



LENGTH AND WIDTH RATIO OF DIFFERENT INSECT FROM SHIVNATH RIVER DURG CHHATTISGARH

Sonu Tiwari and Naresh Kumar Dewangan*

Shri Shankaracharya Professional University, Bhilai, Durg, Chhattisgarh, India – 490020

ABSTRACT

The current study used body length, width, and length-to-width ratio to evaluate the morphometric traits of aquatic and semi-aquatic insects. The range of body length, width, and length-to-width ratio was 0.3–7.7 cm, 0.1–3.2 cm, and 1.50:1–24.00:1, respectively. The water spider had the lowest ratio (1.50:1), while the larva/pygmy grasshopper had the highest (24.00:1). The findings show that the recorded insect taxa and developmental stages differ significantly in terms of body dimensions.

Keywords: Insects, length, width, aquatic, river

INTRODUCTION

Biologists in many fields use published regression equations to predict biomass from simple linear body measurements (Gruner, 2003). The successful invasion of lotic and lentic freshwaters by terrestrial insect required physiological constraints also regarding sensory systems (Rebora et al, 2019). Body shapes of aquatic insect larvae reflect phenotypic responses to complex environmental conditions and can be used to infer habitat properties and indicate natural and anthropogenic perturbations in river ecosystems. Investigation of relationships between body shape and physical-habitat characteristics has been restricted by a lack of an objective schema for quantitative characterization of body-shape variation (Orlofske and Baird, 2014). The length and width of insect body are critical parameters for entomological radar species identification. However, the body width is not measurable in entomological radar currently (Li et al 2021). Body size is a key feature of organisms and varies continuously because of the effects of natural selection on the size-dependency of resource acquisition and mortality rates (Chown, and Gaston, 2010).

METHODS AND MATERIALS

The insects were collected from Shivnath river. Anjora and Mahamara two place was selected for sample collection. The insects were catch using large hand net (mesh size 1 mm). The Measuring ruler was used to measure length and width of different larva and adults of insects.

Formula- Length and Width Ration= Length/Width

S.No	Code	Insect	Length (cm)	Width (cm)	Length:Width Ratio
1.	1	Water beetle sp.1 – Large	2.8	0.6	4.67:1
2.	2	Water beetle sp.2 – Large	2.9	0.6	4.83:1
3.	3	Water beetle sp.3– Medium	2.3	0.5	4.60:1
4.	4	Water beetle sp 4	1.1	0.25*	4.40:1
5.	7	Pygmy grasshopper nymph	2.6	0.2	13.00:1
6.	8	Grasshopper	3.0	0.3	10.00:1
7.	9	Giant water bug	7.7	3.2	2.40:1
8.	10	Stick insect	6.3	0.3	21.00:1
9.	11	Back swimmer – Large	1.8	0.5	3.60:1
10.	11	Back swimmer – Medium	1.3	0.2	6.50:1
11.	11	Back swimmer – Small	0.9	0.2	4.50:1
12.	12	Dragonfly Nymph– Large	1.3	0.2	6.50:1
13.	12	Dragonfly Nymph – Small	1.2	0.2	6.00:1
14.	13a	Dragonfly Nymph - Large	1.9	0.3	6.33:1

15.	13b	Dragonfly Nymph - Medium	1.3	0.3	4.33:1
16.	13c	Dragonfly Larvae – Small	0.7	0.2	3.50:1
17.	14	Dragonfly Nymph	1.6	0.5	3.20:1
18.	15a	Water scorpion – Large	5.9	1.8	3.28:1
19.	15b	Water scorpion – Medium	3.4	0.8	4.25:1
20.	15c	Water scorpion – Small	0.7	0.4	1.75:1
21.	16	Dragonfly Nymph – Big	2.8	0.5	5.60:1
22.	17a	Dragonfly Nymph	1.6	0.3	5.33:1
23.	17b	Dragonfly Nymph	1.5	0.3	5.00:1
24.	17c	Dragonfly Nymph	1.3	0.3	4.33:1
25.	17d	Dragonfly Nymph	1.2	0.3	4.00:1
26.	18	Rove beetle	0.6	0.1	6.00:1
27.	19	Dragonfly Nymph	5.0	0.7	7.14:1
28.	19	Dragonfly Nymph	2.6	0.4	6.50:1
29.	20a	Back swimmer	1.6	0.3	5.33:1
30.	20b	Back swimmer	1.4	0.2	7.00:1
31.	21	Larva/pygmy grasshopper	2.4	0.1	24.00:1
32.	22	Dragonfly Nymph	0.7	0.1	7.00:1
33.	23	Dragonfly Nymph	4.0	0.3	13.33:1
34.	24a	Dragonfly Nymph	1.1	0.3	3.67:1
35.	24b	Dragonfly Nymph	0.8	0.2	4.00:1
36.	25	Dragonfly Nymph	2.4	0.3	8.00:1
37.	26a	Dragonfly nymph-Large	2.3	0.5	4.60:1
38.	26b	Dragonfly nymph-Medium	1.4	0.3	4.67:1
39.	26c	Larva/nymph/naiad – Small	1.0	0.2	5.00:1
40.	27	Water strider	3.1	0.2	15.50:1
41.	29a	Dragonfly nymph	1.7	0.3	5.67:1
42.	29b	Dragonfly nymph	1.2	0.2	6.00:1
43.	30	Dragonfly nymph	2.0	0.4	5.00:1
44.	31	Water spider	0.3	0.2	1.50:1

Table1: Length and width ratio of different insects.

RESULT AND DISCUSSION

The observed insect taxa's body dimensions and length-to-width ratios varied significantly, according to morphometric data. Body width varied from 0.1 to 3.2 cm, while body length ranged from 0.3 to 7.7 cm. The computed length-to-width ratio showed significant variations in body form among the species, ranging from 1.50:1 to 24.00:1.

The larva/pygmy grasshopper had the greatest length-to-width ratio (24.00:1), followed by the water strider (15.50:1) and stick insect (21.00:1), both of which had extremely elongated body shapes. The ratio among the dragonfly nymphs ranged from 3.20:1 to 13.33:1, indicating differences in body proportions between specimens and developmental stages. The ratios of water beetles ranged from 4.40:1 to 4.83:1, which is rather mild.

The water spider (1.50:1), little water scorpion (1.75:1), and large water bug (2.40:1), on the other hand, had quite broad body shapes. Among the specimens measured, the huge water insect had the largest body width (3.2 cm) and length (7.7 cm) (Table 1)

Overall, the observed variation in length-to-width ratios shows significant morphological diversity among the aquatic and semi-aquatic insects sampled; water bugs, water scorpions, and water spiders were found to have broader body forms, whereas elongated forms were more common in taxa like grasshoppers, stick insects, and water striders.

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