



## **Morphometric Variation in Sri Lankan Populations of *Puntius Dorsalis* and a Comparative Analysis with Specimens from India**

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### **Abstract**

*Puntius dorsalis* (Teleostei: Cyprinidae) is widely distributed in Sri Lanka and adjacent countries. No previous information exists on its intraspecific geographic variation and whether the Sri Lankan species is similar or different from Indian *P. dorsalis*. The present study aimed to describe the morphometric characters of *P. dorsalis* in Sri Lanka, and to carry out a comparative analysis with some Indian specimens. Fish specimens (n=5-30) from 10 selected streams or tanks with hydrological connection to different major river systems in Sri Lanka were collected (Kalu river, Nilwala river, Walawe river, Menik river, Kirindi oya, Mahaweli river, Malwathu oya, and Kelani river) and museum specimens (n=5) of one Indian location (Tamilnadu) was also included. Data of 20 morphometric characters of individual fish using pre-decided landmark points were obtained, and all characters were standardized to remove size effect prior to data analysis. Caudal Peduncle Length (CPL) and Pre Orbital Length (PrOL) of *P. dorsalis* were significantly different between males and females (t-test,  $p < 0.05$ , n=30, Nilwala River), thus further data analysis for population comparison was done excluding CPL and PrOL. Univariate ANOVA revealed significant heterogeneity in nine shape characters among eleven samples, but no population specific characters were found. In the discriminant function analysis (DFA) using significant characters for eleven populations, Eye Diameter was identified as having the greatest power to discriminate populations. In principal component analysis (PCA) plot, separation of two groups of populations was possible, where CV1 and CV2 explained 61.0% of the total variation in data. In the cluster analysis, Indian sample clustered with Nilwala river, Nuwara wewa, Menik River, Minneriya, Kalu river, Kirindi oya and Walawe river populations (clade 1) whereas Kelani and Mahaweli river populations made another clade. The results concluded that Indian specimens shared the characters of the first Sri Lankan clade, so that Sri Lankan specimens belonged to the same species *Puntius dorsalis* that was described from India. However, significant intraspecific heterogeneity is evident so that measures should be taken to conserve any genetic diversity present among them.

**Keywords:** cluster analysis, morphometric characters, *Puntius dorsalis*, shape variation.