

## **Development of Morphology in Hatchery-Reared *Rutilus Frisii* Kutum Larvae**

### **ABSTRACT**

Most fish are poorly developed at hatching. They undergo important functional and morphological changes during the early larval period. This study was conducted to monitor the morphological changes of Caspian kutum *Rutilus frisii* kutum larvae in early life stages. Fertilized kutum eggs were incubated at 16-19°C in 8 l glass incubators for 9.5 days. At first feeding (3 days after hatch) larvae were fed two times per day with egg yolk for 5 days, and then *Artemia* nauplii and egg yolk until day 30. The juveniles were then transferred to an outdoor fish hapa nets and further reared until day 60. Larval development, growth, and some morphological changes were described from day 0 to end of experiment. The results showed that there were 3 main stages and 18 sub-stages of ontogenetic development in Caspian kutum from hatching to juvenile stage. The most important change in these stages was change from endogenous to exogenous feeding. During post hatch development, the various organs gradually differentiated and became identifiable.

**Keyword:** Early ontogenic development, *Rutilus frisii* kutum, Morphological changes, The Caspian Sea