

# NOTICE OF PUBLICATION



AQUAFISH COLLABORATIVE RESEARCH SUPPORT PROGRAM

## RESEARCH REPORTS

Sustainable Aquaculture for a Secure Future

**Title:** Comparative studies on survival and growth performance among diploid, triploid and tetraploid dojo loach (*Misgurnus anguillicaudatus*)

**Author(s):** Xiaoyun Zhou<sup>1</sup>, Khalid Abbas<sup>1</sup>, Mingyun Li<sup>2</sup>, Libao Fang<sup>1</sup>, Su Li<sup>3</sup>, Weimin Wang<sup>1</sup>  
<sup>1</sup>College of Fisheries, Key Lab of Freshwater Biodiversity Conservation and Utilization, Ministry of Agriculture, Key Lab of Agricultural Animal Genetics, Breeding and Reproduction of Ministry of Education, Huazhong Agricultural University, 430070 Wuhan, China  
<sup>2</sup>Faculty of Life Sciences and Biotechnology, Ningbo University, 315211 Ningbo, China  
<sup>3</sup>Huangshi Institute of Technology, 435003 Huangshi, Hubei, China

**Date:** September 14, 2010 Publication Number: CRSP Research Report 10-259

The CRSP will not be distributing this publication. Copies may be obtained by writing to the authors.

**Abstract:** To determine the cytotype with better traits for the aquaculture practices of the dojo loach (*Misgurnus anguillicaudatus*) from the viewpoint of fish farming improvement, factorial crosses ( $2n_{\text{♀}} \times 2n_{\text{♂}}$ ,  $2n_{\text{♀}} \times 4n_{\text{♂}}$ ,  $4n_{\text{♀}} \times 2n_{\text{♂}}$ ,  $4n_{\text{♀}} \times 4n_{\text{♂}}$ ) were conducted between natural diploids (D) and tetraploids (T), producing DD, DT, TD, and TT groups (female listed first). The potential benefits of the different cytotypes in culture were evaluated by comparing growth performance and survival rate for a 15-month rearing trial under the same production conditions. The average fertilization rate in DT and TT was significantly lower than in the DD and TD groups, possibly indicating the poor fertilizing capacity of the tetraploid sires. Survival rate in DT and TD was slightly lower than in DD but significantly higher than in the TT groups. Tetraploid females produced obviously larger eggs than diploids and, subsequently, significantly longer initial body length of TT and TD than DD and DT fry. However, from the second month of the growth trial, TT suffered higher mortality than other cytotypes, which significantly influenced morphometric growth parameters. The TD group exhibited superior growth performance throughout the experiment. The mean body length of DT was comparable with that of DD fish during the first 7 months but began to outgrow DD from the 9th month. This study suggests that the relatively better growth of tetraploid and higher survival rate of diploid can be integrated via inter-ploidy hybridization to get TD triploids with better culture traits.

This abstract was excerpted from the original paper, which was published in *Aquaculture International* 18:349–359.

CRSP RESEARCH REPORTS are published as occasional papers by the Management Entity, AquaFish Collaborative Research Support Program, Oregon State University, 418 Snell Hall, Corvallis, Oregon 97331-1643 USA. The Aquafish CRSP is supported by the US Agency for International Development under CRSP Grant No. EPP-A-00-06-00012-00. See the website at <aquafishcrsp.oregonstate.edu>.