

Northern Colorado Plateau Network

Monitoring Brief

National Park Service
U.S. Department of the Interior

Intermountain Region
Inventory & Monitoring Program



2012

Landbirds Monitoring

Importance

By occupying various levels in the food web, birds play an important role in the flow of energy through ecosystems. As nestlings, they consume insects. As adults, birds eat insects and plants and are, in turn, eaten by birds and mammals higher up the food chain. Because they can be sensitive to habitat change, birds are good indicators of ecosystem integrity. They also have strong public appeal; unlike many other animals on the xeric Colorado Plateau, birds are diurnal and, thus, commonly visible to park visitors. Data from the relatively natural habitats of Northern Colorado Plateau Network (NCPN) national parks will provide status and trend information useful in comparisons with more-impacted areas.

Long-term Monitoring

The Northern Colorado Plateau Network (NCPN) is partnering with the Rocky Mountain Bird Observatory (RMBO) to assess breeding-bird species trends in three different habitats: low-elevation riparian, pinyon-juniper, and sagebrush-shrubland. NCPN survey plots will contribute to the RMBO's broader, landscape-scale breeding-bird monitoring program, which includes more than 1,000 plots in 13 states in the Rocky Mountains and Colorado Plateau. Twice during each breeding season, RMBO surveys 15 transects in each of the three habitats of interest across 11 NCPN parks. Point counts and area searches are also conducted as part of a modified monitoring design at Pipe Spring National Monument.



Say's phoebe.
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Bobolink.

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Status and Trends

In 2011, all of the assigned transects were surveyed. Not counting birds detected between points, a total of 9,626 birds of 115 species were recorded. Included in those numbers were 286 birds of 36 species detected at Pipe Spring National Monument. One new species (bobolink) was recorded at Dinosaur National Monument in 2011. This bird was likely a migrant.

Density estimates were calculated for 57 species in at least one habitat. Those calculations yielded robust density estimates for 40 species. RMBO expects to meet the target of detecting a population change of at least 3% within 30 years for those 40 species. The growing volume of collected data allowed RMBO to increase the minimum sample size required for density estimates from 60 to 80 detections this year. This method will initially reduce the number of species for which density can be estimated, but will eventually provide more reliable estimates. Significant population trends were detected for 12 species in 2011 (see page 2).

Contact

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Network park units where landbirds are monitored

Arches NP	Curecanti NRA
Black Canyon of the Gunnison NP	Dinosaur NM
Bryce Canyon NP	Fossil Butte NM
Canyonlands NP	Natural Bridges NM
Capitol Reef NP	Pipe Spring NM
Colorado NM	Zion NP

NP = National Park; NM = National Monument; NRA = National Recreation Area

Landbirds Trend Results

In 2011, RMBO recorded 44 bird species that are of conservation and management concern throughout the NCPN. Density estimates and trend analyses were calculated for 25 of those 44 species. Separate analyses were performed for each habitat.

Significant trends were detected for 12 species, four of which had positive trend detection and three of which had negative trend detection (see table). Five species showed quadratic trends, which are significant but neither positive nor negative (see below).

Trends in NCPN landbird populations.

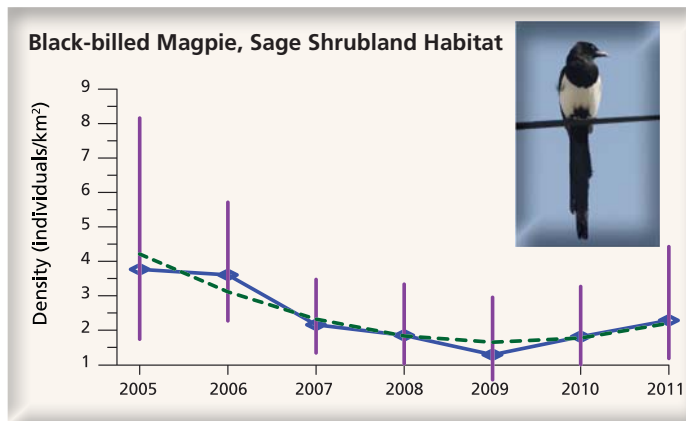
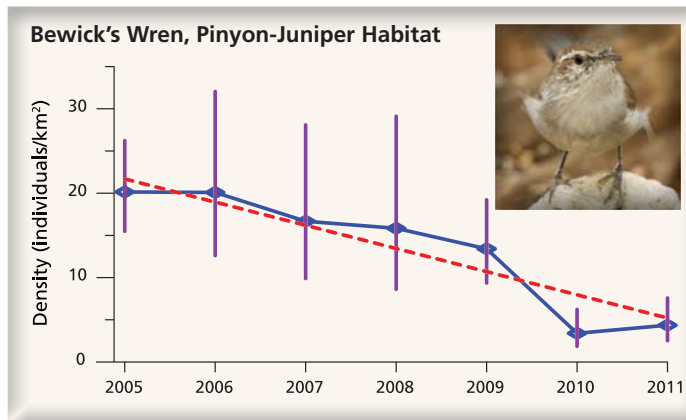
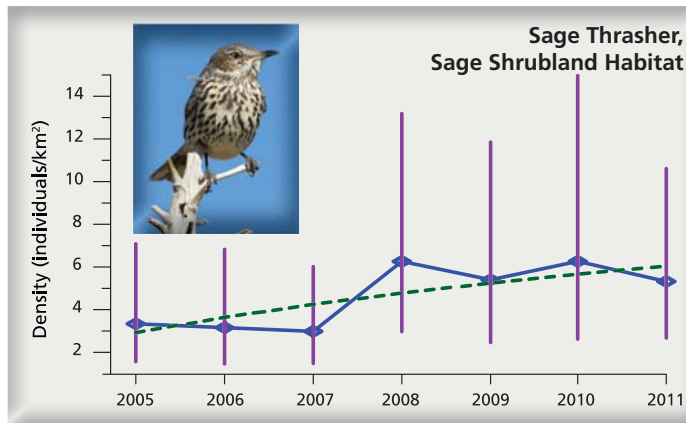
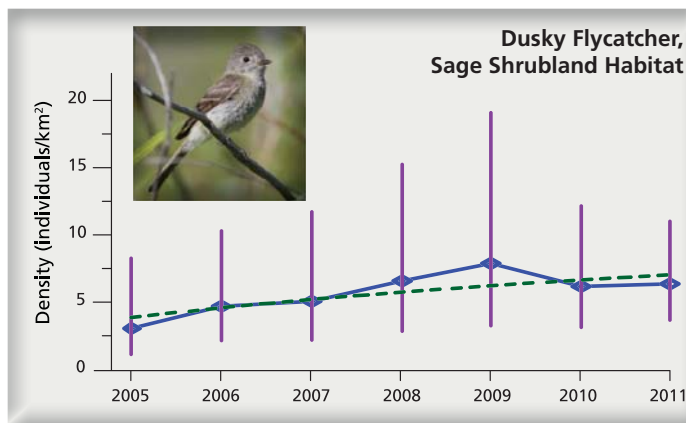
Species	Habitat	Trend		
		↑	↓	↗↘↗
Gray vireo	PJ	X		
Dusky flycatcher	SA	X		
Sage thrasher	SA	X		
Say's phoebe	SA	X		
Bewick's wren	PJ		X	
Black-throated gray warbler	PJ		X	
White-throated swift	PJ		X	
Rock wren	LR			X
Plumbeous vireo	PJ			X
Virginia's warbler	PJ			X
Black-billed magpie	SA			X
Violet-green swallow	SA			X

LR = low-elevation riparian, PJ = pinyon-juniper, SA = sage shrubland
 ↑ = increasing, ↓ = decreasing, ↗↘↗ = quadratic

Populations appeared to be stable (no trend detected) for many sensitive species in certain NCPN habitats. For the second year in a row, dusky flycatcher and sage thrasher in sage shrubland habitat showed significant increasing trends. However, investigation of Bewick's wren populations in pinyon-juniper habitat is recommended, as RMBO has documented a decline of more than 50% in the last seven years for this bird. Potential explanations of Bewick's wren decline include loss of suitable nesting habitat and competition with other cavity nesters.

Although significant decreasing trends were also detected for black-throated gray warbler and white-throated swift (in pinyon-juniper), those results may be suspect, as significant declines in these species were not detected in 2010. RMBO is exploring whether these are true declines, whether observer detectability is varying among years, or if these species have cyclical populations.

Black-billed magpie had evidence of a negative population trend in 2010, but showed a quadratic population trend with the addition of the 2011 data. With continued data collection, species such as black-billed magpie could reveal trends in population variability over time. Long-term monitoring will continue to be necessary for interpreting population status and trends for avian species of the NCPN.



Positive trends were again shown for dusky flycatcher and sage thrasher in sage shrubland habitat. Bewick's wren, in pinyon-juniper habitat, appears to be experiencing significant declines in NCPN parks. Species that show quadratic trends, such as black-billed magpie, in sagebrush habitat, may reveal trends in population variability over time.