



PD/A CRSP SIXTEENTH ANNUAL TECHNICAL REPORT

STRAIN VARIATIONS IN SEX RATIO INHERITANCE

Eighth Work Plan, Kenya Research 2 (KR2)
Abstract

Karen Veverica
Department of Fisheries and Allied Aquacultures
Auburn University, Alabama, USA

Jim Bowman
Department of Fisheries and Wildlife
Oregon State University
Corvallis, Oregon, USA

ABSTRACT

Pond D3 at Sagana Fish Farm, Sagana, Kenya, was dedicated to pair spawns and rearing of fry for this activity. In addition to work conducted in 1997, fry from 24 pair spawns were transferred to hapas from January through April 1998. Although more than 100 fry were obtained from most spawns, survival to 3 g was very low in the rearing hapas, and fewer than 25 fingerlings per spawn were obtained. This number was too low to complete the protocol as planned, and the fingerlings were discarded. Survivals of about 80% were obtained during sex reversal in similar hapas in a similar pond. The only difference is that fry being sex-reversed are reared at much greater densities than the single-spawn fry. To date, only six batches of single-spawn fingerlings with adequate survival beyond a size of 3 g have been obtained. These were initially reared in hapas, followed by three weeks in the hatchery. However, these batches still contained no more than 60 fish, which is an insufficient number for this study. Recently a blower has been installed in the hatchery and a complete diet has become available, so we plan to grow out single spawns in the hatchery after the end of the cool season (end of August). Temperatures in the cool season are too low (20°C and less) for growing tilapia fry in the hatchery.

Ed. Note: Kenya Research 2 (KR2), "Strain Variations in Sex Ratio Inheritance," was to be a collaboration of the Africa CRSP project with an activity submitted by R. Phelps et al. as Study A in their proposal "Monosex Tilapia Production through Androgenesis." For context, a summary of the original project description from the Eighth Work Plan is included:

The few populations of *O. niloticus* that have been studied give mean population sex ratios of 50:50 that would be expected from a XX:XY inheritance pattern but with considerable variation from 50:50 when individual pairs are considered. The source of this variation is unknown and may be a characteristic of the species or only the strain which was evaluated. A minimum of 50 pair spawns of non-hormone-treated *O. niloticus vulcani* will be made in outdoor hapas. Fry will be collected and reared as individual sets to a minimum of 5 cm in length. The sex ratio of each set of progeny will be determined by examining the gonads of a minimum of 100 fish per set of progeny. Sex ratio data from each spawn will be analyzed by Chi square to determine whether it differs from the expected 50:50. The frequency distribution of all spawns within this strain will also be determined and compared across other strains that will be examined in the larger study.

