

## **Protocol Development Summary**

### **Protocol:**

Landbird Population Monitoring [short name: Landbirds]

### **Parks Where Protocol will be Implemented:**

All GULN parks, TBD

### **Justification/Issues being addressed:**

Both resident and migratory landbirds were highly ranked among all of the potential vital signs evaluated by the GULN. Key reasons for monitoring landbirds in network parks are that landbirds (1) come under the legal mandate related to the Endangered Species Act (1973) and Migratory Bird Treaty Act; (2) are specifically identified in the management objectives of some of the parks; (3) are considered to be potential indicators of the condition of park ecosystems because they respond quickly to changes in resource conditions; and (4) comparable regional and national datasets exist for landbird monitoring adjacent to several GULN parks. The Gulf Coast is widely held to be a major flyway, breeding and over-wintering area for many migratory species. Ecologically, birds play diverse and important roles in many ecosystems, both for GULN parks and in general: "Passerines are an important component of (park) ecosystems, and their high body temperature, rapid metabolism, and high ecological position in most food webs make them a good indicator of the effects of local and regional changes in ecosystems (Fancy and Sauer 2000)."

### **Specific Monitoring Questions and Objectives Proposed to be Addressed by the Protocol:**

Some of the specific monitoring questions that will be addressed by this protocol include:

- What are the long-term trends in species composition and relative abundance of the landbird guild on each sampled park?
- What is the natural level of variation in distribution and abundance of the landbird guild on each sampled park?
- How do management activities that affect plant communities affect the species composition and relative abundance of landbirds on each sampled park?
- With respect to climate change/altered disturbance regimes: is there a correlation between locally-assessed climate change indicators and the distribution and productivity of landbirds on each sampled park?

Some of the proposed specific monitoring objectives that will be accomplished are as follows:

- Contribute to established programs looking at regional trends (Breeding Bird Survey (BBS), Monitoring Avian Productivity and Survivorship (MAPS), Christmas Bird Counts.)

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- Assess avian densities for breeding birds (all parks), migrants (GUIS), and wintering birds (PAIS).
- Assess relative bird abundance of wintering birds (all parks).
- Investigate bird – habitat relationships and how they relate to vegetation structural changes due to either natural or human-induced processes (directly spatially linked to the GULN vegetation structure monitoring protocol at VICK).

### **Basic Approach:**

The GULN Landbird Protocol will be developed in the same conceptual and format model as we have used for the GULN Vegetation and GULN Amphibians protocols; that is, we will develop a single unified protocol which will include multiple park-specific sampling projects and applications using a common methodologies and with a common data management schemes. Implementation of this protocol will be delegated to the parks, with a limited network role of supporting data management and analysis.

This protocol will broadly adhere to recommendations for long term monitoring (Oakley et al. 2003) and for monitoring within national parks (Fancy et al. 2008), as well as referencing established bird monitoring programs (Hamel et al. 1996) and more recently developed programs (Siegel et al. 2007). All proposed protocols will be developed after consultation and in cooperation with managers and natural resource specialists at each park. Objectives and sampling design may vary among park units but all will rely on established standardized methodologies suitable for implementation using volunteer monitors.

Data will be collected in standard formats that can be included in extant national databases (Breeding Bird Survey (<http://www.pwrc.usgs.gov/BBS/>); national bird point count database (<http://www.pwrc.usgs.gov/point/main/mainPage.cfm?formName=88>); Christmas bird count (<http://www.audubon.org/Bird/cbc/>); and/or ebird (<http://ebird.org/content/ebird>).

### **Principal Investigators and NPS Lead:**

Protocol development is lead by Dr. Dan Twedt of the USGS Patuxent Wildlife Research Center, in close collaboration with both park and network staff (GULN Data Manager Whitney Granger, GIS Specialist Jeff Bracewell, and Network Coordinator Martha Segura). Because implementation will be largely up to the individual parks, close coordination with the parks' resource management staff is critical.

### **Development Schedule, Budget, and Expected Interim Products:**

Initial park visits and park-specific priorities were established in FY2009 (\$6,000). Development and start-up of pilot projects and local sampling design description will be completed in FY2010 (cost TBD). After peer review, revision and approval, we hope to fully implement the protocol on at least one park July, 2010.

### **Literature Cited:**

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Fancy, S.G., J.E. Gross, and S.L. Carter. 2008. Monitoring the Condition of Natural Resources in US National Parks. Environmental Monitoring and Assessment (in press).

Hamel, P. B., W. P. Smith, D. J. Twedt, J. R. Woehr, E. Morris, R. B. Hamilton, and R. J. Cooper. 1996. A land manager's guide to point counts of birds in the Southeast. Gen. Tech. Rep. SO-120. New Orleans, LA: U.S. Dept. Of Agriculture, Forest Service, Southern Research Station. 39 pp.

Oakley, K. L., L. P. Thomas and S. G. Fancy. 2003. Guidelines for long-term monitoring protocols. Wildlife Society Bulletin **31**:1000–1002.

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