

**GENOMIC MICROSATELLITE LIBRARY
CONSTRUCTION FOR THE FINESCALE
DACE, *PHOXINUS NEOGAEUS*, BY
HYBRIDIZATION ENRICHMENT**

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ABSTRACT

The finescale dace, *Phoxinus neogaeus*, is a small minnow (Family Cyprinidae) that occurs from northwestern Canada to New England, south into northern Minnesota, Wisconsin, Michigan and New York. Isolated populations have been reported in North Dakota, South Dakota, Nebraska and Wyoming. This species is listed as state endangered in South Dakota, as state threatened in Wyoming and Nebraska, and as a sensitive species in US Forest Service Region 2. Little is known about the life history of the species except that it lives in small, weedy streams or ponds and is often found with the northern red-belly dace, *Phoxinus eos*, with which it will hybridize. Hybrids are capable of asexual reproduction by gynogenesis, where diploid clonal females produce unreduced ova containing an exact copy of the maternal *eos/neogaeus* genome. Such hybridization is a contributing factor to the demise of *P. neogaeus* populations. Additionally, poor records concerning the historic distribution of finescale dace in the Great Plains region make it difficult to ascertain the extent of population decline in this region. Here we present the development of a hybridized enriched genomic microsatellite library for both species. These microsatellite markers will be used to assess the current population structure and extent of hybridization in the Great Plains portion of the species range, as well as elucidate some historical trends leading to a greater understanding of the biogeography of this species. This will provide information regarding the genetic status of this locally rare species to fishery managers in order to devise effective management strategies.