Robins, C. R., and E. C. Raney. 1957. Distributional and nomenclatorial notes on the suckers of the genus *Moxostoma*. Copeia, 1957 (2): 154-155.

Rounsefell, G. A., and W. H. Everhart. 1953. Fishery Science its methods and applications. John Wiley & Sons, Inc., New York: 1-444.

Smith-Vaniz, W. F. 1968. Freshwater fishes of Alabama. Auburn Univ. Agr. Exp. Sta.: 1-211.

Swingle, W. E. 1964. Instructions for length-weight programs for IBM 1620 in FORTRAN-FORMAT (FORTRAN I). Auburn Univ. Agr. Exp. Sta., Zoo.-Ent. Dept. Series, Fish. (1): 1-19.

Swingle, W. E. 1965 Length-weight relationship of Alabama fishes. Auburn Univ. Agr. Exp. Sta., Zoo.-Ent. Dept. Series, Fish. (3): 1-87.

Trautman, M. B. 1957. The fishes of Ohio. Ohio State Univ. Press: 1-683.

Vladykov, V. D. 1942. Two fresh-water fishes new for Quebec. Copeia, 1942 (3): 193-194.

OBSERVATIONS ON EARLY DEVELOPMENT OF WHITE BASS, ROCCUS CHRYSOPS (Rafinesque)

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INTRODUCTION

Very little published information is available regarding the development of white bass with the exception of those described from Lake Texoma (Taber, 1969). This study describes certain developmental stages of white bass by culturing the eggs obtained from ripe adults.

MATERIALS AND METHODS

On April 2, 1969, about 17 ripe white bass were obtained by electroshocking from Brush Creek of Beaver Reservoir. At the time of collection, the water temperature was 55 F (air 62 F). The water was clear with the gravel bottom visible up to 8 feet. A pair of ripe fish were stripped in the field and the fertilized eggs were brought to the laboratory and reared at 62 F. Developmental stages were outlined by camera lucida. Due to fungal attack after 24 hours, most of the eggs and larvae perished. All the larvae perished by 150 hours.

OBSERVATIONS

Soon after fertilization, eggs became invested with sticky white gelatenous mass, and firmly adhered to solid surfaces. The unfertilized eggs turned opaque after 30 minutes.

Rate of development slowed down in eggs kept at 55 F and none of them progressed up to hatching stage even after 72 hours, while those kept at 68 F had approached gastrulation within 6 hours and died. The optimum temperature for development appeared to be 60 - 62 F. Large scale mortalities were observed in the first hour, at about 24 hours after fertilization and at hatching. Heavy fungal infestation was noticed.

Characteristics at various stages of development are given below:

Time after fertilization	Characteristics
1. 10 minutes	Ova became turgid, and germinal disc was clear. Diameter of egg shell: 0.7-0.9 mm. Diameter of egg proper: 0.6-0.8 mm. Diameter of oil globule: 0.25-0.3 mm.
2. 30-45 minutes	Two to four cells. Two-celled stage is very characteristic. (pl. IA)
3. 6-7 hours	Blastomeres spread over 1/3 of the surface. (pl. IB)
4. 10-12 hours	Median thickening of cells above oil globule.
5. 14-15 hours	Late gastrula with circular margin around the oil globule.
6. 20 hours	Neutral tube is formed. Brain and optic vesicles and lenses are clear. (pl. IC)
7. 24-26 hours	Somites are noticeable. Eyes are observed. (pl. ID)
8. 28-30 hours	Embryo extended over 3/4 around yolk sack. (pl. IE)
9. 40 hours	Embryo extended completely around yolk sack.
10. 44 hours	Embryo grew further and formed a spiral around yolk sack.
11. 48-50 hours	Embryos twitching and moving frequently. Powerful jerks by the posterior part of the embryo, resulted in hatching from egg; the hatchlings rested on their backs. Some larvae failed to extricate their anterior region from the shell and perished.
12. 62 hours	The straight intestine with distinct anus was present. The head is still continuous with yolk sack.
13. 72 hours	Larvae grew fast. Head is lifted from yolk sack. The oil globule started moving to the forward position in the yolk sack. (pl. IIF)
14. 80 hours	The oil globule was located in the anterior 1/3 of the yolk sack. (pl. IIG)
15. 96 hours	The larvae were found resting occasionally on sides. Length ranged from 2.4 to 2.6 mm. (pl. IIH)
16. 120 hours	The pectoral fin buds were formed. (pl. II-I)
17. 130 hours	The larvae were resting commonly on their sides. Rudimentary oral cavity is observed. (pl. IIJ)
18. 140 hours	The oil globule became indistinct. Chromatopores were observed, along the body, more frequently in the posterior region. At this stage the larvae were highly sensitive to temperatures beyond 64 F. The mouth was formed. Few exhibited normal dorso ventral position in water. Length ranged from 3.6 to 3.9 mm.
19. 148 hours	The mouth was connected to the intestine. Total length ranged from 4. 0-4.5 mm. (pl. IIK)

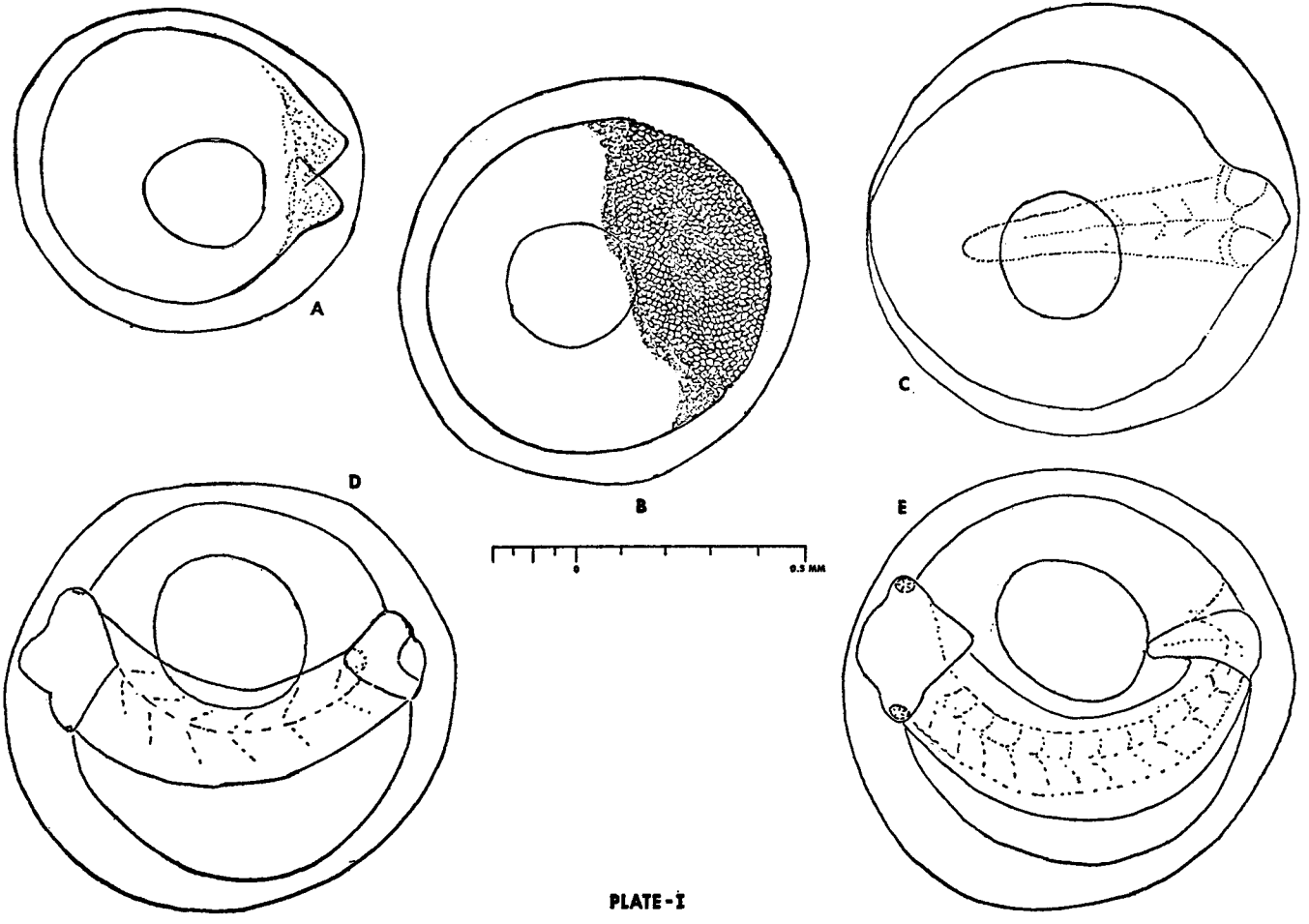

PLATE - I

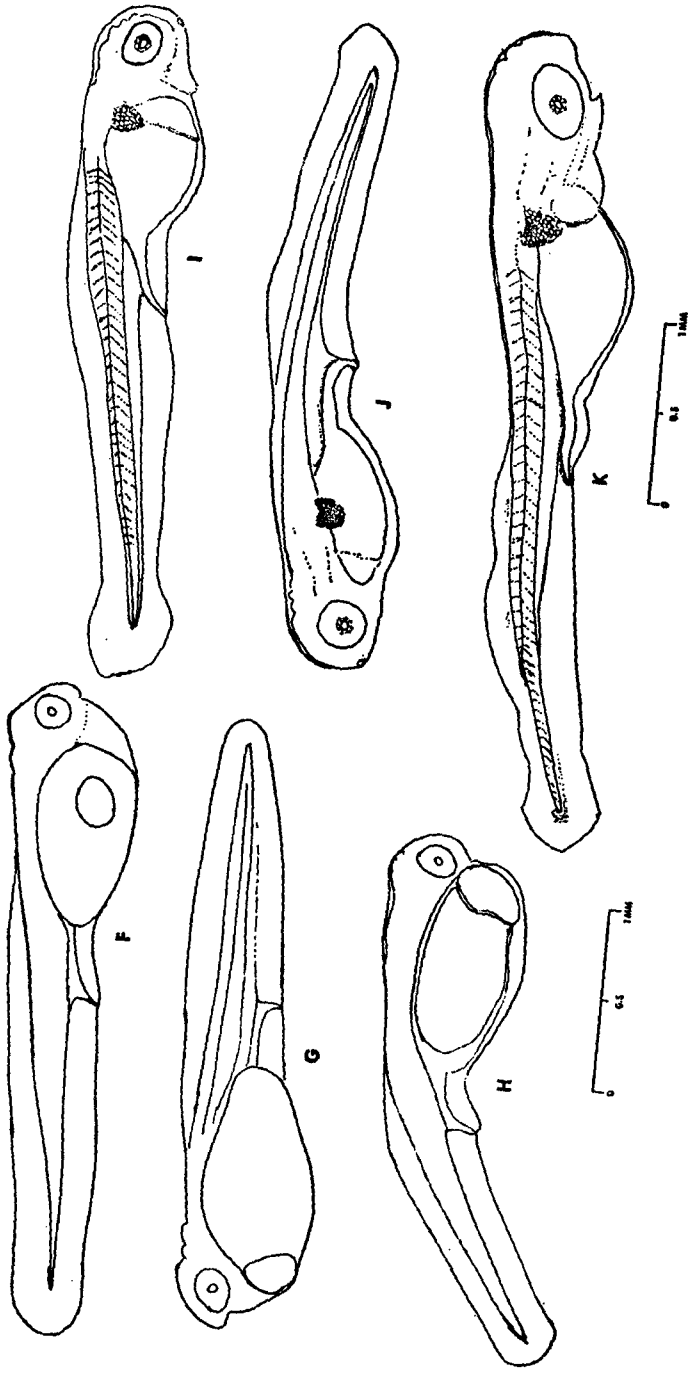

PLATE - II

The larvae collected in the meter nets had characteristics which indicate that they progressed beyond 150 hours of development at 60-62 F.

LITERATURE CITED

Taber, Charles A. 1969. The distribution and identification of larval fish in the Bum Combe Creek arm of Lake Texoma with observation on spawning habits and relative abundance. Doctoral dissertation submitted to the University of Oklahoma. 120p.

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EFFECT OF TEMPERATURE CHANGES UPON DEVELOPING STRIPED BASS EGGS AND FRY

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ABSTRACT

A comparison study was made to determine the effects of temperature upon the percent hatch of striped bass eggs and upon fry survival. No significant difference for percent hatch was found at incubation temperatures between 60°F. and 75°F. at 5° increments. Temperature shock between 65°F. and higher temperatures appears to have a more deleterious effect on freshly fertilized eggs than eggs incubated for 16 or 44 hours at 65°F. before transfer to the same higher test temperatures.

Fry produced at 65°F. and transferred to the various test temperatures two days after hatching showed an apparent difference in survival as temperatures exceeded 65°F. A significant difference in fry survival was observed only for those eggs hatched at the various test temperatures and then exposed to 80°F. temperature.

BACKGROUND

Much interest has been generated during recent years towards the use of striped bass to fill the need for a powerful predator that is also a highly prized game fish. The need for the striped bass seems far more widespread than is habitat meeting the rather specialized spawning requirements of this species. Realization of the full potential will be predicated upon successful relocation rather than upon successful natural reproduction.

Relocation with some species is most feasibly accomplished through the transfer of eggs for hatching in the new environment. It is essential, therefore, to know the approximate tolerance limits of both striped bass eggs and fry toward the major environmental factors to which they may be exposed during relocation. Research in the effects of incubation temperature on striped bass eggs or fry, either in a natural or an experimental environment, has been limited.