

EVALUATION OF FOUR FEED TYPES ON MORTALITY, GROWTH, AND REPRODUCTION OF THE MOSQUITOFISH, *GAMBUSIA AFFINIS*

Craig W. Downs and Christopher E. Miller

Contra Costa Mosquito Abatement District
155 Mason Circle
Concord, California 94520

ABSTRACT

The effects of four feed types (*Artemia* nauplii, decapsulated *Artemia* cysts, trout and salmon starter, and "crushed" floating catfish/35) were evaluated on mortality, growth, and reproduction of the mosquitofish, *Gambusia affinis* (Baird and Girard).

Mosquitofish, less than 24 hours old, were obtained from our production facility. Three groups of 10 fry each were randomly assigned to each of the four feed types and a group of 42 fry was used to estimate initial mass and length. Fish were measured for wet mass and standard length at the initiation of the study, 30, and 70 days. Fish were measured for standard length by individually placing them in a sealable plastic bag with tank water and gently cornering the fish in the bag and placing on a ruler. Wet mass was determined by tarring a beaker of tank water, netting out the fish, allowing excess water to drain before placing the fish in the beaker. Mean initial wet mass of individual fry was 7.0 mg. and mean initial standard length was 7.88 mm.

This study was conducted in an environmentally controlled room at a temperature of 25° C under a florescent light photoperiod of 15L:9D. The fish were cultured in twelve 11.36 L plastic aquaria which were partially filled with 7.57 L of unchlorinated well water (1.32 fry/L of water). Initially, water was monitored for dissolved oxygen and ammonia. It was determined that by the fourth

day ammonia was at an unacceptable level (>0.5 mg/L). Therefore tanks were cleaned, by siphoning tank bottoms, and partial water changes (1/2 tank volume) were conducted every third day.

Brine shrimp eggs (O.S.I.® brand, Hayward, CA) were purchased and decapsulated and/or hatched. Trout and salmon starter and floating catfish/35 feeds were purchased from Rangen Inc., Buhl, Idaho. Each tank was feed 0.05 grams of the respective feed type twice daily. This amount was chosen to provide excess feed at all feedings. This amount was adjusted after the 30-day measurements to correct for growth. At 30 days, fish sex was not determinable and the fish were grouped and weighed by tank. At 70 days, sex was easily determined and fish were grouped by tank and sex and measured. Fish were held for 72 days at which time the experiment was terminated.

At 30 days of age, there was no significant difference in survival of fish fed the four feed types but there was a significant difference in fish length in the fish fed *Artemia* versus those fed the other two feed types. At 60 days of age, there was a significant difference in survival, fish mass, and fish length in fish fed *Artemia* versus those fish fed the other two diets. Parturition occurred at 55, 70, and 71 days in the three tanks fed *Artemia*. No signs of embryo development (gravid spot or abdomen enlargement) occurred in tanks fed either trout and salmon starter or catfish feeds during the study.