

Influences of Drawdown on Shorebird Use of Mudflats in Two East Tennessee River Reservoirs

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Abstract: Mudflats in the Tennessee River Valley (TRV) provide a critical migratory stopover for thousands of shorebirds. The Tennessee Valley Authority controls the availability of mudflats by manipulating water levels in reservoirs interconnected by the Tennessee River. We compared shorebird use of mudflats between Douglas and Chickamauga reservoirs in east Tennessee over two years. These reservoirs were drawn down on different dates, resulting in temporal differences in mudflat exposure. In 2005, mudflat exposure at Douglas and Chickamauga reservoirs began on 4 August and 4 October, respectively, and on 15 July and 3 October in 2006. Four mudflats per reservoir were surveyed with a spotting scope twice per week from 15 August 2005–13 January 2006 and from 31 July 2006–12 January 2007. In September 2005 and August 2006, mean daily abundance of shorebirds on mudflats was greater ($P < 0.03$) in Douglas than in Chickamauga reservoir. However, shorebird abundance was greater ($P < 0.05$) on Chickamauga than on Douglas mudflats from November–January both years. Highest species richness (S) was observed at Douglas and Chickamauga reservoirs from August–September ($S = 14$) and October–November ($S = 6$), respectively. Killdeer (*Charadrius vociferus*) was the most common shorebird using mudflats in Douglas and Chickamauga reservoirs, comprising 62% and 77% of the total birds observed, respectively. Least and pectoral sandpipers (*Calidris minutilla* and *C. melanotos*) and Wilson's snipe (*Gallinago delicata*) also were common shorebirds using mudflats. Differences in mudflat use by shorebirds between reservoirs were related to drawdown date and possibly mudflat acreage, aquatic invertebrate and vegetation density, and soil characteristics. Our results suggest that both reservoirs provided habitat for shorebirds at different times during migration. Thus, we recommend a drawdown schedule where mudflats are exposed sequentially in TRV reservoirs, thereby providing stopover habitat throughout migration and winter for shorebirds.

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