

A Project report submitted to UGC under minor research project  
scheme

## **OSTEOLOGICAL AND MORPHOLOGICAL RELATIONSHIPS AMONG FAMILY CYPRINIDAE FISHES (F. 47-684/13 (WRO)).**

From a developmental perspective skeletal data might be used to evaluate primary homologies (Reilly and Launder 1988). At the anatomical level, skeletal information derived from various morphological systems (e.g. cranial, axial and appendicular) provide raw data to infer phylogenetic hypothesis as well as patterns of modularity (Mabee et. al. 2002). The family Cyprinidae is a morphologically diverse and one of the most dominant families of fishes consisting of about 220 genera and 2420 species (Nelson 2006). Our understanding on osteological structures of fishes from this family in India especially from Western Ghats is limited. The present study planed to present a detailed comparison of the skeletal systems in various Cyprinidae subfamilies using cleared and stained specimens

Objectives of the present work were as under-

- i. To document cranial, vertebral and caudal skeleton character of subfamily- Danioninae, Cyprininae and Garrinae.
- ii. To investigate variations in cranial, vertebral and caudal skeletons of fishes of these subfamilies of family Cyprinidae.
- iii. Cladistic analysis to decipher relationships between members based on osteological characters.

Cleared and stained specimens were observed under microscope. Elements of Neurocranium, Weberian apparatus, Jaw bones, Pectoral girdle, Orbital series bones, Neural spines, Preneural spines, Epural, Haemal spines, Hypurals were studied for variations.

The present research work has yielded variations in cranial, vertebral and caudal skeleton structures. These variations can be used as an atlas of skeletal features of Indian cyprinids.

Osteology of monotypic genus *Rohtee ogilbii* has been studied for the first time. Along with this osteology of members of subfamily Danioninae (Genus- *Salmophasia*, *Barilius*, *Devariao* and *Rasbora*), subfamily Cyprininae (Genus- *Osteobrama*, *Rohtee*, *Puntius*, *Gonoproktopterus*, *Osteochilichthys*, *Cirrhinus*, and *Schismatorhynchus*), and subfamily Garrinae (Genus- *Garra*) has been documented. Also osteology of outgroup taxa *Horabagrus braccysoma* has been completed. Furthermore osteological variations those have been recorded will also supplement molecular Phylogenetic studies of these subfamilies. The study will definitely help to resolve taxonomic uncertainties in many Western Ghats species of Cyprinidae.

#### CONTRIBUTION TO THE SOCIETY

- a) Observations in the present study can be used to develop an atlas of skeletal features of Indian cyprinids.
- b) Variations within different genera will enable to resolve taxonomic uncertainties of fish species.

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