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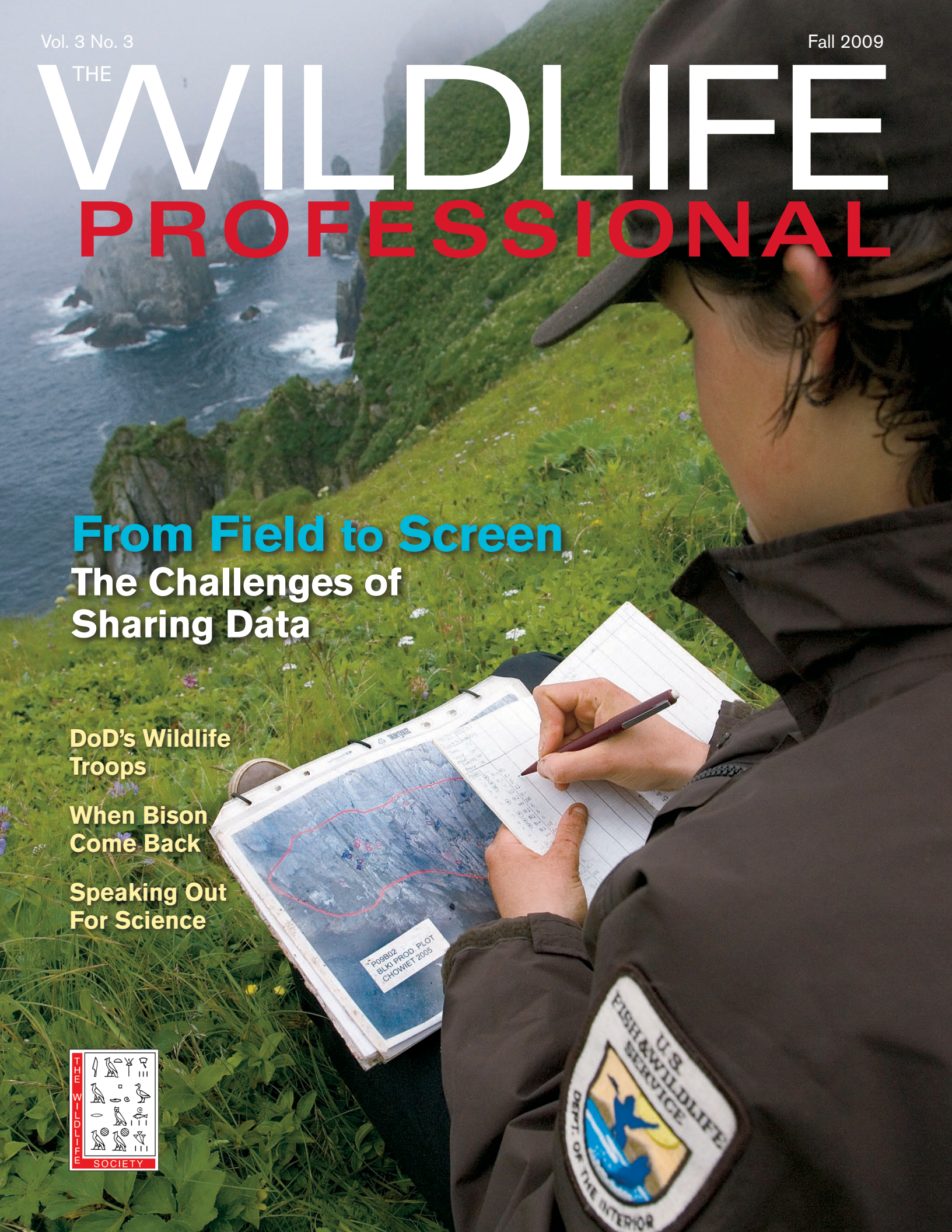

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THE WILDLIFE SOCIETY

A Search Engine Revs Up

NBII ENHANCEMENTS MAKE DATA ACCESS EASIER THAN EVER

By Ron Sepic, Jim Erwin, and Hugh O'Connor

Credit: Bruce Avera Hunter

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The National Biological Information Infrastructure (NBII) has launched a powerful new search engine and redesigned its home page, enhancements that provide a more user-friendly tool for wildlife professionals, policymakers, and others in search of comprehensive, up-to-date information about biological resources.

Established in 1995 by the U.S. Department of the Interior and coordinated since 1996 by the U.S. Geological Survey's Biological Informatics Program, the NBII is a collaborative, web-based initiative that links biological databases and other relevant resources drawn from government agencies, academic institutions, private industry, non-government organizations, and other partners. Through the NBII, wildlife professionals can quickly access the latest information about a range of global issues including emerging diseases, invasive species, sustainability science, ecosystem conservation, and plant and animal species. In addition, the NBII supports scientific data management through features such as the Metadata Clearinghouse and the Natural Resources Monitoring Partnership (NRMP).

Seek and Ye Shall Find

Massive amounts of data and information don't do researchers any good if they don't know how to find what they need quickly and efficiently. Yet too often a search for relevant information on the web is a frustrating hit-or-miss exercise. To make that process easier and more efficient, the NBII's new search engine (designed by Pittsburgh-based search-software company Vívísimo) targets literature, image galleries, websites, databases, and other resources related to biodiversity that wildlife professionals will find relevant.

To date, the new search engine taps more than 40 key repositories of data and information about biodiversity, including all NBII databases and U.S. Fish and Wildlife Service collections about fisheries, habitat conservation, wetlands, migratory bird management, and threatened and endangered species. Searches also tap the Global Biodiversity Information Facility (GBIF), which holds 180 million global species records, and a broad range of additional sources. Search results include essential data and may also include documents, photographs, and audio and video materials.

Users conducting a basic search can enter keywords in the search box and specify which of the repositories to search and which to "turn off." With an advanced search, users can enter more specific information in fields about publisher, date, author, and the like. For all searches, a Biocomplexity Thesaurus (BCT) works behind the scenes to map a user's search terms as well as synonyms to closely related concepts, thus ensuring all potentially relevant sources are made available. For instance, if a user enters "exotic plants" in the search box, the search will provide matches for that term along with matches for the synonyms "non-native" plants and "non-indigenous" plants. It will also include records about other closely related concepts such as "invasive species" and "weeds." In short, the new system seeks to understand the context of a user's search without requiring the user to enter keywords for every possible permutation of the topic. To prevent information overload, users have the option to turn off this capability and search only on their designated terms if they prefer.

Perhaps the most important new feature offered by the Vívísimo search engine is that results arrive in a list and also in "clusters"—thematic categories generated from the texts of searched documents. Users can scan these clusters, weed out irrelevant information, and "drill down" into the areas of interest. For example, a search of the term "bats" will yield clusters about distribution, population, wind turbines, specific bat species, white-nose syndrome, and many other themes. Users can then search the themes that serve their needs (see graphic on page 63).

More enhancements are on the way. For example, through a Google Maps application, users will soon be able find data keyed to a specific geographic re-

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gion either by entering geospatial coordinates or by drawing a "bounding box," a geographic area delineated by the user to target a search area on a map. Users will then be able to interact with the clickable map to explore search results.

There's No Place Like Home

For websites, the home page is a kind of electronic front porch to which everyone is invited. The NBII remodeled its home page to make the wide range of NBII-supported content more accessible. The new design went live at the end of March 2009, and further changes have been ongoing. What follows is a sampling of home page enhancements.

Revolving Features. Content on the home page changes frequently to reflect new events and developments within the NBII and to exhibit content from its 13 regional and thematic sites on a revolving basis. This will give immediate exposure to some of the NBII's data portals. Among them:

- Fire science and management, which provides access to the Fire Research and Management Exchange System and its data on technology that supports fire management and research.
- Fisheries, which includes data on water resources, fishing statistics, and species profiles, some of which are available for download directly from the NBII.
- Invasive species, with a vast array of information on introduced plant and animal species. The data can be used for early detection, rapid assessment, and rapid response, as well as for risk assessments of habitat vulnerability.
- Wildlife disease, with information on wildlife health, mortality events, and wildlife-human-domestic animal disease interactions that can enhance the understanding, surveillance, management, and prevention of wildlife diseases around the world (see *The Wildlife Professional,* summer 2008).

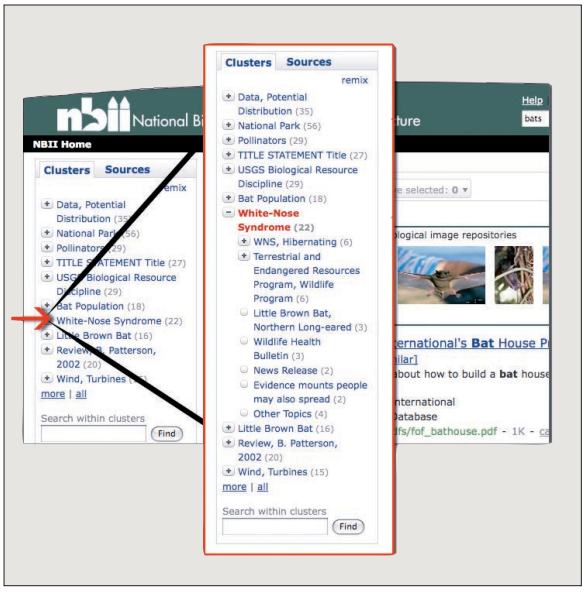
Slideshow. The home page now features a slideshow of photographs drawn from the NBII's Library of Images from the Environment (NBII *LIFE*). The slideshow serves not only as a showplace for images but also contains links to content within the NBII, thereby serving as an additional route to navigate to new or newsworthy content within the NBII.

RSS Feeds. Users can access a listing of RSS feeds to topics of NBII concern, such as the Bird Conservation and Butterflies and Moths of North America. The feeds update users on general biodiversity news and on new content in the NBII site.

Standards. The home-page "Standards" list includes links to products that support improved handling and retrievability of biodiversity information. The Integrated Taxonomic Information System (ITIS), for example, provides authoritative taxonomic information on plants, animals, fungi, and microbes of North America and the world, and the Dublin Core Metadata Standard is an internationally recognized tool for searching and indexing web-based metadata.

Data and Tools. This is a listing of more than a dozen major databases, data sets, and other products available throughout the NBII and on the websites of its partners. These include the Gap Analysis Program (searchable statewide collections of digital species-distribution maps) and the Fisheries and Aquatic Resources Data Access Wizard for finding fisheries-related data sets.

News Briefs. The home page now showcases "News from the NBII Blog," with updated stories about recent events of relevance to NBII users.



Credit: NBII

With the new NBII system, a search on the term "bats" generates "clusters," a list of related concepts. A user interested in white-nose syndrome, for example, can click on that item in the list and drill down through a new layer of results (highlighted above). This display of "hidden concepts" within a search is a hallmark of the new system.

For the Kids. NBII Kids is a new children's section hosted by "Zot the Frog" and featuring games, stories, puzzles, and projects designed to teach children about wildlife and the environment.

Natural Images. Users can access NBII *LIFE*, a growing collection of more than 11,000 photographs about nature and the environment available at no charge for non-commercial use by individuals and organizations.

Regional Rundown. On a map of the United States divided into 11 regions, users can click on an area to learn about region-specific projects and biodiversity content as well as to access the home pages of regional "nodes," such as the NBII Southern Appalachian Information Node (SAIN) and the NBII Mountain Prairie Information Node (MPIN).

"People Are Asking." This Q&A section presents users' questions about biodiversity and about the NBII with answers provided by NBII staff.

In the Stacks. The "NBII Publications Library" provides links to documents and publications such as the e-journal *Sustainability: Science, Practice, and Policy* (a scholarly journal sponsored by the NBII), *Access* (the NBII newsletter), and fact sheets on regional and thematic nodes as well as NBII projects.

The NBII was established to provide swift access to diverse, high-quality biological databases, information, and analytical tools. Recent enhancements to the NBII site are helping to advance that goal. Yet because the NBII remains a work in progress, wildlife professionals and others who use the site can provide valuable feedback on how it might further evolve to serve the ultimate goal: to increase our understanding of Earth's biodiversity and the threats to its survival.

Please send feedback, comments, and suggestions for the new NBII home page and search engine to Ron Sepic at ron_sepic@usgs.gov.