Biosurvey News

The Newsletter of the Oklahoma Biological Survey
Spring 2005

OK WILD BIRD Needs You!

Jeff Kelly

OK WILD BIRD is a new Web-based resource for Oklahoma's ornithological community. The site (www.biosurvey.ou.edu/OkWildBird/index.php) will be launched on May 1. We hope that with your help, OK WILD BIRD will become a one-stop encyclopedia for information on Oklahoma's birds and active ornithological community. The success of this site depends on your willingness to share what you know about Oklahoma's birds. Best of all, it's easy. If you can use e-mail, you can contribute your knowledge to OK WILD BIRD (Fig. 1).

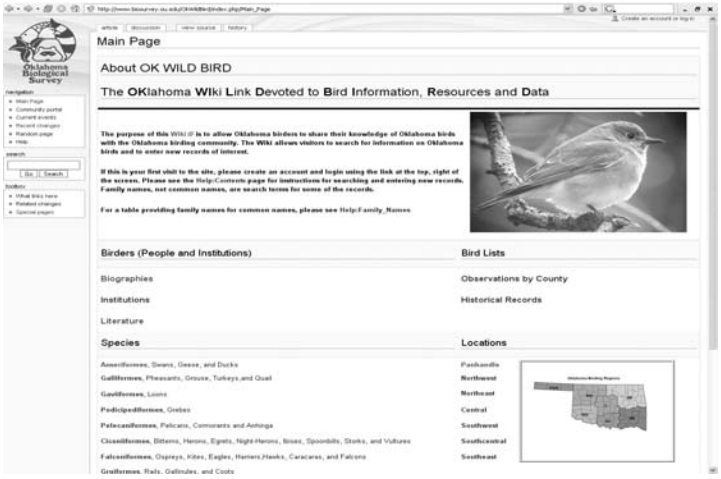


Fig. 1: The OK WILD BIRD Web page.

What makes OK WILD BIRD unique? The philosophy behind OK WILD BIRD is that most of what is known about Oklahoma's birds resides in the minds and notebooks of countless amateur and professional ornithologists all over the state. The objective of the OK WILD BIRD project is to allow Oklahoma ornithologists to contribute what they know to a common forum that will benefit both birds and ornithologists. Wouldn't it be great to be able to tap into this local information whenever you wanted it? Want to identify that bird at the feeder? Looking for a good birding spot? Want to join a field trip or find a local birding club? Wondering where a species has been seen recently or historically? Our hope is that you will use this site to ask and answer these questions.

How does OK WILD BIRD work? Unlike other Web formats, OK WILD BIRD uses WIKI software to store all of your contributions in a database that others can search, read, and add to. This is the same software that powers wikipedia.org, an online free encyclopedia based on contributions from users all over the world. Users of WIKI Web sites, however, do not need any specific WIKI software. If you can search the Web, you can contribute to OK WILD BIRD. Just point your Internet browser (e.g., Internet Explorer, Netscape Navigator, Mozilla FireFox) to www.biosurvey.ou.edu/OkWildBird/index.php and start typing! Because contributions to the site are stored and organized, the information on the page accumulates through time. In this way OK WILD BIRD enables ornithologists to store their records in a central and accessible database.

What information can be found on OK WILD BIRD? At first launch, we envision a Web page with four main sections dedicated to (1) people and institutions interested in Oklahoma ornithology, (2) accounts of species occurring in Oklahoma, (3) field notes organized by current and historical records in each county, and (4) birding locations within six regions of the state. We also plan to add sections on birding tips and schoolyard birding. Ultimately we hope that the information accumulated in OK WILD BIRD can be used in the classroom to help teach Oklahoma's children concepts of natural history, science, biodiversity, and conservation. To date we have added some of our existing information to the Web page, but this is only a tiny fraction of the ornithological community's knowledge and interests. That information is in your hands and we need your help. The success of the site will depend largely on contributions from you.

The Oklahoma Biological Survey has a long history of publishing important ornithological resources that include the works of Margaret Morse Nice, George Sutton and, most recently, the Oklahoma Breeding Bird Atlas (2004), edited by Dan Reinking. Our hope is that the new OK WILD BIRD Web page will extend this tradition by making the work of countless ornithologists throughout Oklahoma available on the Internet.

Inside this issue:

OBS Researcher Receives NSF CAREER Award

Have you ever wondered why streams have lots of fish, but seldom have green plants or algae? (The stringy green algae that grow in summer are noticeable because fish DON'T eat them). It's because the bases of most stream foodwebs are not big, green plants, but rather microscopic diatoms: unicellular algae with beautiful sculptured glass cell walls. These algae form a brownish, slippery coating on stream stones, and because they store extra energy as oil, they also are highly nutritious.

Both grazers (organisms that eat algae) and floods take their toll on diatom populations, so stream stones are usually not as slippery after rains. Yet diatoms rebound quickly. Much of the re-growth may come from diatoms protected in tiny cracks and crevices of streambed stones, especially rough-textured stones. Dr. Liz Bergey recently received a five-year Faculty Early Career Development Award from the National Science Foundation to investigate how algae protected in crevices augment the food supply of streams and speed the re-growth of algae after floods. This research includes local greenhouse experiments, field surveys, and field experiments in mountain streams of the Rockies.

Because this particular grant is for career development, it also supports teaching. Consequently, Dr. Bergey will be able to support and expand her elementary school outreach program. With the help of undergraduate interns, Dr. Bergey currently presents hands-on programs at local schools. The added funding will allow the development of grade-specific programs that tie in with the schools' curricula. These expanded programs will enhance biology learning by school children and also give college students teaching experience.

Publications of the Oklahoma Biological Survey Preparing for Publication in Summer 2005

The Oklahoma Biological Survey is pleased to announce resumption of the peer-reviewed series *Publications of the Oklahoma Biological Survey* (POBS). Manuscripts have been received and reviewed, editorial revisions are under way, and articles are being prepared for a targeted publication release in the early summer of 2005. Reestablishment of the POBS in 2005 will represent resumption of the series after 72 years. Five volumes appeared after initiation of the series in 1929.

Research articles in the *Publications of the Oklahoma Biological Survey* concern the biota of Oklahoma and adjoining regions. The series is focused on biogeography, ecology, and systematics and will be published at irregular intervals. The POBS will be distributed to regional libraries in hard copy format and made available as pdf files on the series Web site. Additional information and instructions for authors can be viewed online at http://www.biosurvey.ou.edu/pobs/index.html.

Graduate Student Research: Mapping the Spread of Invasive Species Across Oklahoma Over the Past 100 Years

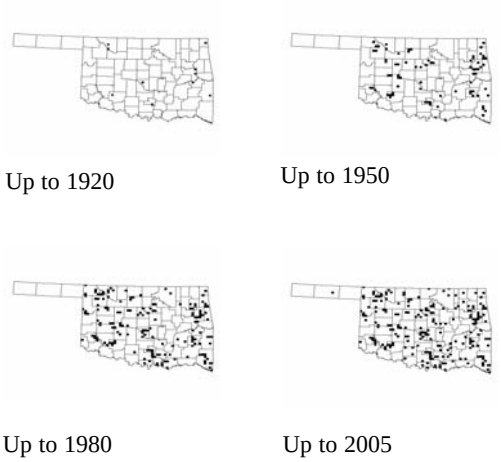
Priscilla H. C. Crawford

As a graduate research assistant at the Oklahoma Biological Survey, I manage the Oklahoma Vascular Plants Database (OVPD). This database contains information on all the plant specimens housed in the herbaria of Oklahoma, and this compilation of plant specimen records represents the past and present vegetation of the entire state. The OVPD has been several years in the making. With recent funding from the National Science Foundation, we will see the majority of the data entry completed and this data made available to researchers around the world via the Internet. This resource will contain information regarding all the plant specimens housed in the herbaria of Oklahoma. Not only is managing this resource my job, but I also am utilizing the data for my dissertation research under the direction of Dr. Bruce Hoagland.

Invasive species research is one of the hottest fields in ecology today. Researchers and land managers are interested in the spread of invasive plants across the landscape. Certain questions can be addressed using the data housed in the OVPD, such as which species are spreading and how quickly those plants are moving into particular habitats. A prominent European botanist and ecologist, Peter Pyšek, has used similar data from herbaria around Europe to determine the rates of invasion of highly "weedy" or invasive plants. Following his example, I will map the spread of particular plant species, not only across Oklahoma, but also through time.

Using a Geographic Information System (GIS) I can illustrate the collection of plant species across the state and through time. I created maps of eastern red cedar (*Juniperus virginiana* L.) specimens as they were collected in Oklahoma over the past century (see maps). However, there are a few problems with interpreting these maps made from the OVPD data; these problems are inherent in any database constructed with herbarium specimens. Several researchers using herbarium records report difficulties due to: high number of collections during certain years and hardly any collections during other times (plant collecting was at a low during World War II and picked up soon after); poor information associated with the plant specimen (missing location or date of collection); and incorrect identification (many specimens are not verified by experts). In the OVPD, I have seen what we call collecting biases, such as collection effort focused on special places (Black Mesa and the Wichita Mountains). I have also seen botanists focus on a particular plant or group of plants (orchids or Indian Blanket). However, we also see plants neglected; cacti (which are rather unpleasant to collect) and "weedy" plants, while generally very abundant, tend to be ignored by plant collectors. Because of these biases, the OVPD does not accurately reflect the true distribution of plants across Oklahoma. Therefore mapping the data and determining the spread of invasive species over time, unfortunately, will not be as simple as I had originally expected.

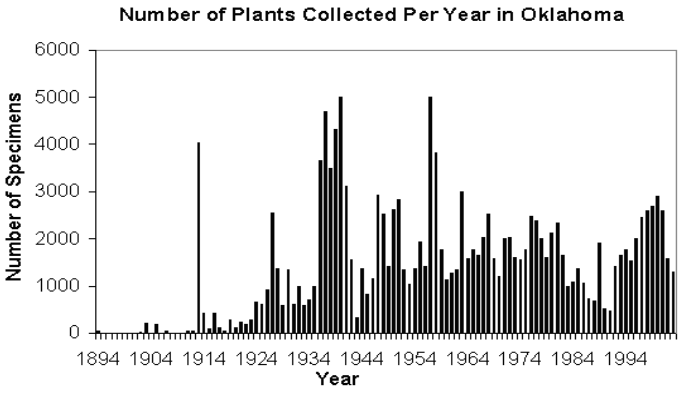
Similar to what other researchers have seen in their data, Oklahoma has experienced periods of extensive plant collecting followed by times of relatively little activity (see graph). Taking into account the dips and peaks in collecting is important when you are trying to determine the speed at which a plant is invading. Are there more collections of eastern red cedar because it is spreading or because more botanists are collecting it? Comparing the overall rate of collection to the collection rate of plants considered to be invasive should indicate whether the abundance of these invasive species is increasing in Oklahoma. Analyzing collection rates and invasion rates of several species will be the next step in my research.



Up to 1920 Up to 1950

Up to 1980 Up to 2005

Location of Eastern red cedar (*Juniperus virginiana* L.) plant collections in Oklahoma.



The OVPD will become an excellent tool for biologists interested in the vegetation of Oklahoma. My dissertation is just the beginning of what I expect to be many studies employing this rich biological resource. My preliminary work has begun to illustrate the vast research potential of the OVPD, but it also has brought to light some of the problems associated with data based on herbarium records. This should not discourage future researchers, but will require that they take the necessary steps to reduce the effect of any collecting bias.

George J. Goodman Honored at Bebb Herbarium Open House

Wayne Elisens

More than 80 friends, students, and colleagues of the late George J. Goodman attended an open house at the Robert Bebb Herbarium on January 16. The open house was held to honor Dr. Goodman on the 100th anniversary of his birth year and to announce initiation of a $40,000 project to fund renovations of the George J. Goodman Foyer. The event was co-sponsored and organized by the OU College of Arts and Sciences, the George J. Goodman Tribute Committee, and the Robert Bebb Herbarium.

Many friends and colleagues associated with the herbarium attended the open house. L-R: Cheryl Lawson, John Skvarla, David Nagle, Bruce Hoagland, and Jim Estes.

After completing his doctoral degree at Washington University and the Missouri Botanical Garden, Dr. Goodman came to the University of Oklahoma as an assistant professor of botany and curator of the herbarium. He served as curator for 33 years, from 1933 to 1936, and from 1945 until his retirement in 1975, when the OU Board of Regents officially designated the George J. Goodman Foyer to honor his contributions. He also was awarded a Distinguished Service Citation in 1978, which at the time was the university's highest honor. During Dr. Goodman's association with the Oklahoma Biological Survey and tenure as curator of the herbarium, the number of botanical specimens increased substantially and the herbarium achieved national prominence. Goodman was a beloved teacher, mentor, and colleague who had a profound impact on those who knew him. It is a tribute to him that on a cold January afternoon nearly six years after his death, many individuals braved the elements and traveled great distances to celebrate his legacy and honor his accomplishments.

Participating in the open house celebration was Dr. Goodman's widow, Mrs. Marcia Goodman. Other attendees included Dr. Goodman's daughter, grandchildren, and great grandchildren, many distinguished guests, and individuals currently and formerly associated with the Oklahoma Biological Survey, including James Estes, curator emeritus of the Robert Bebb Herbarium, and Paul Risser, former director of the Oklahoma Biological Survey and current chancellor of the Oklahoma State Regents for Higher Education. Information about the Goodman foyer renovation project can be obtained by contacting Wayne Elisens (elisens@ou.edu) or by viewing the informational flier at http://www.biosurvey.ou.edu/bebb/Herbarium.pdf.

BioBlitz! 2005

BioBlitz! is a 24-hour inventory of the biological diversity of a specific area conducted by biologists from around the state and other volunteers. On September 9 and 10, the Oklahoma Biological Survey will sponsor its fifth annual BioBlitz! at Oxley Nature Center/Mohawk Park in Tulsa. A special guest will be state chancellor of higher education, Dr. Paul Risser, a former director of the Survey and an excellent field botanist.

Everyone is welcome to participate in BioBlitz! In addition to helping with surveys, the public can join in interpretive activities, view displays, talk with biologists and see the final tally of plants and animals that were discovered during the 24-hour inventory. More information, including registration information, will be posted on the Web site soon.

OBS Develops Web Catalog for Oklahoma Species and Habitats Research Data

Ian Butler and Bill Dengler

Left untended, the value and accessibility of research data can decline in just a few years. Data may be lost, details about the project may become progressively vague following its completion, or the media storing the data may no longer be readable by a computer. This sad state of affairs is not inevitable, however.

We believe that biological research programs and researchers working in Oklahoma will benefit from access to a secure, searchable online data catalog. The Oklahoma Biological Survey/Oklahoma Natural Heritage Inventory has begun a project to establish and maintain a permanent, online catalog of raw data sets collected during biological field research projects. The catalog will provide a central site for storing and maintaining research data on Oklahoma's animal and plant species and habitats. Anyone who has research data or plans future field research projects in Oklahoma, or in biologically associated regions, may contribute data. Unlike many data clearing houses on the Web, the data catalog will host project data as well as metadata.

Participating researchers or sponsoring agencies retain ownership of all data they contribute, retain complete access to their data, and may even update it if desired. Data owners may designate levels of public access, which range from completely open to highly restricted. Sensitive data, such as rare species site locations or preliminary field results, can be protected in this way. Researchers may search the catalog to acquire existing data related to current or future projects.

The catalog project initially will emphasize locating research projects, old or new, containing data on one or more of 87 rare species selected from the Draft Tier List of the Oklahoma Comprehensive Wildlife Conservations Strategy, 2005. This initial focus will not, however, exclude from the catalog contributed data for those Oklahoma species or habitats that are not rare.

The Oklahoma Department of Wildlife Conservations (ODWC) is funding the first three years of the project, which Ian Butler, information technology analyst, is leading. Butler, Bill Dengler, technical project management specialist, and Shiby Mathew, computer science graduate student, are developing the data catalog's content scope and disposition procedures in collaborations with ODWC, their contract researchers, and OBS biologists. Butler expects an initial online catalog to be available for contributors by the end of this August.

To learn how contributing data to the data catalog can benefit your research program, contact Bill Denger, bdengler@ou.edu, (405) 325-5061 or Ian Butler, ian_b@ou.edu, (405) 325-1985.

New on the Web

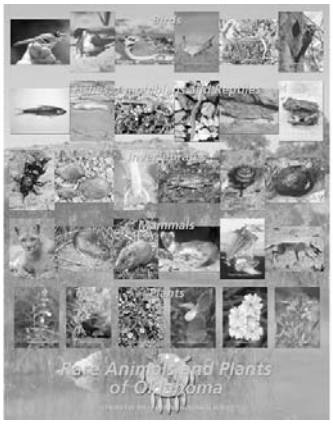
Addition of OK WILD BIRD

Updated personnel lists

New poster page

www.biosurvey.ou.edu

NOW AVAILABLE!!



"Rare Animals and Plants of Oklahoma" is the second in a series of posters presented by the Oklahoma Biological Survey.

Please see the Web site for ordering information!

Biosurvey News
Spring 2005
Amy K. Buthod and Caryn C. Vaughn, editors

Biosurvey News is published twice each year and reports on the activites, programs, and news related to the Oklahoma Biological Survey. We welcome readers comments and suggestions.

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Biodiversity:

The plains minnow (*Hybognathus placitus*)

Rich Broughton

If you ever view a western Oklahoma river from a bridge or raised bank when the water is clear, you are likely to see large schools of small fishes. From a distance, these may appear as quickly moving, dark clouds in the water. In many areas of Oklahoma it is likely that these are plains minnows. The plains minnow is one of Oklahoma's most widespread fish species. It is most common in shallow sandy runs and pools of rivers in the central and western parts of the state, but also may be found in clear waters of the east.

Minnows are technically fish in the family Cyprinidae, and *Hybognathus* is a genus known as the silvery minnows. Appropriately, the plains minnow is generally silver in color with a slightly darker back (dorsum) of tan or olive and colorless fins. Among minnows common in large sand-bottomed rivers, including the red shiner (*Cyprinella lutrensis*), bullhead minnow *(Pimephales vigilax*), and sand shiner (*Notropis stramineus*), the plains minnow is the largest, frequently approaching 5 inches in length. Plains minnows graze on algae in areas of lower current.

Plains minnows are important members of the fish fauna of Great Plains rivers. They are broadly distributed in the Missouri River and western Mississippi River basins, and while their populations appear to be largely stable, they are declining in some parts of their southern range. Indeed, they are now rare or extirpated in some parts of the Cimarron River in Oklahoma. However, in other places plains minnows can still be seen in large numbers. So next time you cross over a sand-bottomed river, keep an eye out for schools of plains minnows.

The plains minnow.