Lifetime Movement Patterns of Cutthroat Trout in a Stream Network

Michael K. Young, Rocky Mountain Research Station, 800 East Beckwith Avenue, Missoula, Montana 59801

Although recent research has emphasized the ubiquity of movements in freshwater fish life histories, the timing, prevalence, and extent of these movements remain contentious. I used juvenile-adult distributions, PIT tagging, and turnover rates of unmarked fish to assess lifetime movement patterns of Colorado River cutthroat trout throughout the 40-km North

Fork Little Snake River watershed in southern Wyoming from 1996 to 2001. Turnover rates indicated that about 30 percent of fish moved an average of at least 100 m annually. Juvenile and adult fish exhibited little spatial overlap in about half of the stream segments in this basin, and length-frequency discrepancies between tributary and main-stem fish implied widespread movement of fish age-2 and younger. About 40 percent of recaptured PIT-tagged fish were mobile. The probability of movement was related to the length of time between first and last capture and to specific growth rate, but not to fish length or condition. Fish marked in tributaries were less likely to move and moved shorter distances than did fish marked in the main stem, but fish from both sources were most likely to move upstream between captures. Median movement was 300 m and many fish moved several kilometers and between tributaries and the main stem, but migration barriers appeared to influence movement in some areas. These complex movement patterns support the conclusion that even slow-growing salmonids in small streams regularly alter their positions to feed, grow, reproduce, and seek refuge from unfavorable environments.