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**AGING AND AGE CLASS STRUCTURE OF THE
RIO GRANDE SILVERY MINNOW (HYBOGNATHUS AMARUS)**

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ABSTRACT: The Rio Grande silvery minnow (RGSM) is Federally-endangered. Extirpated from about 95% of its historical range, it now occurs only in the middle Rio Grande in New Mexico. Understanding its life history is critical for its management and future survival. We collected (ASIR) and aged (ANS) 50 individual RGSM from each of the main three reaches that comprise its current range. Samples were stratified between seasons (Fall, 2009, and Spring, 2010) and 10-mm size groups. Specimens ranged from 26-90 mm field standard length (corresponding to 32-111 mm total length). Specimens were predominantly ages 0-2, with a few age-3 fish in spring. Length-age keys were developed based on 5-mm bins and applied to length frequencies from 2009-2010 samples. The proportions of age-0 fish in fall and age-1 fish in the spring were 95%, and 91%, respectively. The proportions of age-1 fish in fall and age-2 fish in spring were about 5% and 8%, respectively. Age-2 fish in fall and age-3 fish in spring comprised 0.3% of the populations. These results were consistent with ages estimated from length, except that overlaps in lengths between cohorts prevented accurate aging of all individuals by length analysis alone. Age-3 fish could not be identified by length. Estimated hatching dates of age-0 fish were consistent with previous studies indicating spawning coincident with high spring flows. Scales of 20 RGSM collected in 1874 were also analyzed. These samples consisted of 0, 1, and 2 age classes, providing no evidence of changes in age class structure between time periods. Otoliths were more reliable than scales for aging. However, scale ages agreed with otolith ages for about 90% of specimens, so scales may be useful as a non-lethal technique for aging RGSM. The short life span of the RGSM implies that sufficient instream flows for successful recruitment are required almost annually for maintenance of the RGSM. The species' sensitivity to low flows is exacerbated by fragmentation of the range of the RGSM by diversion dams, which prevent access to upstream low-flow refuges.

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