Use of scale for the growth study of Indian major carp (*Cirrhinus mrigala* Ham., 1822) in tropical freshwater

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Age and growth study provide detail information on the life history, ecology of fish and habitat which is important to manage the water body for fish production and optimization of harvestable size. Scale based age and growth of Indian major carp (*Cirrhinus mrigala*, Ham. 1822) from Vallabhsagar reservoir was studied and minimum (25.0 cm and 145.0 g) and maximum (82.0 cm and 6500.00 g) length and weight of fish were observed. In length-weight relationship, constant (a) −2.212, exponent of slope; (b) 3.141 and correlation coefficient (r) 0.937 were determined. The back calculations of scale study evident that the fish attains the length and weight (27.07 cm, 243.42 g) at 1st, (38.18 cm, 644.26 g) at 2nd, (46.78 cm, 1222.73 g) at 3rd, (53.30 cm, 1813.97 g) at 4th, (62.82 cm, 2811.34 g) at 5th and (71.39 cm, 4248.94 g) at 6th year of age. The growth parameters, such as index of species average size (Øh) 11.86 and index of weight growth ($ØC_w$) 81.78 were observed. Similarly, growth constant average (Clt_{av}) were (0.410 and 0.211) indicating for two growth phases existed in fish, first is fast growing phase up to 2 years shows sexual immaturity and second is slow growing phase 2 years onwards shows sexual maturity. The results of this studies concluded that the growth of studied fish was satisfactory and environment of Vallabhsagar reservoir is conducive for survival of Indian major carp (*Cirrhinus mrigala*).

Keywords: Mrigal, Nain, Vallabhsagar