

# Introduction – Regional Monitoring Programs<sup>1</sup>

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## Introduction

There is increasing interest in the initiation of regional or statewide monitoring programs that are less extensive than national efforts such as the Breeding Bird Survey. A number of regional programs have been in existence for a decade or more, so the papers in this section represented an effort to bring together the collective experience of the people who had developed these programs, and to hear about the benefits and drawbacks of their particular designs. Speakers reviewed why they felt there was a need for a regional monitoring effort, examined the designs and response variables associated with their regional monitoring program, presented the short- and longer-term results from the program, discussed the logistic and scientific successes and failures of each program, and presented recommendations for those who might be interested in starting their own regional monitoring program. Below, we provide a brief overview of some important points that emerged from this session, and how these regional efforts might be included as integral parts of broader national monitoring efforts that seem to be emerging.

### Need for Regional Monitoring Efforts

The consensus among land managers seems to be that the sample sizes generated from Breeding Bird Survey (BBS) data include too few routes for meaningful use at the regional or more local level (perhaps at the level of a county or a Forest Service District). But does that mean we need to acquire population trend data from regions that are smaller than those effectively sampled by the BBS? An issue that managers need to be clear about is why they need trend data, and at precisely which spatial scale such data are needed. Would knowledge of a severe population decline of Townsend's Warbler (*Dendroica townsendi*) in one District be of concern? Given that we know almost nothing about the spatial scales at which the metapopulation dynamics of local extinctions and recoveries operate, we would not know whether declines at local scales are

worrisome or not. For example, even though Linder and Buehler (this volume), Howe and Roberts (this volume), and Hanowski et al. (this volume) each show that reliable trend data can be obtained for smaller areas than can be addressed through the use of BBS data, are trends at these spatial scales worthy of management action? Moreover, local-scale trends are likely to differ from what BBS regional trends from the same area produce. This raises another important issue: what can one conclude if trend data do or do not correspond with BBS trend data from the same region? Differences could be due to subtle differences in the methodology used to generate data (e.g., roadside vs. off-road transects), in the locations sampled, in the sample area, or any of a number of other factors. All of the trend data are undoubtedly "correct," but they represent trends associated with different sets of birds (sets taken from different spatial scales). Without a better understanding of exactly what subsets of the landscape are being sampled, and how they differ, simple comparisons of BBS-generated trend data with trend data generated otherwise will be of limited value. However, at the very least, the fact that they do differ is an indication (if not a warning) to managers and conservationists that we need to think more about the spatial scales over which negative trend data would be indicative of a problem that needs management attention.

Perhaps our attempts to attain population trends at sub-regional scales for other than research purposes, or for the purpose of enhancing our understanding of spatial details associated with population trends of threatened or endangered species, are well meaning but misguided. For example, one would certainly expect population changes at the District or even National Forest level after the Forest experiences a stand-replacement fire (e.g., the Bitterroot National Forest after the fires of 2000), but that is not to say there is a problem that needs management attention. Trend data based on point count data are perhaps best left to the larger regional, multi-state scale that the BBS covers quite well. This is certainly more like the scale at which we wish to ensure persistence of a species. Additionally, we should at least encourage migration monitoring based on local, constant effort counting and netting operations that sample from substantial portions of migratory populations as they pass through restricted locations en route north or south. In general, perhaps more of our local monitoring efforts should be devoted to other

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than long-term population trend monitoring, as discussed further below.

## Program Design

### ***Multi-Agency Collaboration***

Because virtually all public land management agencies want monitoring at relatively local scales in relation to land use practices, successful programs have capitalized on that common need, and have leveraged their resources to build larger collaborative efforts. Indeed, this is an opportunity to conduct coordinated monitoring in a way that produces collective information that far outweighs what each agency might be able to accomplish on its own. There are now several successful multi-agency cooperative monitoring efforts described in this section, and each can serve as a model of how one might undertake such an effort. Land managers from other regions interested in initiating monitoring programs may derive benefit from correspondence with the coordinators of these and other (e.g., Ontario, Colorado) monitoring programs that have persisted for more than a decade now.

### ***Habitat Relationships “Monitoring”***

Howe and Roberts (this volume) show that a relatively small volunteer effort can produce meaningful bird-habitat relationships information, which cannot be readily derived from current BBS data, but which is critical for management decision-making. Indeed, the Nicolet Forest monitoring program was not designed to produce trend data, but to focus on geographic occurrence and patterns of habitat use—kinds of information not well provided by existing monitoring programs. The Northern Region Landbird Monitoring Program (Hutto, this volume) also provides a strong focus on habitat relationships by including vegetation information with long-term monitoring points, and by devoting one of every two years to the gathering of targeted, short-term management effects information. This is exactly the kind of “monitoring” that provides a useful alternative to what seems to have become a fixation on population trend monitoring.

By permanently marking survey points, monitoring programs have also positioned themselves to be in a powerful statistical position to learn about the effects of natural disturbance events. For example, the Klamath Demographic Monitoring Program (Alexander et al. 2004), among many other applications, had located more than 100 stations in and near a fire that subsequently burned 125,000 acres within the Six Rivers and Shasta-Trinity National Forests in 1999. A simple after-the-fact comparison of bird occurrence between burned and unburned points shed light on fire effects

that mirrored results from published studies specifically designed to extract such information. Similarly, the Northern Region Landbird Monitoring Program had run for a half-dozen years, more than 100 permanently marked points that were, coincidentally, in the middle of the Bitterroot National Forest fires of 2000. Observers were then able to return to the same points after the disturbance event, and to nearby points on permanently marked transects that did not burn, to provide data that fit into one of the first-ever before-after/control-impact studies to investigate the effects of stand-replacement forest fire—a design that is otherwise impossible to achieve because managers will probably never be in a position to provide research biologists an experimentally ignited stand-replacement fire.

In summary, the acquisition of detailed habitat-based information associated with each survey point, the inclusion of managed lands, and the ability to conduct more local management effects studies or before-after/control-impact studies are not only possible, but highly prized data of immediate use to land managers and conservation biologists. Because one can anticipate long-term effects of alternative management scenarios using such monitoring data, habitat relationships monitoring data may actually be much more useful to a land manager than information derived from the typical long-term monitoring data, which allows only retrospective analysis. Thus, regional monitoring programs are revealing a kind of usefulness to decision-makers that cannot be attained from larger, national monitoring efforts. The critical part, as always, is to get decision-makers to listen to what the bird data have to offer. We feel that much progress has been made along these avenues in the last few years.

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