Factors Influencing Variation in Scale-Based Ages of Cuttrhoat Trout from Yellowstone Lake

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Reliable assignment of age to fishes is important for estimation of age-class abundances. As part of an ongoing investigation of the historic environment-recruitment relations for Yellowstone cutthroat trout (*Oncorhynchus clarki bouvieri*) (YCT) in Yellowstone Lake, the extensive time series (spanning 35 years) of scale-based YCT ages was examined. The YCT were caught during September in gill nets used to annually monitor the YCT population at 11 lake sites. Multiple regression revealed that variation in mean total length at capture of YCT, considered age-2 or age-3 on the basis of scale annuli, was attributable to lake site and environmental effects as well as scale-reader error. Logistic regression models based on these key effects correctly classified ~90 percent of the age-2 and age-3 YCT to their scale based ages and provided an objective means of assigning ages to YCT whose scale-based ages were otherwise questionable or only their length at capture and netting site were known. The resulting data set is more reliable and extensive than its predecessor, particularly for the recruitment age classes , i.e., age-2 and age-3, of YCT whose abundances will be key response variables in subsequent analyses of historic environment-recruitment relations for the population.