

The Glade

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

Volume 3, Number 1

February 2000

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President's Corner

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Maintaining biological diversity is the founding principle of the science of conservation biology. Each species that creates this diversity has an intrinsic value regardless of its current economic value or popularity for being cute and cuddly. It is often difficult to communicate this value to policy makers and the public in the face of ever increasing demands on our resources. Finding new ways to communicate this value to policy makers and the public should be at the forefront of conservation biology, for they are the ones that create the mandates for resource management agencies. Dealing with resource demands falls squarely on the shoulders of today's resource managers. Villainized by environmentalist as being only dedicated to industries and condemned by industries for trying to preserve every last ant on the face of the earth, conservation biologists seek the "Wisdom of Solomon" to divide the resources needed by man and beast in a fair and equitable manner. A manager once told me that he knows he must be doing the right thing when everyone hates him. We, as conservation biologists, need to provide managers with as much support, information, and guidance in the preservation and restoration of declining and extirpated species. It is to this end that we, as conservation biologists, must apply our knowledge to find ways that humans can utilize resources and minimize our impacts on the rest of the biota. It is my hope that resource managers come to see our organization as a resource to their decision making process--an organization founded in fact and science that seeks to minimize the impacts of humans but also recognize our needs for resources.

The Mizzou Tigers for Tigers Program

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The tiger (*Panthera tigris*) is the mascot of over 60 colleges and universities including the University of Missouri-Columbia (MU). The tiger is also a critically endangered species with an estimated 4,600 to 7,200 individuals left in the wild (Jackson and Kempf 1996). Extant wild tiger populations face numerous threats common to many large predators including habitat loss, habitat fragmentation, poaching, and inbreeding (Kenney et al. 1995, Jackson and Kempf 1996). To date, there has been little effort by universities with tigers as their mascots to contribute to tiger conservation. This is unfortunate because involving universities in the conservation of their animal mascots represents an almost untapped opportunity that can benefit both universities and conservation while addressing some or all of the mission objectives of many schools (e.g., education, research, outreach; Baltz and Ratnaswamy 2000).

In recognition of the plight of wild tigers, MU recently (February 1999) unveiled *Mizzou Tigers for Tigers*, a program designed to aid international tiger conservation efforts. According to the World Wildlife Fund, this program represents a pioneering effort by MU among all universities in the nation. One of the objectives of the program is to raise awareness among the over 200,000 MU students, faculty/staff and alumni concerning the conservation status of tigers in the wild. As part of that effort, a website has been created with information about wild tigers and links to other websites with information about tigers and tiger conservation (www.missouri.edu/~tigers). MU has also begun to bring tiger experts to campus to speak and will make information about tigers available at major sporting events.

MU also intends to become directly involved in tiger conservation efforts by funding efforts aimed at tiger conservation and by creating research and educational links between MU and entities in tiger-range countries. Because MU's mascot is the Bengal tiger, efforts will be focused on conservation of tigers in India, Nepal, Bangladesh, and Myanmar. More specifically, it is likely that one or more specific Tiger Conservation Units (as defined by Wikmaranayake et al. 1998) will be chosen in which to focus our efforts. Eventually, MU intends to bring graduate students and conservation professionals from tiger-range countries to the university for training in wildlife management and other fields related to the conservation of tigers. Finally, MU intends to help other universities with tiger mascots create similar mascot conservation programs.



About the *Mizzou Tigers for Tigers* Program (continued)



Can wild tigers be saved? MU is getting involved in tiger conservation at an important time. There is increasing awareness among the public about the plight of tigers and there is increasing knowledge about what it will take to save them. Everyone involved with *Mizzou Tigers for Tigers* is excited about the potential of the program to contribute to international efforts to secure a future for wild tigers.

For more information about the *Mizzou Tigers for Tigers* program contact Michael Baltz at *Mizzou Tigers for Tigers* at the address given or by phone (573) 884-7553, fax (573) 884-5070, or email. Visit the web site at <http://www.missouri.edu/~tigers>.

Citations:

- Baltz, M. E. and M. J. Ratnaswamy. 2000. Using college animal mascots to support species conservation efforts. *Wildlife Society Bulletin*. In Press.
- Jackson, P. and E. Kempf. 1996. Wanted alive! Tigers in the wild. World Wildlife Fund International, Gland, Switzerland.
- Kenney, J. S., J. L. D. Smith, A. M. Starfield, and C. W. McDougal. 1995. The long-term effects of tiger poaching on population viability. *Conservation Biology* 9:1127-1133.
- Wikramanayake, E. D., E. Dinerstein, J. G. Robinson, U. Karanth, A. Rabinowitz, D. Olson, T. Mathew, P. Hedao, M. Conner, G. Hemley, and D. Bolze. 1998. An ecology-based method for defining priorities for large mammal conservation: The tiger as a case study. *Conservation Biology* 12:865-878.

Announcements and Notes

- ♣ We are currently seeking articles for the November 2000 issue of *The Glade*. If you would like to write an article for the November or future issues, please contact Michelle Boone at mdb7ef@mizzou.edu.
- ♣ Conservation Biology Workshop at the Missouri Natural Resources Conference (MNRC): MOSCB will be sponsoring a workshop addressing how the principles of conservation biology are applicable to natural resource management policies and practices here in Missouri. We will be encouraging participation by natural resource professionals throughout the state at this workshop to be held in conjunction with the MNRC February 2-4, 2000 at Marriot's Tan-Tar-A (Osage Beach).
- ♣ We welcome letters or comments on articles in any issues of *The Glade*. Please send emails or letters to Michelle Boone at mdb7ef@mizzou.edu or moscb@showme.missouri.edu, or 105 Tucker Hall, Division of Biological Sciences, UMC, Columbia, MO 65211.

A Summary of Missouri's Landscape and Biotic Diversity

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With the Year 2000 upon us, we feel it is timely to take stock of Missouri's natural heritage. Recent and historic anthropogenic disturbances in the form of agricultural development, river modification, urbanization, and some forestry practices have profoundly altered the biological and physical composition of our state. The effects of these disturbances are largely irreversible, and have contributed to population declines, rarities, and local extirpations of Missouri's biota.

Thus, rather than dwelling on what once was, we feel that it is important for all of us to be aware of the natural heritage we currently have in Missouri. Ideally such knowledge will help guide research, conservation, and restoration efforts. Perhaps the biggest challenge that we face as conservation biologists is the ability to pass along a natural trust of diversity and richness equal to that which we inherited. Toward this end, the graphics below summarize the present composition of this trust at both the organismal and landscape levels.

Table 1. Current estimates of Missouri's biological species richness, along with additional conservation information (Yatskievych 1999, Johnson, 1997, Pflieger 1997, The biodiversity task force 1992). ^a Includes Ozark endemic species which range outside of Missouri in adjacent Arkansas and Oklahoma

ANIMALS	Native	Introduced	Endemics ^a	Relicts
Mammals	67	4	0	0
Birds	173 Breeding 147 Wintering 149 Migrants	7	0	0
Amphibians/Reptiles	108	0	6	6
Fish	203	11	18	5
Aquatic Crustaceans (decapods, amphipods, isopods)	64	2	26	0
Molluscs (aquatic snails, mussels, bivalves)	129	2	11	2
Aquatic insects	2,500 ?	?	15	15
Terrestrial insects and spiders	15,000 ?	?	?	?
Other (annelids, flatworms, nematodes, protozoans, etc.)	?	?	?	?
PLANTS				
Vascular	2,005	765	50	38
Bryophytes (mosses and liverworts)	400	0	2	12
Lichens	370 ?	?	?	?
Algae	?	?	?	?
FUNGI	1,500 ?	?	?	?

Contemporary Landcover

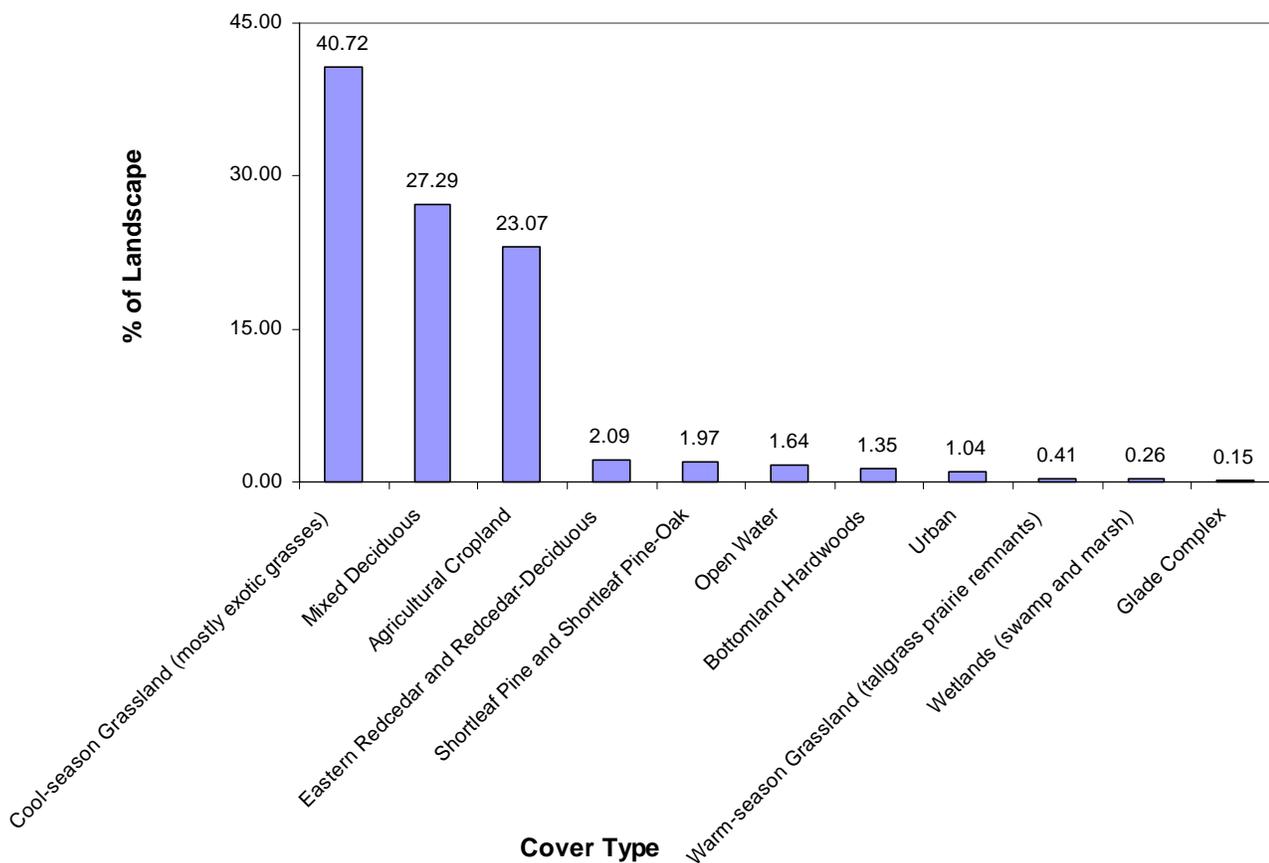


Figure 1. Current Missouri landcover summary statistics, derived from Landsat TM (MORAP, 1999)

We have three primary objectives for presenting these data. First, we want to provide a benchmark against which our stewardship efforts can be measured by future generations. Second, we believe that the information provided herein is basic knowledge that would be useful to any Missouri Conservation Biologist. And lastly, we believe that providing this information in a single reference will be helpful to those charged with making decisions regarding the future of Missouri's natural heritage (i.e. policy makers and managers). We hope that you find this summary useful, whether it serves as a reference to monitor future trends, as a reminder of the gaps in our knowledge, or as an indicator of the degree to which human activities have impacted the biota and landscape.

Citations:

Missouri Resource Assessment Partnership (MORAP). 1999. Missouri statewide land cover/phase 2.24. Columbia, MO.
 Johnson, T.R. 1997. The amphibians and reptiles of Missouri. Missouri Department of Conservation, Jefferson City, MO.
 Pflieger, W. L. 1997. The Fishes of Missouri. Missouri Department of Conservation. Jefferson City, MO.
 The biodiversity task force. 1992. The biodiversity of Missouri: Definition, status, and recommendations for its conservation. Missouri Department of Conservation. Jefferson City, MO.
 Yatskievych, G. A. 1999. Steyermark's flora of Missouri. Missouri Dept. of Conservation in cooperation with Missouri Botanical Garden Press. Jefferson City, MO.

Partners in Amphibian and Reptile Conservation: A National Strategy for the Conservation of Amphibians, Reptiles, and Their Habitats

Laura A. Herbeck, Research Working Group Co-chair, PARC Midwest Working Group Co-chair, North Central Research Station, US Forest Service, 202 Natural Resource Building, University of Missouri, Columbia, MO 65211, lherbeck@fs.fed.us

Amphibians and reptiles come in a variety of forms including salamanders, hellbenders, amphiumas, sirens, frogs, toads, snakes, lizards, turtles, crocodilians, and others, and are associated with almost every known habitat. Their life histories are rich and complex, often involving both aquatic and terrestrial habitats. Over the past decade, there have been numerous reports suggesting that amphibian and reptile populations have significantly declined or have experienced range reductions in a wide array of geographic regions and habitats. Although some causes of declines are obvious, such as habitat loss or alteration, over collection and invasive species, others have been inexplicable. Recent amphibian research has provided insight into a variety of environmental and biological factors that can cause negative impacts on amphibian and reptile populations, including disease, parasitism, toxic pollutants, and climatic conditions.



Worldwide declines of reptiles and amphibians continue to generate concerns among scientists and managers. Snakes, turtles, and lizards among the reptiles, and frogs and salamanders among the amphibians have been steadily disappearing from North America and throughout the world. One example is the southern hognose snake (*Heterodon simus*) that once ranged from Mississippi to North Carolina. No specimens have been seen in Alabama or Mississippi for more than 15 years. Another is the flatwoods salamander (*Ambystoma cingulatum*) of the Southeast, the most recent species to be added to the federal list of threatened species. The list of declining species goes on and on from California to Maine to Florida.

A new organization known as Partners in Amphibian and Reptile Conservation (PARC) is one possible answer to help maintain the herpetofaunal component of our country's natural heritage and recover some of what we have almost lost. PARC was initiated in response to scientific evidence and anecdotal reports indicating that populations of many amphibians and reptiles are declining or are decreasing in distribution. Some species of concern in Missouri, such as the Illinois chorus frog (*Pseudacris streckeri illinoensis*) may be unfamiliar to all but professional and amateur herpetologists. Others, such as the three-toed box turtle (*Terrapene carolina triunguis*) can be found in Ozark forests as well as neighborhood backyards, and are familiar to most everyone. Declining amphibian and reptile populations signifies the need for immediate conservation action. Amphibians and reptiles are important components of our biological diversity and play critical roles in controlling insect and rodent populations. They also are a key prey base for many other species. Amphibians and reptiles are sensitive indicators of environmental health and quality. Their declines are clear signals of problems that could ultimately affect human health.

PARC was formed in 1998 to facilitate communication and cooperation among a wide variety of stakeholders (e.g., government agencies, industry, academic institutions, land stewards, funding institutions, and the public). PARC is a network of concerned scientists, managers, donors, and citizens who are committed to working cooperatively to conserve amphibians, reptiles, and their habitats. The mix of people and organizations participating in PARC will not only be able to identify the problems confronting native herpetofauna but can also implement solutions, and provide the support needed to assure their effective conservation. Through a coordinated, cooperative program of research, management, monitoring, public policy, and education, PARC will be able to accomplish these tasks. One consensus among PARC members is that the only sustainable approach for conservation of reptiles and amphibians is to familiarize the public with the organisms and their habitats so that everyone develops an appreciation for them. Public support of such an effort, with any group of fauna or flora, is a vital ingredient of a long-term solution.

Scientists and managers whose interests and responsibilities involve snakes, frogs, turtles, salamanders, lizards, or crocodilians should find out about PARC. Let us know if you want to participate (parc@srel.edu) or check out our web site at www.parcplace.org.

What can you do?

- (1) Visit the PARC web site located at <http://www.parcplace.org> or communicate directly with PARC at mailbox@parcplace.org.
- (2) Get involved in the technical or regional working groups. Technical working groups include research, management, monitoring, public policy, and education. Regional working groups include Northeast PARC, Southeast PARC, PARC Midwest, Northwest PARC, and Southwest PARC. Missouri is included in the PARC Midwest regional working group. For current listings of working group chairs, check out the PARC web site (<http://www.parcplace.org>) and links to PARC Midwest.
- (3) Determine how you might contribute to PARC's priority conservation needs for amphibians and reptiles (see PARC web site).
- (4) Lend your support to efforts by nature centers, museums, or schools in your community that are involved in educational projects directed towards amphibians and reptiles.

University of Missouri-Columbia Conservation Biology Seminar Series

Seminars are held in 2-16 Agriculture Building from 4:00-5:00 p.m. Refreshments are available from 3:30-4:00 p.m. See <http://www.conserv.missouri.edu/index2.html> for updates.

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| 10 February | <i>Chivalry is dead in migratory birds: evidence from the non-breeding period</i>
Peter Marra, Smithsonian Environmental Research Center |
| 9 March | <i>Declining amphibians: overview and a field biologists perspective</i>
Martha Crump, Northern Arizona University |

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Membership Information

The goal of MOSCB is to promote communication among conservation biologists throughout the state of Missouri. Membership in MOSCB is free. To become a member send your name, address, phone number, and email address to: moscb@showme.missouri.edu or write to the address listed below. Membership must be renewed annually. Membership expires on August 1st of each year. Please visit the MOSCB web page for more detailed information (<http://www.missouri.edu/~moscb/index.html>).

The Glade Vol. 3, No. 1 was edited by Michelle Boone. Funding for this issue of *The Glade* was provided by the Missouri Botanical Garden and MDC Natural History Section. This issue was printed by University Printing.