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Distributed to Volunteers and Supporters of the Oklahoma Chapter of The Nature Conservancy

### DOCENT WINTER MEETING

—Dennis Bires

All docents are encouraged to attend the Winter Meeting, to be held on Saturday, 12 February 2005, at 2:00 pm., on the University of Tulsa campus. Our meeting will be held in room 206 of John Rogers Hall (the College of Law), at the corner of Florence Avenue and East 4th Place (3120 E. 4th Pl.), just show up and follow the signs. Ample parking will be available across 4th Place. Ignore permit-only parking signs—guests are exempt.

At the meeting we'll make plans for new docent recruitment, new docent training, docent reorientation, spring workdays, and other events. Bring your ideas and energy, we'll do our best to use both.

Call Dennis Bires, 918-341-3908, with any questions, but there is no need to call in advance to attend.

### CHRISTMAS BIRD-COUNT

—Betty & David Turner

We enjoy participating in the Tallgrass Prairie Preserve Christmas Bird-count (CBC) and have done for a few years. After taking part in the 2004

Hulah count, we begin anticipating the event on New Year's Day at the Tallgrass Prairie. Our assigned section is the bison-loop and we enjoy the opportunity to drive the oil-lease roads, seeing ponds and other terrain that are normally "off limits".

We begin to wonder: Will the weather cooperate or be bitterly cold and begin watching the forecast a week in advance. Will we again see a bald eagle perched above the picnic area? Will we see a prairie chicken? What ducks will we surprise on the ponds? Will the bison cooperate and keep their distance or will they give us a scare like they did one year when we began looking for a spot to crawl through the fence to escape a few bison that seemed intent on coming at us? What unexpected experiences will we have this year?

This CBC close-up with nature experience gives us a real education about how the entire ecology, with the effect of weather and bison foraging, works together. Since we have had a rainy season that yielded a good seed crop, we expect to see a larger number of species, unlike the dismal count that followed the drought a few years ago. Many grasses had not seeded out that year and we only found about ten

species and about fifty birds in our bison-loop area. Without seeds there were almost no seed-eating birds (no meadowlarks at all); there were no hawks in our area, therefore, we assumed there were few rodents as well, again due to the lack of seeds.

This is the second year that fellow docents, Steve and Maureen Forsythe, have counted with us. It is always more fun when you have four sets of eyes watching, counting and analyzing which bird you actually saw. Would you believe, the birds don't wear name tags and are forever silhouetting on you, making it even more challenging to determine their true identity? We enjoy having the Forsythe expertise helping us arrive at a decisive identity and count.

We left the Visitor's Center at 8:00 a.m. and did not finish until 5:15 p.m. We had an unusually warm day with temperatures ranging from 55 to 69 degrees. During the day we saw 21 species and counted 253 birds. The four of us were especially pleased to observe 39 prairie chickens and 4 rough-legged hawks. We did not see any eagles and we typically do not in our count area—others did see some eagles. Although the bison were close to some areas where we needed to

walk, they cooperated and kept their distance.

As in the past few years, we again observed how grasses grow to the water's edge and how the pond water and streams appear to be much clearer in our bison pasture than in any cattle pasture that we have ever observed. The streams seemed even clearer this year. The Nature Conservancy's restoration effort seems to be working.



Additional highlights to the day: We always enjoy the potluck chili feed and bird tally—anxious to hear which species and how many have been seen by the entire group (perhaps we found one that no one else saw). The final highlight of the day came when around 7:30 p.m. we left under a clear sky. We stopped at the first turn-out from the Visitor's Center, turned off the headlights and stood in awe at the majestic display of stars and the Milky Way. The experience is like frosting on

the cake to end our delightful day.

Steve and Maureen said, “Any day at the prairie is a good day especially looking for birds. It was wonderful seeing all the prairie chickens.”

Bob Hamilton, our Director of Science and Stewardship, and Jay Pruett, Director of Conservation helped with this count. Other docents participating in the CBC were Art Browning, John Fisher, Jan Henkle, Suzy Harris and Nick Del Grosso. A total of 22 people counted and they came from Tulsa, Bartlesville and Fort Gibson. The total species count was 85.

Christmas bird counts began on December 25, 1900 and have continued under the guidance of the National Audubon Society. The purpose is to gather information about the winter distributions of various birds, and monitor the status of resident and migratory birds throughout the Western Hemisphere. Original intent was to provide an alternative to the practice of shooting as many birds as possible on Christmas Day, a tradition for many decades in the USA and abroad.

Now, a CBC is primarily a social event for birders, but is also very valuable in monitoring distribution (and abundance to a lesser extent) since they have occurred annually over the past 105 years. The data have become a crucial part of the U. S. Government's natural history

monitoring database. Check the following website for information: [www.audubon.org/bird/cbc](http://www.audubon.org/bird/cbc). Currently, around 2000 counts occur annually in North and Central America; this season's was between December 14 and January 5. Each group completes a census of those birds found in one twenty-four hour period within a 15-mile radius of a selected point. Our 15-mile radius is centered on the Visitor's Center. Over 55,000 volunteers were expected to participate in Audubon's 105th season. Last year over 63 million birds were counted.

Don Wolfe, biologist at the Sutton Avian Research Center, organizes the Tallgrass Prairie Preserve CBC each year. Anyone who would like to be added to his bird counter list may contact him at 918-336-7778 or send an e-mail to [dwolfe@ou.edu](mailto:dwolfe@ou.edu). If it sounds like fun but you don't feel that you know birds very well, you would be matched with experienced birders who would always appreciate another set of eyes to help spot the birds. You will also grow in your ability to identify birds.<sup>1</sup>

### CHRISTMAS BIRD-COUNT RESULTS

—Don Wolfe

- New species recorded:
  - Purple Finch (3)
  - House Finch (1)

<sup>1</sup> We received additional contributions for this article from Steve and Maureen Forsythe, Don Wolfe and Suzy Harris.

➤ Notable record highs:

- Redhead (25); only 1 reported in 2000.
- Red-shouldered Hawk (3); 2 reported last year, one each in 2001 and 2002.
- American Kestrel (31); range in previous years from 9 to 24.
- Greater Prairie-Chicken (41); range in previous years from 1 to 31.
- Northern Bobwhite (116); range in previous years from 14 to 79
- Red-headed Woodpecker (124); range in previous years from 3 to 64.
- Blue Jay (230); range in previous years from 17 to 135.
- American Crow (382); range in previous years from 46 to 190.
- Sedge Wren (4); one reported in 2000.
- Swamp Sparrow (10); 7 reported in 2000, 5 reported in 2004.
- Rusty Blackbird (15); 4 reported in 2000.

➤ Notable misses:

- Merlin; 1-2 seen in previous year.
- Golden Eagle; recorded 5 of past 6 years; had six last year.

**SCIENCE IN ACTION**

—Andrew Donovan-Shead

Diatoms are algal organisms with complex cellular structure, mostly “single cells that live between two-valved silicate shells, one overlapping the other like the two halves of a Petri dish,” more properly known as a frustule. When the cell divides, “each half keeps one side and grows a new shell within it.” Diatoms produce energy through photosynthesis and are, in general, considered to be simple plants. Diatoms have existed for a long time; they are so small that one might think they are insignificant. Diatomaceous earth, such as Kieselguhr and Bann clay, is composed of the silicate remains of diatoms; it is used to stabilize nitroglycerin to make dynamite, or used as a filter medium in the brewing industry—your Bud Lite has almost certainly been pumped through diatoms to clarify the beer.<sup>2</sup>

What has this to do with the prairie? It is your introduction to Andrew Potter who is investigating the presence of diatoms in the bison wallows of the Tallgrass Prairie Preserve.

Andrew comes from Henryetta, Oklahoma. In May 2003 he was awarded a BS degree by Oklahoma State University where he is presently

<sup>2</sup> I got help with this paragraph from the Internet web-site [www.wikipedia.org](http://www.wikipedia.org). Instead of diatoms, I used Irish Moss and Bentonite to clear the beer I made.

engaged in work for his MS degree, from which he expects to graduate in the Fall of this year.

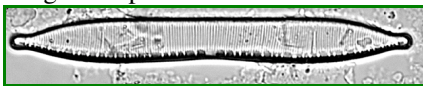
**DIATOMS IN BISON WALLOWES**

—Andrew Potter

My current work is focused on studying the diatoms of the Salt Plains National Wildlife Refuge, Alfalfa County, Oklahoma. I am interested in the variety of diatoms, their distribution, and discovering how they cope with their salty environment. Diatoms living on the salt plains experience a saline environment up to ten times that of seawater; in addition to the high salinity they are exposed to quickly changing conditions on the salt flats caused by high ultra-violet radiation from the sun and extremes in temperature. It is this combination of environmental factors that makes the salt plains an ideal place to study the effects of disturbance on biological diversity.

Though most of my work concerns the diatoms of the Salt Plains National Wildlife Refuge, I am also interested in those found in other unique habitats in Oklahoma, such as the Tallgrass Prairie Preserve where I have the opportunity to investigate diatoms in a threatened ecosystem. Two main things motivate me in my work: my own scientific interests, and the opportunity to bring valuable information to the people who need it. The Nature Conservancy has recognized the importance of

preserving places like the tallgrass prairie; now is the time for folks to listen and act in support of this work. I hope that I can help in some way to not just gain scientific information about a place, but to inspire people to want to defend it. Edward Abbey once said: “The idea of wilderness needs no defense. It only needs more defenders.” So, I am here too as a scientist to help provide the facts needed to defend the wilderness, just as the docents of the Tallgrass Prairie Preserve are here to help disseminate those facts and to inspire visitors from the general public.



*Hantzschia*

Diatoms I have found in the “wallow-like depressions” at the Tallgrass Prairie Preserve are quite interesting for several reasons. Firstly, diatoms are aquatic organisms, and the wallows only contain water after a good rain, which immediately suggests that diatoms will be present that have adapted to periodically dry conditions. Sites like these have not been investigated before so it is still a question as to which diatoms are present. I spent some time this summer looking at diatoms in Iowa and other prairie states. Although on a much smaller scale, the wallows should present similar conditions to the kettle holes left by retreating glaciers. So it is of interest to compare diatom floras for these types of sites.



*Pinnularia*

But just the presence of diatoms in these wallows raises a lot of questions. What diatoms are there? Do these wallows have different diatoms than the surrounding areas? Are the diatoms different to those found in similar habitats on other prairies? Answering yes to any of these questions could, potentially, change the way we look at and manage these seemingly uninteresting land features.

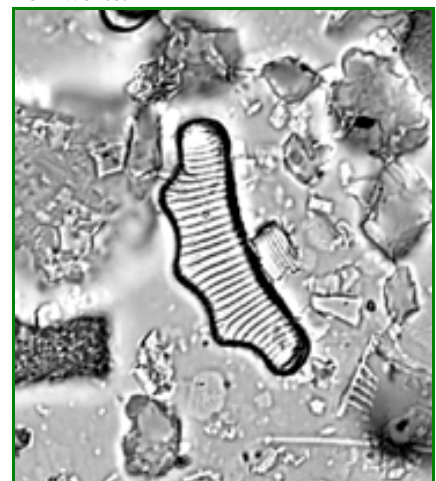
I haven’t had much time to examine the samples from the Preserve, but what I did see revealed some diatoms I don’t normally see elsewhere. Here is a list of genera that I noticed in the samples from the wallows:

- Pinnularia
- Eunotia
- Denticula
- Navicula
- Nitzschia

Three of my photographs of the samples I gathered from the bison wallows are reproduced here; the images were produced magnified 1,000 times. These diatoms are mobile, able to move up and down through sediments seeking moisture, light, and

to escape predators and harsh conditions. Not all diatoms have mobility, usually it is those living on the bottom of shallow water.

Since diatoms produce energy through photosynthesis, they do require light, and generally are thought of as occurring as plankton in the upper few meters of a body of water or at the bottom in shallow water environments. Some diatoms are referred to as aerophilic, which means they depend on free oxygen in the air, and are found in such places as the damp soils found in bison wallows and in rocks, on the surface of plants such as bryophytes, and even in places of low-light like caves. Bryophytes belong to a branch of plant science concerned with non-flowering plants such as mosses, liverworts, and hornworts.



*Eunotia*

Since diatoms use photosynthesis, they do respire, but the most important aspect of photosynthesis is the fixation



of carbon dioxide into organic carbon. In this way they are the base of the food chain in many aquatic systems. One impressive fact about diatoms is that they perform about 25-percent of the primary photosynthetic production on the planet, which is a significant contribution for such a small form of life; therefore, collectively, they are a major player in the carbon cycle.

Diatoms need the same nutrients as plants to thrive and, like plants, they are usually limited by the nitrogen and phosphorus available to them in their environment. In addition they require silicon, from which they build the walls of their protective shell.

Diatoms are good indicators of the environmental condition, and are often used as direct proxies for the condition of the environment in the past. This type of application is usually used in lake core sediments, due to the relatively uniform deposition and preservation of the diatom frustules on the lake bottom. At present it is difficult to use this method in the prairie, due to the transient nature of the sites at which diatoms would occur. Diatoms have been used as indicators for water and nutrient levels in the

environment though I haven't seen any studies for indication of light levels.

To be broadly effective my research results need to be correlated with meteorological data and the scientific results produced by other researchers. In my work at the salt plains, I plan to use data on rainfall and temperature patterns gathered by the Oklahoma Mesonet. I will use this data to see if it correlates with changes in diatom assemblages. Also, I have designed my study based on what other researchers have found, which also applies to the diatoms I find at the Tallgrass Prairie. I would expect to see similar trends as revealed by previous research programs, but any differences between my research and that of others would be of great interest.

#### **BACKYARD BIRDING**

—Andrew Donovan-Shead

Reading brings many chance encounters with other writers, often accompanied by thoughts such as: "Oh! So-and-so will be interested in this." And thus it happened while reading a newspaper article I thought:

"Oh! Readers of The Docent News will be interested in this:

Bill Sherwonit's midlife passion is for the birds. He sings the praises of bird-watching in his Alaskan backyard. <http://www.csmonitor.com/2005/0112/p18s04-hfes.html?s=hns>

I have made the link active, so those of you who are reading this in electronic format with Adobe Reader can position the cursor over the link and then left-click the mouse when the cursor changes from an open hand to a pointing finger with a *W* on its back. Doing so should open the article in your web-browser, as long as you are connected to the Internet.

#### **NICKEL PRESERVE VOLUNTEERS**

—George Pierson

Tallgrass Docents! Chris Wilson, Director of the Nickel Preserve, is planning to schedule some volunteer workdays at the preserve. Typical activities are road cleanup, seed collection, and tree planting. If you would like to be notified via email of any upcoming events, send a note to Chris at [nickel@oklanature.com](mailto:nickel@oklanature.com) and he will add you to the distribution list.

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