SOUTH DAKOTA'S FIRST "BIOBLITZ"

by Kenneth F. Higgins, Charles R. Berry, Jr. and Steven R. Chipps

Photo courtesy of SDSU

Two hundred years ago Merriweather Lewis and William Clark entered what is now South Dakota for the first time in August 1804. Undoubtedly, they were wondering about what kinds of plants and animals they would find there. Perhaps you have pondered the same questions as you entered a State or National Park.

One of the first questions that visitors often have for a Park Ranger is "What lives here?" or "Do you have a species list for this park?" Similarly, housing developers, highway engineers, or city planners also often ask, "What lives here?" Surprisingly, we often know little about the diversity of plants and animals living in our own backyards.

Biodiversity - short for biological diversity - is the variety of living things. Scientists often speak of three levels of biodiversity - genetics, species, and ecosystems. Species come in all shapes and sizes, from the tiny organisms that we can see through a microscope to those as large as trees or whales.

Two hundred years ago, Lewis and Clark were the first naturalists to document plant and animal diversity in South Dakota. They kept a daily logbook with names and descriptions of all the plants and animals they encountered along their voyage of discovery.

Today, a new and unique method of documenting biodiversity is called a "BioBlitz." In retrospect, Lewis and Clark's inventory of the flora and fauna along the Missouri River was not very different from the "BioBlitz" inventories being done by professional and volunteer conservationists and scientists at parks and natural areas throughout the world.

So, what is a BioBlitz? Most often it is a rapid biological survey that brings naturalists, scientists, educators, and families all together at one time in a natural area to compile a snapshot of the biodiversity present there. Most BioBlitz surveys are conducted in a 24-hour period. This enables finding animals that are active during either day or night. Bats, owls, fireflies and night crawlers are examples of animals that are most active during the night.

The first BioBlitz in North America was held on May 31, 1996, in Kenilworth Park in Washington, D.C., and about 1,000 species of plants and animals were found there. Since then, dozens of BioBlitzes have been conducted in over 25 states and six countries. Some "Blitzes" yield inventories of more than 2,500 species of plants and animals. The actual number of species found during a BioBlitz depends somewhat on the size of the area, the variety of habitats available on it, and the number and expertise of the scientists helping with the survey.

The idea to have a BioBlitz in South Dakota surfaced in late Fall of 2002. The challenge of how to organize one was not as easy, but with some help, advice, and encouragement from scientists and staff at the Illinois Natural History Survey and the Field Museum in Chicago we were ready to organize a BioBlitz in South Dakota.

We learned that the four elements for a BioBlitz are a suitable site, a source of funding and sponsorship, a cadre of scientists with a broad range of expertise, and a lot of dedication and enthusiasm by lots of interested people.

Selecting the site was fairly easy. We choose a complex of four natural areas (three state and one federally owned) centering on Oakwood Lakes State Park in Brookings County. We chose this area because it contained wetland, grassland and woodland ecosystems representative of eastern South Dakota.

An ecosystem is made up of plant and animal communities, and each ecosystem has its own species list. Ecosystems are part of the definitions of biodiversity.

Funding and sponsorship was provided by Game, Fish and Parks and the U.S. Geological Survey via the South Dakota Cooperative Fish and Wildlife Research Unit at South Da-

kota State University.

Finding a large team of South Dakota scientists with expertise ranging from algae to higher plants and animals that could be assembled at one time - was a challenging task. Unlike at the Robert Allerton Park BioBlitz in Illinois where over 160 scientists participated, including 47 entomologists, 16 botanists, 8 ornithologists, 7 mammalogists, and 5 herpetologists, we were faced with doing a BioBlitz with 25 or fewer scientists including 5 entomologists, 5 botanists, 4 ornithologists, 1 mammalogist, 2 ichthyologists, and 1 herpetologist, a third of whom we had to recruit from out-of-state Universities.

To offset working with such a small cadre of scientists, we decided to extend our biological survey in 2003 to bi-weekly or monthly intervals beginning with the onset of spring and ending in late summer (April-September).

This turned out to be an asset to our BioBlitz because we were better able to identify seasonally-expressive species that are difficult to collect during certain times of the year. However, gathering inventory data over a 6-month field season increased coordination and record keeping tasks, but we believe it was well worth the additional effort.

The BioBlitz species total for the Oakwood Lakes State Park Complex now stands at 1,215 and it represents 14 taxa. As expected, nearly 85 percent of the 1,215 species we found were represented by terrestrial insects, vascular plants, birds and aquatic insects.

ONE OF THE HIGHLIGHTS of our BioBlitz was finding a new species of flowering plant for the area known as Dutchman's breeches (*Dicentra cucularia*). Dr. Gary Larson, plant taxonomist and Herbarium Curator at South Dakota State University, found several specimens of this species in a woodland site. This was the first record of this species in the park even though plants had been periodically collected in the park since the 1890s. Just one of the exciting moments often experienced during a BioBlitz.

Determining the biodiversity at the Oakwood Lakes complex was one goal of our 2003 BioBlitz. The other goal was to educate the general public about the biodiversity that occurs near their communities and about the lifelong career and hobby opportunities that are available to those interested in natural resources conservation. For example, bird watchers are proud of the lists of species they have compiled over the years. One of the youths at our BioBlitz may become a future ornithologist; that would be great. Opportunities for training and education toward careers in natural resources are available at several colleges and universities in South Dakota.

As part of our BioBlitz educational program, we invited speakers to give seven presentations ranging from butterflies to the art of falconry and the historic role of a French vouyager. All of the presentations were made under a large tent that was erected near the Indian burial mounds at Oakwood Lakes State Park. Over 300 visitors were entertained on the first day of summer by various speakers throughout the day.

Others participated in an early morning birding walk while some took notice of a dozen agency displays and a large assortment of fish and turtles on display in the Game, Fish and Parks mobile aquarium. Food and refreshments were catered by the Valley Restaurant staff from Volga.

There were a few stressful moments. Our biggest worry was whether or not the tent would remain standing for the talks because we endured 25-40 mph winds the whole day. And then there was the snapping turtle that inflicted a minor bite on the leg of one of our presenters and the kid that got a minor finger puncture from a catfish spine. But overall the day-long education program went off rather smoothly.

One product of our BioBlitz was the development of lists of species that park visitors are interested in viewing. These lists will also help Oakwood Park rangers to better manage the park for all natural plants and animals, including human visitors. Because of the BioBlitz, we also know more about biodiversity in Brookings County, South Dakota.

BUT WHAT GOOD IS biodiversity? Biodiversity produces goods and services for the most fundamental of our needs, clear air, fresh water, food, medicines, and shelter. We enjoy the fried walleye on the campfire, but sometimes forget about the plants and animals in the walleye food web. We see the berries of chokecherry bushes and forget about the insect pollinators (e.g., honey bees). Biodiversity has been called "the tapestry of life."

Biodiversity has economic value as it supports much of the tourism industry in South Dakota. Biodiversity also provides people with recreational, psychological, emotional and spiritual enjoyment, which you can indeed find at the beautiful Oakwood Lakes State Park.

WILL THERE BE ANOTHER BioBlitz in South Dakota? *Yes!* Will scientists use the inventory data on the plants and animals identified during our BioBlitz in future years? Definitely, Yes!

We encourage others to think about conducting future BioBlitz inventories throughout South Dakota. We could provide a protocol model and guidelines on how best to organize and conduct such an event.

As everyday citizens we think we know so much about our world and the creatures that live in it, but sometimes we know very little about the natural world. We are so interested these days in studies of modern cellular or genetic sciences (e.g., DNA crime detection work or species cloning), or in the management of a few game species, that we often forget about studies or inventories that answer the basic question of "What lives here?" Don't wait for nature's plants and animals to come to you. Go visit a state park or some other type of natural area and find out for yourself what different kinds of plants and animals live there. And if you get a chance, volunteer to help with a "BioBlitz" - it will be a rewarding and memorable experience. ■

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