Introducing eBird: The Union of Passion and Purpose

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Two dawns of the twenty-first century

In cultural terms, it has been stated that for the United States the twenty-first century began on 11 September 2001, the day when international terrorism struck a terrible blow on North American shores. Although these attacks have generated a profoundly unwelcome aftermath, they have also released a remarkable sense of dedication among many citizens of the world, a dedication to focus on higher meanings in their lives and to seek out ways to contribute actively for the common good.

Birders were spared neither the initial agony nor the aftermath of this tragic event. The good news, however, is that we find ourselves privileged to contemplate how we might contribute tangibly toward community purpose. Ironically, perhaps our most important opportunity owes its roots to the other major, watershed event coinciding with the dawn of the new millennium the maturation of the Internet.

For most of the decade before September 11, the Internet already had served as an efficient delivery tool, allowing information and products to reach consumers. We believe, however, that the Internet reached maturity only a year or two ago, when projects began to emerge that *reversed the direction* of information-flow—pooling data from widely dispersed individuals into centralized databases. In the world of biology, chief among these projects have been those created by and for birders. These projects seek to tap the vast pools of information about nature generated each day by people like us having a passion for birds.

We do not exaggerate in claiming that birders are among the most significant pioneers in using the Internet to interpret and conserve the natural world Our concept is proven (see <http://birdsource.org> for many examples) To all birders, especially to readers of *North American Birds*, we say, "Now it's time to kick it up a notch!" The real work, and the real exhilaration, is about to begin.

Our passion has been our curse

This very magazine exists because birders tend to be record-keepers. "Listing" takes many forms, but even the most casual among us likes to document in one form or another what we encounter in the field. If you read this magazine, you know what we mean. In thousands of closets around the world today lie countless notebooks, index cards, annotated checklists, and diaries. Those of us involved with birding institutions know well the frustration of hearing, over and over again, about "my late-uncle's bird records" We know how valuable they could be. Sadly, we also know we can't use them

Those of us who contribute regularly to *N.A.B.* do so because we want to make something more of our observations than a stash of bird-records to be posthumously discarded. We know that each observation provides useful information about the distribution and/or abundance of that species After all, these observations are painstakingly compiled by the regional editors for *N.A.B.*, who then disseminate the information by placing each report in the context of the "bigger picture." These seasonal and annual summaries, in turn, yield countless stories of both biological and cultural interest, as distributions shift across North America and abundances fluctuate through time

Unfortunately, the medium of the printed page is always constrained by time and money. Word limits, deadlines, and format restrictions limit the amount of information that can be received and digested. We all know that the records that survive to grace the pages of *N.A.B.* pale in comparison to the volume of information gathered each quarter by birders, and as a result, only the most noteworthy trends can be detected and commented upon Indeed, most bird sightings are never even reported, because most observers assume that because their sightings are not unusual, they are also not valuable.

One of the most painstaking tasks any birder or scientist can face is that of extracting noteworthy patterns from the written page. Anyone who has attempted this feat—poring over volumes of text in search of records for a particular species or region—knows this well. Our curse is that so much information exists, yet so much of it lies out of sight in private records, and that public records are often produced only as pared-down seasonal or yearly compendia. If you have ever faced this dilemma, then you have dreamed of the day when such information could be readily accessible via a central database, just waiting to be sorted, graphed, mapped, and interpreted

The long-awaited day has arrived

Maturation of the Internet has removed the constraints long imposed on the printed page, and we are pleased to announce the arrival of our long-awaited on-line checklist project, called ***eBird***. Developed jointly by the Cornell Lab of Ornithology and the National Audubon Society, the project uses industry-scaled database tools and cutting-edge Internet software to collect, archive, and disseminate bird sightings from anywhere in the world (though our initial focus is North America).

Precursors of eBird are no doubt familiar to *N.A.B.* readers. For several years, projects such as Christmas Bird Count, Great Backyard Bird Count, and Project FeederWatch have used prototype Internet tools to conduct interactive data-gathering online, but these projects focus on specific protocols and narrow windows of time. eBird, however, will finally open the process up to bird observations made 365 days per year, at any place, and using a wide variety of protocols.

All observations will be archived in a common database, so that recent and past sightings will be available for personal perusal, for analyses of abundances and distributions, for scientific research, and for use in long-term monitoring. Using customized data-retrieval functions, the process of gathering information and analyzing trends in specific regions will be far easier

and more efficient than ever before Contrary to competing with *N A B*, we intend eBird to be an indispensable tool to be used by *N.A.B.* Regional and Subregional Editors as they collect, analyze, and publicize sightings and trends from across their regions. In fact, Ned Brinkley and many *N.A.B.* Regional Editors have been instrumental with assistance and suggestions in developing eBird. eBird is not meant to replace *N.A.B.* but instead to augment the observations available to the editors and to ease the efforts involved in finding and making sense of notable trends.

Compilers are not the only beneficiaries of these new technologies. eBird's overarching objectives are (1) to make entering bird sightings quick and easy, and (2) to make these sightings available for user-generated queries in real time. eBird will allow all participants to enter, store, retrieve, and analyze their personal bird observations over the Internet. Because eBird is built with the users in mind, the project will make it easy for a newly indoctrinated backyard birder to start keeping a life list (not to mention year list, month list, or yard list). Moreover, all observations are stored in a central database, where eBirders not only can track their personal sightings, but they also can access the sightings submitted by birders from across North America. As participation expands, generating more reports of common and uncommon species, our knowledge of the details of distribution, abundance, and movements of North American birds will achieve a new level of sophistication.

How does it work?

Central to the entire project is an elemental database consisting of just six core fields (who, where, when, what species, how many, and effort), all of which adhere to international monitoring standards. It should take a typical birder 5-15 minutes to enter a day's observations. Once signed in, eBirders will have multiple ways to select their birding location. Hundreds of renowned birding hotspots, such as National Wildlife Refuges and Audubon centers and Important Bird Areas (IBAs) are already uploaded into the database If your regular birding site isn't listed as a hotspot, you can pinpoint and register your own favorite location, be it a locally known hotspot, a nearby park or nature center, even your own backyard. An innovative mapping tool (patent pending!) allows users to zoom in on their location using a street map, a topographic map, and aerial views, and then add their specific point to the database where it is stored and available for subsequent entries.

After pointing-and-clicking to enter the date, species, number of individuals for each species, and an estimate of effort (e.g., time spent and distance traveled), a summarized list will appear, prompting you to review your submission. eBirders then confirm their observations by clicking the 'Submit data' button, which uploads the list to the central database and collates their observations with all other submitted reports from across North America. These data will be immediately available to all eBird users for any subsequent queries or analyses. Therefore, anyone (e.g., regional *N.A.B.* compilers) will have access to notable sightings in his or her region essentially as they are submitted, and can verify any of these observations as necessary.

Who's going to take out the garbage?

The old adage "garbage in, garbage out" is especially appropriate for databases filled with sight-records from a variably skilled public. What's to stop erroneous data from entering the database? What if the Brambling submitted by an inexperienced birder is actually a misidentified Oregon Junco? To help screen the data for bogus sightings, state and regional experts have created a series of "filters" for each state and province across the U.S. (including Alaska and Hawaii) and Canada. Each filter sets an upper limit on the number of each species that can be reported without documentation from a given location on a given date. As each birder submits a checklist, eBird software automatically compares the entire submission with the filter. Any sighting that exceeds the filter's settings is 'flagged' for review by a state or regional expert for verification and/or documentation. Initially, these filters are set so that any notable sighting will be flagged, not just the rare species requiring documentation. A late summer Say's Phoebe in western Washington, for example, is notable and will be flagged, even though documentation for the state's bird records committee is not necessary. More obvious are the Calliope Hummingbirds on a Manhattan Christmas Bird Count, or Long-billed Murrelets in the Finger Lakes region of New York. Such records do need documentation to state records committees, and will be certainly flagged. A selected regional editor will have the ability to fine-tune the filters to reflect their region as the project proceeds through time.

Flagging the vagrants

For any flagged record, the observer submitting it immediately will be asked to confirm or edit (in case of a typographic error) the sighting. If the report is confirmed (i.e., the observer is sure that's what he saw), it will be forwarded to a regional editor. These editors will have the opportunity to determine whether the sighting is acceptable as entered, or if additional documentation is necessary before it enters the permanent database. Only these editors will have the prerogative of removing flags, thereby sending the notable record into the permanent database. In the future, eBirders will be able to submit notes, photographs, or other supporting evidence directly to the regional editor via the eBird web site.

It is important to stress that flagged sightings will not simply be discarded All such observations will be brought to the attention of a regional editor and/or a state records committee. In many cases, a sighting may not be allowed to pass into the permanent database without supporting evidence, but in others the flag merely alerts a regional compiler of an "expected-but-rare" sighting that might warrant mention in the pages of *North American Birds.*

The benefits of real-time tracking

Using state-of-the-art tools for data retrieval, any interested person will have the opportunity to have fun querying the database, for any purpose User-friendly prompts will permit birders (or fifth-grade science classes) to generate on-line reports focusing on specific locations, species, dates, or combinations of these variables. The casual birder can examine a home-state checklist, or browse specific locations he or she intends to visit. The seasoned chaser can search for specific sightings of unusual species, or check on the national "hotline" page for the most unusual. Everyone will enjoy watching winter finches pour southward and comparing irruptions year to year, or studying the warbler migration as it unfolds in spring and fall. Querying the database will be simple enough to allow even first-time users to browse maps or trends, but also will permit amateur scientists and researchers to drill deeply into the numbers and even conduct sophisticated analyses.

We cannot overemphasize the long-term importance of this project for the conservation of birds. The impact of census projects, such as Breeding Bird Survey and Christmas Bird Count, is already well established, as these provide our most reliable records of population trends at both regional and global scales across North America. But these projects, like so many others, represent single-frame snapshots at fixed intervals and a relatively small number of fixed places. eBird releases us from these constraints, allowing literally every individual birder to develop his or her own bird-monitoring routes, and every nature center to develop a protocol for measurement of long-term change in its bird populations. Measured over decades and centuries, such *measurements of individual places* will play an enormous role, we believe, in detecting and explaining changes in bird populations Such understanding, in turn, is essential as we struggle to sustain wild places and wild birds in the face of inexorable pressures they face from human culture

The union of passion and purpose

Alpha-testing of eBird began last fall, and beta-testing begins in April 2002 Because it is web-based, we plan to treat it as a living, community-based effort. We will seek input from birders, bird clubs, Audubon chapters, and scientists across the continent. We will amend and improve both input and output capabilities as new ideas or new technology allow. We especially hope that those individuals who faithfully document North American birds, and those who devotedly read *North American Birds*, will participate actively in the effort. The new millennium in birding has arrived, and we feel privileged indeed to be able to meld our passion for birds and nature with a global-scaled effort to document and to understand their timeless ebb and flow