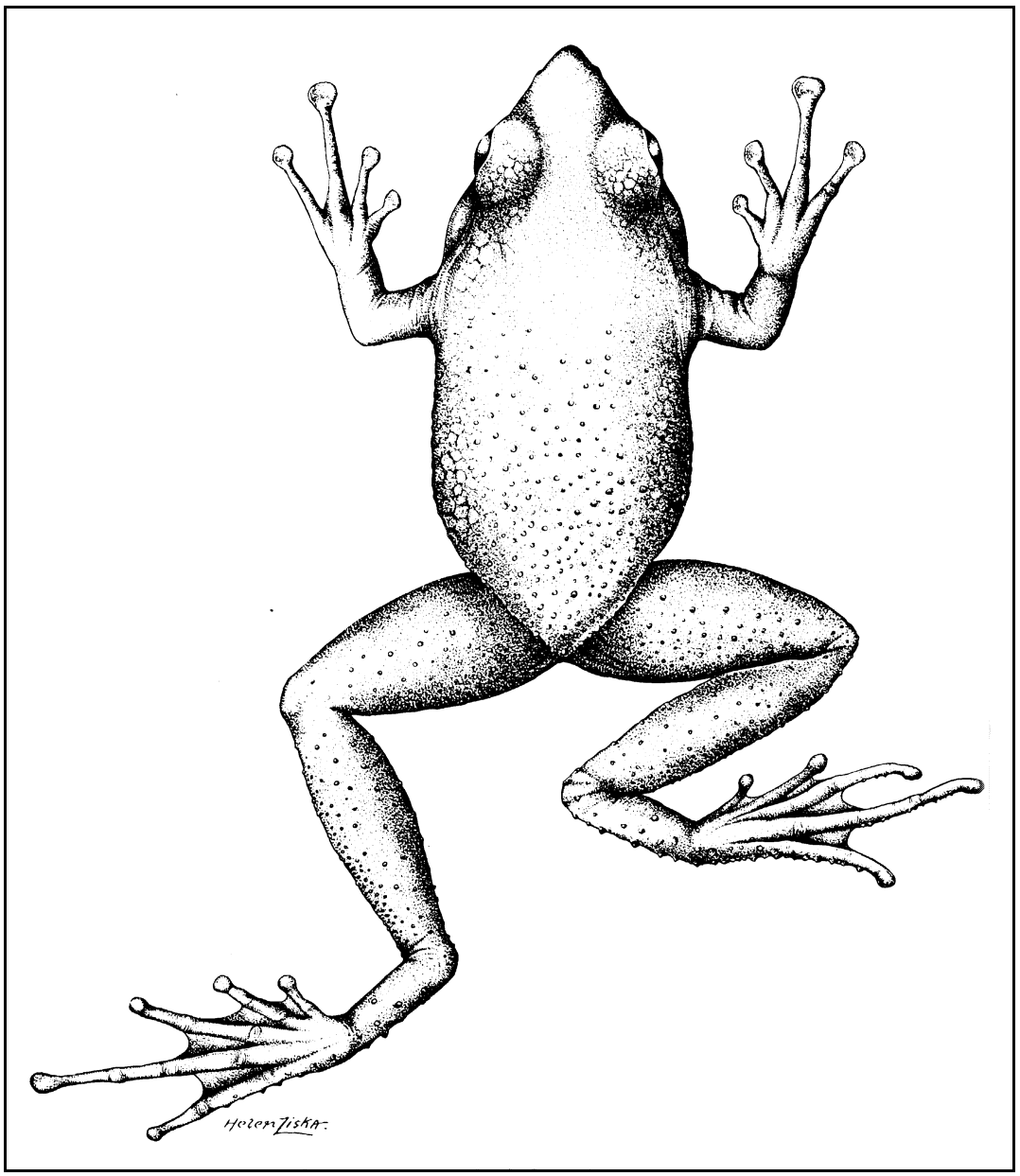
BULLETIN
of the
Chicago Herpetological Society

Volume 45, Number 4
April 2010



BULLETIN OF THE CHICAGO HERPETOLOGICAL SOCIETY
Volume 45, Number 4
April 2010

Cover: Adult male climbing puddle frog, *Phrynobatrachus dendrobates*. Drawing by Mrs. Helen Ziska from *Contributions to the Herpetology of the Belgian Congo Based on the Collection of the American Museum Congo Expedition, 1909–1915* by G. K. Noble, Bulletin of the American Museum of Natural History 49(2):147-347, 1924.

The Chicago Herpetological Society is a nonprofit organization incorporated under the laws of the state of Illinois. Its purposes are education, conservation and the advancement of herpetology. Meetings are announced in this publication, and are normally held at 7:30 P.M., the last Wednesday of each month.

Membership in the CHS includes a subscription to the monthly *Bulletin*. Annual dues are: Individual Membership, $25.00; Family Membership, $28.00; Sustaining Membership, $50.00; Contributing Membership, $100.00; Institutional Membership, $38.00. Remittance must be made in U.S. funds. Subscribers outside the U.S. must add $12.00 for postage. Send membership dues or address changes to: Chicago Herpetological Society, Membership Secretary, 2430 N. Cannon Drive, Chicago, IL 60614.

Manuscripts published in the *Bulletin of the Chicago Herpetological Society* are not peer reviewed. Manuscripts should be submitted to the editor as email attachments, or on IBM PC-compatible or Macintosh format diskettes or CDs. Alternatively, manuscripts may be submitted in duplicate, typewritten and double spaced. Manuscripts and letters concerning editorial business should be sent to: Chicago Herpetological Society, Publications Secretary, 2430 N. Cannon Drive, Chicago, IL 60614. **Back issues** are limited but are available from the Publications Secretary for $2.50 per issue postpaid.
Visit the CHS home page at <http://www.Chicagoherp.org>.

The *Bulletin of the Chicago Herpetological Society* (ISSN 0009-3564) is published monthly by the Chicago Herpetological Society, 2430 N. Cannon Drive, Chicago IL 60614. Periodicals postage paid at Chicago IL. **Postmaster:** Send address changes to: Chicago Herpetological Society, Membership Secretary, 2430 N. Cannon Drive, Chicago IL 60614.

Bull. Chicago Herp. Soc. 45(4):57-61, 2010

Lewis and Clark: Herpetologists, Naturalists and National Icons

David Chiszar [1], Hobart M. Smith [2] and Terri Chiszar [3]

Abstract

Although much has been written about the Lewis and Clark Expedition, especially in association with the recent bicentennial celebration, we contend that an important aspect of the Expedition's contribution to posterity has been missed while certain other aspects have been overstated. Lewis and Clark have been held to be discoverers of 300 taxa of plants and animals of western North America, including 15 herpetological taxa. Yet, these men published not a single taxonomic paper nor even a single Linnaean binomial. Hence, from a scientific-taxonomic point of view, it is an overstatement to consider Lewis and Clark to be discoverers of these organisms, although they certainly were collectors of many, especially plants. On the other hand, Lewis and Clark unquestionably stimulated further research on western botany and zoology by American biologists; they also brought about the Americanization of natural history scholarship. Prior to Lewis and Clark, most North American organisms receiving Linnaean names had gotten those names from Europeans, including Linnaeus himself and various of his intellectual descendants; the Expedition marked a turning point such that American biologists now did increasing amounts of North American taxonomic work. We assert that in the long run, these stimulating effects of the Great Expedition were its greatest contributions.

A consequence of the bicentennial celebration of the Lewis and Clark Expedition (1804–1806) was the elevation of Meriwether Lewis and William Clark to the status of American icons, deservedly in many respects. Of course, they were similarly elevated in their own time, but the focus of adulation then was on the fact of their survival under arduous conditions and their personification of the new territorial realities of the United States (e.g., see Merry, 2009, chapter 10, esp. p. 167). Of course, these matters have not been forgotten; indeed they have been expanded and supplemented with new respect for other achievements not widely recognized at the time. Cartographic and geopolitical contributions of Lewis and Clark have been moved from center stage as modern historians have concentrated on the Expedition's ethnographic, botanical, zoological and commercial aspects. This represents new scholarship as well as new interests of the public. After all, there can be profit in adding yet additional glitter and gloss to our national heroes. Hollywood does this all the time with athletes, generals, political leaders and even with some countercultural figures. On the other hand, we run the risk of crossing from historiography to hagiography or idolatry, and this appears to have happened to some extent in the case of Lewis and Clark. Likely the problem will only grow with the advent of hyperhistorical technology and its virtually unlimited capacity to access information (Mussulman, 2004).

Before proceeding we ought to mention that few people have greater respect and admiration for Lewis and Clark and the Corps of Discovery than the present authors. Together and separately we have traveled the route and marveled at the fortitude and skill that were required to make that journey in the first decade of the nineteenth century. Like Ambrose (1996) we draw inspiration from these great Americans. While we will express some criticism of modern Lewis and Clark scholarship and some curiosity about Lewis's behavior, this in no way is meant to imply that we gainsay the major accomplishments of the Expedition. One of the paramount objectives as dictated by President Jefferson was for Lewis and Clark to learn if connections existed between the Missouri and Columbia watersheds that would make possible a river route between the Pacific Ocean and the Mississippi, and thence to the east coast via the Ohio and Potomac. Was there a Northwest Passage? The absence of such a connection was correctly ascertained by the Expedition; hence, that all-important mission was accomplished (although President Jefferson doubtless would have been happier with a different result). Numerous related geographic facts were documented, including the naming of dozens of rivers, creeks and land formations in the respective watersheds. The magnitudes and implications of these discoveries cause many subsequent scientific careers to pale by comparison.

When we turn to the herpetology of the Expedition, we quickly learn that Lewis and Clark were far less interested in these animals than in mammals, birds and other targets of observation. Even their notes on mammals and birds leave something to be desired. Yet, Lewis and Clark are credited with "discovering and making known to the world numerous fish, reptiles, birds and mammals unheard of previously" (Cutright, 1989, p. 395). Major works on Lewis and Clark zoology and botany include Coues (1874, 1893), Criswell (1940), Burroughs (1961, 1966), and Cutright (1989). A brief but indispensable article by Benson (1978) is especially important for readers interested in herpetology. In addition, many other writers offer evaluative comments about the biological aspects of the Expedition, while being primarily focused on geography, politics and adventure. Typically, these writers are not biologists, though they are

1. Department of Psychology, University of Colorado, Boulder CO 80309-0345.

2. Department of EEBIO, University of Colorado, Boulder CO 80309-0324.

3. 593 Spruce Circle, Louisville CO 80027.

almost always scholars in other fields (e.g., Ambrose).

Most workers during the past century have proceeded in similar ways when dealing with the biology of the Expedition. They start with the text of the Lewis and Clark journals (edited by Thwaites, 1904–05, or by Moulton, 1983–2001), and then use modern field guides to pin down the taxa that Lewis and Clark must have seen. The journals of Lewis and Clark did not use Linnaean names and they did not provide technical taxonomic data, such as key characters or related anatomical information. When binomials appear in the recently published versions of the journals, these names have been added by the editors. Hence, when Lewis and Clark describe a frog, for example, we get sketchy information on gross anatomy and usually a fairly precise location. Using a century of accumulated taxonomic and biogeographic data, a skilled herpetologist such as Benson (1978) can usually make a good guess about the identity of the animal. Sometimes he is able only to narrow down the identity to two or three possible species, and sometimes the information is insufficient to permit even this. Proceeding in this manner, Benson made good guesses (sometimes absolutely certain conclusions) regarding 18 herpetological taxa. Similarly, Cutright (1989) proposed that 15 herpetological taxa described by Lewis and Clark were new to science as of 1805. This may be so, and further comment will be made about this below.

First, however, it might be wise to assess the state of North American herpetology at the time Lewis and Clark started out. Twelve amphibians (9 frogs and 3 salamanders) had been named, along with 16 turtles, 5 lizards and 24 snakes, all from east of the Mississippi, none from more western lands (note: Amphibia and Reptilia were not separate vertebrate classes at the time of the Expedition). Linnaean nomenclature had not yet become the stuff of high school biology; indeed, high school biology was still years in the future. Yet, Linnaeus was well known to the scientifically literate members of society, including President Jefferson and various people he sent Lewis to study with in Philadelphia before starting out on the Expedition. Lewis, therefore, was certainly exposed to Linnaean ideas and to the proper methods of naming a new taxon. With 57 herpetological exemplars already available, Lewis certainly could have known the genera then recognized and, consequently, he could have had mental templates to accommodate new but similar taxa (e.g., *Crotalus*). The same argument could be made for fish, birds and mammals. This reasoning takes on additional force for plants because Lewis is known to have carried three technical volumes during the Expedition: Miller (1779), *An Illustration of the Sexual System of Linnaeus, vol. 1*; Miller (1789), *An Illustration of the Termini Botanici of Linnaeus, vol.2*; Barton (1803), *Elements of Botany: Or Outlines of the Natural History of Vegetables*. So, here especially we might have expected Lewis to have a scientifically prepared mind, ready to attempt to allocate new material to appropriate genera, particularly when a new taxon could reasonably be allocated to an existing genus containing similar species.

Recognizing that President Jefferson explicitly instructed Lewis to focus on organisms new to science (i.e., not found in the eastern United States), Lewis and Clark can be forgiven for not inventorying the known plants and animals encountered during the Expedition. Although the range extensions would have been valuable data, the explorers clearly had other priorities. Nevertheless, it seems strange that no scientific names were used in the journals, either for already known and named taxa or for putative new ones.

Why not . . . especially since Lewis was probably able? Our hypotheses follow. Keeping the journals was an onerous chore after a day's hard work, and the explorers likely were saving energy by refraining from taxonomic exertions. Common names when these were known were good enough, at least for the time being. When common names were unavailable, the sketchy descriptions would have to suffice. Next, it must be kept in mind that Lewis intended to edit the journals after the Expedition in order to bring them to publication in polished form. This work Lewis planned to do in Philadelphia, close to his various academic mentors, especially Benjamin Smith Barton (incidentally, although Barton was primarily a botanist, he also published a number of herpetological items, including the first books devoted entirely to North American herpetology [Adler, 2007]). Could Lewis have planned to polish not only his spelling and grammar, but also his nomenclature? Might he have planned to introduce Linnaean names for those organisms already possessing them and, perhaps, to propose names for new taxa? After all, modern field biologists typically do their taxonomic work back in their laboratories, in the presence of their libraries and their knowledgeable colleagues. If this was Lewis's intention, the task would have been Herculean, particularly since there was at that time scant tradition of this sort of scholarly work in the United States. Naming had been a European prerogative, so to speak, and was typically done by Linnaeus and later by his students, not by colonials or revolutionaries. Such matters were certainly visible to Lewis. Americans had been collectors of specimens, but the specimens had usually been shipped to an appropriate Linnaean descendant in Europe for final disposition. It is distinctly possible that Lewis planned to hire a European "helper" to take care of the taxonomy. In those days a paid associate might not be given a coauthorship or even recognition in the text. Thus, the journals of Lewis and Clark would have remained just that, while the scholarly effort required of the Captains might have been reduced considerably. Indeed, there were several people in Philadelphia awaiting Lewis's arrival with the hope of serving in this way.

There is no question whatsoever about Lewis's feelings of priority regarding the Expedition and publications arising from it. When he learned that several members of the Corps of Discovery, including Robert Frazier, were planning to publish their journals independently, Lewis published a progress report of sorts regarding his own efforts, indicating when the volumes likely would be available, and how the public might subscribe. He added: " . . . I think it my duty to declare that Robert Frazier, who was only a private on this expedition, is entirely unacquainted with celestial observations, mineralogy, botany, or zoology, and therefore cannot possibly give any accurate information on those subjects. . . ." (This letter was printed in a Washington, D.C. newspaper on March 18, 1807; see Jackson, 1998, for the full text.) Clearly, Captain Lewis had strong feelings of intellectual ownership, and he more or less promised a first-rate scientific job in his eventual publication.

Lewis suffered from bouts of severe depression, and while on his way to Philadelphia to work on the journals he fell into one of these and took his life (October 11, 1809). There is an alternative theory that he was murdered (Morris, 2004; Starrs and Gale, 2009), but suicide remains the majority opinion among historians. He was despondent about a number of issues: financial, romantic-matrimonial, political and social. Could the editorial task ahead of him have also contributed to his suicidal impulses? Jefferson and others had long awaited publication of the edited journals, with expectations building with each passing month. Could Lewis have been overwhelmed by the magnitude of the task, so that these anxieties simply added to the psychic storm already claiming his mind?

These are imponderables, and we will never know Lewis's thoughts at the end, whichever way it came. We can, however, look in another direction to see matters in a new light. Let us go on to examine the subsequent history of the plants and animals that Lewis and Clark encountered.

Cutright (1989) lists 178 plants and 122 vertebrates as having been discovered by Lewis and Clark (see also Criswell, 1940; Jackson, 1962). Exhibits at the Lewis and Clark Center in Nebraska City, Nebraska, illustrate most of these plants and animals and attribute their discovery to Lewis and Clark, following Cutright in spirit. Yet, not a single one of these organisms was actually described by Lewis or Clark in the technical sense (i.e., in a taxonomic publication that provided diagnostic information, distributional data, and a Linnaean name). Of course, all the organisms were described in the journals, usually in brief, sometimes vague passages that rarely contained sufficient information to permit unambiguous taxonomic identification. This point has led in the past to disparagement of the biological aspects of the Expedition: "It must be borne in mind that both Lewis and Clark were engineers, and thus, by implication, in no sense naturalists" (first clause Setzer, 1954; entire sentence Cutright, 1989). We herpetologists, however, are familiar with an engineer named Lawrence Klauber who was in every sense a naturalist, and so we can readily accept the concept of an engineer doing excellent taxonomic and related work. Lewis may very well have been able to enhance the raw passages during careful editing, bringing them into condition that would justify proper taxonomic nomenclature (with or without a European associate), but, as we know, this did not happen because of his death. Therefore, claiming Lewis and Clark to be the discoverers of these organisms is problematic, except in a noncritical sense that attaches no scientific criteria to terms like description, discovery or identification.

Table 1. Number of publicationsof Linnaean names of North American plants and animals probably seen by Lewis and Clark grouped by decade.

Decade	Plants	Vertebrate Animals	Reptiles and Amphibians
1800–09	0	1	0
1810–19	99	24	1
1820–29	10	17	2
1830–39	28	25	4
1840–49	20	7	1
1850–59	7	16	7
1860–69	4	4	0
1870–79	4	6	0
1880–89	0	3	0
1890–99	0	8	0
1900–09	6	4	0
1910–19	0	3	0
1920–29	0	0	0
1930–39	0	2	0
1940–49	0	2	0
Sum	**178**	**122**	**15**

Although based on these views we must withhold the laurels of scientific-taxonomic priority from Lewis and Clark, thereby avoiding the recent trend towards overpraising their biological accomplishments, we nevertheless position ourselves to see with clarity the real core of the Expedition's significance. Table 1 will draw matters into focus by showing the temporal distribution of technical publications reporting and naming the organisms (probably) seen by Lewis and Clark but which were not already known to science.

The fact that leaps from these data is that an upsurge in taxonomic activity occurred in the decade following the great Expedition and was sustained for more than 50 years thereafter. Indeed, the job of identifying and reporting the full inventory of Lewis and Clark plants and animals was not completed until well into the twentieth century. The electrifying effect of the Lewis and Clark Expedition on North American taxonomy was particularly obvious in the case of plants because the Captains brought back not only their journal entries but also cuttings, dried specimens and seeds. Since much of this western material was at once seen to be new by botanists of the time, they had essentially been presented with a stimulus package promoting more or less immediate intellectual productivity and hyperscrivening. Much the same can be said regarding the vertebrates, but here the rush to publish would be slightly delayed because necessary specimens had not been as assiduously collected as had been the case for plant material. The delay is made obvious in Table 2 where publications reporting Linnaean names are grouped into two temporal bins (1800–1819 and 1820–1949). Clearly, a higher percent of vertebrate animals was named at a later time than was the case for plants ($\div^2 = 36.1$, $df = 1$, $p < 0.01$). Table 3 shows that the rate of naming lower vertebrates was more or less the same as that for higher verte-

Table 2. Percent of publications of Linnaean names of North American plants and vertebrate animals probably seen by Lewis and Clark, grouped into two temporal categories.

	1800–1819	1820–1949
Plants	56	44
Vertebrate animals	20	80

Table 3. Percent of publications of Linnaean names of North American lower and higher vertebrates probably seen by Lewis and Clark, grouped into two temporal categories.

	1800–1819	**1820–1949**
Fish, Amphibians and Reptiles	15	85
Birds and Mammals	22	78

brates ($\div^2 = 0.72$, $df = 1$, $p > 0.05$). Nevertheless, the Expedition stimulated North American animal taxonomic activity for many decades as it did for plants. These facts certainly reveal a profound biological contribution of Lewis and Clark, even though the Captains did not actually participate in the scientific publications they triggered.

An even more important contribution lurks a bit deeper in these publications. While many of them were written by Europeans, especially the infamous Frederick Pursh (the author of most of the 99 plant names in the second decade of the nineteenth century; see reference to Pursh), American scientists increasingly participated in the work (e.g., Baird and Girard, Cope, Harlan, Holbrook, Rafinesque, Say). Also, American museums increasingly served as depositories for biological materials (e.g., Peale, Philadelphia Academy of Natural Science, Harvard and, later, the Smithsonian). Finally, collectors and systematists were stimulated to undertake additional expeditions and to build increasingly useful research collections, all to support further nomenclatural and biogeographic work. Clearly, Lewis and Clark precipitated nothing less than the Americanization of North American taxonomic activity (Kastner, 1977). In the long run this contribution was of great importance for the national ego and for the development of American scientific and educational institutions. Likely these phenomena would have come about eventually as the United States continued on its course toward becoming a world power and as other government sponsored expeditions occurred. Yet, Lewis and Clark forced an early beginning. (See R. W. Emerson's famous commencement speech at Harvard University for his view of the early nineteenth century condition of American scholarship, August 31, 1837; Mead, 1970).

A serendipitous event enhanced the developments described in the preceding paragraph. After the death of Lewis, the job of editing the journals and firming up their scientific content should have fallen to Dr. Barton, but he was in poor health and died soon thereafter. It was Nicholas Biddle who published the first edition of the journals in 1814, but he eliminated almost all scientific content, explicitly leaving that material for someone better qualified (who did not come along until nearly a century later in the person of Reuben G. Thwaites). So, Biddle published a geographic-adventure narrative, without much botanical or zoological value. While numerous plant specimens would keep botanists busy for years, far fewer animal specimens had been collected. Therefore, nineteenth century zoologists wanting to work on western material were obliged to make new expeditions and new collections and to work in the absence of the technical commentaries of Lewis and Clark. This is part of the reason for the delay in naming zoological taxa relative to rate at which plant taxa were named. Of course, several famous Lewis-and-Clark animals were quickly named from specimens and direct collaborations with Lewis (Wilson, 1808–14), but as suggested in Tables 2 and 3 the majority of the animal taxa, including the amphibians and reptiles, had to wait until new expeditions were made. Ironically, Biddle's failure to bring out an early version of Lewis and Clark's scientific notes had the salubrious effect of stimulating the Americanization of western U.S. natural history by encouraging young American biologists to undertake new research.

In short, although it has become fashionable to tout Lewis and Clark as discoverers of numerous plants and animals, this is not only dubious from a scientific point of view, it also misses the deeper significance of the magnificent Expedition and its aftermath.

References

Adler, K. 2007. Contributions to the history of herpetology, volume 2. Society for the Study of Amphibians and Reptiles Contributions to Herpetology 21.

Ambrose, S. E. 1996. Undaunted courage: Merriwether Lewis, Thomas Jefferson, and the opening of the American west. New York: Simon and Schuster.

Benson, K. R. 1978. Herpetology of the Lewis and Clark expedition, 1804–1806. Herpetological Review 9(3):87-91.

Biddle, N. (editor). 1814. History of the expedition under the command of Captains Lewis and Clark to the sources of the Missouri, thence across the Rocky Mountains and down the River Columbia to the Pacific Ocean. Performed during the years 1804–5–6. Philadelphia, Pennsylvania: Bradford and Inskeep. (Incidentally, this is the same N. Biddle who later became the president of the National Bank and who fought a losing battle with President Andrew Jackson to preserve this institution. Hence, it is perhaps not surprising that one of the nation's early central bankers, though a scholarly man, was not prepared to do justice to the scientific aspects of the Expedition.)

Burroughs, R. D. 1961. The natural history of the Lewis and Clark expedition. East Lansing, Michigan: Michigan State University Press.

————–. 1966. The Lewis and Clark expedition's botanical discoveries. Natural History 75:56-62.

Coues, E. 1874. An account of the various publications relating to the travels of Lewis and Clarke (sic), with a commentary on the zoological results of the expedition. Washington, D.C.: Bull. U.S. Geol. and Geogr. Survey of the Territories, No. 1.

Coues, E. (editor). 1893. History of the expedition under the command of Lewis and Clark. 4 vols. New York: Harper.

Criswell, E. H. 1940. Lewis and Clark: Linguistic pioneers. Columbia, Missouri: University of Missouri Studies 15(2).

Cutright, P. R. 1989. Lewis and Clark: Pioneering naturalists (Second edition). Lincoln, NE: University of Nebraska Press. [Orig. publ. 1969 by University of Illinois Press]

Jackson, D. 1962. Letters of the Lewis and Clark Expedition with related documents, 1783–1840. Urbana, Illinois: University of Illinois Press.

————–. 1998. The race to publish Lewis and Clark. Pp. 209-228. *In*: J. P. Ronda, editor, Voyages of discovery: Essays on the Lewis and Clark Expedition. Helena, Montana: Montana Historical Society Press.

Kastner, J. 1977. A species of eternity. New York: Knopf.

Mead, C. D. (editor). 1970. "The American scholar today": Emerson's essay and some critical views. New York: Dodd, Mead and Co.

Merry, R. W. 2009. A country of vast designs: James K. Polk, the Mexican War and the conquest of the American continent. New York: Simon & Schuster.

Morris, L. E. 2004. The fate of the corps: What became of the Lewis and Clark explorers after the expedition. New Haven, Connecticut: Yale University Press.

Moulton, G. E. 1983–2001. The journals of the Lewis and Clark Expedition. 12 vols. Lincoln: Nebraska: University of Nebraska Press.

Mussulman, J. A. 2004. Over, above, and beyond: The Lewis and Clark Expedition as hyperhistory. Pp. 152-158. *In*: J. P. Ronda and N. T. Koupal, editors, Finding Lewis and Clark: Old trails, new directions. Pierre, South Dakota: South Dakota State Historical Society Press.

Peck, R. M. 2004. "To acquire what knolege you can": The scientific contributions of Lewis and Clark. Pp. 58-79. *In*: J. P. Ronda and N. T. Koupal, editors, Finding Lewis and Clark: Old trails, new directions. Pierre, South Dakota: South Dakota State Historical Society Press.

Pursh, F. 1814. Flora Americae Septentrionalis. 2 vols. London: White, Cochrane and Co. (Note: Pursh stole a large number of Lewis and Clark botanical samples, carrying them off to England, where he did his taxonomic work on the collection. Most of the material has since been recovered and is back in the USA at the Philadelphia Academy of Natural Sciences. Cutright (1989) and Peck (2004) present accounts of this matter along with references documenting its history.)

Setzer, H. W. 1954. Zoological contributions of the Lewis and Clark Expedition. Journal of the Washington Academy of Sciences 44(11): 356-357.

Starrs, J. E., and K. Gale. 2009. The death of Meriwether Lewis: A historic crime scene investigation. Omaha, Nebraska: River Junction Press.

Thwaites, R. G. (editor). 1904–05. Original journals of the Lewis and Clark Expedition. 8 vols. New York: Dodd, Mead and Co.

Wilson, A. 1808–14. American ornithology, or, The natural history of the birds of the United States (9 volumes). Philadelphia, Pennsylvania: Bradford and Inskeep.

Bull. Chicago Herp. Soc. 45(4):62-63, 2010

Notes on Reproduction of the Delicate Ameiva, *Ameiva leptophrys* (Squamata: Teiidae) from Costa Rica

Stephen R. Goldberg
Biology Department, Whittier College
Whittier, CA 90608
sgoldberg@whittier.edu

Abstract

A histological examination was conducted on gonadal material of the teiid lizard, *Ameiva leptophrys* from Costa Rica. Sperm formation (spermiogenesis) appears to occur year-round in males. The smallest reproductively active male (spermiogenesis in progress) measured 82 mm SVL. Mean clutch size for 5 *A. leptophrys* females was 2.4 ± 0.55 SD, range = 2–3. Females may produce multiple clutches in the same year. The smallest reproductively active female (corpora lutea present) measured 83 mm snout–vent length. The reproductive cycle of *A. leptophrys* appears similar to that of other species of *Ameiva* from Costa Rica.

The genus *Ameiva* consists of 34 species distributed in Mexico, Central America, South America and the Caribbean (TIGR Reptile Database, 2009). In this paper, I add information on the reproductive biology of *A. leptophrys* from a histological examination of gonadal material taken from museum specimens. *Ameiva leptophrys* frequents lowland humid humid forests of southwestern Costa Rica and Panama to western Colombia (Savage, 2002). Histological information is presented indicating that *A. leptophrys* females produce multiple clutches and males undergo continuous spermiogenesis.

A total of 38 *A. leptophrys* (13 males, mean snout–vent length [SVL] = 110.6 mm ± 12.6 SD, range = 82–128 mm; 10 females, mean SVL = 96.5 mm ± 11.6 SD, range = 81–113 mm; 15 subadults, mean SVL = 56.6 mm ± 9.3 SD, range = 43–75 mm) collected in Puntarenas Province, Costa Rica, in 1959, 1962–1964, 1973 and 1975 were examined from the herpetology collection of the Natural History Museum of Los Angeles County, (LACM), Los Angeles, California.

For histological examination, the left testis was removed from males and the left ovary was removed from females. Enlarged follicles (> 5 mm length) or oviductal eggs were counted. Tissues were embedded in paraffin and cut into sections at 5µm. Slides were stained with Harris hematoxylin followed by eosin counterstain (Presnell and Schreibman, 1997). Histology slides are deposited in LACM. An unpaired *t*-test was used to compare male and female mean body sizes (SVL) Instat (vers. 3.0b, Graphpad Software, San Diego, CA).

The following specimens from Puntarenas Province, Costa Rica were examined: LACM 174834-174837, 174840-174853, 174855, 174856, 174858, 174922-174924, 174928, 174930, 174931, 174933-174939, 174941-174944.

The mean SVL of males was significantly larger than that of females (unpaired *t*-test, $t = 2.8$, $df = 21$, $P = 0.012$). The only stage observed in the testicular cycle was spermiogenesis (= sperm formation) in which lumina of the seminiferous tubules are lined by clusters of sperm or metamorphosing spermatids. Males undergoing spermiogenesis were found in the following months: March ($n = 1$); June ($n = 3$), July ($n = 7$), August ($n = 1$), September ($n = 1$). The smallest mature male (spermiogenesis in progress) measured 82 mm SVL (LACM 174928) and was from March. One additional male from August that measured 70 mm SVL contained a regressed testis in which Sertoli cells and spermatogonia predominated in the seminiferous tubules (LACM 174930). It was classified as a subadult.

Table 1. Stages in ovarian cycle of *Ameiva leptophrys* collected in July 1973 from Puntarenas Province, Costa Rica.

n	Quiescent	Follicles > 5 mm	Oviductal eggs	Corpora lutea	Oviductal eggs and yolk deposition
10	4	3	1	1	1

Stages in the ovarian cycle are in Table 1. The presence of one female (LACM 174841) with oviductal eggs and concurrent yolk deposition for the next egg clutch indicates *A. leptophrys* may produce multiple egg clutches in the same year. Mean clutch size for five *A. leptophrys* females was 2.4 ± 0.55 SD, range = 2–3. The smallest reproductively active female (corpora lutea present) measured 83 mm SVL. One female from July (SVL = 75 mm) contained quiescent ovaries and was classified as a subadult (LACM 174851).

Subadults were recorded from the following months: January ($n = 8$), March ($n = 1$), July ($n = 3$), August ($n = 2$). All are larger than than the 42 mm (standard length) reported for *A. leptophrys* neonates which appear in the wet season (Savage, 2002).

In a previous study Goldberg (2009) reported that males of three species of *Ameiva* from Central America: *A. festiva, A. quadrilineata* and *A. undulata* underwent continuous spermiogenesis suggesting the potential for year-round breeding. Females of each of these species contained oviductal eggs while undergoing concomitant yolk deposition for a subsequent clutch indicating the potential to produce multiple clutches in the same year. It thus, at this point, appears that the Costa Rican species of *Ameiva* exhibit similar reproductive cycles.

Acknowledgments

I thank Christine Thacker (LACM) for permission to examine lizards which are part of the Costa Rica Expeditions Collection donated by Jay M. Savage to LACM in 1998.

Literature Cited

Goldberg, S. R. 2009. Reproductive cycles of three *Ameiva* species, *Ameiva festiva, Ameiva quadrilineata,* and *Ameiva undulata* (Squamata: Teiidae) from Central America. Bull. Maryland Herp. Soc. 45:7-13.

Presnell, J. K., and M. P. Schreibman. 1997. Humason's animal tissue techniques, Fifth edition. Baltimore: The Johns Hopkins Press.

Savage, J. M. 2002. The amphibians and reptiles of Costa Rica. A herpetofauna between two continents, between two seas. Chicago: The University of Chicago Press.

TIGR Reptile Database. 2008. Online at: www.reptile-database.org/db-info/taxa.html. Last access 13 August 2009.

Bull. Chicago Herp. Soc. 45(4):63-65, 2010

Highland Terrapins and Turtle-free Zones: A Look Back at an Earlier Generation's Views on Turtles

David S. Lee
The Tortoise Reserve
PO Box 7082
White Lake, NC 27614
torresinc@aol.com

Over time turtles have provided us with many intriguing and at times positive culture images. We can all give examples: turtles as subjects of aboriginal art; mythological visions of our world supported on the back of a giant turtle; turtles as ingredients for ancient Chinese medicines. Respected for their longevity, the reason for the famed Chesapeake Bay terrapin fishery of the early 1900s, and last year's Fourth of July turtle races—turtles have played continuous roles in various aspects of nearly every culture. Their shells are used for intricate Japanese tortoiseshell carvings, and their images to promote car wax, candy, insurance, and other commercial products. Turtles represent sacred objects, topics for fables and proverbs, characters in comic strips, icons of endurance, food for tribes of subsistance hunters, key components of soup, and inspirations for rock bands and teenage ninjas. They are mascots of university sports teams and the single character of one chapter in *The Grapes of Wrath*; they live in writings of Henry David Thoreau and Gilbert White, and in the poems of Ogden Nash. These reptiles, the subjects of uncounted research topics, became the first astronauts to be flung into orbit during the Cold War space race. Galapagos and Aldabra tortoises, and marine turtles and their eggs, provided important enroute food sources for European explorers and American whalers and pirates. And let's not forget the 10 million little red-eared sliders sold throughout the world each year as pets.

They are interesting animals and their body design is both ancient and most curious. To quote Alfred Romer: "Because they are still living, turtles are commonplace objects to us; were they entirely extinct, their shells—the most remarkable defensive armor ever assumed by a tetrapod—would be cause for wonder." Just imagine living inside your rib cage for decades on end; an essentially unchanged protective structure with blueprints embedded in rocks formed 200 million years ago.

While I am sure the turtles would have a different perspective on all the attention they have received, it is clear that compared to most animals our turtles, tortoises and terrapins have been given more than their share of the public relations market, and they continue to be an important component of our cultural history. One could safely say that turtles have received celebrity status in the animal kingdom. But this has not always been the case. In the early 1900s, at the dawn of interest in conservation in this country, turtles were viewed as creatures from the dark side. They were for the most part regarded as outright villainous. This is something present-day books on turtles always omit, and apparently a topic our earlier authors totally avoided due to the public sentiment of the time.

The following note about our native box turtles is from *The American Field* (July 26, 1939):

> A summer or so ago I had occasion to make a trip from my home to South Boston, Va., in an automobile. On this trip I saw a number of dead Highland terrapins which had been run over by cars; many of these were strewn near highway crossings—an unusual number, I thought. When I arrived in South Boston, I got in conversation with a gentleman who delights in a quail hunt or a fishing trip. He told me that their had been a scarcity of quail around his hunting territory and that he had gone out to investigate the cause. He picked the nesting time of the quail to make his investigation. This man said that he found five nests, three of which had already been destroyed; two terrapins were at each of the destroyed nest and one terrapin at each of the undestroyed nests. This summer my daughter was coming home along a trail not far from where I live. She heard a young rabbit crying and found the mother rabbit fighting desperately to protect her offspring. Upon the approach of my daughter, the old rabbit ran off, leaving a terrapin in possession of the nest with its tiny occupant. The latter was so badly wounded that it died in a few minutes. My daughter brought the terrapin home and told me of what she had seen, and I killed it. After what the gentleman in Virginia told me and, following my daughter's experience I firmly believe that these Highland terrapins are pests and I'm sure that I saw more on my trip to Virginia than I had ever seen in all of my life. I am now sixty-four years old, have roamed the woods since boyhood and lived in the country most of my life. Some measures should be taken to control the terrapin. - S. J. Guyer. (Canton, N.C.)

The October 1927 issue of *Outdoor Life* ran an essay entitled "Turtle Zones and Ducks." It would be hard to think of an article that had more misinformation in a single page of text, but nonetheless its premise is historically interesting. The storyline was that most of our native waterfowl nest north of the 40th parallel

because their ducklings could not survive the hordes of hungry turtles that lived in the latitudes to the south. The turtles were even blamed for keeping migratory ducks out of certain lakes during migration, and the author also accused the turtles of regularly raiding their nests and eating the eggs. Hunters wondered "why ducks will not use certain waters even when decoys are set in faultless array." It is of course our native snapping turtle that got the blame for eating the "tender ducklings," and scaring waterfowl off of various bodies of water. The writer went on to state "that less than 5% (of the ducks) grow from shell to maturity" in the waters inhabited by turtles. I was surprised he had not use the term "infested" to strengthen his point.

One would reason that this story was about snapping turtles, but no, the condemnation is apparently for all turtles. In a following paragraph the author went on to state:

> The central United States has a large number of species of turtles, all extremely fond of tender ducklings. Among these are the snappers, two kinds of paints, the yellow bellied sliders, the stinking and the little muds. Add to this the terrapins, which prowl on dry land but are prone to dine upon duck eggs once they get their snout into a duck nest. Perhaps the soft shells eat ducklings. Anybody who knows turtles would not put it past them.

Perhaps a few examples of editorials placed in various newspapers and magazines of the time will show that this type of thinking was almost universal. Here is a fun one: the title was "An Animated Steel Trap" and it was written by Andrew Price.

> A hot summer day; a party gathering apples under the shady trees of the old orchard; a sound of a chicken in distress, and the exclamation of a visitor, 'A hawk!' But the lady of the house, with the air of one worried with the recurrence of an old vexation said: 'No, it's that old turtle again!'
>
> I had heard of the turtle which by his industry distanced the hare, but to learn that the cries of the fowl in the distance were occasioned by its capture by a turtle was a revelation to me. I ran for my rifle, for certainly this turtle justified the use of a gun.
>
> We hurried down to the spring branch at the foot of the orchard and saw a chicken of 'frying size' being dragged down into the mud by some irresistible invisible agency. It was disappearing slowly, and I fired to one side, having detected a slight movement in that direction of the surface of the mud hole.
>
> I chanced to choose the right side, and a spot of blood showed on the surface of the slough, and the chicken was released and hobbled away."

From the *Detroit News* (July 1, 1934): "Snapping Turtles a Menace to Wildlife."

> As study of the food habits of the snapping turtle becomes more extended plenty of evidence is being uncovered substantiating the belief that this turtle is a menace to fish life of the waters it inhabits as well as to the young of aquatic birds and animals. Snapping turtles killed this spring usually show that they have dined well on the spawn of all kinds of game fish and not infrequently their stomachs contain fingerling bass, bluegills, perch and other fish species. They have been known to grab young wild ducks by their legs, drawl them underwater and devour them a their leisure. In fact they will take anything that swims and looks like food. Lakes infested with snapping turtles as a rule are poor fishing waters and will remain so until the turtle population is brought under control.

And then there are stories of turtles clinging to cows' tongues (*Washington Herald*, August 17, 1925) biting the noses of horses when they come to drink (*Turtles of the US and Canada*, 2nd edition), and the Muskrat Association catching over 4,600 turtles in one summer and finding muskrat fur in "many" of their stomachs (*Outdoor Life*, 1928, Vol. 51, no. 2).

OK, just one more, but damn there are so many more to choose from. In the *Beverly Tribune* (Kansas) a 23 June 1927 article simply titled "Turtles" ends by saying: "Traps, poison, rifle bullets and hard heals must become allies in this turtle war if Kansas is to have more ducks, more fish and game. So along with swatting the fly, take the turtle."

Even the respected biologists of the time wrote of turtles as if they were creatures we could best do without. In his 1891 publication, *The Batrachians and Reptiles of Indiana*, O. P. Hay wrote of snapping turtles that "They have been accused of capturing young ducks. A large specimen that I dissected had in its large intestine the feathers and partly digested bones of a full grown robin." Raymond L. Ditmars, who one day would become regarded as the godfather of modern and popular herpetology reported: "The Snapping Turtle is an exceedingly voracious brute, and is not particular as to its fare. Young waterfowl are stalked from beneath the surface, seized by a dart of the jaws and pulled below to drown and be quickly torn to pieces by the keen mandibles and assisted by the font limbs. The turtle is entirely carnivorous." (*The Reptile Book*, 1907).

Up through most of the early 1900s people classified wildlife into one of two broad categories—good or bad. The "good" species were things one could eat, or animals that preyed on the "bad" creatures. Agencies used the terms "beneficial" and "injurious" wildlife as this made the categories sound absolutely official. The "bad" animals were vermin that ate our crops, preyed on game species, or killed our domestic animals. It was rather straightforward, and all about outdoor economics. There were some conflicts within this system; snakes that ate rodents were still "bad," yet rabbits and deer that ate our crops were nevertheless "good," as we could eat them. Snapping turtles, though edible, were vermin, as they were known to eat beneficial species such as hatchling ducks and game fish. And let's not forget they snap and bite, and that couldn't be a good thing. A 1928 typed manuscript I found in the files of the former U.S. Biological Survey put this into the perspective of the time. The report was titled "Data on the Snapper Crusade," and the first line read: "It has always been a source of speculation as to what good purpose some living things served and the snapping turtle was one of these." One of the conclusions of this report was that skunks were actually beneficial after all because they ate turtle eggs and helped to keep the snapper populations in check. The negative opinion of snapping turtles even worked its way into a popular children's book of the period. (R. McCloskey. 1941. *Make Way for Ducklings*. New York: The Viking Press.)

Ongoing investigations conducted by state agencies and the US Biological Survey were among the first to document the real roles various animals played in natural communities. Prior to their efforts most natural history information was based on compilations of anecdotal observations and serendipitous reports, a system that tended to document isolated spectacular events, not the way animals typically made their day-to-day livings. The ecological concepts of the interrelationships of plant and animal communities had yet to be developed; each

living thing was viewed simply in terms of its direct relationship to us. At the time the term "conservation" was simply an economic buzzword for let's figure out how to locally maintain and produce more game species.

As early as 1908 the Pennsylvania Department of Agriculture reported on the economic status of their native turtles: "The painted turtle (*Chrysemys picta*) appears to be almost equally herbivorous and carnivorous. Out of 86 examined 61 had eaten insects, 10 containing specimens of the rose bug. The author concludes that this species must be regarded as beneficial. The report went on to likewise pardon the "speckled tortoise" (*Clemmys guttata*) and musk turtles as "beneficial rather than obnoxious." (Zool. Bull. Penn. Dept. Agr., 6 (1908), No. 4-5.)

Because of all prevailing attitudes regarding turtles, the snappers and other species became one of the main areas of focus for the Biological Survey's studies. Their findings on the diets of snapping turtles were surprising. These large "carnivorous," predatory turtles were eating large quantities of aquatic plants. They examined untold numbers of turtle stomachs. Looking through photocopies of a hundred or so original data cards from the 1920s and '30s, it is clear that snappers have a varied diet. In addition to the expected frogs, crayfish, freshwater clams, aquatic insects, and fish, there was a long list of unexpected food items—beavers, muskrats, grapes, freshwater sponges, acorns, blue crabs, spider egg cases, other turtles, salamanders, frog eggs, toads, and water snakes. One surprise was a turtle with its stomach packed with 17-year cicadas, suggesting that the snapper came on land to catch them. The majority of the stomachs contained bullheads, various species of crayfish and assorted plant material—rhizomes of grasses, duckweed, skunk cabbage, and other wet land and aquatic vegetation, dead leaves of deciduous trees, filamentous green algae and various seeds. And yes, there were a few ducks and other water birds, but very few considering all the stomach content cards I looked through (1 black duck, 1 ruddy duck, 1 American coot, and some feathers from a mallard).

Modern studies confirm that the vicious carnivorous nature of snapping turtles is a little overstated. While the total list of snapping turtle food items is long, when all the various studies are compiled it appears that fish, aquatic invertebrates, and plant material make up the bulk of the diet, with plants comprising a surprising 36–60% of the volume and frequency. These turtles are also major carrion eaters, and I suspect a number of the larger food items catalogued from the stomachs of snappers were ones scavenged by the turtles.

OK, here is the real story behind the "Turtle Zone" and ducks. Yes, turtles eat ducklings and occasionally capture adult ducks, but the adult birds are arguably sick or injured ones. And keep in mind, largemouth bass are also known to eat ducklings, yet no one put them on the injurious wildlife list. There is a latitudinal line in North America above which there are very few turtles of any species. This is because at more northern latitudes the hibernation period required for turtles does not allow them enough time to feed and grow in the summer, and the soil temperatures are too cool for successful egg incubation. Many species of waterfowl migrate north of this "line" in the summer to nest and raise their young. The longer periods of daylight provide greater opportunity for feeding, allowing their young to grow and the ducks and geese to quickly build up needed fat reserves for migration. Yet keep in mind that mallards, black ducks, blue-winged teal, hooded mergansers and wood ducks all successfully nest and raise their young well into the "Turtle Zone," and in recent decades the expansion of nesting Canada geese and semi-domestic mallards into the Southeast attests to the fact that snapping turtles and nesting waterfowl can coexist.

Our attitudes have changed considerably since the early 1900s. The quotes provided here are not unique. In my files are numerous similar articles that were written between 1916 and 1939 as editorials, and they appeared regularly in newspapers, popular outdoor hunting and fishing magazines with names as such as *Fins, Feathers, Fur*, and even in the professional game association bulletins of the time. The article in *Outdoor Life* that I cited at the beginning of this story ends with the thought "It may be possible some day to rid the country of turtles, but there is no remedy in sight now, in fact turtles very likely are increasing in numbers." So, by and large, it is refreshing to see how far we have advanced in our understanding of the natural world. Despite the concerns loudly expressed 60–90 years ago, I don't think we need to be too worried about future global warming allowing turtles to expand their range further north, eliminating ducks from the face of the earth.

While many still consider turtles as vermin, fortunately today not everyone sees them that way. Last summer I came across a lady helping a snapper to safely cross a highway. Her husband directed traffic, while two children stood by her car as she prodded the back end of the large turtle with a rolled up newspaper, encouraging it to move off the road. An approaching driver quickly positioned his pickup to help block one lane of oncoming cars. The turtle was confused. Traffic was a little backed up, but no one seemed to mind. A number of drivers gave thumbs up signs as they edged past the commotion, and once the snapper was safely on the shoulder of the road, and could see the swamp was only 30–40 feet away, she started moving faster. With her neck fully extended, and the shell and long tail held high off the ground, the turtle quickly reached the water's edge. The joyful children high-fived and giggled as their parents herded them back into their car. Horns beeped in recognition of a job well done. Young faces pressed against back seat windows in attempts to get a glimpse of the turtle as the line of vehicles passed by. The female snapper, apparently successfully completing her nesting chores was back home, safe from the asphalt's inherent dangers for at least another year.

A half-century of wildlife public relations is paying off; turtles once again have achieved some respect. OK, so the lady helping the turtle probably was not a duck hunter, but to most people turtles are no longer considered as true vermin. At least they are well above the level of hornets, ticks, garden slugs, intestinal parasites and telemarketers.

What You Missed at the March Meeting

John Archer
j-archer@sbcglobal.net

I usually google our speakers before the meeting so that I don't mess up the introductions too much. I did that with Paul Sereno. Google came up with 46,100 hits. If you've ever played this game, you know that number isn't exceptionally high. I get about 217,000 hits when I google my name. The difference being that all of the hits I found (and I went way into the search just out of curiosity) about Paul Sereno were about THE Paul Sereno; I plunged into the searches of John Archer and never did find me (there are quite a few more famous John Archers. Hard to believe, I know.). Pictures of Paul Sereno had 8,240 hits. Videos had 76 hits. Dr. Sereno is not unknown.

Dr. Paul Sereno, holding a cast of the cranial cavity of the "boar croc." Photograph by Tlaloc Soria.

A quote from a web site of the University of Chicago, where he is a professor of organismal biology and anatomy:

> "Paul Sereno has discovered dinosaurs on several continents. His overall aim is to map the dinosaur family tree by tracing the many evolutionary changes recorded in their skeletons. The patterns of change recorded on the branches of the evolutionary tree are key to understanding how evolution works over millions of years. Sereno fuses his mission of scientific research with his educational mission, engaging his students directly in the process of discovery. In 1998, Sereno and his wife, educator Gabrielle Lyon, co-founded Project Exploration, an organization dedicated to bringing dinosaur discoveries and natural science to the public and providing innovative educational opportunities for city kids."

And a quote from Paul on the Project Exploration web site (http://www.projectexploration.org/paul.htm):

> "I see paleontology as 'adventure with a purpose.' How else to describe a scientific discipline that allows you to romp in remote corners of the globe, resurrecting gargantuan creatures that have never been seen? And the trick to big fossil finds? You've got to be able to go where no one has gone before."

From his *National Geographic* bio:

> "The author of books and articles in *National Geographic* and *Natural History* magazines and the subject of many documentaries, Sereno's recognitions include the *Chicago Tribune*'s Teacher of the Year Award (1993), *Chicago* magazine's Chicagoan of the Year (1996), *Newsweek* magazine's The Century Club (1997), *People* magazine's 50 Most Beautiful People (1997), *Esquire*'s 100 Best People in the World (1997), Boston Museum of Science's Walker Prize for extraordinary contributions in paleontology (1997), and Columbia University's University Medal for Excellence (1999)."

He has his own web site (http://www.paulsereno.org/).

He's famous. And yet Paul arrived at the Notebaert carrying a twenty-five-pound, 90-million-year-old croc skull, apologized for being late (he wasn't), helped set up the projector, shook hands and posed for photos, grabbed a cup of coffee, and then delivered a tremendous presentation, after which he again posed for photos and then went to dinner afterwards. Sadly, I was unable to make the dinner. Like all of our speakers I've had the pleasure of meeting, Paul is affable, approachable, and enthusiastic. Maybe enthusiastic is an understatement. This is the reason you want to come to our meetings; you get great presentations and can meet and interact with people like Dr. Paul Sereno.

Paul's presentation was filled with extraordinary pictures and interesting videos accompanied by oration that whirled us through his discoveries and gave us an insight into the workings of science and a questing mind. He spoke not only of what he's done but what still needs to be done, and I was enthralled as he bounded from insights to questions to hopes to accomplishments. Paul is like all of our speakers, but writ large.

He started with his underlying desire to improve the cataloging and computerizing of the vast amounts of data that overwhelm the paleontological world and hinder progress towards a better phylogeny of dinosaurs in particular. He admitted that he has the ideas but not yet the means to accomplish this.

His main strategy for finding bones that no one else has is simply to go where no one else has gone and where no one else is likely to go. His prime example of this is the Sahara, perhaps the last region on earth where some places remain absolutely unexplored. Dr. Sereno believes that the challenges of negotiating with nomads, fixing transportation, hauling all water and the tremendous amount of supplies necessary to sustain a major expedition in a desolate landscape subject to 120-degree heat means that the Sahara will remain difficult to penetrate. Therefore the desert will likely continue providing opportunities for him in the future. With pictures flashing on the screen, we got a glimpse of some of the finds that have been gleaned from the warehouse that houses the spoils of Paul's many expeditions, including the Gobi desert, South America, and even Tibet. Paul says that when his fieldwork lags he jumps into working in the warehouse in an attempt to "release some of these animals into the wild." I suppose that's what he does in his spare time.

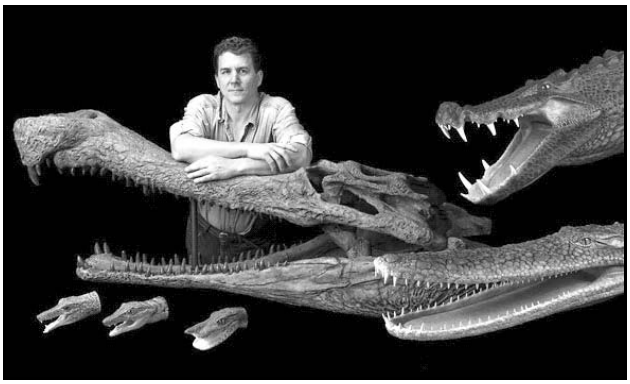
While talking about a find in Inner Mongolia, he gave us an example of how his mind works. Backed by slides, he talked about finding the first bona fide population of 25 birdlike dinosaurs, all juveniles, preserved Pompeii style in a cluster all moving in the same direction. Paul used this as an example of how paleontologists ask questions that may not occur to scientists who study living animals. When they aged these dinosaurs

they were all one to two years old. They found no hatchlings and no adults, perhaps implying that juveniles would roam in age-specific herds until maturing. But the fact that really piqued Paul's interest is that some of the juveniles' skulls were ten percent bigger than others. Did that mean two breeding seasons? He promptly searched the literature for pictures and measurements of bird skull maturation after hatching . . . and found nothing. Apparently no one has ever recorded how bird skulls change as they grow. With the help of an emu farm, Dr. Sereno is currently filling that gap, and the results may help fill in part of the natural history of a long extinct animal.

I'm sure a world-famous paleontologist gets inquiries from all over the world, both from colleagues and from the public. Paul was contacted by a wealthy individual who had purchased a Chinese dinosaur skull in Arizona. Upon hearing a description he convinced the owner that he had something new and that the purchaser's mantel was not the proper repository. Lamenting the fact that once smuggled fossils are in the U.S. it is unlikely that any prosecution will result, Dr. Sereno says that he will soon release a paper on the skull and the skull will be returned to China where it is already quite famous.

Accompanied by a brief film clip he explored the inconsistency of a small dinosaur with a head-butting skull. Head butting is an activity reserved for modest to large animals, and Paul questioned how this evolved in a dwarf dinosaur with an oversized brain.

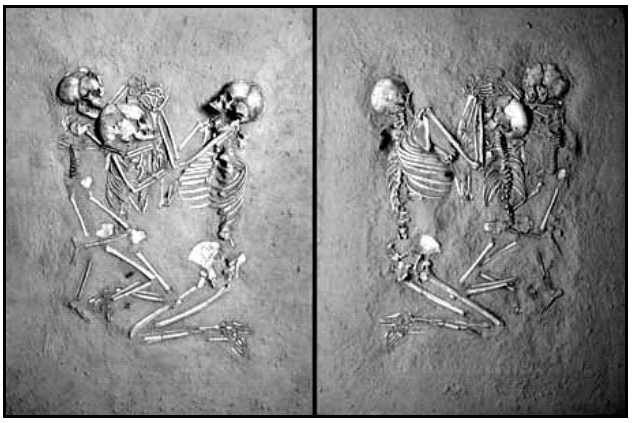
He then launched into the early crocs he has found. With names like dog croc, duck croc, pancake croc, and super croc, we feasted on a panoply of photos that could easily grace the pages of *National Geographic* because, er, they have. We listened to lessons on how to tell what these animals ate, what they looked like, and how paleontologists surmise the lifestyles of the extinct and weird. We feasted on more examples of how paleontologists ask different questions than scientists studying living animals. Long narrow flattened snouts and curved teeth probably mean fish eater, but what about a reasonably-long rather-flattened powerful jaw with huge non-curved cutting teeth and an armored snout? We saw and photographed that impressive 90-million-year-old skull sitting on a table where we could actually get nose-to-nose with the boar croc. How did Paul conclude that dog croc had a soft snout and boar croc had an armored snout? What was the function of the armored snout? Or the buck teeth that the herbivorous dog croc flourished?



Just a small sampling of the croc discoveries of Paul Sereno.

Wait, how does he know that dog croc was herbivorous? How did early crocs move? How did they evolve the muscles in their extraordinary tails that allow them the ability to swim much like a fish while walking on land in the typical energy-conserving way of most terrestrial quadrupeds? Why do most crocs only have one gait? A nice film clip of a galloping Australian freshwater crocodile demonstrated the locomotion of the only living galloping croc, and Dr. Sereno explained how armor, skeletal structure, muscle relocation and shoulder joints provide answers and inevitably raise more questions.

With slides that highlighted the desolation of the Sahara, Paul talked of his expedition's remarkable and serendipitous discovery of the largest archaeological site in that desert. In one sand dune lie hundreds of graves spanning a time period from ten thousand to five thousand years ago. Very cool computer-enhanced graphics showed a three-dimensional view of a woman and two children buried 5,300 years ago. Paul explained that paleontologists tend to be very good at extracting large finds from the ground intact while archeologists tend to map everything as they extract things piecemeal. Being a paleontologist, Paul used the intact method on the triple burial and he feels that method not only provided the extraordinary bottom view of the find, but also allowed them to conclude that the arrowheads and pollen grains found with the bones were evidence of deliberately placed adornment (the pollen grains came from flowers). He followed this with a quick overview of his ongoing efforts to bring a museum (which he's designed!) to Niger and make this highly sensitive cultural find available not only to the Nigeriens living in the cities, but also to the nomads that wander the lands he explores.



Top and bottom views of the 5,300-year-old triple burial. We have both views because Dr. Sereno excavated the entire group in one large block.

He ended with a quick summary of some of the data that he and his wife Gabrielle Lyon have collected about the fortunes of the students involved with Project Exploration. He is obviously and justifiably proud of what that organization has accomplished.

After writing this I feel much the same as I did at the end of Dr. Sereno's presentation. I am in awe of the many paths he pursues, his multifaceted mind, his charismatic speaking, and his ability to parse questions and grasp solutions. Looking at the list of awards he's received and the notoriety he's achieved, it's obvious that I'm not the only one who feels that way. Get thee to the meetings!

Herpetology 2010

In this column the editorial staff presents short abstracts of herpetological articles we have found of interest. This is not an attempt to summarize all of the research papers being published; it is an attempt to increase the reader's awareness of what herpetologists have been doing and publishing. The editor assumes full responsibility for any errors or misleading statements.

MIDDLE EASTERN ELEGANT RACERS

G. Babocsay et al. [2009, Herpetozoa 22(3/4):173-180] present life history notes on two captive (observed during summer and late autumn) and on fourteen, randomly encountered free-ranging specimens of the elegant racer, *Platyceps elegantissimus*. Activity patterns of the captive specimens were bimodal, their morning activity peaking between 10:00 and 11:00 both in summer and autumn. The afternoon activity peaked between 18:00 and 19:00 in summer and between 14:00 and 15:00 in autumn. Out of the 14 wild-ranging specimens encountered, nine were observed in daylight, one at dusk and two in full darkness (early morning and late evening); two were inactive when found in their shelters during the day. Captive specimens immediately noticed any movement around the terrarium, reacting by quick flight or by freezing their body. One captive and one wild-ranging specimen were observed basking in the morning. Contrary to widely accepted views that *P. elegantissimus* is nocturnal, it conducts a predominantly diurnal, although cryptic lifestyle.

TEXAS HORNED LIZARD ESCAPE BEHAVIOR

W. E. Cooper, Jr., and W. C. Sherbrooke [2010, Herpetologica 66(1):23-30] note that horned lizards are difficult to detect because of their cryptic coloration and behavior, but often flee from approaching predators and use specialized behavioral, morphological, and physiological defenses at close quarters. Escape theory predicts that flight initiation distance (predator–prey distance when escape begins) increases as predation risk increases. The authors predicted that, despite relying on crypsis, Texas horned lizards (*Phrynosoma cornutum*) would have greater flight initiation distances when approached rapidly than slowly and when approached directly than indirectly. Flight initiation distance was greater for rapid than slow and direct than indirect approach, verifying the predictions for prey that do not rely exclusively on crypsis, forgoing escape. Effect size was larger for approach speed than for directness of approach, in part because the difference between minimum bypass distances was small (0.0 m for direct and 0.6 m for indirect approaches). The authors also investigated responses to a shadow passing over a lizard, which might be a cue to imminent risk. When a model accipiter passed overhead, lizards were much more likely to move and jump if and when the model cast a shadow directly on them than if the shadow passed nearby without falling on them. Some lizards fled when the shadow fell on them. The authors interpret these novel findings as indicating that *P. cornutum* assess themselves as being in immediate peril when suddenly covered by a shadow. They reacted primarily by immediate flight or jumping, possibly reflecting preparation to use alternative defensive strategies at close quarters or to delay escape while further assessing risk. Thus, although Texas horned lizards rely strongly on crypsis, they make escape decisions based on degree of predation risk.

DESERT TORTOISE NUTRITION

L. C. Hazard et al. [2010, J. Herpetology 44(1):135-147] note that exotic plants can make up a major component of the diet for some desert tortoises (*Gopherus agassizii*) in the Mojave Desert. If introduced plants differ nutritionally from native plants, they may influence the growth and welfare of young tortoises. Minerals available from a native grass (*Achnatherum hymenoides*), an introduced grass (*Schismus barbatus*), a native forb (*Malacothrix glabrata*), and an introduced forb (*Erodium cicutarium*) were measured for juvenile desert tortoises voluntarily eating single-species diets. Tortoises were offered weighed amounts of chopped foods daily for 130 days (dry grasses; summer diet) or 90 days (green forbs; spring diet). Orts and feces were collected daily and dried to constant mass, and calcium, phosphorus, and magnesium contents of food and feces were measured and used to calculate nutrient digestibilities. Overall, tortoises gained more minerals from forbs than from grasses. Tortoises lost small but significant amounts of phosphorus when on grass diets, which may have contributed to observed decreases in mass and shell volume. There were few nutritional differences between native and exotic forbs or between native and exotic grasses. Comparing nutrient availability to estimated requirements for growth by juveniles and for egg production by adult females suggests that phosphorus is more limiting than calcium or magnesium and that calcium may pose a significant osmotic challenge for excretion in this desert species. Management practices that promote availability of forbs could increase growth rates and shell ossification, which would enhance predator resistance of juvenile tortoises.

MASSASAUGA DIETS

P. J. Weatherhead et al. [2009, J. Herpetology 43(3):693-697] state that knowing what venomous snakes eat is relevant both to their conservation and to understanding the functional diversity of their venom proteins. The authors used fecal samples to quantify the diet of eastern massasauga rattlesnakes (*Sistrurus catenatus catenatus*) in Ontario and Ohio. Small mammals comprised almost the entire diet of both populations, collectively comprising 13 species, five of which were common to both populations. Consistent with their habitat use, Ontario snakes ate both forest and field mammals. The unexpected occurrence of eastern chipmunks (*Tamias striatus*) in the Ohio samples suggested that those snakes either moved out of the fields in which they were caught to feed, or encountered chipmunks dispersing along fencerows. Large snakes did not drop small prey species from their diets and the occurrence of large prey species in diets indicates that juvenile small mammals are important prey. Limited effects of snake size on diet composition suggest that ontogenetic shifts in venom composition are unlikely to occur in the eastern massasauga. The similarity of diets between populations makes it unlikely that populations differ in venom composition because of local adaptation of venom proteins to different suites of prey.

SEA TURTLES IN GUINEA-BISSAU

P. Catry et al. [2009, Chelonian Conservation and Biology 8(2): 150-160] provide the first overview of sea turtles in Guinea-Bissau, present data on their ecology, and analyze threats and conservation initiatives. The green turtle (*Chelonia mydas*) is by far the most widespread and abundant of the 5 species that nest in Guinea-Bissau. Between ca. 7000 and 29,000 green turtle nests are laid per year at the globally important site of Poilão Island, with a few hundred more on surrounding islands. There is a marked interspeciric variability in nesting seasonality, with green and hawksbill (*Eretmochelys imbricata*) turtles nesting mostly during the rainy season and olive ridley (*Lepidochelys olivacea*) and leatherback turtles (*Dermochelys coriacea*) during the dry season. Informal interviews all over the coastal zone suggest that sea turtle populations have markedly declined within living memory. Main threats are poaching of eggs and of nesting females and the incidental capture in fishing gear. Among the major achievements of sea turtle conservation efforts are that all species are protected by law, the most important nesting beaches are included in the protected area network, and significant progress has been made in removing the presence of settlements of foreign fishermen from the areas near the turtle concentrations where accidental captures used to occur. On the down side, protection in the national parks is insufficient. The main problem seems to be the weak enforcement of park and national rules by park authorities, which creates a feeling of relative impunity in park residents and visiting fishermen.

IMPACTS OF CULTIVATION ON REPTILES

G. P. R. Masterson et al. [2009, African Journal of Herpetology 58(2):71-84] note that habitat transformation is the primary anthropogenic threat to global biodiversity. Fragmentation of reptile populations following habitat transformation within a landscape can lead to the extirpation of species. The authors investigated the eftects of land-use on the species richness and abundance of reptile assemblages in three habitat types (two natural and one modified) in the grasslands of Gauteng, South Africa. Using trap arrays, they surveyed reptiles in primary grassland with little or no rock cover, primary grassland with large quartzite outcrops and scattered rocks, and secondary grasslands that were historically plowed and cropped. Vegetation height and vegetation cover were measured at these same localities. Significantly fewer reptile species were caught in the historically cultivated sites than in either of the two natural habitat types. Differences in the reptile assemblage of each habitat type were not explained by either the spatial location or the vegetation structure of the trap sites but were well explained by the sites' habitat type. Estimates of total species richness indicated that the reptile assemblages in the three habitat types were adequately sampled, further supporting the authors' observation of'reduced species richness in the secondary grasslands. The authors infer that habitat transformation associated with cultivation (e.g., rock removal) has had a detectable, negative impact on the species richness and composition of the local reptile assemblages. They recommend that land-use planning in Gauteng emphasize the need for areas of interconnected, untransformed habitat in order to mitigate the negative impacts of habitat transformation on the local reptile diversity.

ECOLOGY OF THE LESSER SIREN

P. M. Hampton [2009, J. Herpetology 43(4):704-709] notes that the lesser siren (*Siren intermedia*) is a fully aquatic salamander with functionally limited overland dispersal. Details of the ecology of this species throughout its geographic range and diversity of habitats are limited. This study investigated the ecology of a presumably isolated population of *S. intermedia* in eastern Texas. The conservative estimated population density was 0.33 sirens/m^2 with a standing crop biomass of 9.66 g/m^2. Growth rates averaged 0.022 mm/day in total length, slightly slower than other populations. Growth rate was not significantly different between males and females, nor was it correlated with size. The diet of the study population included at least 10 different taxa, of which tadpoles and snails (Order Basommatophora) were the most important prey. Like other populations, activity was highest during late winter and early spring, which coincides with the breeding season. The abundance of siren captures was weakly influenced by water temperature but not correlated with precipitation. Bite marks are hypothesized to be a result of siren courtship behavior. The abundance of males and females captured with fresh bite marks was significantly correlated with the number of gravid females. Because sirens are predatory generalists and represent a significant proportion of biomass in many aquatic environments, it is important to understand siren ecology throughout its geographic range and broad use of habitat types.

SPATIAL ECOLOGY OF EASTERN DIAMONDBACKS

S. K. Hoss et al. [2010, J. Herpetology 44(1):110-123] note that landscape composition and configuration affect ecological processes at the population and community levels, but few studies have demonstrated the effects of landscape pattern on individuals. Because heterogeneity influences abundance and distribution of critical resources, it is hypothesized that it indirectly affects home range size of individuals. To examine the spatial ecology of the declining eastern diamond-backed rattlesnake (*Crotalus adamanteus*; EDB), a two-year study was conducted in southwestern Georgia. The authors obtained home range estimates via radio-telemetry, employed Euclidean distance analysis to examine habitat associations at two spatial scales, and used the software program FRAGSTATS to analyze landscape heterogeneity and examine its effect on home range size. Although no significant habitat associations were detected, there were trends for a positive association with pine habitat at the landscape scale and a negative association with agriculture within the home range. Home range size was negatively correlated with several landscape metrics representing heterogeneity in patch configuration, such that individuals in heterogeneous landscapes had small home ranges. This relationship was strongest at three spatial scales: the first was similar to mean home range size of EDBs; and the others were three and four times as large as the largest home range recorded. Together, these results suggest that management regimes to enhance population densities of EDBs emphasize the preservation of pine uplands, while maintaining a mosaic of other habitat types, and limit the conversion of forest to agriculture. Also, the results underscore the importance of using robust analytical tools and multiscale approaches in studies of spatial ecology.

LIFE ON LARGE ROCK SURFACES

D. A. Janse van Rensburg and P. le F. N. Mouton [2009, African Journal of Herpetology 58(2):106-115] note that the lizard family Cordylidae has been classified as a clade of classical ambush foragers. Two species, *Platysaurus broadleyi* and *Pseudocordylus capensis*, however, display much greater movement rates during activity than other cordylids. The foraging behavior of *Platysaurus broadleyi* is now well-studied, but little information is available on foraging inthe graceful crag lizard, *Pseudocordylus capensis*, one of several melanistic cordylid species found in South Africa. This species is typically associated with large boulders or cliff faces. It was expected that low food availability on large, barren rock surfaces would necessitate a less sedentary foraging mode compared to that of other cordylids not frequenting large rock surfaces. This study aimed to verify the high movement rates previously recorded for *P capensis*. Baseline data on home range size and spacing patterns were also collected. Foraging behavior of *P capensis* was investigated at three localities and across two seasons. Results confirmed previous findings that *Pseudocordylus capensis*, like *Platysaurus broadleyi*, displays a less sedentary foraging strategy in comparison to other cordylids. No consistent seasonal pattern in movement rates was observed. The authors concluded that a less sedentary foraging strategy is a prerequisite for life on large, barren rock surfaces where food availability may be low or not uniformly distributed. Like in the case of *Platysaurus broadleyi*, fruit may be an important dietary item of *Pseudocordylus capensis*, but further study is needed for confirmation. Both male and female *P. capensis* have large home ranges, a unique phenomenon for cordylids. Among males, use of space only overlaps marginally, but extensive overlap occurs among males and females and among females, respectively.

GIANT GARTERSNAKE DEMOGRAPHICS

G. D. Wylie et al. [2010, J. Herpetology 44(1):94-103] note that the giant gartersnake (*Thamnophis gigas*) is restricted to wetlands of the Central Valley of California. Because of wetland loss in this region, the giant gartersnake is both federally and state listed as threatened. The authors conducted mark–recapture studies of four populations of the giant gartersnake in the Sacramento Valley (northern Central Valley), California, to obtain baseline data on abundance and density to assist in recovery planning for this species. Sampled habitats ranged from natural, unmanaged marsh to constructed managed marshes and habitats associated with rice agriculture. Giant gartersnake density in a natural wetland (1.90 individuals/ha) was an order of magnitude greater than in a managed wetland subject to active season drying (0.17 individuals/ha). Sex ratios at all sites were not different from 1:1, and females were longer and heavier than males. Females had greater body condition than males, and individuals at the least disturbed sites had significantly greater body condition than individuals at the managed wetland. The few remaining natural wetlands in the Central Valley are important, productive habitat for the giant gartersnake, and should be conserved and protected. Wetlands constructed and restored for the giant gartersnake should be modeled after the permanent, shallow wetlands representative of historic giant gartersnake habitat.

NEW FROG SPECIES FROM NEW GUINEA

F. Kraus and A. Allison [2009, Copeia 2009(4):690-697] describe *Oreophryne ezra*, a new species of scandent/arboreal frog from Sudest Island, Louisiade Archipelago, off the southeastern tip of New Guinea that exhibits a remarkable ontogenetic change in color pattern. Juveniles are shiny black with lemon-yellow spots; adults are uniform peach with bright blue eyes. The ontogenetic changes in color-pattern elements that comprise this transformation are described in detail. This ontogenetic change, uniform peach adult coloration, and blue iris all appear to be unique features within the genus *Oreophryne*, most of whose members are tan, brown, or gray. Presumably, the striking juvenile color pattern serves an aposematic function, but this conjecture requires testing. The new species is restricted to a relatively small patch of cloud forest perched on the highest peak of Sudest Island. Climate change may pose a threat to the new species if changing rainfall or temperature regimes result in the loss of this forest.

HERPETOFAUNA OF SIMI

M. J. Wilson and H. Grillitsch [2009, Herpetozoa 22(3/4): 99-113] summarize information about the herpetofauna of the Dodecanese island of Simi and the neighboring islet of Sesklia, based on recent herpetological trips by the first author and other herpetologists, as well as literature data and a small collection of specimens from the Natural History Museum in Vienna. From the literature, thirteen reptile species and a single amphibian species were known to occur on the island. In this paper the European cat snake *Telescopus fallax*, is added to the species list of Simi, and the presence of the rare Levant skink, *Trachylepis aurata*, is confirmed. A comparative herpetofaunal species list of the islands of Simi, Rhodes, Tilos, Khalki, Nissiros and the Turkish mainland is provided.

SPOTTED AND BLANDING'S TURTLES' HABITAT USE

F. Beaudry et al. [2009, J. Herpetology 43(4):636-645] used radio-telemetry to investigate the seasonal dynamics of wetland use by spotted turtles (*Clemmys guttata*) and Blanding's turtles (*Emydoidea blandingii*) in southern Maine. Habitat use was examined in a temporally segregated manner, comparing wetland use among seasonally discrete activity periods. Distinct seasonal movement patterns were detected and logistic regression revealed significant differences in wetland characteristics across seasons for both species. Spotted turtles exhibited a positive association with wetlands hosting abundant wood frog (*Lithobates sylvaticus*) egg masses in spring, and a negative association with forested wetlands from spring through late summer. Blanding's turtles were closely associated with forested wetlands in spring, wetlands with abundant wood frog egg masses and good sun exposure in early summer, and deep-water wetlands in late summer and fall. The seasonal differences in habitat use found in this study highlight the complex and dynamic landscape required to sustain these rare turtles. Spotted and Blanding's turtles' diverse habitat requirements require frequent terrestrial movements, exposing them to threats for which mitigation requires understanding spatial and temporal shifts in habitats use.

Unofficial Minutes of the CHS Board Meeting, March 19, 2010

The meeting was called to order at 7:41 P.M. at the Schaumburg Public Library. Board member Deb Krohn was absent.

Officers' Reports

Recording Secretary: Cindy Rampacek read the minutes and minor corrections were made. The minutes were accepted.

Treasurer: Andy Malawy presented the February financial report, which was discussed and accepted.

Membership Secretary: Mike Dloogatch share the expiring memberships with the board. There were many memberships that expired that he hopes will renew very soon.

Vice-president: Rick Hoppenrath mentioned Dante Fenolio will be returning as a speaker for the May meeting.

Sergeant-at-arms: Dick Buchholz reported that attendance at the February general meeting was 39.

Committee Reports

Shows (Jenny Vollman):
- Stella May Schwartz School, Oak Brook Terrace, April 15.
- Park Voyagers Family Day, April 17
- Cosley Zoo, June 19.

Adoptions: Linda Malawy is dealing with the animals of a woman who passed away and willed the snakes. Cindy shared the names of a few shelters in Illinois that need help.

Old Business

ReptileFest: There will be name tags for the board members to help the folks at 'Fest identify someone who can solve a problem. Jenny will chat with Nancy Bigelow regarding the corn snake tree. Tortoise pen needs new carpet. The box turtle box and the tortoise pen need to be manned. Linda will need the high schoolers' assistance for the herps of Illinois display. Linda will email out a list of animals that she needs. Deb is doing Ask a Vet and the speakers. Rick is handling contests as well as a possible donation of automatic hand sanitizer. The digital billboards will be up shortly. They will run 400 times per day starting two weeks before 'Fest. There also is a new food vendor this year.

At NARBC we arranged with Eric Thiss of ZooBooks to purchase a complete bound set of the *Bulletin of the Chicago Herpetological Society*. These are now being held by John Archer, with the exception of three volumes that Eric could not locate. Eric will look for the missing volumes.

New Business

The Greater Cincinnati Herpetological Society has sent out an email trying to network with other herp societies. We already exchange publications with them.

Round Table

Dick Buchholz feels that we have a strong need for stand-alone signs promoting CHS membership, to be used at any of our live animal shows or other events.

Jim Foster was concerned about whether there would be signs at ReptileFest explaining about salmonella and safe reptile handling.

John Archer mentioned that his daughter Grace was taking a course at the University of Illinois that included a video produced by the Humane Society of the United States. She was not happy with HSUS stance on reptiles.

The meeting was adjourned at 9:18 P.M.

Respectfully submitted by recording secretary Cindy Rampacek

Advertisements

For sale: rats and mice—pinkies, fuzzies and adults. Quantity discounts. Please send a SASE for pricelist or call Bill Brant, *THE GOURMET RODENT*, 12921 SW 1st Rd, Ste 107-434, Jonesville, FL 32669, 352-472-9189, E-mail: GrmtRodent@aol.com.

For sale: from **The Mouse Factory**, producing superior quality, frozen feeder mice and rats. Our mice and rats are vacuum-packed to greatly extend freezer life by reducing freezer burning and preserving vitamin and nutrient content. We feed our colony a nutrtionally balanced diet of rodent chow, formulated especially for us, and four types of natural whole grains and seeds. For a complete price list please visit our web site, www.themousefactory.com. We accept all major credit cards, PayPal or money orders. Call us **toll-free** (800) 720-0076 or send us an e-mail at info@themousefactory.com. Write us at PO Box 85, Alpine TX 79831.

For sale: **high quality frozen feeders**. Over a decade of production and supply. Seven sizes of mice availabe: small newborn pinks up to jumbo adults. Prices start at $25 per 100. Feeders are separate in the resealable bag, not frozen together. Low shipping rates. Free price list. Kelly Haller, 4236 SE 25th Street, Topeka KS 66605, (913) 234-3358 evenings and weekends.

For sale: Rats—live or frozen. I breed rats for my collection of boas so only top quality lab chow and care will do, I'm now offering surplus animals for sale. Located in far south suburbs of Chicago. Only orders of 20 or more please, no large rats will be available. For current availability and prices, please e-mail Steve at smuys@sbcglobal.net.

For sale: Australian herp books. *The Taipan—The World's Most Dangerous Snake* by Paul Masci and Philip Kendall,1995, 90 pp., many color and black & white photos, tables, comprehensive treatment including history, interactions with David Fleay, Ram Chandra, Eric Worrell, and Dr. Struan Sutherland, snakebite case histories, and biology, softbound, $52; *Australian Reptiles & Frogs* by Raymond T. Hoser, 1989, 238 8½ × 11½" pages, 631 color photos of herps and their habitats, range maps, bibliography, info on captive husbandry, conservation, reptile photography, DJ, hardbound, $135; *Australia's Reptiles—A Photographic Reference to the Terrestrial Reptiles of Australia* by Stephen K. Wilson and David G. Knowles, 1988, 447 large (8 × 11½ ") pages, 847 color photos, drawings, range maps, descriptions, taxonomy, habitats, habits, extensive bibliography, text based on field work by authors throughout Australia, DJ, hardbound, $135; *The Snakes of Victoria* by John A. Coventry and Peter Robertson, 1991, 70 pp., many color photos, range maps, 6 figs., descriptions and natural history info, published by Museum of Victoria (Australia), softbound, $35. All books in excellent condition and sent postpaid within the U.S. William R. Turner, 7395 S. Downing Circle W., Centennial, CO 80122; telephone (303) 795-5128; e-mail: toursbyturner@aol.com

For sale: Trophy quality jungle carpet, diamond-jungle, and jaguar carpet pythons. Website: moreliatrophyclub.com E-mail: junglejohn@tds.net

Herp tours: The beautiful Amazon! Costa Rica from the Atlantic to the Pacific! Esquinas Rainforest Lodge, the Osa Peninsula, Santa Rosa National Park, and a host of other great places to find herps and relax. Remember, you get what you pay for, so go with the best! GreenTracks, Inc. offers the finest from wildlife tours to adventure travel, led by internationally acclaimed herpers and naturalists. Visit our website <http://www.greentracks.com> or call (800) 892-1035, E-mail: info@greentracks.com

Line ads in this publication are run free for CHS members—$2 per line for nonmembers. Any ad may be refused at the discretion of the Editor. Submit ads to: Michael Dloogatch, 6048 N. Lawndale Avenue, Chicago IL 60659, (773) 588-0728 evening telephone, (312) 782-2868 fax, E-mail: MADadder0@aol.com

UPCOMING MEETINGS

The next meeting of the Chicago Herpetological Society will be held at 7:30 P.M., Wednesday, April 28, at the Peggy Notebaert Nature Museum, Cannon Drive and Fullerton Parkway, in Chicago. **Jeff Lemm**, a herpetologist at the San Diego Zoo's Institute for Conservation Research will present a program on the amphibians and reptiles of Australia. An avid field herper, Jeff has also been keeping and breeding reptiles and amphibians for over 25 years. Jeff's professional research interests include monitor lizards, rock iguanas, and native Southern California herpetofauna. Jeff also enjoys photographing wildlife in the wild and has traveled extensively throughout the world in search of his subjects..

Dr. Dante Fenolio, Amphibian Conservation Biologist with the Atlanta Botanical Garden, will speak at the May 26 meeting about his work with endangered amphibians.

The regular monthly meetings of the Chicago Herpetological Society take place at Chicago's newest museum—the **Peggy Notebaert Nature Museum**. This beautiful building is at Fullerton Parkway and Cannon Drive, directly across Fullerton from the Lincoln Park Zoo. Meetings are held the last Wednesday of each month, from 7:30 P.M. through 9:30 P.M. Parking is free on Cannon Drive. A plethora of CTA buses stop nearby.

Board of Directors Meeting

Are you interested in how the decisions are made that determine how the Chicago Herpetological Society runs? And would you like to have input into those decisions? If so, mark your calendar for the next board meeting, to be held at 7:30 P.M., May 14, in the adult meeting room on the second floor of the Schaumburg Township District Library, 130 S. Roselle Road, Schaumburg.

The Chicago Turtle Club

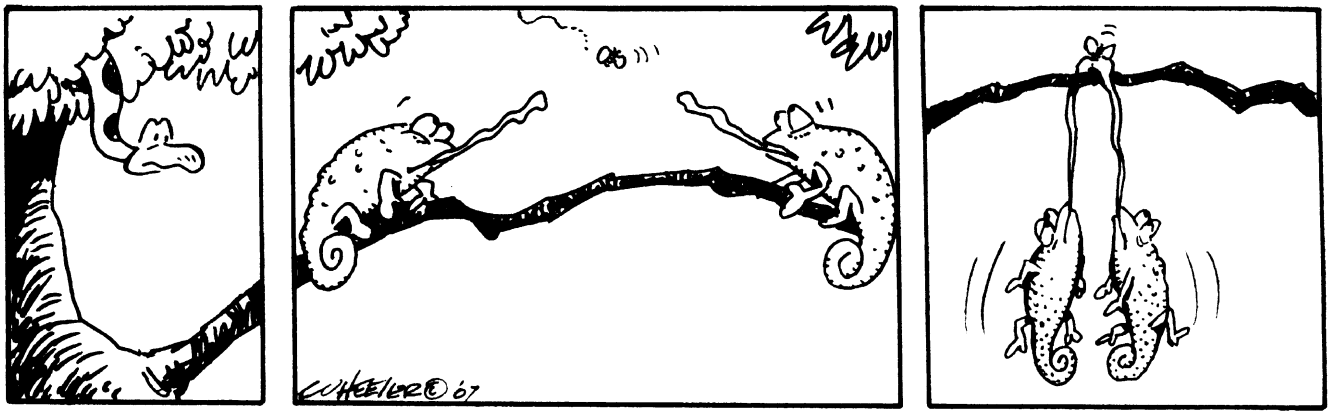
The monthly meetings of the Chicago Turtle Club are informal; questions, children and animals are welcome. Meetings normally take place at the North Park Village Nature Center, 5801 N. Pulaski, in Chicago. Parking is free. For more info visit the CTC website: http://chicagoturtle.org/.

REPTILEFEST 2010 IS HISTORY!

Once again the Chicago Herpetological Society demonstrated that we are the premier regional herp society and one of the premier nonprofit societies in the country, maybe the world. Nearly two hundred people came together to help ReptileFest Coordinator Rick Hoppenrath put together the best 'Fest yet. As I wandered through the event what amazed me is how the exhibitors make 'Fest their own. Things get done, activities get organized, and animals get cleaned, often by folks that aren't even exhibiting the animal. I think that 'Fest is the ultimate demonstration of how this society is your society. From our youngest members to the old and cranky members like me, we all pitch in with our expertise. I know from talking with the public and from our surveys that we're doing it right.

To those of you who participated, we thank you for your hard work and we know you had fun. To those of you who had no chance to participate, we're sorry you didn't get a chance to work this extraordinary event. You were missed. Now wind down from the excitement. And then start getting ready for next year! **John Archer, President**

THE ADVENTURES OF SPOT



Periodicals Postage
Paid at Chicago IL

CHICAGO HERPETOLOGICAL SOCIETY

Affiliated with the Chicago Academy of Sciences

2430 North Cannon Drive • Chicago, Illinois 60614