

Effects of zebra mussel (*Dreissena polymorpha*) invasion on the aquatic community of a Great Plains reservoir

by

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ABSTRACT

The zebra mussel is an invasive bivalve that was first confirmed in Kansas in 2003, and has decreased zooplankton abundance and altered the aquatic community in other areas where it has invaded. However, little is known about its effects on the aquatic communities of warm-water Great Plains reservoirs. We analyzed zooplankton, benthic macroinvertebrate, and juvenile and small-bodied fish abundance in the littoral zone of an Eastern Kansas reservoir with an established zebra mussel population (El Dorado Reservoir) and a control reservoir without zebra mussels (Melvern Reservoir) for two years pre-zebra mussel invasion (2001-2002) and two years post-invasion (2008-2009). We found no difference in littoral zooplankton abundance between reservoirs across time, but abundance of some macroinvertebrate taxa increased, and abundance of juvenile *Lepomis* spp. and red shiners decreased in the littoral zone of El Dorado Reservoir in August of the post-zebra mussel invasion period in comparison to the control reservoir. We also analyzed abundance and condition of six adult reservoir fishes in El Dorado Reservoir and three control reservoirs in Eastern Kansas for ten years pre-zebra mussel invasion (1993-2002) and five years post-invasion (2004-2008). Adult white crappie abundance remained constant in El Dorado Reservoir but decreased in the control reservoirs during the post-zebra mussel invasion period, and condition of adult bluegill, white bass, and white crappie decreased in El Dorado Reservoir in the post-zebra mussel invasion period compared to the control reservoirs. Our findings suggest that zebra mussel invasion in El Dorado Reservoir may have affected some benthic macroinvertebrates, juvenile and small-bodied fishes, and adult fishes. We did not find evidence that zebra mussels have had substantial effects on the zooplankton community of El Dorado Reservoir. However, July-August zebra mussel veliger densities in El Dorado Reservoir averaged less than 12 veligers/L in four of the six post-zebra mussel invasion years. Additional research and long-term monitoring of zooplankton, macroinvertebrates, and fishes will be necessary to determine the full effects of zebra mussels on the aquatic communities of warm-water reservoirs throughout North America.