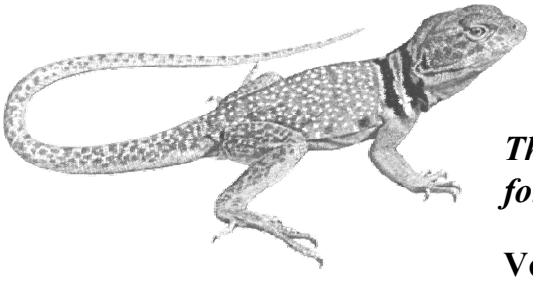

The Glade

The Newsletter of the Missouri Chapter of the Society for Conservation Biology

Volume 9, Number 2 **Fall 2006**

IMPORTANT!

Our parent organization (SCB) has requested that the bylaws of all chapters be amended to require that chapter members be SCB members. This request was made in part to encourage greater interaction and support among the chapters and parent organization. In order to satisfy this request, please join SCB by visiting https://www.conbio.org/join/ before January 1, 2007. Joining at the basic membership level ($10) is all that is required. Thank you!

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News and Notes

•**Silent Auction Items Needed!** MOSCB will be holding a silent auction fundraiser at our booth during the 2007 Missouri Natural Resources Conference. If you have an item that you think would draw some bids and will donate it to the cause, please contact Alan Journet (ajournet@semo.edu). Examples include: new Missouri natural history books, new outdoor recreation equipment, gift certificates, crafts, wine.

•**MOSCB session at MNRC 2007!** MOSCB is sponsoring a Missouri biodiversity session at the 2007 Missouri Natural Resources Conference the morning of Friday, February 2nd. Our speakers and topics include: Doug Ladd (overview), Janet Sternburg (non-game mammals), Sybill Amelon (bats), Doug Novinger (native fishes), Tim Vogt (dragonflies), Paul McKenzie (grasses/sedges), Jeanne Mihail (fungi), and Dennis Figg (conservation strategy). Please plan to attend!

•**MOSCB Board Elections!** The MOSCB 2007-8 Board will be elected during our annual meeting at the Missouri Natural Resources Conference. Nominations for the four offices will be accepted January 1-15, 2007 and may be sent to moscb@conbio.org. A reminder and information about absentee balloting will be posted on the listserv and our website (www.snr.missouri.edu/moscb). Information about officer duties is on the "Exec Board" page of the website.

•**MOSCB Annual Meeting!** The next MOSCB annual meeting will take place Thursday, February 1 at the Missouri Natural Resources Conference. Details about the time and room will be posted on the listserv and our website (www.snr.missouri.edu/moscb).

•**Are you moving?** Please let us know of any change in address you have so that we get your issue of *The Glade* to the right place! Email Esther Stroh (esther_stroh@usgs.gov) with address updates.

•**Contribute an article to *The Glade*!** We welcome article submissions from our membership for publication in *The Glade*. If you have a topic you would like to write about or read about, please email editor Todd Jones-Farrand (FarrandD@missouri.edu).

The Missouri River Public Use Assessment Project

Rochelle B. Renken, Missouri Department of Conservation, Email: **Rochelle.Renken@mdc.mo.gov**

The afternoon was a typical bluebird day in the fall when you just love working outdoors. On this day, I had already talked with many Missouri River users at the river access where I was collecting information from users as they left the river. As a party of eight users politely answered my questions, I was particularly surprised by one person's answer. When I asked the one-legged man on crutches what disability category best described him as part of our survey, I fully expected the man to reply that he was physically disabled. Yet he did not see himself as handicapped and he responded that he fell under the category of "No Disability." As I had trained my 170 survey clerks to do when given surprising answers by river users to survey questions, I dutifully accepted his response and noted on the survey form that this Missouri River user was a white male, between 45 and 64 years old, and not disabled. To me, that encounter with the one-legged man typified the field work of the Missouri River Public Use Assessment. You always had an interesting work story to tell the family when you got home at the end of the day.

The Missouri River Public Use Assessment was a 13-month long study of essentially, recreational use of the river over an 811-mile stretch from the river's mouth near St. Louis, Missouri to the base of Gavins Point Dam at Yankton, South Dakota. We conducted the field work for the survey from January 3, 2004 through January 28, 2005 to learn what activities people participated in, how much time they spent in those activities, their harvest of fish and wildlife, the economic value of the river to users, and to describe socio-characteristics of river users.

A couple enjoys a picnic on the river bank.

In addition, the work estimated attendance at Lewis and Clark bicentennial commemoration events held along the river during the project study period. The project was cooperatively conducted by the Missouri Department of Conservation and the Nebraska Game and Parks Commission, with the assistance of the Kansas Department of Wildlife and Parks, Iowa Department of Natural Resources, and South Dakota Game, Fish, and Parks Commission.

Our preliminary results suggest a great number of people of all ages use the river, with the majority of river trips involving fishing, camping, boating, and sightseeing. For example, in just an 86-mile stretch of the river from South Sioux City, Nebraska to Gavin's Point Dam, we estimated that users made about 206,000 visits to the river and spent nearly 667,940 hours on the river during the study. We estimated that 74,160

individuals came to the river to enjoy it in some fashion in that 13-month period. That number of individuals is about 75 percent of the combined populations of Sioux City, Iowa and Yankton, South Dakota, the two largest communities within this stretch of the river. These river users reported participating in 41 different activities while on the river. Activities ranged from the traditional consumptive uses of fishing and hunting to non-consumptive uses, such as boating, floating, camping, waterskiing, loafing, and exercising. Visitors of all ages used the river. In fact, it appeared the river was the destination for many family outings because we noted a fairly even distribution of age groups in our survey. Most users were male (71%). And a majority of visitors were white (96%) in terms of ethnic origin. This estimate was not too surprising considering that at least 89% of the population of South Dakota, Nebraska, and Iowa were white in the 2000 census (US Census Bureau; http://quickfacts.census.gov/qfd).

At this writing, we have peeled only the outer layer of information from the onion of data collected in the Missouri River Public Use Assessment project. We have summarized and analyzed data for just 10% of the 811 miles of river under study. It is expected that a final report on the project will be released in late 2007. And while waiting for the cold, hard estimates to be calculated in my colleague's (Steve Sheriff, also of the Missouri Department of Conservation) office, you can ask us for some of our other favorite stories about Missouri River users.

Cynthia Pederson interviews duck hunters at Bob Brown Conservation Area.

Special thanks to Steve Sheriff, Missouri Department of Conservation, for his help with this article and for providing pictures.

You do not really understand something unless you can explain it to your grandmother.

-- attributed to Albert Einstein

BioBlitz in Mid-Missouri

*Katy Klymus & Jen Hamel, University of Missouri, Email: **ekate78@gmail.com***

On September 15-16, 2006, naturalists, scientists, and community members in Columbia gathered to explore the city's biodiversity. It was Columbia's third BioBlitz, organized by University of Missouri grad students and sponsored by the School of Natural Resources and Division of Biological Sciences.

A BioBlitz is a 24-hour race to identify as many species of living organisms as possible in a particular area. It was developed in the late 90's by biologist E.O. Wilson and Massachusetts's wildlife expert Peter Alden. It has now spread across the globe including Canada, New Zealand and Australia. Goals of BioBlitz are to document species occurrences, create synergy between naturalists/scientists, educate the public and have fun. Different BioBlitz events may focus on different goals. For instance, the 2002 Calumet BioBlitz in Chicago inventoried biodiversity in industrial areas consisting of landfills and refineries, and many other BioBlitz events focus on urban areas and parks. Such events focus the public's awareness to the incredible diversity found within their city and not just far away rain forests. BioBlitz events may focus more on the actual species inventory, more on the public outreach, or a combination of the two. BioBlitz is an event that can be designed to fit the goals and talent pool of the local region.

Sara Storrs and Jan Weaver of the University of Missouri initiated Columbia's first BioBlitz in the Fall of 2005. Since then a second Columbia BioBlitz occurred the spring of 2006. The reasoning behind the spring event was to see what seasonal changes in diversity could be observed. For instance, amphibians were much more common in the spring event then the fall events.

Folks of all ages enjoy getting an up close look at the birds from the University of Missouri's Raptor Rehab Project.

The third Columbia BioBlitz was aimed at educating the public about the city's biodiversity and increase communication between the general public and scientists. An important aspect of this goal was to get scientists to share their passion with the public. Often scientists have a difficult time relaying the importance of their studies to the lay audience. The ability to do so, however, is vital to conservation. Such an event, though small, is one way to initiate this connection. The Columbia BioBlitz is organized in 2-hour long nature walks through the Flat Branch watershed. The past years have focused on the MKT trail at the Martin Luther King Jr. Memorial Garden. These nature walks are led by 3 different naturalists each specializing in a particular taxon. During walks the leaders point out the various species and record what is found. These lists are compiled at the end to get an account of the park's biodiversity.

During the first BioBlitz, over 150 participants identified 841 species of plants, fungi, invertebrates, birds, mammals, reptiles and amphibians (Table 1). During the rainy Spring 2006 event, about 75 people identified 304 species. The Fall 2006 event recorded 228 species with over 90 participants. Invertebrate numbers were lower for this fall's event due to fewer people available to sort insects; however, we were able to include fish species. At the end of the 24 hours, a picnic was held for all participants who came to share their stories. Educational displays for the Fall 2006 event included live herps from the University and birds from the University's Raptor Rehab Project.

The Columbia BioBlitz has been a success for all involved, and has garnered the support of the city and local businesses. It promises to become a fixture in Columbia's public activities. For more information on BioBlitz and how to organize your own, check out the following links:
USGS: www.pwrc.usgs.gov/bioblitz/
St. Louis BioBlitz:
http://stlbioblitz.com
Columbia BioBlitz :
http://bioblitz.missouri.edu
University of Connecticut:
http://web.unconn.edu/mnh/bioblitz
Chicago:
www.fieldmuseum.org/bioblitz
New Zealand BioBlitz:
http://www.landcareresearch.co.nz/research/biodiversity/bioblitz/

A scientist shows kids life under a rock along the trail.

Table 1. Numbers of species recorded in Columbia's fall season BioBlitzes. The numbers from Spring 2006 are not available.

Taxa	Fall 2005	Fall 2006
Fungi	38	5
Plants	194	107
Invertebrates	540	66
Amphibians	12	4
Reptiles	10	3
Fish	0	5
Birds	47	26
Mammals	10	12
Total	851	228

Study nature, love nature, stay close to nature. It will never fail you.

-- Frank Lloyd Wright

Crayfish of Whiteman Air Force Base, Missouri

M. Neil Bass, Whiteman Air Force Base, email: ***Neil.bass@whiteman.af.mil***

Whiteman Air Force Base (WAFB) is an active 1730 ha Air Force base situated on the Osage Plains Physiogeographic Province (Kurz 1997) and in the Prairie Faunal Aquatic Region of Central Missouri (Pflieger 1996) about sixty miles east of Kansas City. Military operations and changing mission requirements present particular challenges to aquatic habitats. Because crayfish have proven to be a viable indicator species for aquatic habitats (Somers et al. 1996), developing baseline information about the crayfish populations at WAFB provides information critical to evaluating the effects of military activities.

The base is nearly equally divided between the Blackwater and Lamine watersheds. The tributaries of the Blackwater River that drain WAFB are mostly gravelly bottomed, perennial streams that remain cool throughout the summer. The Lamine drainage is comprised of a warm, intermittent, mud-bottomed stream. Both drainages contain ponds, flooded drainage ditches, and ephemeral pools. Each watershed also has diverse stream habitats. There are first order gravel-bedded streams, intermittent streams, channelized, mud-bottomed, third order streams and many grades in between.

Trapping was conducted from September 7 through October 29, 2004 using wire minnow traps with a 51 mm opening in each end. Traps were baited with cat food and placed in perforated containers. Fifteen traps were set in the Blackwater and 5 in the Lamine drainage. The 20 traps were dispersed between 3 ponds, 6 streams, 4 ephemeral pools, and an oxbow. The traps were checked daily through the week and were unchecked on weekends. Traps were set for 10 to 13 days.

The 169 crayfish captured were identified to species, sexed, and the carapace length was measured with digital calipers (Momot 1967, Payne 1972, Flint 1977). Location of capture was documented as well as the water depth of each trap. Each crayfish was uniquely marked with red nail polish (Camougis and Hichar 1959). The paint was always applied to the carapace, the tail fan, or to both.

Only 2 species were captured, the Virile Crayfish (*Orconectes virilis*) and the Grassland Crayfish (*Procambarus gracilis*). The Blackwater contained 51 *O. virilis* and 35 *P. gracilis*, while the Lamine had 45 and 38, respectively. Marked crayfish were recaptured on four occasions. Where the 2 species co-occurred, 1 species predominated, consistent with the findings of Collins et al. (1983). *O. virilis* were found at 13 sites and were dominant at 11. *P. gracilis* were present at 6 sites and dominant at 4. The 4 sites predominated by *P. gracilis* were characterized as areas with remnant native grasses and by being prone to drying up in the summer, per the habitat description for the species (Pflieger 1996).

Pflieger (1996) hypothesized five species of crayfish naturally occur in the area of WAFB including: devil's crayfish (*Cambarus diogenes*), papershell crayfish (*Orconectes immunis*), golden crayfish (*Orconectes luteus*), virile crayfish, and grassland crayfish, with other species possibly being introduced by fishermen. As such, the capture of only two species was unexpected.

No captures were recorded in the 3 ponds surveyed. According to Collins et al. (1983) and Somers and Green (1993), predatory fish, especially largemouth bass (*Micropterus salmoides*), depress crayfish trapability more than actual crayfish numbers. Two of the ponds sampled have healthy largemouth bass numbers and the third is overstocked with green sunfish (*Lepomis cyanellus*). *O. virilis* has been captured from 2 of the 3 ponds during previous fish trapping sessions. More trapping effort would likely have captured *O. virilis* in these ponds since adequate crayfish habitat exists. It is possible that other species are present due to bait introductions (Pflieger 1996), but the absence of species other than *O. virilis* and *P. gracilis* from other trapping sites indicates that any introductions are recent or have been unsuccessful.

There were no differences found in abundances between or among habitat types or drainages. The only differences in size were exhibited between males and females in the Blackwater drainage (t=10.19), with males being larger, as was expected in these sexually dimorphic species.

No sex bias was found in this study. Other studies have found crayfish populations biased towards males (Somers and Stechey 1986, Olsen et al. 1991, Stuecheli 1991, Somers and Green 1993, Acosta 2000). Male bias has been attributed to the larger size and larger chelae of males which gives them less predation risks (Somers and Stechey 1986, Stuecheli 1991), but no statistically significant relationship was found in this study. However, sex ratios in the pool habitats of the Blackwater approached significance (0.10>P>0.05) favoring males. These males were found to be significantly larger (t=7.59). Other factors driving sex bias may include: moon phase (Somers and Stechey 1986), the absence of gravid females (Acosta 2000), lower water temperatures (Somers and Green 1993), and seasonal sex bias (Somers et al. 1996). However, Skurdal et al. (1992) also found no sex bias when sampling was performed outside the breeding season. All sampling in this study was outside of the egg fertilization and young rearing season for the two species captured and mean air temperature in this time frame only dropped by five degrees F from 60 to 55 (National Climatic Data Center 2004). Predation risks from fish were nonexistent for most of the sampling areas. The areas that had fish predation risks had no captures. Therefore most of the factors listed above that tend to bias sex ratios were not present.

Somers and Stechey (1986) found no correlation between size and water depth in *O. virilis*. However, I found carapace length to be positively correlated with water depth (P<.001). The 1986 study was on a Canadian lake and ranged in depth from 1m to 8m, which is a much greater range than the 0.017m to 0.915m sampled in this study and could account for the different results.

WAFB has a species-depauperate crayfish population consisting of just two species. While the Blackwater and Lamine drainages appear different, gravel and cool versus mud-bottomed and warm, the crayfish populations would indicate they are similar. This is likely due to their proximity to one another and the easy overland dispersal routes. The burrowing *P. gracilis* dominates upland ephemeral habitats, while *O. virilis* dominates all areas with perennial flow.

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When one tugs at a single thing in nature,
he finds it attached to the rest of the world. --John Muir

Membership Information

The goal of MOSCB is to promote communication among conservation biologists throughout the state of Missouri. Membership in MOSCB is free. Please visit our MOSCB web page for more detailed information (http://www.snr.missouri.edu/moscb).

The Glade Vol. 9, No.2 was edited by Todd Jones-Farrand (FarrandD@missouri.edu). Special thanks to the authors in this issue for their time and thought in writing their articles. Funding for this issue of *The Glade* was provided by contributions from members of MOSCB.