

### Citation

Kloth, Thomas C, 1980. Observations on the spawning behavior of captive Florida Pompano, Trachinotus carolinus, Copeia, 1980 (4): page 884

Copeia, 1980(4), Pp- 884-886  
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Ichthyologists and Herpetologists

OBSERVATIONS ON THE SPAWNING BEHAVIOR OF CAPTIVE FLORIDA POMPANO, TRACHINOTUS CAROLINUS.—In 1972, a series of experiments was conducted to induce the Florida pompano, *Trachinotus carolinus*, (L.) to spawn through hormone injections. The experimental procedure included manually stripping eggs and sperm into glass bowls. Between 22 April and 9 August, semi-natural spawns (i.e. hormone induced), occurred five times in the holding tank. Viable eggs with developing embryos were recovered each time. On 19 May, the actual spawning act was observed,

Pompano were selected from outdoor holding tanks without environmental controls. Oocytes were removed with a catheter tube and examined for development. Specific selection criteria were oocyte diameter, degree of vitellinogenesis and number of mature oocytes. Sperm samples were examined for spermatozoa quantity and activity. Females received two injections of human chorionic gonadotropin (ICN Nutritional Biochemicals) with a 24-hour interval between injections. Ovulation usually occurred eight hours after the second injection. Males received one injection of acetone dried, powdered carp (*Cyprinus carpio*) pituitary (Stoller Fisheries, Inc.) approximately 24 hours before the anticipated spawning time.

Injected fish were held in a circular spawning tank (1.83 m in diameter and 0.91 m deep) equipped with an external biological filter. A small, electric pump circulated water between the tank and filter, and also provided water circulation in the tank. Salinity was 35‰, and water temperature was 26-28 C. The room was dimly lighted—approximately 25 f-c at the water surface—to prevent the pompano from becoming overly excited.

On 19 May, the spawning behavior of two females was observed. Female 325 was in the spawn tank with four males while the other females were kept in a separate tank. Spawning behavior of Female 325 was first observed at 1644 h, approximately 32.5 hours after the initial hormone injection. She swam slowly around the tank bottom with the males following her and then rose to mid-tank. Here she assumed a stationary position for 15 sec with a male positioned below her. During this time, her body vibrated, presumably as eggs were being expelled. The male remained almost motionless except for an occasional quiver of his entire body. After the spawning act, she returned to the bottom and continued swimming with all the males following her. Six similar spawning acts of

10-15 sec duration were observed between 1644 and 1725 h with an interval of 4~10 min between spawns. On two occasions, two males participated in the spawning sequence. In these cases, one male was positioned on each side of the stationary female, slightly below her midline.

Because of the dim lighting in the spawn room, the actual expulsion of eggs and sperm was not observed. Eggs were seen floating at the water surface soon after the initial spawning act. Female 325 was removed from the spawn tank and replaced by Female 65. The males were not replaced. The 4 males started to follow her immediately and spawning behavior was observed 15 min later at 1800 h. Two spawning acts occurred with an 8 min interval and followed the same pattern as with Female 325. Each spawning act lasted 15 sec and involved two males. After the second spawning act, the female was removed, and her remaining eggs were stripped manually into glass bowls. The males were also removed from the spawn tank to facilitate egg removal. Approximately 125,000 eggs were collected from the spawn tank and placed in incubator aquariums. Microscopic examination of the eggs revealed 52% fertilization and normal embryonic development at the 16-cell stage.

Although there has been a great deal of interest in the Florida pompano because of mariculture potential, knowledge of its reproductive behavior is limited. Pompano apparently spawn offshore in both the Atlantic Ocean and Gulf of Mexico (Fields, 1962; Finucane, 1969). They have a protracted spawning season of April-October with a peak in April and May (Finucane, 1969). Induced spawning of pompano by hormone injections has been reported (Finucane, 1970; Hoff et al., 1972; Hoff et al., 1978). Hoff et al. (1978) also reported the seminatural spawning of pompano. However, they did not observe the spawning act.

The natural spawning behavior of several species of carangids has been reported. Von Westernhagen (1974) observed the spawning behavior of two carangids, *Alectis indicus* (Ruppell) and *Caranx ignobilis* (Forsk), in their natural reef environment. With both species, one female was pursued by two or three males near the bottom until a spawning pair was formed. Von Westernhagen did not observe the spawning act of *Alectis indicus* but reported spawning pairs of *Caranx ignobilis* slowly circled each other near the sandy bottom while eggs and sperm were released. Breder and Rosen (1966) discussed spawning in the Carangidae. They reviewed spawning accounts of *Seriola dorsalis* (Gills) and *Caranx sexfasciatus* (Quoy and Gairnard), but did not mention *T. carolinus*. In both of these cases, spawning fish continued to swim as opposed to *T. carolinus* which remained stationary while spawning.

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