

## Progression of the North American Breeding Bird Survey (BBS) and Future Directions

Initiated in 1966, the BBS serves as the primary source of large-scale, long-term population data for over 400 of North America's breeding bird species. Each year these data, as well as the relative abundance and trend estimates derived from them, inform Federal, State and private entities in identifying at-risk bird species and planning avian conservation strategies. As new analytical methods and spatial technologies emerge, the USGS continues its commitment to meeting developing science needs through ongoing improvement of the survey's core strengths. Current efforts include:

### Improvements to the Survey's Analytical Framework

#### Strengthening Trend Estimation:

- Recent implementation of a hierarchical Bayesian model that improves trend estimate precision.
- Developed species detection models to increase trend estimate precision using existing field protocols.

#### Crafting a Foundation for Environmental Change Research:

- Designed a spatial model that permits geo-spatial inference – a vital step in evaluating sampling and adaptive monitoring components that will permit tailored monitoring of target ecosystems and/or species, regional management actions, localized disasters, etc.

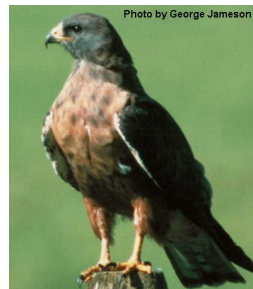
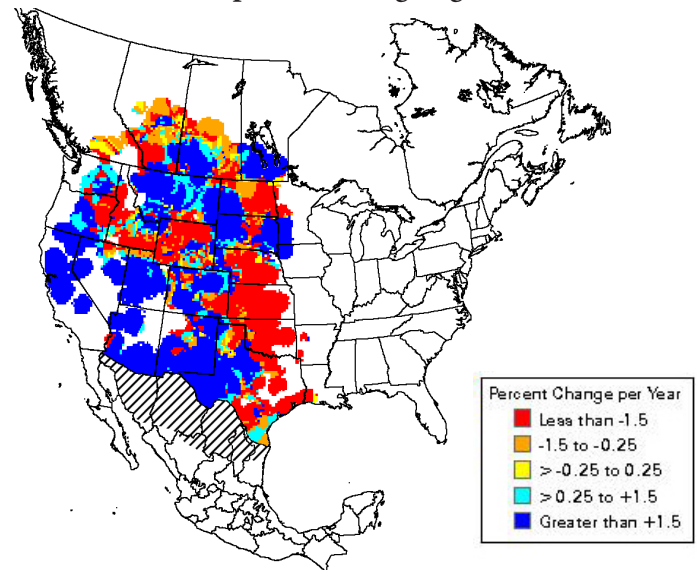
#### Advancing Estimates of Population Size:

- New research on emerging species detection models that, if successful, could allow enumeration of whole populations.

### Improvements in Data Breadth and Collection

- An additional 32 years of BBS point-count data, including over 125,000 unique locations, will become available in 2012 that will extend research on the influence of historic climate and land use change on birds.
- The BBS has begun to transition the survey from a route level structure to one offering information at actual survey locations.
- Expanding the partnership with Mexico to ensure all North American bird populations are included.

BBS trend map depicting areas of Swainson's Hawk population loss (red) and increase (blue). Hatching depicts portion of range where Mexican BBS expansion is ongoing.



Swainson's Hawk

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