IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 5, Issue 1, February 2025
Impact Factor: 7.67

Effects of Environmental Factors on Reproductive Activity in *Lepidocephalichthys Guntea* (Ham.): Role of Photoperiod and Temperature

Sumana Kaviraj and Dr. Mousumi Roy
Research Scholar, Department of Zoology
Research Supervisor and Assistant Professor, Department of Zoology
Arunodaya University, Naharlagun, Arunachal Pradesh, India.

Abstract: *The present study investigates the effects of environmental factors, particularly photoperiod and temperature, on the reproductive activity of Lepidocephalichthys guntea (Hamilton, 1822), a small freshwater cobitid loach widely distributed in South and Southeast Asia. L. guntea is a freshwater/brackish, demersal and tropical fish species reported from Pakistan, northern India, Bangladesh, Nepal, Myanmar and Thailand. Reproductive activity in teleost fishes is generally regulated by interactions among external environmental cues and internal endocrine mechanisms. Among these external cues, photoperiod and temperature are among the most important factors controlling gonadal development, gamete maturation and spawning periodicity.*

In the present study, adult specimens of L. guntea were collected monthly from Ramnagar block-II over a period of one annual reproductive cycle. Environmental parameters such as day length, water temperature, rainfall, dissolved oxygen and pH were recorded. Reproductive activity was assessed through gonadosomatic index, gonadal maturity stages, ova diameter, fecundity, sex ratio and histological examination of gonads. The results indicated that gonadal development increased with rising temperature and increasing photoperiod during the pre-spawning phase. Peak reproductive activity was observed during July, when water temperature and day length were favourable for maturation and spawning. Similar recent studies on L. guntea from Bangladesh have reported seasonal reproductive patterns and have emphasized the role of environmental factors in its breeding biology.

The study suggests that photoperiod and temperature act as major environmental regulators of reproductive activity in L. guntea. These factors likely influence the hypothalamo-pituitary-gonadal axis, leading to changes in gonadotropin release, gametogenesis and spawning behaviour. The findings are useful for understanding seasonal breeding, conservation biology and possible captive breeding management of this small indigenous fish.

Keywords: *Lepidocephalichthys guntea*; photoperiod; temperature; reproductive cycle; gonadosomatic index; fecundity; spawning season; environmental factors; teleost reproduction