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Visual spectral sensitivity of rock bream (Oplegnathus fasciatus) by the LED light

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The characteristics of aquatic light fields are generally reflected in the visual systems of fishes inhabiting them. Therefore, research on light sensitivity of fish may be useful to explain the correlation between visual function and habitat, behavior and distribution of fish. Rock beam are important species in coastal ecology and one of the main species for aquiculture in Korea. To maintain resources and understand ecology of rock bream, a spectral sensitivity of scotopic rock bream (N=5, TL=14.5±1.8 cm, W=59.3±20.4 g) in the range of visible light (408 to 656 nm) was investigated using light-emitting diodes (LEDs). To assess electrophysiological response of fish, an electroretinogram (ERG) of the dark-adapted eyes of fish was recorded. ERG potentials were recorded by using three silver-wire electrodes (540800, A-M systems, USA, $\emptyset 0.2 \times L11$ mm): the recording electrode was placed on the corneal surface and the two reference electrodes were placed on the skin around. Two of four typical waves (a-, b-waves) of ERG potentials were observed. To determine spectral sensitivity, we measured the b-wave amplitude for each individual. In the dark adapted rock bream (n=5), a spectral sensitivity peak was estimated by fitting function at approximately 499 nm. Collectively, these results demonstrate that the rockfish has suitable visual capabilities for inhabiting coastal water.

Biography

Hyeon-Ok Shin has completed his PhD from Tokyo University of Marine Science and Technology of Fisheries Science. He is the Professor of the Division of Marine Production System Management, Pukyong National University. He has published more than 76 papers in reputed journals and has been serving as an Editorial Board Member of repute.

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