Source-sink Dynamics of Passerines in the Greater Yellowstone[TWS]

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We studied the distribution of bird species diversity and abundance among multiple habitats from 1995-1998. Distributions were shown to be very heterogeneous in space with several habitats acting as hot spots for diversity and density. Habitats dominated by deciduous vegetation were the strongest hot spots. All of the hot spot habitats occur as relatively small patches and many hot spots are within or near sites of intensive human land use. Thus, reproductive success and population viability may be low in some hot spots. We studied nest success of multiple species in cottonwood (hot spot with intensive land use), aspen (hot spot with less intensive land use), and lodgepole pine (non-hot spot) to investigate possible source-sink status of populations in various habitats. We searched for and monitored nests of multiple species in each habitat during 1997-98. We successfully monitored 1,004 nests and obtained data for 18 species. Preliminary analyses indicate that for most species, reproductive output is lower in cottonwood habitat than it is in aspen or in lodgepole pine. This is due to lower nest survival and higher brood parasitism in cottonwood. Analyses of covariates of nest survival indicate that intensity of human land use near a site is inversely related to nest survival on a site. Preliminary results of population modeling suggest that cottonwood and some aspen stands may act as high-density population sinks and that many aspen stands may be important population sources.