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RESEARCH

Fishery, growth, mortality, and stock assessment of endangered *Tor putitora* from Tehri dam reservoir, Uttarakhand, Himalayan foothills of India in relation to environmental variables

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Abstract The current study determined *Tor putitora* (Hamilton, 1822) fishery, growth, mortality, and population characteristics using length-frequency data assembled monthly from the Tehri dam reservoir in Uttarakhand from January to December 2022. The estimation data was separated into 40-mm class intervals, and population parameters were investigated and computed using the FiSAT-II software tool. $W=0.0101\ L^{2.906}$, where $a=0.0101$ and $b=2.99$, were determined as the length-weight relationships, and the growth performance index (ϕ) was computed to be 5.40. *Tor putitora* commercial catches in the Tehri dam reservoir were dominated by length groups of 360–399 and 320–359 mm. Different growth parameters were estimated using length-frequency data as $L_\infty=987.00$ mm, $K=0.26\ yr^{-1}$, and $t_0=-0.0003$ years. Z, M, and F mortality coefficients were estimated to be 1.01, 0.27, and 0.73, respectively. At the end of the first, second, third, fourth, fifth, sixth, and seventh years, the fish measured 226, 400, 535, 638, 718, 780, and 827, respectively, respectively. The estimated value of the exploitation rate (E) was 0.73 using the length-converted catch curve approach, which was determined to be somewhat higher than the optimum value (0.50). *Tor putitora* recruitment patterns from the Tehri dam reservoir reveal that the species only has one recruitment pattern every year, and that solely occurs from June to September. The current exploitation level (0.73) has already exceeded the maximum

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