Embryonic Development of the Sacramento Perch (*Archoplites interruptus*): A Preliminary Report

On January 13th 2003 a captive bred pair of Sacramento perch spawned in a 55 gallon aquarium. Observation began at 2:18 p.m. and eggs were produced in decreasing numbers until 2:35 p.m. Since the female was thinner than had been previously observed, spawning probably commenced before 2:18 p.m. The female continued to spawn with the male although no eggs were expressed. At 3:05 p.m. the female was driven away by the male (Spawning was video taped on Hi 8 mm tape). Water temperature was 27.84°C at the time of spawning. Eggs were removed for observation by removing a section of the spawning substrate for each sampling interval. Eggs were placed in a petri dish and photomicrographs were taken using 40x at 1, 1.5, 3, 6, 9, 12, 15, 18, 21, 24, and, 27 hours. A 20x objective was used at 44, 66, 90, 110, 133 and 158 hours. Eggs and larvae were preserved in 10% buffered formalin at sample intervals from 3 hours thru 90 hours. A photomicrograph of an 18 minute post fertilization egg was taken from another spawning (27.04°C at 100x). Duration of spawning was observed to be at least 17 minutes (may be as long as 20-25 minutes) and eggs sampled during the early sampling intervals varied in developmental stages. Eggs were left in the spawning tank and guarded by the male who also provided constant aeration by fanning the eggs. At each sampling interval spawning substrate with eggs attached was removed from a random portion of the spawning substrate. The male aggressively defended the eggs at each sampling interval. Photomicrographs and fixation of eggs and larvae were done within a maximum 15 minutes from each sampling interval.

Fertilized Sacramento perch eggs are spherical and approximately 850 microns in diameter with a single oil globule 350 microns in diameter (in this study). Eggs are yellowish white in color and adhesive to slightly adhesive. When spawning substrate was removed removing some eggs were dislodged and dropped to the bottom of the tank. Eggs that fell to the bottom were still sticky but could be removed with a burst of water from a turkey baster. Observation of eggs at a specific orientation was difficult due to the attachment to the spawning substrate and depth of water in the petri dish. Eggs (on spawning substrate) were removed at 25 hours and placed in a 20 gallon aquarium for hatching. Eggs started to hatch at 27 hours (27.84°C). Newly emerged larvae were incomplete and had no eye pigmentation, minimal if any mouth parts, and an incomplete gut. Larvae remained on the substrate and some appear to be attached to the substrate by some type of “thread”. When currents disturb the larvae they swim in a circle as if tethered. Attachment of this “thread” appeared to be on the abdomen. Swim-up started at approximately 91 hours post fertilization with complete swim-up by 96 hours. First feeding started at approximately 110 hours. *Brachionus plicatilis* (marine rotifer 50-199 microns in width) was readily accepted by the larval fish and first feed rotifers were approximately 110-115 microns in width. It was also noted that rotifers were still alive in the intestine of early feeding larvae. Temperature ranged from 27.84°C to 26.76°C from fertilization to hatch. Photomicrographs are attached showing development at each sampling interval.
- 18 minutes
- 1 hour
- 1 hour
- 1.5 hours
- 3 hours #1
- 3 hours #2
- 6 hours
- 9 hours
- 12 hours
- 15 hours
- 18 hours, Movement observed
- 21 hours, Heartbeat observed
- 24 hours
- 27 hours, hatch