in the sixth instar stage, where as the premental seta are 1+1 in both the Ischnura species. The number of palpal seta in the labium of *Pseudagrion decorum* Rambur which were 2+2 in fifth instar larva now become $2+_1+2+_1$ in sixth instar stage. The tarsus is two segmented in all the three species.

Pseudagrion decorum Rambur - Premental seta 1+1, palpal seta $2+_1+2+_1$, median pair rudimentary, body length 5.7mm., head width 1.0mm., abdomen 3mm., caudal lamella 3mm.,

Ischnura delicata Hagen - Premental seta 1+1, Palpal seta 2+2, body length 4.5mm., head width 0.6mm, abdomen 2.2mm., Caudal lamella 2.6mm.

Ischnura senegalensis Rambur - Premental seta 1+1, palpal seta 2+2, body length 5.3mm, head width 0.8mm., abdomen 2.8mm., caudal lamella 2.8mm.

Seventh instal larva

Antenn is a six segmened, wing buds absent, tarsus two segmented.

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Pseudagrion decorum Rambur - Premental seta 1+1, Palpal seta $2+_1+2+_1$ body length 6.2mm, head width 1.5mm, abdomen 3.0mm. caudal lamella 3.5mm.
Ischnura delicata Hagen - Premental seta 2+2, Palpal seta 2+2 body length 5.9mm, head width 1.2mm, abdomen 3.0mm. Caudal lamella 3.2mm.
Ischnura senegalensis Rambur - Premental seta 2+2, palpal seta 2+2., body length 5.9mm., head width 1.2mm., abdomen 3.0mm., caudal lamella 3.2mm.

Eight instar larva.
The number of antennal segments. In Pseuda grion decorum Rambur the number of segments in tarsus increased wing buds and gonapophysis begin to appear.
Pseudagrion decorum Rambur - Tarsus three segmented, Palpal seta 3+3, rudiments of gonapophysis and wing buds appear, margin of caudal lamella spiny, premental seta 1+1, body length 6.6mm., head width 2mm., abdomen 3.2mm., Caudal lamella 3.8mm.
Ischnura delicata Hagen - Tarsus two segmented, Palpal seta 2+2, rudiments of gonapophysis and wing buds absent, margin of caudal lamella hairy, premental seta 2+2, palpal seta 3+3, body length 6.1mm., head width 1.5mm., abdomen 3.0mm., Caudal lamella 3.5mm.
Ischnura senegalensis Rambur - Tarsus two segmented, Palpal seta 2+2, rudiments of gonapophysis and wing buds absent, margin of tracheal gills hairy, premental seta 2+2, palpal seta 3+3, body length 6.4mm., head width 1.2mm., abdomen 3mm., Candal lamella 2.8mm.

Ninth instar larva
Broader and longer than eighth instar larva. In ischnura species the number of segments in antenna palpal and premental seta increases in number.
Pseudagrion decorum Rambur - Antenna six segmented, gonapophysis and wings buds enlarged, premental seta 1+1, palpal seta 3+3, body length 8.5mm., head width 2.1mm., abdomn 4mm., Tarsus three segmented Caudal lamella 5mm.
Ischnura delicata Hagen. - Antenna seven segmented, rudiments of wing buds and gonapophysis absent, premental seta $2+_1+2+_1$ median pair rudimentary, palpal seta 4+4, body length 6.6mm., head width 1.6mm., abdomen 3.0mm. Tarrus two segmented, caudal lamella 4mm.
Ischnura senegalensis Rambur. - Antenna seven segmented, rudiments of wing buds and gonapophysis appear, premental seta $2+_1+2+_1$ median pair rudimentary, palpal seta 4+4, body length 7.6mm., head width 1.5mm., abdomen 3.5mm., Caudal lamella 4.5mm., tarsus two segmented.

Tenth instar larva.
Number of segments in the antenna and the tarsus is same as in ninth instar larve. Number of palpal seta increases in Pseudagrion species.
Pseudagrion decorum Rambur - Premental seta 1+1, palpal seta $3+_1+3+_1$ median pair rudimentary, wing buds enlarged, formation of gonapophysis complete, body length 10.5mm, head width 2.3mm., abdomen 4.5mm caudal lamella 6.5mm.
Ischnura delicata Hagen - Premental seta 3+3, palpal seta 4+4, rudiments of wing buds and gonapophysis appear, margin of tracheal gills spiny, body length 7.5mm, head width 2mm., abdomen 3.5 mm. Caudal lamella 4.5mm.
Ischnura senegalensis Rambur - Premental seta 3+3, palpal seta 4+4, formation of gonapophysis complete, margin of trachel gills spiny, body length 8.5mm, head width 1.8mm., abdomen 4.0mm., Caudal lamella 5.0mm.

Eleventh instar larva.
Number of premental seta and tarsus segment increases in Ischnura species, number of palpal seta is same in all the three species. Formation of gonapophysis complete.
Pseudagrion decorum Rambur - Premental seta 1+1 palpal 4+4, tarsus three segmented, body length 12.4mm., head width 2.5mm., abdomen 7.0mm., caudal lamella 6mm. wing buds 2mm.
Ischnura delicata Hagen - Premental seta $3+_1+3+_1$ median pair rudimentary, palpal seta 4+4, tarsus three segmented, body length 10.4mm., head width 2.2mm., abdomen 5mm., caudal lamella 6.0., wing buds 1mm.

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Ischnura senegalensis Rambur - Premental seta $3+_1+3+_1$ median pair rudimentary, palpal seta 4+4, tarsus three segmented, body length 11.4mm, head width 2mm, abdomen 6mm, candal lamella 6mm. wing buds 1mm.

Twelveth instar larva.

Rudiments of anal cerci appear in all the three species.

Pseudagrion decorum Rambur - Premental seta 1+1, palpal seta 4+4, length 15.4mm., head width 3mm., abdomen 10mm., caudal lamella 6mm., wing buds 3mm.

Ischnura delicata Hagen - Premental seta 4+4, palpal seta 4+4+4, length 11.4mm., head width 2.5mm abdomen 6m., caudal lamella 6mm., wing buds 2mm.

Ischnura senegalensis Rambur - Premental seta 4+4, palpal seta 4+4, body length 11.9mm., head width 2.3mm.., abdomen 6.5mm, caudal lamella 6mm., wing buds 1.5mm.

Thirteenth instar larva.

Rudiments of ocelli appear, formation of gonpo physis complete analcerci enlarged in all the three species.

Pseudagrion decorum Rambur - Premental seta 1+1 palpal seta 4+4. body length 11.4mm., head width 3.5mm., abdomen 12mm., wing buds 4mm., Caudal lamella 8mm.

Ischnura delicata Hagen - Premental seta 4+4, palpal seta 4.4 body length 12.2mm., head width 3mm., abdomen 6mm., Caudal lamella 7mm., wing buds 2mm.

Ischnura senegalensis Rambur - Premental seta $4+_1+5$ five on the right side, four big and one small on the left side, palpal seta $4+_1+5$., body length 12.7mm., head width 2.5mm., abdomen 6.5mm., wing buds 2mm. Caudal lamela 7.0 mm.

Fourteenth instar larva.

Formation of antenna, wing buds, caudal lamella gonapophysis, premental seta, palpal seta and anal cerci complete.

Pseudagrion decorum Rambur - Premental seta 1+1, palpal seta 4+4. Colour greenish, eye brownish. body length 21.2m, head width 4mm., abdomen 12mm., caudal lamella 10mm., wing buds 4mm.

Ischnura delicata Hagen - Premental seta 4+4, palpal seta 5+5 Colour whitish, eye greenish. body length 12.5mm., head width 3.5mm., abdomen 7mm., wing buds 3mm., caudal lamella 6.5mm.

Ischnura senegalensis Rambur - Premental seta 5+5, palpal seta 5+5 Colour brounish, eye greenish. body length 13.2mm., head width 3mm. abdomen 7.5mm., wing buds 2.5mm., caudal lamella 6.5mm.

Duration of larval instars

For studying the duration of larval instars different larva of each species were kept in seperate containers and the day on which fifty percent larva moulted was considered as the date of moult. Duration of the larval instars is presented in table 1. The duration of nymphal instars in the field during the active period of June to November and from mid February to the end of March, is the same as under laboratory conditions presented in the above table. Larval characters have been talulated and are presented in Table 2.

Results and Conclusion

In *Pseudagrion decorum*, *Ischnura delicata* and *Ischnura senegalensis* the number of larval instars is fourteen, it is twelve in *Ischnura verticalis*[4], and fifteen in *Lestes dryas*[3]and *Lestes paraemosa*[5-6]. The colour of *Pseudagrion decorum* larva is greenish as in *Lestes paraemosa*[6], it is pale yellowish in *Ischnura delicata* and brown is *Ischnura senegalensis* as described[1-2]. Eyes of *Pseudagrion decorum* are beed like and peg like in *Ischnura delicata* and *Ischnura senegalensis*. The antenna is three segmented in the second instar larva as in *Ischnura verticalis*[4] and *Lestes paraemsa*[6]. Third instar larva also have three segmented antenna, it is four segmented in *Ischnura verticalis*[4]. Fourth and fifth instar larvae have four segmented antenna as in *Lestis paramosa*[6]. In sixth instar larva the antenna is five segmented as in *Lestes paraemosa*[6] and *Lestes dryas*[3]. The antenna is six segmented in seventh and eighth instar larva as in *Ischnura verticalis*[4] and *Lestes paraemosa*[6]. From ninth instar onwards in *Ischnura* species the number of the segments in antenna is seven, it is six in *Pseudagrion decorum* as in *Ischnura verticalis*[4] and *Lestes paraemosa*[6]. In second instar larva the number of palpal seta is 1+1 as in Ischnura verticalis (Grieve, 1937). In third instar larva also the number is 1+1 as in *Lestes paraemosa* [6], it is 2+2 in *Ischnura verticalis* [4]. In fourth instar larva the number of palpal seta is 2+2 as in *Ischnura verticalis*[4].

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Table 1: Chart showing duration of the larval instars

Instar	Duration in days		
	***Pseudagrion decorum* Rambur**	***Ischnura deliata* Hagen**	***Ischnura senegalensis* Rambur**
Second	5	5	4
Third	5	6	5
Fourth	5	6	5
Fifth	5	6	5
Sixth	8	7	6
Seventh	4	6	5
Eight	9	8	8
Ninth	8	9	9
Tenth	7	10	10
Eleventh	5	9	8
Twelth	6	10	9
Thirteenth	7	11	10
Fourteenth	10	15	13
Total days	**85**	**108**	**97**

The number of palpal seta is 2+2 fifth instar larva it is three in *Ischnura verticalis*[4]. In sixth instar larva of *Pseudagrion decorum* the number is $2+_1+2+_1$ median pair being rudimentary as in Ischnura verticalis (Grieve, 1937), In Ischnura species number of palpal seta is 2+2. In *Pseudagrion decorum* the palpal seta are 3+3 in seventh and eighth instar larva, their number is 2+2 in *Lestes paraemosa* [6] and four in *Ischnura verticalis*[4]. In ninth instar larva of *Ischnura* species the number is 4+4 as in *Ischnura verticalis* [4], it is 3+3 in *Pseudagrion decorum.* In tenth instar larva the number of palpal seta is 4+4 in all the three species, it is five in *Ischnura verticalis*[4] and 3+3 in *Lestes paraemosa*[6]. The number of palpal seta is 4+4 in eleventh and twelveth instar larve, it is 3+3 in *Lestes paraemosa*[6] and six in *Ischnura verticalis*[4]. In thirteenth and fourtenth instar larva the number of palpal seta is 5+5, as in *Lestes paraemosa*[6], it is 3+3 and Six in *Ischnura verticalis*[4].

Premental seta appears first in fifth instar larva of *Pseudagrion decorum* as in *Ischnura verticalis*[4] and *Lestes paraemosa*[6] and in sixth instar larva of *Ischneura species.* From fifth to fourteenth larva instars of *Pseudagrion decorum* the number of premental seta is 1+1. In sixth instar larva of *Ischnura* species the number premental seta is 1+1, it is $2+2+_1$ in *Ischnura verticalis*[4] and 2+2 is *Lestes paremosa*[6]. The number is 2+2 in seventh instar larva of *Ischnura* species as in *Lestes paraemosa*[6] and $2+_1+3$ in *Ischnura verticalis*[6] and 3+3 in *Lestes paraemosa*[6]. In ninth instar larva of *Ischnura* species the number is $2+_1+2+_1$ as in *Lestes paraemosa*[6], it is 3+4 in *Ischnura verticalis*[4]. In tenth instar larva of *Ischneura* species the number is 3+3, it is $3+_1+4$ in *Ischnura verticalis*[4] and 3+4 in *Lestes paraemosa*[6]. In eleventh instar larva the number is $3+_1+3+_1$, it is 5+5+1 in *Ischnura verticalis*[4] and 4+4 in *Lestes paraemosa*[6].

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In twelveth instar larva of *Iscnura delicata* and *Ischnura senegalensis*, it is 4+4 in *Ischneura verticalis* [4] and 4+5 in *Lestes paraemosa*[6]. In thirteenth instar larva of *Ischnura delicata* the number is 4+4, it is $4+_1+5$ in *Ischnura selegalensis* and 5+5 in *Lestes paraemosa*[6]. In fourteenth instar larva of *Ischnura delicata* the number is 4+4, it is 5+5 in *Ischnura seleganesis* as in *Lestes paraemosa*[6]. Rudiments of the wing buds appear in the ninth instar larva of *Ischnura senegalnsis*, tenth instar larva of *Ischnura dlicata* and eighth instar larva of *Pseudagrion decorum*. Their development completes in eleventh instar larva. In *Ischnura verticalis*[4] wing buds appear first in sixth instar larva.
The tarsus bears only one segment upto fourth instar larva it is two segmented in fifth, sixth and seventh instar larva. In eighth, ninth and tenth instar larva of *Pseudagrion decorum* it is three segmented while in *Ischnura* species it is still two segmented. From eleventh to fourteenth instar larva the number of tarsal segments is invariably three. In *Ischnura verticalis*[4] it is two segmented in fifth, sixth instar larva and three segmented in seventh to twelveth instar larva. In *Pseudagrion decorum* and *Ischnura delicate* Ocelli appear in thirteenth instar larva while in *Ischnura senegalensis* they appear in fourteenth instar larva. Anal cerci in all the three species appear first in twelveth instar larva and their development is complete in Fourteenth instar larva. Gonapophysis appear in eighth instars larva of *Pseudagrion decorum*, tenth instars of *Ischnura delicata* and ninth instar larva of *Ischnura senegalensis*. In *Pseudagrion decorum* and *Ischnura senegalensis* their development is complete in tenth instar stage and eleventh star stage in *Ischnura deliata*. From second to fifth instar larva the larval period is less in comparison to succeeding larval stages as in *Ischnura verticalis*[4]. In sixth instar larva larval period is of longer duration than the seventh instar larva as in *Lestis paraemosa*[6]. In eighth instar larva of *Pseudagrion decorum* the larval period is comparatively more than in *Inschnura* species as in *Lestis paraemosa*[6]. In ninth instar larva of *Ischnura* species the larval period lasts longer than in eighth instar larva as in *Ischnura verticalis*[4] and *Lestes paraemosa*[6]. In tenth instar larva the larval period is of more duration than in eleventh instar larva, it is of lesser duration in *Ischnura verticalis*[4] and *Lestes paraemosa*. From twelveth to fourteenth instar larva the larval period goes on increasing and it is maximum in fourteenth instar larva.

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Table 2: Larval characters

Larva Stage		Body Length in mm.	Head Width in mm.	Length of Abdomen in mm.	Length of caudal lamella in mm.	Antennal segments	Premental segments	Palpal seta	Premen-tal seta	Tarsus Seg-ments	Wing Bunds	Gonapo Physis	Anal Cerci
IInd	PD	2.3	0.5	1.0	1.5	3	3	1+1	AB	1	Ab	AB	AB
Instar	ID	1.8	0.4	1.2	1.0	3	3	1+1	AB	1	Ab	AB	AB
Larva	IS	2.0	.35	1.0	1.2	3	3	1+1	AB	1	Ab	AB	AB
IIIrd	PD	2.5	0.5	1.5	2.0	3	3	1+1	AB	1	AB	AB	AB
Instar	ID	2.0	0.45	1.2	1.0	3	3	1+1	AB	1	AB	AB	AB
Larva	IS	2.0	0.42	1.2	1.0	3	3	1+1	AB	1	AB	AB	AB
IVth	PD	4.3	0.6	2.0	2.5	4	4	2+2	AB	1	AB	AB	AB
Instar	ID	3.3	0.5	1.3	2.5	4	4	2+2	AB	1	AB	AB	AB
Larva	IS	3.3	0.45	1.5	2.0	4	4	2+2	AB	1	AB	AB	AB
Vth	PD	4.7	0.5	2.0	3.0	4	4	2+2	1+1	2	AB	AB	AB
Instar	ID	4.3	0.6	2.0	2.5	4	4	2+2	AB	2	AB	AB	AB
Larva	IS	4.3	0.5	2.0	2.5	4	4	2+2	AB	2	AB	AB	AB
VIth	PD	5.7	1.0	3.0	3.0	5	5	$2+_1+2+_1$	1+1	2	AB	AB	AB
Instar	ID	4.5	0.6	2.2	2.6	5	5	2+2	1+1	2	AB	AB	AB
Larva	IS	5.3	0.8	2.8	2.8	5	5	2+2	1+1	2	AB	AB	AB
VIIth	PD	6.2	1.5	3.0	3.5	6	6	3+3	1+1	2	AB	AB	AB
Instar	ID	5.9	1.2	3.0	3.2	6	6	2+2	2+2	2	AB	AB	AB
Larva	IS	5.9	1.2	3.0	3.2	6	6	2+2	2+2	2	AB	AB	AB
VIIIth	PD	6.6	2.0	3.2	3.8	6	6	3+3	1+1	3	AP	AP	AB
Instar	ID	6.1	1.5	3.0	3.5	6	6	3+3	2+2	2	AB	AB	AB
Larva	IS	6.4	1.2	3.0	3.8	6	6	3+3	2+2	2	AB	AB	AB
IXth	PD	8.5	2.1	4.0	5.0	6	6	3+3	1+1	3	EN	EN	AB
Instar	ID	6.6	1.6	3.0	4.0	7	7	4+4	$2+_1+2+_1$	2	AB	AB	AB
Larva	IS	7.6	1.5	3.5	4.5	7	7	4+4	$2+_1+2+_1$	2	AP	AP	AB
Xth	PD	10.5	2.3	4.5	6.5	6	6	$3+_1+3+_1$	1+1	3	EN	C	AB
Instar	ID	7.5	2.0	3.5	4.5	7	7	4+4	3+3	3	AP	AP	AB
Larva	IS	8.5	1.8	4.0	5.0	7	7	4+4	3+3	3	EN	C	AB
XIth	PD	12.4	2.5	7.0	6.0	6	7	4+4	1+1	3	2 mm.	C	AB
Instar	ID	10.4	2.2	5.0	6.0	7	7	4+4	$3+_1+3+_1$	3	1 mm.	C	AB
Larva	IS	11.4	2.0	6.0	6.0	7	7	4+4	$3+_1+3+_1$	3	1 mm.	C	AB
XIIth	PD	15.4	3.0	10.0	6.0	6	7	4+4	1+1	3	3.0	C	AP
Instar	ID	11.4	2.5	6.0	6.0	7	7	4+4	4+4	3	2.0	C	AP
Larva	IS	11.9	2.3	6.5	6.0	7	7	4+4	4+4	3	1.5	C	AP
XIIIth	PD	11.4	3.5	12.0	8.0	6	7	4+4	1+1	3	4.0	C	EN
Instar	ID	12.2	3.0	6.0	7.0	7	7	4+4	4+4	3	2.0	C	EN
Larva	IS	12.7	2.5	6.5	7.0	7	7	4+1+5	$4+_1+5$	3	2.0	C	EN
XIVth	PD	21.2	4.0	12.0	10.0	6	7	4+4	1+1	3	4.0	C	C
Instar	ID	12.7	3.5	7.0	6.5	7	7	5+5	4+4	3	3.0	C	C
Larva	IS	13.2	3.0	7.5	6.5	7	7	5+5	5+5	3	2.5	C	C

PD=*Pseudagrion decorum* Rambur, ID=*Ischnura delicata* Hagen., IS =*Ischnura senegalensis* Rambur, AB=Abdomen, AP= Appear, C=Completely formed, EN=Enlarged, P=Present