

ZOOPLANKTON ABUNDANCE AND DIVERSITY  
IN CENTRAL FLORIDA GRASS CARP PONDS

BY

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## ABSTRACT

The effect of the Asian grass carp (Ctenopharyngodon idella Val.) and aquatic vegetation upon the zooplankton in four adjacent experimental ponds (0.139 ha each) was studied for one year. Zooplankton were collected with a newly designed shallow-water sampler. Pond 1 contained no aquatic vegetation. Ponds 2, 3, and 4 contained nine species of rooted aquatic plants. Grass carp were stocked into Pond 2 (65 per ha) and Pond 3 (611 per ha). Physicochemical parameters were similar among the ponds.

Eighty-eight zooplankton species were enumerated. The abundance of zooplankton groups (Rotifera, Cladocera, and Copepoda) was not significantly different among the ponds containing grass carp. No significant differences existed between Pond 3 (high grass carp stocking rate) and Pond 4 (no grass carp) for species diversity ( $\bar{d}$ ) and species dominance. The number of species and species diversity ( $\bar{d}$ ) was found to be significantly different in Pond 2 (low grass carp stocking rate) when compared to Ponds 3 and 4; those differences probably were not due to the grass carp. Grass carp did not appear to affect the water quality of the ponds. In general, it was concluded that grass carp had little, if any, direct or indirect affect upon the zooplankton.

Species commonness was greatest among ponds containing vegetation. Rotifers were the dominant zooplankton group in those ponds.

Zooplankton were most abundant in the pond without vegetation and were dominated by copepods (notably Tropocyclops prasinus). That pond contained the lowest number of species and had the lowest species diversity ( $\bar{d}$ ) of the ponds. The annual mean for the Simpson Index (species dominance) was highest in Pond 1. The lack of vegetation may have influenced the abundance and diversity of the zooplankton in Pond 1 compared to the other ponds. Those differences also may have been due to selective predation by mosquitofish (Gambusia affinis); that fish was significantly less abundant in Pond 1.

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