

Biodiversity Information for Natural Resource Management:
Information Needs and Practices in Southern Appalachia

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Introduction

Natural resource managers rely on high quality, current and complete environmental information to make decisions about how resources and landscapes are managed for biodiversity conservation and human use. As such, they represent a unique combination of research scientist, decision maker and practicing professional. In addition, given the applied nature of their work, relating to conservation, resource use and policy, they are frequently required to make timely decisions with real world consequences. However, wading through the vast amounts of currently available scientific and technical knowledge to find needed information can be a challenge. To be useful, this information must be gathered, documented, organized, presented and shared in ways that are appropriate. Importantly, for natural resource managers, this information must also be easily accessible.

Increasingly, web portals and information networks address these needs by providing organized, easy access to an array of information about the environment. A challenge to these efforts however, is knowing what information is most appropriate to include for any given environmental topic, and how best to provide access to that information for the specific audience addressed, in this case natural resource managers in the Southern Appalachian region.

Background

The National Biological Information Infrastructure was a “broad collaborative program” managed by the U.S. Geological Survey to provide “access to data and information on the nation’s biological resources” (NBII Program 2002) via an internet portal. The mission of NBII’s Southern Appalachian Information Node (SAIN) was to make the “region’s biodiversity information available for decision making.” To support this mission, SAIN partnered with the University of Tennessee’s Center for Information and Communication Studies on the Increasing Biological Information Sources: Technical Assistance and Support for Delivery and Technology Transfer (IBIS) project to identify biodiversity information, and develop tools and services that increase the accessibility and effectiveness of that information. Priority topics were all critically related to current natural resource management concerns including the biodiversity related aspects of climate change, renewable energy and aquatic resource management and restoration. Priority audiences included organizational decision makers, natural resource managers, researchers, educators and the public.

Completing the IBIS objectives required identifying the specific information needs and practices of SAIN’s priority audiences as well as the status of their data collection, maintenance and/or sharing practices. Differences in information needs and practices among environmental researchers, educators and members of the community interested in environmental issues have been identified in numerous sources (see Meko 2009). However, the specific biodiversity information needs of natural resource managers in the Southern Appalachian Region, and how these might differ from other environmental scientists interested in more basic research were unknown.

Research Purpose and Questions

The purpose of this research is to assess the information needs and information seeking behavior of Southern Appalachian natural resource managers in order to 1) make needed

biodiversity information more accessible for their unique combined purposes of research, decision making and professional practice, and 2) to understand how natural resource managers biodiversity information needs and information seeking behavior differ from other biodiversity information audiences such as those interested more purely in research or education. Specific research questions include: 1) What biodiversity information is needed by Southern Appalachian natural resource managers, 2) What information sources are currently relied upon, and why, 3) how do Southern Appalachian natural resource managers currently find the information they need to do their work, and 4) what makes biodiversity information easier for natural resource managers to find?

Methods

To address these questions, an internet survey was conducted in the fall of 2010 and winter of 2011. To capture the full range of researchers, educators, environmental decision makers and resource managers whose biodiversity related work includes natural resource management as they define it (rather than limiting participants to those whose titles, organizations, or professional affiliations identify them as natural resource managers) invitations were sent to a wide range of potential participants. The survey population included all life and agricultural science faculty at research intensive universities in the Southeast, regional members of the herbarial and natural history collections community, attendees at regional environmentally related conferences and workshops, and regional members of the environmental non-profit, land trust, and state fish and wildlife agency communities.

Results

428 individuals responded to the survey. Twenty-percent of these (n = 87) include natural resource management in their biodiversity related work. Of those who do include natural resource management in their work, eighty percent say that half or more than half of the information they need to do their work relates specifically to biodiversity, while only sixty-three

percent of those whose work does not include natural resource management say half or more than half of their work relates specifically to biodiversity. Furthermore, respondents whose biodiversity related work includes natural resource management are statistically significantly ($p < .05$) more likely than those whose work does not include natural resource management (31% vs. 20%) to say they are most limited in finding the information they need to do their work by not knowing *how* to find it. These results support the particularly high need of natural resource managers for biodiversity information and suggest they have greater difficulty accessing the information they need to do their work than other environmental information seekers.

Analysis of the other parameters of interest with respect to biodiversity information needs and practices (what type of biodiversity information is needed, what information sources are used and why, barriers and facilitators to finding biodiversity information) all suggest natural resource managers represent a unique sub-population within those requiring biodiversity information whose needs must be considered if biodiversity information programs such as those developed and maintained by the USGS are to be effective, and if natural resource management itself is to be successful. For example, as compared to respondents who do not include natural resource management in their biodiversity related work, those who do are more likely to need summarized rather than raw data, mapping, information search, data management, documentation, metadata and decision support tools, and information specific to aquatic resources restoration and management. They are also more likely to consult a variety of information sources, most specifically those provided by state environmental and wildlife resource agencies. This likely stems from the geo-political boundedness of most environmental and natural resource management policies. Accordingly, nearly 90% of natural resource management respondents say that biodiversity information at the appropriate scale is important or essential.

Conclusions

These results suggest that the information needs of researchers, decision makers and educators whose biodiversity related work in the Southeast includes natural resource management not only differ from others needing biodiversity information, but may also be greater than others needing biodiversity information. The results also suggest that these needs extend beyond those for specific topics and types of information to needs for information search training and decision support. Results also provide actionable findings for the USGS in terms of meeting these needs via its various biodiversity information programs. For example, USGS can help meet the needs of its natural resource management audience, by providing easy access to high quality, current, complete and mapped or mappable data (especially summarized data), tools that support decision making, and training and support for finding appropriate information.

Literature Cited

Meko, Beth. 2010. Biodiversity Information Needs of Environmental Decision Makers: A Literature Review. Knoxville: University of Tennessee.

NBII Program (2002). "National Biological Information Infrastructure - Yesterday, Today and Tomorrow." from http://www.nbii.gov/images/uploaded/8496_1121844944856_NBII-History.pdf.