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Adaptive ability of fish population by climate change in a biodiversity hotpot, Peninsular India

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Report

Ecosystems are increasingly affected by anthropogenic impacts such as land-use change and climate change, altering the structure and function of biological communities [1]. Changes in morphology is mostly due to evolution and environmental changes [2-5]. This will result in variation in both intraspecific and interspecific in freshwater fishes [6]. Morphological variations will occur in parameters like shape, diets and predation [7-9] and diet availability [10]. Variations in shape in fishes are based on the habitat changes, which will lead to deeper body or stream lined body. This will manure in swimming ability [11-14].

In fishes, head, body and fin characters will depict the feeding and habitat dwelling in aquatic system. For example, longer snout (snout length) are essential in bottom feeding, larger eyes are meant for finding out the prey in the bottom, slender peduncle (peduncle length) will help the fish to move swiftly in faster water like in fast mountain streams and dorsal fin base length will help the fish to maneuverability. Stream lined body with lesser values of body depth show that they move quickly in the water column. Greater body depth reveals that the fish will be confined to the bottom. A recently described freshwater fish belongs to the family Cyprinidae (Order: Cypriniformes) from a biodiversity hotspot, the Western Ghats of peninsular India was collected after 12 years from the same river basin. This species, *Hypselobarbus keralaensis* [15] belongs to the genus *Hypselobarbus* endemic to Western Ghats streams and rivers. Earlier it was designated as *H.kurali*. Ecomorphological characters used for locomotion and feeding were compared between the same species after a gap of 12 years. Based on the morphological data it can be predicted that the population has the adaptive ability due to climate change. Data were from the specimens from Manonmaniam Sundaranar University Museum of Natural History (MSUMNH) and also from Collections of M. Arunachalam (CMA).

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