

Feature Review

Open Access

Effects of Salinity Variation on Growth and Health of Yellowfin Seabream (*Acanthopagrus latus*)

Ming Li, Congbiao You ✉

Hainan Tropical Agricultural Resources Research Institute, Tropical Microbial Resources Research Center, Sanya, 572025, Hainan, China

✉ Corresponding author: congbiao.you@hitar.org

International Journal of Marine Science, 2026, Vol.16, No.2 doi: [10.5376/ijms.2026.16.0009](https://doi.org/10.5376/ijms.2026.16.0009)

Received: 19 Feb., 2026

Accepted: 28 Mar., 2026

Published: 11 Apr., 2026

Copyright © 2026 Li and You, This is an open access article published under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Preferred citation for this article:

Li M., and You C.B., 2026, Effects of salinity variation on growth and health of yellowfin seabream (*Acanthopagrus latus*), International Journal of Marine Science, 16(2): 111-126 (doi: [10.5376/ijms.2026.16.0009](https://doi.org/10.5376/ijms.2026.16.0009))

Abstract Salinity is one of the most important environmental factors affecting the growth, physiological regulation, and health status of marine fish. Yellowfin seabream (*Acanthopagrus latus*) is an economically valuable aquaculture species with strong environmental adaptability; however, fluctuations in seawater salinity caused by climate change and intensive aquaculture practices may negatively affect its production performance. This review summarizes the effects of salinity variation on the growth performance, physiological responses, immune function, and molecular regulatory mechanisms of yellowfin seabream. Changes in salinity influence feeding activity, nutrient utilization, energy allocation, osmotic regulation, antioxidant capacity, and disease resistance through complex physiological and biochemical pathways. Salinity stress can induce oxidative damage, alter hematological parameters, and regulate the expression of osmoregulatory and stress-related genes, including ion transporters and antioxidant-related factors. Case studies under different salinity conditions further demonstrate the importance of maintaining suitable salinity ranges for improving growth efficiency and aquaculture sustainability. Future research integrating multi-omics approaches, environmental monitoring technologies, and selective breeding strategies will provide new insights into salinity adaptation mechanisms and promote climate-resilient aquaculture of yellowfin seabream.

Keywords Yellowfin seabream; Salinity variation; Growth performance; Osmoregulation; Aquaculture health management

1 Introduction

Yellowfin seabream (*Acanthopagrus latus*) is a euryhaline sparid widely distributed in the Indo-West Pacific and is recognized as an economically important coastal fish in several Asian production regions. In the northern South China Sea, it has been described as the most economically important sparid species, highlighting its commercial relevance to regional fisheries and aquaculture. The species is also important in the Pearl River Estuary and adjacent traditional fishing grounds, where its value is tied to both capture fisheries and habitat-linked population dynamics (Tang et al., 2023). Its culture potential is strengthened by strong environmental plasticity, because *A. latus* tolerates broad changes in salinity and temperature and can be reared in ponds or cages (Zhao et al., 2025). This euryhalinity is not only commercially useful but biologically distinctive, since the species naturally occupies coastal environments with large and frequent salinity fluctuations and therefore serves as a suitable model for studying teleost osmoregulation. Field evidence further shows that *A. latus* uses habitats spanning low- to moderate-salinity estuarine waters and more marine environments across its life cycle, with repeated migration between these habitats common in many individuals. This ecological pattern helps explain why salinity is a central variable in yellowfin seabream production: hatchery, nursery, pond, and cage systems often expose fish to abrupt or seasonal changes caused by rainfall, freshwater inflow, evaporation, and estuarine mixing. For aquaculture, salinity is therefore not simply a background water-quality parameter; it is a production factor that shapes growth rate, feed use, survival, physiological stability, and ultimately economic return (Seale et al., 2024).

Salinity variation affects fish physiological ecology because osmotic imbalance alters ion and water homeostasis and forces reallocation of energy toward osmoregulation and stress defense (Mkulo et al., 2025). In teleosts, this regulation depends mainly on coordinated responses of the gill, intestine, kidney, and associated epithelial transport systems, which sense environmental change and switch between salt uptake and salt secretion strategies. Across