

WEIGHT–LENGTH RELATION OF AN ASIAN CATFISH, *HORABAGRUS BRACHYSOMA* (GÜNTHER, 1864), (SILURIFORMES: HORABAGRIDAE) FROM RIVERS OF THE WESTERN GHATS, KERALA, INDIA

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Abstract. The weight–length (W – L) relation was estimated for an endemic catfish, *Horabagrus brachysoma* (known also as Asian sun catfish, Günther's catfish, Manjaletta, or Manjakoory). The fish were collected from the four major river systems of Kerala, part of the Western Ghats mountain range, between January 2005 and February 2006. The estimates for the parameter b of the W – L relation ($W = aL^b$) ranged between 2.7623 and 3.17968. Linear regressions on log- transformed data were highly significant ($P < 0.01$) for the species in all the riverine habitats studied. Analysis of covariance revealed significant difference between sexes of *H. brachysoma* in the Chalakudy River for the slopes of the regression line.

Keywords: fish, weight-length relation, endemic catfish, *Horabagrus brachysoma*

The weight–length relation (WLR) has been useful in rational management and resource conservation and determining weight and biomass when only length measurements are available, as indications of conditions and to allow for comparison of species growth between different regions (Oscoz et al. 2005).

The Günther's catfish (Asian sun catfish), *Horabagrus brachysoma* (Günther, 1864) is an endemic species restricted to rivers (and occasionally lakes) in the Southern region of the Indian subcontinent. This horabagrid catfish (Sullivan et al. 2006), locally known as Manjakoory, is listed as endangered species (Molur and Walker 2001) and has aquaculture potential in both the food and ornamental trades. Though listed as endangered, *H. brachysoma* contributes greatly to fresh water fish production in its areas of distribution and adds significantly to the animal protein intake of the riverine inhabitants. There has hitherto been no available information on the weight–length relation of the species except the work conducted in the Pamba River (Sunil Kumar et al. 1999).

This paper reports an attempt to determine the weight–length relation of the species in the riverine habitats of Kerala, southern India.

Monthly samples were bought from local fishers or commercial landing centres at two locations along each of the four major rivers of Kerala viz. Chalakudy, Periyar, Pamba, and Achankovil (part of the Western Ghats mountain range,) (Fig. 1). The fish were caught using hooks and gill nets (mesh size: 25–80 mm), operated from the dug-out- as well as plank-built canoes from January 2005 to February 2006. Specimens were preserved in 10% buffered formalin and a total of 488 specimens were examined. Individual length and weight measurements were made to the nearest 0.1 cm and 0.1 g respectively. The parameters a and b of the WLR ($W = aL^b$) were estimated by the least squares regression method using SPSS computer software. The regression coefficients of sexes were compared by analysis of covariance (ANCOVA).

The details of weight-length relationships of *H. brachysoma*, collected from the four rivers, are given in Fig. 2 and Table 1. The results of Student's t -test showed that regression coefficients of males and females collected from two rivers, Chalakudy, and Achankovil registered significant deviation from isometric value of 3, whereas those from Periyar and Pamba had regression coefficients similar to 3 (Table 1). The WLR were all sig-

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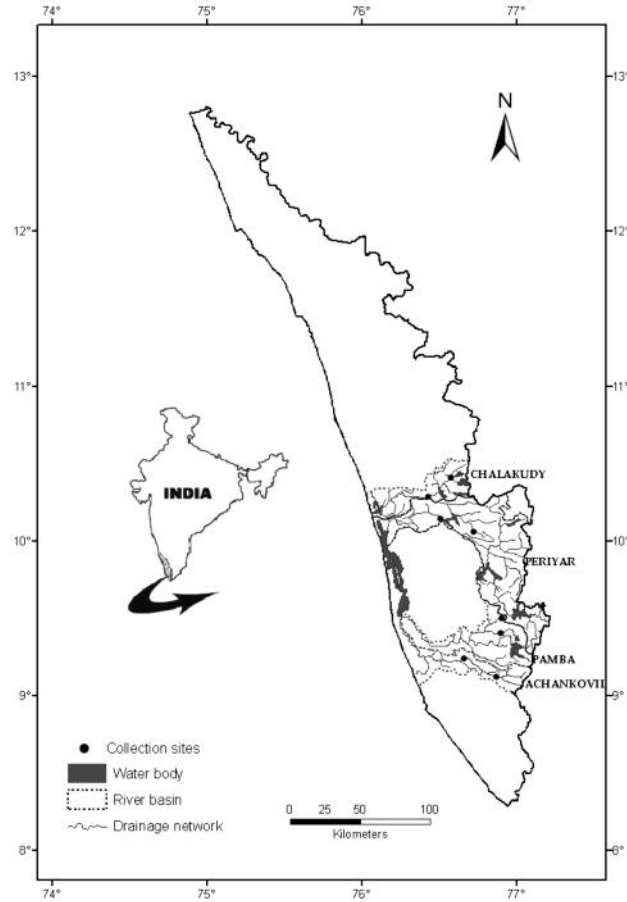


Fig. 1. Map of the area studied

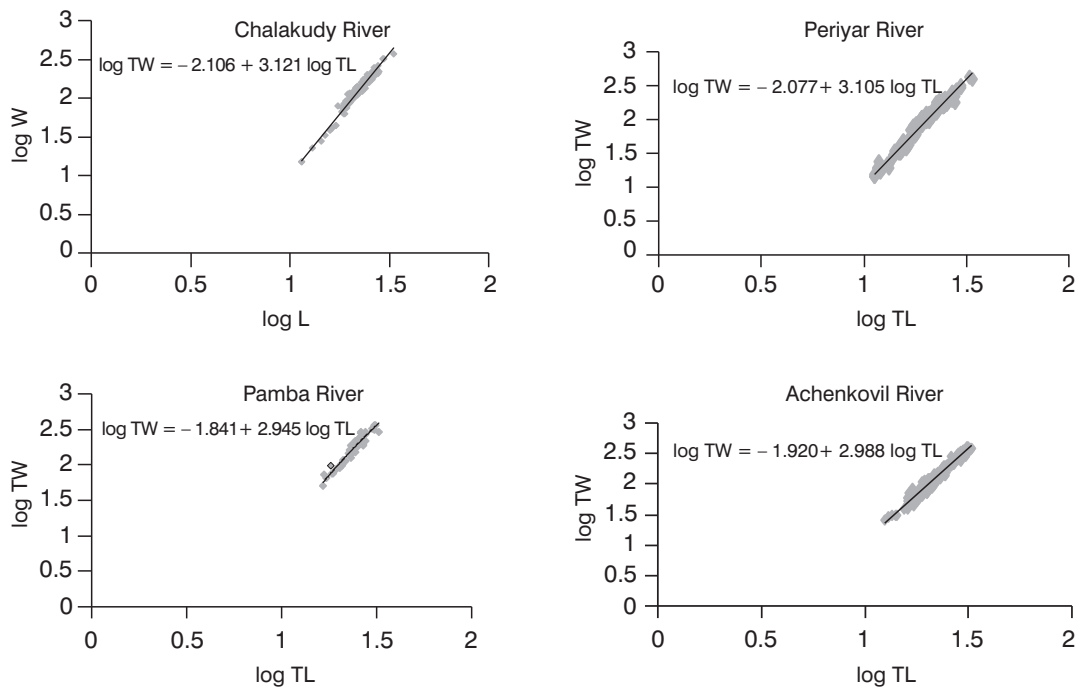


Fig. 2 . Weight–length relation of *H. brachysoma* from the four major river systems of Kerala

Table 1
Descriptive statistics and estimated parameters of the weight-length relation for *H. brachysoma* from the four major river systems in Kerala, southern India

River	Sex/Poolled	<i>n</i>	TL Min. [cm]	TL Max. [cm]	TW min. [cm]	TW Max [cm]	<i>a</i>	SE. of <i>a</i>	<i>b</i>	SE. of <i>b</i>	95 % CL of <i>b</i>	<i>r</i> ² (<i>P</i> < 0.01)*
Chalakudy	M	52	11.4	28	14.9	249	-2.187	0.095	3.18	0.072	3.036–3.324	0.975
	F	48	12.5	33.2	36.1	369	-1.911	0.15	2.978	0.111	2.754–3.202	0.94
	P	100	11.4	33.2	14.9	369	-2.106	0.081	3.121	0.061	3.000–3.241	0.964
Periyar	M	51	11.3	28.2	15.8	278	-2.034	0.116	3.072	0.09	2.892–3.252	0.96
	F	61	11.2	34	14.1	410	-2.105	0.075	3.127	0.058	3.011–3.242	0.98
	P	112	11.2	34	14.1	410	-2.077	0.065	3.105	0.05	3.005–3.204	0.972
Pamba	M	40	13.5	30.3	21.2	329	-1.925	0.222	3	0.165	2.666–3.334	0.897
	F	42	16.5	32.4	16.8	360	-1.687	0.183	2.84	0.133	2.572–3.108	0.92
	P	82	13.5	32.4	16.8	360	-1.841	0.139	2.945	0.102	2.741–3.148	0.912
Achenkovil	M	96	11.1	32.5	25	381	-1.92	0.08	2.988	0.061	2.867–3.109	0.962
	F	98	11.6	33	29.6	408	-1.98	0.083	3.04	0.062	2.918–3.162	0.942
	P	194	11.1	33	25	408	-1.955	0.057	3.018	0.043	2.934–3.103	0.963

M = male, F = female, P = pooled, CL = confidence level, * significant at 1% level.

nificant ($P < 0.01$) in the four river systems with r values greater than 0.900. The only exception was the female population in the Pamba River, which showed r values lower than 0.900. The values of the parameter b were well within the normal range of 2.5 to 3.5 (Carlander 1969) and the range given by Tesch (1971) (between 2 and 4).

We found significant differences between sexes of *H. brachysoma* in the Chalakudy River for the slopes of the regression lines ($F = 9.490$, d.f. = 99, $P < 0.01$). The males had higher b value and are thus heavier than females of same length in this river. Geographic location and associated environmental conditions, such as seasonality (date and time of capture), stomach fullness, disease and parasite loads, can also affect the value of b (Bagenal and Tesch 1978). The results of the WLR in the Pamba River were comparable to the results of the earlier work in the same water body (Sunil Kumar et al. 1999).

The female to male sex ratio in the four rivers were similar to the typical ratio of 1 : 1 (Avşar 1998). No significant difference was observed between the populations of *H. brachysoma* in the riverine habitats of Kerala with respect to the weight-length relations. Due to the selective properties of the fishing gear used in the present study, such as gill net, our samples do not include juveniles of the species. Hence, the use of these relations should be limited to the sizes used to estimate the parameters. The endemic and endangered status makes

H. brachysoma an important species to study and protect and the information on W - L relations of this fish is useful for more effective fishery management and conservation.

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