Embryogenesis and early larval development in wild-caught Levantine scraper, Capoeta damascina (Valenciennes, 1842)

Levantine scraper, Capoeta damascina is a candidate species for future stock assessments, conservation studies, and hatchery efforts. Herein, we documented embryonic and early larval development, from egg activation to the exogenous feeding period, using morphological and histological landmarks. Embryos were obtained by in vitro fertilization from hormonally induced wild-caught broodstock, and subsequent development was monitored at temperatures coinciding with native conditions. Embryonic development from fertilization to hatch lasted ~105–110 hr. Larvae emerged with unpigmented eyes and body morphology, as well as an undifferentiated digestive tract. The mouth was closed at hatch by the oropharyngeal membrane and opened by the early endogenous feeding period. Trabeculae cartilage, quadrate bone, and Meckel's cartilage of the endoskeleton were present during the endogenous feeding period. During this period, the larvae underwent considerable changes in craniofacial morphology, locomotion, and organogenesis of the digestive tract. The cartilaginous floor of the neurocranium developed and the first four ceratobranchials appeared simultaneously at the end of endogenous feeding period. The digestive tract was differentiated into buccopharynx, esophagus, and small intestine during the endogenous feeding period. The intestinal valve and numerous longitudinal folds at the posterior region of the intestine formed together by the endo–exogenous feeding period. Major developmental events in retinogenesis occurred during the endogenous feeding period. When larvae entered exogenous feeding the mouth was fully-functional. Additionally, liver size and eye diameter increased. Our analysis of embryonic and early larval development in Levantine scraper aligned with other freshwater fishes.