

Abundance Patterns Over Time for Riverine Birds

Hypothesis: We hypothesize that the increase in aquatic and riparian habitat complexity predicted to result from implementation of localized site rehabilitation efforts, cumulative alluvial effects, and the flows specified in the [Trinity River Record of Decision](#) (ROD) will benefit riverine bird communities along the river.

Importance: Riverine birds depend on the aquatic and riparian habitats in the Program area for foraging and breeding. Some species are resident year-round on the Trinity River, while a few disperse from breeding territories or migrate to warmer climates during winter months. Life histories of this group of birds encompass a variety of aquatic habitats, including those used by salmonid fish. Riverine bird abundances are good indicators of the health of a river ecosystem, and monitoring trends in these species on the Trinity River will help to assess Program success.

Targets, Predicted or Desired Response: We expect that riverine birds will benefit from the increase in aquatic and riparian habitat complexity that is predicted to result from implementation of localized site rehabilitation efforts, cumulative alluvial effects, and ROD flows. The transformation from current extensive fixed riparian-berm habitat to a dynamic, species-diverse, structurally and spatially complex riparian habitat should benefit the riverine bird community in the long term.

Technical Approach: Riverine birds are those that depend on the aquatic habitats for foraging and breeding and thus serve as a measure of the health of the river ecosystem. Monitoring abundance and productivity of a set of target riverine birds will assess progress toward enhancing the quality and quantity of habitat for these birds. We completed eight years of river-float surveys for these species and analyzed the data to identify trends in abundance for five riverine species.

Results: Trends in abundance were estimated from 2002 through 2009 for five target riverine bird species. Four species showed statistically significant abundance trends at the 40-mile (63-km) Program area scale in the summer or fall season (Table 1): American dipper, belted kingfisher, common merganser, and green heron. Spotted sandpipers showed no changes over time. At the Program area scale, we found significant declines in common merganser abundance in the breeding season and fall; belted kingfishers declined in breeding season; American dippers and green herons increased in the breeding season ([Miller et al. 2010](#)). Common mergansers can have large impacts on juvenile fish, particularly smolt. Merganser abundance declined in both summer and fall. Belted kingfishers burrow into banks to build their nests and, although appropriate bank substrate can be limited near the water, they will travel some distance from water to nest in cut banks, dredge spoils, snags, or stumps. Kingfisher abundance has been shown to be related to the general health of the river ecosystem and water quality and also to the abundance of small fish up to about 12 cm. Increasing dipper abundance may be signaling improved foraging habitat, the same habitats used by juvenile fish.

Table 1. Significant Abundance Trends for Riverine Birds from 2002 to 2009 along 40 Miles (63 km) of the Mainstem Trinity River from Lewiston Dam to the Confluence with the North Fork

Species	Season	Change (+ or -)	Probability of F (alpha=0.05)
American Dipper	Summer	+	0.015
Green Heron	Summer	+	0.002 ⁻⁴
Belted Kingfisher	Summer	-	0.016
Common Merganser	Summer	-	0.020
	Fall	-	0.020

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