Seven Nests Recorded for Loggerhead Turtle (Caretta caretta) in One Season

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HERPETOLOGY AT MEMPHIS STATE UNIVERSITY

The 1981 joint annual meetings of The Society for the Study of Amphibians and Reptiles and The Herpetologists' League will be hosted by Memphis State University with Dr. James S. Jacob serving as local chairman. The host institution was founded in 1912 as West Tennessee State Normal School on the site of an old plantation. In 1925 the name was changed to West Tennessee State Teachers College and the curriculum was expanded to a four-year program. The name was shortened five years later to State Teachers College, and in 1941 the institution became Memphis State College. The undergraduate program was reorganized into three schools in 1951 and a graduate school was added. In 1957, by action of the Tennessee Legislature, the institution was designated Memphis State University. The University, with an enrollment of approximately 21,000, is comprised of eight schools and colleges: Graduate School, Cecil C. Humphries School of Law, College of Arts and Sciences, Fogelman College of Business and Economics, College of Communication and Fine Arts, College of Education, Herff College of Engineering, and University College. Seventeen undergraduate degrees in 60 different programs are offered through the seven undergraduate colleges. The Graduate School offers nine Masters degrees in 57 programs and three Doctoral degrees in six departments. The Division of Public Service and Continuing Education offers a wide variety of credit and non-credit courses and programs both on and off campus.

The Department of Biology, consisting of 32 faculty, occupies two buildings on Main Campus, Ellington Biological Sciences and Life Sciences. The Ecological Research Center, which houses the Museum of Zoology and most of the vertebrate zoology research laboratories, is located on South Campus. M.S. and Ph.D. degrees in biology are offered by the department with concentrations in Botany, Cell and Molecular Biology, Invertebrate Zoology, Microbiology, and Vertebrate Zoology. Located in the Life Sciences Building, The Center for Electron Microscopy houses both scanning and transmission instruments. Support facilities such as this and Computer Services are available for graduate student and faculty research at no cost to the investigator. Meeman Biological Field Station is located ca. 40 km north of Memphis adjacent to Meeman-Shelby Forest State Park, Shelby Wildlife Management Area, and the Mississippi River.

Dr. Jacob joined the faculty in 1977. He is currently involved in a scanning electron microscopy study of the lungs of the copperhead, *Agkistrodon contortrix*, and cottonmouth, *A. piscivorus*. Three students have recently completed undergraduate herpetological problems. Anita M. Steed, now at The University of Oklahoma pursuing an M.S. with Dr. Charles C. Carpenter, worked on comparative morphology and histology of the lungs of *Agkistrodon contortrix* and *A. piscivorus*. The effect of temperature on the heart rate-ventilatory response in *Agkistrodon contortrix* was investigated by Steven L. Carroll. Michael A. Rinehart looked at female reproductive cycle of *Agkistrodon piscivorus* in western Alabama. Four graduate students are pursuing Masters degrees under the supervision of Dr. Jacob. J. Stephen Sanders' thesis topic is thermal ecology of *Agkistrodon contortrix*. He is also working on microdermatoglyphics of selected colubrid snakes and thermoregulation of six-lined racerunner, *Cnemidophorus sexlineatus*, in western Ten-
PROPOSED AMENDMENT TO THE SSAR BYLAWS

The members of the Society for the Study of Amphibians and Reptiles are hereby notified of a proposal approved by the SSAR Board of Directors to amend Article VII, Section 2 of the SSAR Bylaws (1970, Journ. Herp., 4(1-2):98), which currently reads:

"Dues shall not exceed $15 annually."

This proposed amendment will be on the agenda for discussion at the 1981 SSAR general business meeting at Memphis, Tennessee, in August 1981. A ballot on the amendment will be submitted by mail to the SSAR membership after the annual meeting in Memphis.

Respectfully submitted,

Joseph T. Collins
SSAR Secretary

1981 REGIONAL SOCIETIES MEETING

The 1981 Regional Herpetological Societies Meeting will be held Sunday, 9 August 1981 at Memphis State University in conjunction with the SSAR/HL meetings. A symposium, "Alien Amphibians & Reptiles: The Problem of Introduced Species," will be part of this year’s meeting. The second part will be a slide presentation. Contributors for the slide presentation are asked to bring 15 of their best slides and provide narration. The goal is to present photos of every North American species of amphibian and reptile, and as many other species as possible. Anyone interested in participating in the symposium or slide presentation is asked to contact: John C. Murphy, Regional Herp. Societies Liaison Committee Chairman, 201 Peerless Dr., Plainfield, IL 60544 before 1 May 1981.

SSAR BUSINESS

Since Jacob’s arrival at MSU, the Collection of Amphibians and Reptiles in the Memphis State University Museum of Zoology has expanded rapidly. Specimen collection data will soon be placed on computer files, using the SELGEM program for data retrieval. The emphasis of the collection is in the Mid-South area, much of which is poorly known herpetologically.

Reproductive Biology of Reptiles will be the topic for the featured symposium. It is scheduled for Monday through Wednesday, 10-12 August. Dr. Ernest Williams will present the first Distinguished Herpetologist Lecture, sponsored by The Herpetologists’ League, on Monday, 10 August. Student paper awards presented by the societies at the Memphis meetings will include additional prizes donated by David M. Dennis and Ben Greishaw. David Dennis is providing a set of his magnificent prints to SSAR for the Kennedy Award. Ben Greishaw is giving The Herpetologists’ League one of his exquisite wood carvings of a hatching turtle for the HL student prize. Several commercial supply firms and publishers are helping to sponsor the 1981 meetings, and they will be exhibiting on Monday and Tuesday, 10-11 August. Paper sessions, the featured symposium, business meetings, and most exhibits will be held on the third floor of the University Center.

Memphis is located in West Tennessee on the bluffs of the Mississippi River adjacent to Arkansas and Mississippi. Average rainfall for August is ca. 8 cm with daytime temperature ranging between 29 and 35°C. Metropolitan Memphis, with a population of over 900,000, offers a wide variety of entertainment, including museums, art galleries, amusement parks, and various nocturnal activities.

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Fig. 2. John Willard Brister Library houses more than 700,000 bound volumes and ca. 1,000,000 pieces of micromaterial. Leslie F. Johnson has just completed work on a project looking at the male reproductive cycle of Agkistrodon piscivorus in western Alabama. Her thesis research in an investigation of the relationship between pituitary activity and male reproductive cycle of Cnemidophorus sexlineatus in Tennessee. Comparative parasite loadings in Agkistrodon piscivorus and three species of Nerodia from western Alabama is James L. Detterline’s thesis project. James J. Greenhaw has just begun work on the reproductive cycle of male rough green snakes, Opheodrys aestivus, in central Arkansas. Samuel L. Reynolds recently finished his Masters at Marshall University with Dr. Michael E. Seidel and has just started work on his Ph.D. with Dr. Jacob. His thesis was titled "Electrophoretic and morphological analysis of the musk turtle, Sternotherus odoratus." Dr. Lewis B. Coons, Director of The Center for Electron Microscopy, has recently begun a project with Dr. Jacob looking at the ultrastructure of lung parenchyma in Agkistrodon contortrix and A. piscivorus.

Fig. 3. Malls have been constructed at MSU in an effort to establish a pedestrian campus. The original Brister Library Building (left rear) is one of the oldest structures on campus and was recently added to the National Register of Historic Places.
OPEN LETTER FROM THE ASSOCIATION OF SYSTEMATICS COLLECTIONS

Dear George:

As you know, the Society for the Study of Amphibians and Reptiles is a member society of the Association of Systematics Collections. However, because relatively few institutions employing systematists have formal systematics collections (and hence relatively few are institutional ASC members), many systematists are unaware of ASC's existence and/or are unaware that ASC actively serves individuals in the systematics community as well as collection-oriented institutions. The reason for this is partly because ASC's name identifies the organization with collections and partly because ASC has failed to address itself directly to systematics beyond its member institutions.

Therefore, I am writing to request that the enclosed letter and accompanying announcement be published in your journal and/or newsletter. As you can see from the announcement, ASC currently is engaged in a variety of activities of vital interest to systematists in general. We would like to do more, and need feedback from various disciplines.

I must emphatically add that we will at no point endeavor to compete with discipline-oriented societies. However, most of ASC's activities span several disciplines and have proven to be of value to systematists at member institutions. Therefore, I am confident that these activities can be of value to colleagues elsewhere.

I thank you for the opportunity to present ASC to your colleagues, and hope that they will respond so that we may continue to serve the systematics community.

Sincerely,

Peter H. Raven
President
as we begin preparation of a position paper on the long range needs of systematic biology.

The institutions that currently comprise the Association's membership maintain collections for the purpose of supporting research in the various disciplines of systematic biology. Decisions and national policies that affect these collections may have considerable impact on the research community and should not be made (or developed) without the participation of researchers.

A brief overview of activities the ASC has undertaken in the past is presented below. We are particularly interested in how these activities affect the research community, how they might be directed to better serve the systematics community as a whole, and the relevance of the activities to research programs.

Therefore, the ASC would appreciate feedback from systematists at member and non-member institutions concerning the problems faced in your research programs, and we would appreciate any suggestions you may have as to how we might help resolve these problems. We would also like to know about any discipline-oriented problems that you feel might be addressed through the ASC.

Also, the opportunity to share appropriate comments and suggestions with others in the systematics community through the ASC Newsletter would be most welcome.

It is our fervent hope that this letter and accompanying brief description of ASC activities will encourage exchange between the systematics community and ASC.

Sincerely,

Peter H. Raven
President

ACTIVITIES OF THE ASSOCIATION
OF SYSTEMATICS COLLECTIONS

Representation.—ASC officers and staff have addressed congressional committees, federal agencies, and the Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) on a variety of matters directly affecting systematics collections and the systematists who use those collections. For example, the ASC has been responsible for obtaining a blanket exemption for international transfer of specimens of species listed in the appendices to CITES; contributed to the process that led to an exemption of public buildings housing systematics collections from federal temperature standards; testified before the Federal Council on the Arts and the Humanities concerning the needs of museums that maintain systematics collections; and testified before congressional committees on the proposed revisions in the Endangered Species Act. ASC is currently collaborating with the American Association of Museums in a lobbying effort designed to represent the needs of all types of museums.

ASC staff and consultants have successfully represented the needs of state and university systematics collections and their personnel to higher budgetary authorities when fiscal crises threatened the existence of those collections.

ASC maintains up-to-date information on the status of legislation affecting systematics e.g. government agency authorization and appropriation bills, regulatory actions, and species listings).

Funding.—Notice of most funding opportunities for systematists is circulated by the academic research administrations in their institutions. ASC maintains and makes available data on grants awarded by selected agencies for research programs and resource maintenance in systematics. ASC has assisted in locating funding for workshops, seminars, and short courses involving problems faced by systematists and systematics collections. ASC has repeatedly interfaced between the systematics community and federal funding sources other than NSF (e.g. Department of Energy, Environmental Protection Agency, Fish and Wildlife Service, and National Institutes of Health).

Interaction with member societies and provision of discipline-oriented services.—ASC has aided the production and dissemination of various publications on systematics resources generated by professional societies in eleven disciplines. ASC is cooperating on a contractural basis with the American Society of Mammalogists to maintain computer files of literature citations that are published as "Recent Literature of Mammalogy" in their journal and will be used for literature searches in the future.

Also in cooperation with the American Society of Mammalogists, the ASC maintains the Checklist of the Mammals of the World. ASC is developing a catalog of collections (domestic and foreign) containing specimens of mammal species listed as "endangered" by the U.S. Endangered Species Act (files reference collection name, catalog numbers of specimens, and in some cases, locality data).


Center for Biosystematics Resources (CBR).—A registry of systematists and systematics collections is maintained by the ASC. This registry was originally designed for, and used extensively by, private industry and government agencies to locate biological specialists and/or collections. It is being refined to be of greater value to systematists seeking to locate other systematists or collections of special interest. As the data base expands, CBR will be able to profile the resources of the systematics community; e.g. personnel, funds, and facilities; and how these are distributed through time, according to discipline, and between institutions.

Systematics and the Law.—ASC maintains official lists of controlled species for both the federal government and Parties to the CITES. A liaison has also been established with representatives in each state responsible for maintaining lists of protected non-game species. This ensures that information about controlled species (federal, international, and state) is available to systematists via ASC publications and contact with our Law Project Biologist. ASC maintains up-to-date permit information for institutions and systematists working with controlled species.

ASC will soon publish Pest Control in Museums: A Status Report (1980) which contains chapters on federal statutes and regulations governing pesticide use, institutional liabilities, museum pest control procedures, and other aspects of the pest control problem. Appendices to this publication include pesticide descriptions, bibliography to pertinent literature, and an Annotation to Federal Pesticide Regulations.

Publications.—The ASC Newsletter, published six times each year, carries member institution and society profiles, funding opportunities, position announcements, legislative and curatorial information, equipment available for exchange, news and feedback from readers, book reviews, classified advertising, and other items of general interest to systematists. It is available free upon request in North America. Recipients outside North America must remit postage fees ($8.00 in U.S. funds) annually.

Miscellaneous.—ASC maintains an extensive bibliography of literature pertaining to "computerization" of collections and has prepared profiles on individual computer-oriented cataloging projects. ASC frequently serves as a clearinghouse for information on museum computerization projects and mid-range computer hardware.

ASC continually interfaces with various groups from outside the systematics community — private corporations, government agencies, and non-profit service organizations. ASC has coordinated workshops, seminars, and short courses involving problems faced by systematists. During the next year, the ASC through its Council on Curatorial Practices will formulate guidelines for the management and acquisition of voucher specimens, including suggested fee schedules.

A list of titles published by ASC may be obtained without charge by writing to the Association of Systematics Collections, Museum of Natural History, University of Kansas, Lawrence, Kansas 66045.
BEHAVIORAL OBSERVATION IN BULLSNAKES

An incident involving two bullsnakes (Pituophis melanoleucus sayi) was observed on 21 May, 1976, at approximately 5 P.M. by members of a University of Nebraska State Museum field party. The observation was made on the Kuhre Ranch road in extreme northern Brown County, Nebraska (SE 1/4, NE 1/4, SW 1/4, SW 1/4, Sec 32, T33N, R23W, USGS 15” Norden Quad).

The snakes were observed for approximately 25 minutes. Each was roughly one meter (39.37 inches) in length. Their bodies were very loosely intertwined and one individual had a firm grip on the right rear portion of the other’s head (Figs. 1, 2, and 3). Neither animal acknowledged the presence of the observers.

During the observation, the biting snake was the more vigorous of the two, releasing its grip only once in order to grip the passive snake from the left. At irregular intervals, the biting snake would temporarily apply an additional loop against, but not around, the body of the other, well anterior of its vent. During the observation, the only movement offered by the passive snake was a very weak lashing of its body, perhaps in resistance to the actions of the vigorous snake. Blood was clotted upon the head of the passive snake and on the roadway.

As the snakes proceeded, there was no tight intertwining of bodies, nor elevation of anterior body portions of either snake, postures which are typical of ritualistic male combat in various snake species (Bogert and Roth, 1966; Shaw, 1951). No attempt at copulation was observed nor did the aggressive snake make any muscular undulations or twitches as described in courting males of Pituophis m. melanoleucus (Shaw, 1951). No third snake was obvious.

The two snakes were pulled from the roadway for their own safety, whereupon the biting snake took alarm and fled. Its sex is unknown. Nearly dead, the remaining snake showed the parietal and prootic bones of its head (Figs. 1, 2, and 3). Neither interaction was observed nor did the aggressive or courtship activity is uncertain.

The body postures of the two snakes do not support either of the first two explanations, for their correspondence poorly with the distinctive postures of combat and courtship described by Lowe (1948), Shaw (1948 and 1951), and Bogert and Roth (1966). Indeed, considering the estimated lengths of the snakes and conflicting reports of minimum adult length in P. m. sayi (36 in., Wright and Wright, 1957, and 50 in., Conant, 1975), the adult status of the individuals and their readiness to perform any vigorous combative or courtship activity is uncertain.

It is perhaps more probable that the aggressive individual was attempting to swallow the other snake, as ophiophagy (Porter, 1972) and even cannibalism (Klauber, 1947) have been reported in Pituophis. But while the aggressor physically may have been attempting to consume the injured snake, it is possible, given the observed behavior to be predation, that the incident was a natural response to the scent of the recently ingested pocket gopher on the head and mouth of the passive bullsnake.

ACKNOWLEDGMENT

I wish to express my thanks to Dr. J. D. Lynch, University of Nebraska-Lincoln for his review of this report.

LITERATURE CITED


ALBINISTIC NORTHERN WATER SNAKE IN ALABAMA

Hensley (1959) has previously reported 10 albino or albinistic northern water snakes, *Natrix sipedon*. Six of these specimens were born in the same litter of a normally colored individual from Michigan. These specimens were said to have the areas of dark markings flesh colored and a Virginia specimen was described as having a very faint pattern.

Figure 1. A juvenile albinistic *Natrix sipedon pleuralis* collected in Lee County, Alabama, in April 1976. Photo by Tom French.

A similar juvenile *Natrix sipedon pleuralis* (Figure 1) was captured on a warm, rainy night on a county highway, 4.5 air miles (7.2 km) south of Auburn, Lee County, Alabama, in April 1976. The eyes of this specimen were bright pink. The banded pattern was quite apparent but appeared a dark flesh color outlined in white and lacking melanin pigment. The areas between bands were a paler flesh color. This snake was kept in captivity for three months, and was fed small mosquito. The specimen was shown by Blaney as Figure 1C is not a *sticticeps* and not from within the range of that subspecies.

Literature Cited


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STATUS OF THE OUTER BANKS KINGSNAKE, *LAMPROPELTIS GETULUS STICTICEPS*

The recognition of a subspecies is in part a matter of taste; no genuine consensus on the matter has emerged despite a plethora of discussion in the literature. Recently, Blaney (1979) has submerged the trinomial designation of the common kingsnake endemic to the Inter-Capes Zone of North Carolina's Outer Banks, claiming it shows "no characteristics unique enough to warrant the status of subspecies." Nevertheless, the suite of characteristics given as diagnostic by Lazell and Musick (1973) is unique. No specimen of nominate *getulus*, no specimen of *L. g. floridanus*, and no intergrade between those forms can match the combined characteristics of *sticticeps*.

Blaney has suggested possible origin for *sticticeps* from an "intergrade population" between *getulus* and *floridanus*. It is not an origin with which we agree, but we admit conclusive evidence is currently lacking. Biochemical evidence should be sought. In any case, *sticticeps* is no sense an intergrade between any other two forms today, either morphologically or geographically. If it originated as such, it has undergone dramatic differentiation from that stock. It is worth noting that none of the photographs provided by either Lazell and Musick (1973) or Blaney (1979) shows a dorsal interspace or the distinctive punctuations of *sticticeps*. The specimen shown by Blaney as Figure 1C is not a *sticticeps* and not from within the range of that subspecies.

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COURTSHIP BEHAVIOR OF MALE TERRAPENE CAROLINA MAJOR (REPTILIA, TESTUDINIDAE, EMYDIDAE).

Except for that of *Terrapene carolina carolina* (Evans; 1953, 1968), the male courtship patterns of the subspecies of the eastern box turtle have been poorly described. Evans (1953, 1968) reported that a male *T. c. carolina* approaches a female but stops about 10 cm away. His legs are straightened (often one raised off the ground) and his head is held high. Next he circles around the female, biting her shell as he goes, or pushing her carapace with his head and neck fully extended forward (but not raised). First he places his nose close to (sometimes touches) the tail at the vent, hind legs and posterior carapacial marginals and appears to be smelling these. Occasionally he will bite these parts of the other turtle, but usually the other turtle moves to the side, and with head and neck still extended carefully "sniffs" the bridge, especially the inguinal area. After this he moves to a position where he can smell the head, neck
and forelegs of his intended mate, and then begins vigorously to bite these (the bite marks on Penn and Pothish's females probably were due to such biting during courtship, not after mating). If he cannot reach the head region, due to the other turtle being closed-up or facing a wall, the male will ram and push the other turtle's carapace, sometimes for a distance of up to a meter. Finally, he moves posteriorly and attempts to mount in the manner described by Evans (1960).

That Evans (1953, 1968) and Penn and Pothish (1940) should have failed to recognize some apparent olfactory behavior is a major deletion. The olfactory behavior of the male T. c. major is similar to that described by Eglis (1962) for the smelling of potential food by this subspecies. Pheromonal cues probably elicit courtship in aquatic turtles (Jenkins, 1979), and may account for the long pursuits by females of the males by terrestrial emydids and tortoises (Testudinidae) (Weaver, 1970; Auffenberg, 1978). Such a chase by male Terrapene ornata is described by Brumwell (1940) who also reported that a male of that species nosed about the lower carapacial margin of a female during courtship. Also, during the mating period, I have observed wild male T. c. carolina smelling the ground as they prowl through the woods, perhaps following a pheromone trail left by a female. Terrapene carolina lack mental glands (Winkur and Legler, 1975), but perhaps pheromones are produced in undiscovered cloacal or inguinal glands (Rathke's glands of Ehrenfeld and Ehrenfeld, 1973).

LITERATURE CITED


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STILL MORE ON BIPES

Naturalists in the state of Colorado, as well as elsewhere, have long been concerned with the mention of an encounter with "Chirotes" by members of the long expedition to the Rocky Mountains in 1820. Dr.s Richard G. Beidlerman of Colorado College and T. Paul Maslin of the University of Colorado have been "on the scene," as it were, for 30-40 years, making periodic efforts to determine the bases for the report, and several graduate students at the University including Richard L. Holland and Geoffrey A. Hammerson, have likewise tried their hand at a solution. Considerable publicity resulted, at intervals, the most notable being an article that appeared in one of the local papers. All these efforts yielded only more anecdotes and speculations, hence were not recorded.

The revival of speculation on the subject in the formal literature of herpetology by Campbell (1980), however, calls for a "progress report" that is long overdue. Taylor's consideration through the 1938 of the Long expedition report was fully justified on the basis of knowledge at that time, for two reasons of both of which he was well aware. For one, the description in James' account, that "They were so active, that it was not without some difficulty that we succeeded in obtaining a specimen," is completely erroneous. Bipes, as Taylor knew from field experience in 1932 and later, is sluggish, secretive, no more difficult to catch — once discovered — than Lumbricus. The James description of behavior cannot possibly fit Bipes, which is neither constructed for nor inclined toward quick, elusive movements. On the contrary, the slender Eumeces multivirgatus, moderately abundant where the Bipes was reputedly found, does fit the description very well. The bell account (1857) of the same journey does not mention "Chirotes." Second, amphibians are exclusively tropical and subtropical reptiles, so far as is known; survival of any member of that suborder through such rigorous winters defies credence. The suspicion arises hence that no fabrication was involved, and that the James account of behavior cannot possibly fit Bipes, which is neither constructed for nor inclined toward quick, elusive movements. On the contrary, the slender Eumeces multivirgatus, moderately abundant where the Bipes was reputedly found, does fit the description very well. The bell account (1857) of the same journey does not mention "Chirotes." Second, amphibians are exclusively tropical and subtropical reptiles, so far as is known; survival of any member of that suborder through such rigorous winters defies credence. The suspicion arises hence that no fabrication was involved, and that the James account of behavior cannot possibly fit Bipes, which is neither constructed for nor inclined toward quick, elusive movements. On the contrary, the slender Eumeces multivirgatus, moderately abundant where the Bipes was reputedly found, does fit the description very well. The bell account (1857) of the same journey does not mention "Chirotes." Second, amphibians are exclusively tropical and subtropical reptiles, so far as is known; survival of any member of that suborder through such rigorous winters defies credence. The suspicion arises hence that no fabrication was involved, and that the James account of behavior cannot possibly fit Bipes, which is neither constructed for nor inclined toward quick, elusive movements. On the contrary, the slender Eumeces multivirgatus, moderately abundant where the Bipes was reputedly found, does fit the description very well. The bell account (1857) of the same journey does not mention "Chirotes." Second, amphibia
On the night of 9 August 1979, a female loggerhead turtle was documented laying her seventh nest for the 1979 season on Little Cumberland Island (LCI), Camden County, Georgia. Although green turtles (*Chelonia mydas*) have been observed laying seven nests (Carr et al., 1978) in a single season, the greatest number reported in the literature for a loggerhead has been five nests (Hughes, 1974). Worth and Smith (1976) suggested that one loggerhead in their study may have laid six nests and several instances of loggerhead nesting six times in a season have been recorded on Little Cumberland Island (Richardson, pers. comm.).

The loggerhead was tagged (Blue Rottags, GA0471 GA0472) while laying a nest on 19 May on the north end of Cumberland Island (CI) just south of Little Cumberland Island. She laid six additional recorded nests: 4 June (CI), 18 June (LCI), 2 July (CI), 15 July (LCI), 27 July (CI) and 9 August (LCI). The 1979 nesting season on the two islands extended from 12 May to 21 August. Since the mean inter-nest interval was 13.67 days (SE = 0.56 days), it is unlikely that additional nests were missed.

The fact that this female bore tag scars from a previous year plus her measurements (Carapace Length 103.5 cm, C. Width 97.0 cm, Head Width 21.5 cm; all measurements over the curve) indicate that 1979 was not the first nesting season for this turtle.

LITERATURE CITED


designed a simpler hook which fits under the edge of the lid without damaging the gasket (Figs. 3 & 4).

Use of these containers at U.U. has been entirely positive. We can detect no deterioration or change in the containers or their gaskets when used in the usual manner with solutions of alcohol and formalin. We also use the containers to fumigate bones with chloroform and as shipping containers (for which purpose they were originally made).

The plastic material used in construction has a soft surface texture and the entire bucket and lid are flexible enough to be deformed without breaking. The walls are translucent, permitting easy visual determination of internal fluid levels.

We use the 5-gallon size almost exclusively. Overall dimensions are: diameter 30.5 cm; height with lid 35.5 cm. When fully loaded these containers weigh approximately 20 kg and can be carried easily. They fit nicely onto open museum shelving without excess allowance for clearance. The lid is recessed and permits secure stacking. Full buckets can be stacked 4 high on a movable dolly (total height ca. 147.5 cm) without deforming the bottom bucket. Empty buckets nest neatly. The low cost and durability of Saturn buckets permit carefree use for shipping and field work.

The disadvantages of plastic buckets are few and minor: they are not transparent and rotsible; practically unbreakable; stackable; tight seal; noncorrosive; very strong and sturdy when full and nestable when empty; large enough to accommodate most large herpetological specimens but small enough to be moved easily to provide easy access to contents; compatible with standard open shelving.

The cost of storage space per unit of volume in a plastic bucket (19 L, $2.56) is approximately 5% of that of a stainless steel tank (56.3 L, ca. $150.00).

Mr. Darrell MacBeth (Industrial Container and Supply Co., Salt Lake City) provided samples and information used in the preparation of this paper.

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PRESERVING ANURAN SKINS BY DRYING

The preparation of amphibia for systematic study as dried skins was introduced by Kincaid (1948) and Juszczynski (1952), but has only been used, to my knowledge, by Turner (1959) in his study of variation in Rana pretiosa in Yellowstone Park, Wyoming, and by me (Schueler, 1973, 1979).

Juszczynski (1952) and Turner (1959) dried the skins on glass in the open air, a procedure that requires laboratory facilities and makes removal of the dried skin difficult. Kincaid (1948, cited by Cook, 1965) floated skins onto paper to which they adhered as they dried, so that the paper was warped as the skin shrank. In a notice of geographic variation in Rana sylvatica in northern Ontario I mentioned the drying of skins between waxed paper in a plant press (Schueler, 1973); this note describes this method of preservation and some attributes which can be assessed on dried skins which may be of interest in studies of variation.

PREPARATION OF SKINS

Juszczynski (1952) killed amphibia by destroying the base of the skull and the upper spinal column with scissors, a procedure that is not satisfactory if the skeleton is to be preserved; Turner (1959) used chloroform or dilute formalin. I find that color is well preserved if frogs are killed by over-anesthesia with dilute ethyl or isopropyl alcohol. I cut the skin with scissors soon after death. I make a midventral incision from the pectoral girdle to the vent (Figure 1) and along the ventral midlines of the legs. I strip the skin from the frog (Figures 5-11) leaving one hand and one foot on both the skin and on the carcass (by cutting through the joints; Figures 6 & 9). The skin is less likely to tear as it is pulled from the head if the midventral incision is not extended to the throat until the skin is removed. I rinse any blood or dirt from the skin in water, and keep it wet until spreading it (Figure 12). The skin is spread on half of a sheet of waxed paper (Figure 13). A thin paper label will stick to the outside of a smooth skin or to the flesh side of a rough skin (such as Bufo; thicker paper is more likely to work loose from the skin with bending and humidity changes). I then fold the waxed paper over the skin, smooth out wrinkles and air bubbles (Figure 14), and dry it between blotters in a plant press.

Skinning is most rapid if sharp pointed scissors are used, and spreading is facilitated by a hard, rounded object such as the single end of forceps or a pen cap. With experience, it takes little more than a minute to skin a 40-80 mm Rana, and a little less than a minute to spread the skin on the waxed paper. Larger and smaller specimens take longer to prepare, as do taxa with lumpy skins or skin adherent to bone. A novice Skinner may take 15 minutes or longer to deal with a specimen. If dry blotters are changed twice, the skin will be dry in 24 h at 20-25° C.

When the skin is dry it can be removed from the waxed paper by first peeling the paper from the one side of the skin and then drawing the paper over the sharp edge of, e., g., a table, so that the paper pulls off the skin from below. Newly dried skins will curl, and should be kept lightly pressed until they reach equilibrium with ambient humidity. Some skins of Rana pipiens are shown in Figure 15. For storage, I glue skins, by the hand left on the skin, to 100% rag content typing paper with a permanent white glue. Rubber cement will discolor the skins (Turner, 1959), and will eventually fail. Collection data should be written on the paper, as the field labels may come unstuck from the skins after a lapse of years. Skins of Rana pipiens prepared by Joyce C. Cook and C. Bruce Powell in 1963 (National Museum of Natural Sciences 19405) show no apparent signs of deterioration or of separating from the paper on which they were dried.

ATTRIBUTES OF DRIED SKINS

All pigmented colors are initially preserved by drying (Juszczynski, 1952), though the structural green of anurans is lost. I have found that after 9 years, the ventral orange of Rana palustris and Hyla versicolor is lost, and that the ventral yellow of Rana sylvatica and R. clamitans is somewhat faded. Dermal secretory glands are often conspicuous by their translucency in the dried skin. Colors and color patterns can be measured directly or by comparison with standards, and relatively undistorted linear and area measurements.
Stages in the skinning of a Northern Leopard Frog (Rana pipiens; see text).
In 1817 Johann Baptist von Spix and his colleague Karl-Friedrich-Philipp von Martius, a botanist, set out from Bavaria on a three-year exploration of Brazil. Besides collections of plants and other animals, those of amphibians and reptiles provided the most comprehensive and important early survey of the herpetology of Brazil and, indeed, of all of South America. Some 155 species were described, most of them newly discovered, as well as first descriptions of such familiar genera as Bothrops, Micrurus, Kinosternon and Caiman among others. All species were beautifully illustrated in detailed, full-page plates, one of which is reproduced in color.

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Some further comments. This geographic distribution does not publish "observation" records. Records submitted should be based on preserved specimens which have been placed in a university or museum collection (private collection depository records are discouraged).

Please submit new geographic distribution records in the standard format only to Joseph T. Collins, Museum of Natural History, University of Kansas, Lawrence, Kansas 66045. Short manuscripts are discouraged, and are only acceptable when data cannot be adequately presented in the standard format.


SAURIA


Submitted by THOMAS VANCE, Biology Department, Navarro College, Corsicana, Texas 75110.

ANOLIS SAGrei (Brown Anole). USA: FLORIDA: St. Lucie Co: Hutchinson Island. Fort Pierce, Hernando Avenue. 10 September 1978. S. Myers and B. Hutchinson. Verified by P. Meylan, Florida State Museum (UF 44103-44106). Found on houses and shrubs. This plant appears to be restricted to the upper west-facing slopes of the Panoche Hills.

Submitted by STEVEN MYERS, Department of Herpetology, Fort Worth Zoological Park, Fort Worth, Texas 76110. Present address: The University of Texas Health Science Center at Dallas, Division of Comparative Medicine, Animal Resources Center, Dallas, Texas 75235.


Submitted by THOMAS VANCE, Biology Department, Navarro College, Corsicana, Texas 75110.

SERPENTES

AGKISTR ODON CONTORTRIX CONTOR TRIX (Southern Copperhead). USA: ARKAN SAS: Newton Co: collected 19 km W Jasper. 24 June 1980 by Thomas Vance. Verified by Thomas Vance. Navarro College (NC 1980.6.24.1S). First record for Newton County which partly fills the area between most surrounding Arkansas counties (Dellinger and Black, 1938, Occ. Papers Univ. Arkansas Mus. 3:3-34, and Dowling, 1957, Occ. Papers Univ. Arkansas Mus. 3:3-51). The neck of this specimen is partly mutilated due to it being injured and the overall color pattern is darker and more intense than southern representatives of this subspecies.

Submitted by THOMAS VANCE, Biology Department, Navarro College, Corsicana, Texas 75110.

COLUBER CONSTRUCTRIS PRIAPUS (Southern Black Racer). USA: ARKANSAS: Pike Co: collected 7 km E Athens on Hwy 84.7 April 1980 by Thomas Vance. Verified by Thomas Vance. Navarro College (NC 1980.4.7.2S). First record for Pike County and partly fills the area of the southern part of its range between most surrounding counties (Dellinger and Black, 1938, Occ. Papers Univ. Arkansas Mus. 1:3-47, and Dowling, 1957, Occ. Papers Univ. Arkansas Mus. 3:3-31).

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This specimen is a juvenile with typical markings of the subspecies *constrictor*, and was collected at 1115 hours as it was crawling across the road.

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Submitted by THOMAS VANCE, Biology Department, Navarro College, Corsicana, Texas 75110.


Submitted by THOMAS VANCE, Biology Department, Navarro College, Corsicana, Texas 75110.

HETERODON PLATYRHINOS (Eastern Hog-nose Snake). USA: ARKANSAS: Searcy Co: collected 12 km NNW Marshall on the Buffalo River, Buffalo National River. 29 June 1980 by Macon Edwards. Verified by Thomas Vance. Navarro College (NC 1980.6.29.1S). This is the first record for Searcy County and partly fills the area for the northern part of its Arkansas range between most of the surrounding counties (Dellinger and Black, 1936, Occ. Papers Univ. Arkansas Mus. 1:3-47 and Dowling, 1957, Occ. Papers Univ. Arkansas Mus. 3:3-51). This specimen is a juvenile which was caught as it was swimming along the shore of the Buffalo River.

Submitted by THOMAS VANCE, Biology Department, Navarro College, Corsicana, Texas 75110.


Submitted by ALLAN W. SMITS, Department of Physiology and Cell Biology, University of Kansas, Lawrence, Kansas 66045.


Submitted by GORDON W. SCHUETT and FRED KRAUS, Department of Biology, University of Toledo, Toledo, Ohio 43606, and University of Michigan Museum of Zoology, Ann Arbor, Michigan 48109.

THAMNOPHIS SIRTALIS SIRTALIS (Eastern Garter Snake). USA: ARKANSAS: Marion Co: collected ca. 17 km SE Yellville on a dirt road near the Buffalo River, Buffalo National River. 29 June 1980 by Macon Edwards. Verified by Thomas Vance. Navarro College (NC 1980.6.29.2S). This snake is abundant on the margins of the park and at the park's outlets. The type locality is approximately 10 km NNW of the park entrance.

Submitted by THOMAS VANCE, Biology Department, Navarro College, Corsicana, Texas 75110.

ELEutherodactylus BRANSORDII (COPE): AN ADDITION TO THE FROG FAUNA OF HONDURAS

Among the materials collected by Arden H. Brame, Jr. in Honduras, during 1969 and not available for inclusion in Meyer and Wilson's (1971) account of Honduras amphibians is a small frog (LACM 45200) completely overlooked during the intervening years. The individual is a juvenile female *E. bransordii* 15.5 mm in standard length, taken from Departamento de Olancho: 0.8 km SE San Jose de Rio Tinto, approx. 14 km NE Catacamas at an elevation of 330 m. It was collected February 20, 1969.

The example agrees in every respect with specimens of *E. bransordii* as described by Savage and Emerson (1970) and in direct comparison to material from Costa Rica and Nicaragua. This species cannot be confused with any other form in Mexico or Central America because of the combination of rudimentary disks on fingers (no disks on fingers I-II) and toes, no toe webbing, an inner tarsal fold and numerous strongly developed small pungent plantar tubercles. This example has the following character formula, according to the system of Savage and Emerson (1970), M Z, C X B P R: Morph II.

The specimen is the first record for Honduras and comes from a locality approximately 170 km NE of the previously northernmost record for the species in the Bonaza mining area (200-300 m) of Departamento de Zelaya, Nicaragua. The site of capture is in a narrow ecotone between lowland moist forest and premontane wet forest according to the Holdridge (1967) terminology. It probably lies in what is essentially a gallery forest predominated by vegetation of the latter type. The few records of this species from eastern Nicaragua as compared to its ubiquitous presence at lowland sites in Atlantic slope Costa Rica suggest that this frog does not occur in the lowland pine savanna areas of Nicaragua and Honduras. From southeastern Nicaragua northward the species is to be expected only along the margins of the Honduras-Nicaragua uplands in especially humid situations and gallery forests. The lack of collecting in such places in eastern Honduras, because of their inaccessibility, probably explains the absence of other records of the republic. Three other species of *Eleutherodactylus* (*minus*, *nobelii* and *ridens*) that are relatively common in Atlantic slope Costa Rica and adjacent south-eastern Nicaragua, are similarly known from only a single locality in eastern Honduras (Meyer and Wilson, 1971). The *E. minus* and *E. nobelii* records are also from Departamento de Olancho from habitats that seem similar to that at the Rio Tinto locality.

LITERATURE CITED


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A RANGE EXTENSION AND LOW ELEVATIONAL RECORD FOR THE ARIZONA RIDGENOSE RATTLESNAKE (CROTALUS W. WILLARDI)

The Arizona ridgenose rattlesnake (Crotalus w. willardi) is a montane subspecies of limited distribution in southeastern Arizona, having been recorded only from Carr and Ramsey Canyons in the Huachuca Mountains and from the Santa Rita Mountains. Specimens have been observed at elevations ranging from 1700 m to over 2740 m (Stebbins, 1954; Klauber, 1972) in plant associations dominated by Arizona white oak (Quercus arizonica), big-tooth maple (Acer grandidentata), New Mexican locust (Robinia neomexicana), Douglas fir (Pseudotsuga taxifolia), and white fir (Abies concolor) (Wright and Wright, 1975). Low (1964) states that this rattlesnake is present from the Transition Zone to the Upper Sonoran, and is most commonly found on conifer forest floors. Shaw and Campbell (1974) have suggested that this snake may favor canyon bottoms dominated by deciduous trees such as maple, oak and ash.

An adult male C. w. willardi, measuring 550 mm in length, was observed seven kilometers west of Parker Lake, Cochise County, Arizona, in the rolling foothills southwest of the Huachuca Mountains. The snake was found coiled under a piece of bark near a decomposing oak log along a south-facing slope of a small tributary canyon of Brushy Canyon. Dominant vegetation included Arizona sycamore (Platanus wrightii), Mexican pinyon (Pinus cembroides), one seed juniper (Juniperus monosperma), Arizona ash (Fraxinus velutina), Emory oak (Quercus emoryi), and Mexican blue oak (Quercus oblongifolia). This plant community has been described as pine-oak woodland by Lowe and Brown (1973), also exhibiting characteristics of the deciduous woodland community. Elevation is 1600 meters.

The presence of this subspecies at a previously unrecorded elevation and in a characteristic southern oak-juniper community raises the possibility that it may be more widespread than previously suspected, and certainly not as restricted to higher elevations and more montane habitats. Canyon systems in this area, with their lush vegetation, thicker canopy and rocky substrate may provide a means for dispersal from isolated mountain ranges into more arid, less habitable environments.

LITERATURE CITED


HERPETOLOGICAL RECORDS FROM A RELICT PRAIRIE IN OHIO

Killdeer Plains is a relict prairie in northwestern Ohio that developed during the xerothermic period following the last glaciation (Sears, 1942, Bot. Review 8:708-736). The original prairie was 30,000 acres, but due to intensive farming, only 7,000 acres remain and are contained primarily in the Killdeer Plains Wildlife Area, Wyandot County (7 km E of Marseilles). We recorded 16 species of reptiles and amphibians during the course of a field study on Thamnophis radix (an endangered species in Ohio which is isolated, 483 km E of the rest of this species' distribution; Conant, Thomas, and Rausch, 1945, Copeia 1945:61-68) and T. sirtalis. Four of these species are records for Wyandot County and supplement Conant (1951, The reptiles of Ohio, Univ. Notre Dame Press). Individual specimens are in the Ohio State University Museum of Zoology (uncatalogued), unless otherwise stated.


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A PACIFIC LOGGERHEAD CAPTURED OFF CALIFORNIA'S NORTHERN CHANNEL ISLANDS

A small Pacific loggerhead, Caretta caretta gigas, was captured in waters near Santa Cruz Island, California, on 15 March 1978. The encounter occurred three nautical miles off Valley Anchorage at 33°56'N and 119°39'W during a Bureau of Land Management Cetacea Survey.

The turtle, observed floating quietly at the surface of the water, was captured and brought on board the survey vessel, and was identified as a young female Pacific loggerhead. Straight line measurements of the keeled carapace were 457 mm (17.9 inches) in length and 381 mm (15.0 inches) in width. Approximate weight was 8.6 kg (18 pounds). A single species of barnacle and three small crabs were the only commensals associated with the turtle. These organisms were removed and preserved for specific identification.

Several investigations have reported the presence of Caretta caretta gigas in the waters of Southern California and Baja California, Mexico (Shaw, 1947; Caldwell, 1962; Marquez, 1969), but the loggerhead has not been previously reported this far north in the Southern California Bight. This record represents a northern extension of the range of the species on the Pacific coast.

LITERATURE CITED


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Harp Review 12(1), 1981 15
HERPETOLOGICAL RECORDS FROM CENTRAL AND NORTHEASTERN ARIZONA

During the past 2 years, the Bureau of Land Management, Department of the Interior, Phoenix District, has been conducting herpetological inventories in areas from Phoenix, north to the Prescott National Forest and Wickenburg, northwest to Kingman.

Listed below are records that have been determined to be range extensions. Voucher specimens are on file at the Phoenix District herpetological museum unless otherwise noted. Vegetative associations listed are based on Brown and Lowe (1974).

ANURA

**Bufo alvarius**—Mohave County, Arizona, ca. 3,200 ft. Atamo Spring, 15 km E Signal, T13N, R12W, SE, Sec. 9, Arizona Upland, 13 July 1977. KBJ J3314 Extends range WNW 100 km from that reported by Hahn and May (1972). Not collected.

**Bufo woodhousei**—Mohave County, Arizona, ca. 1,600 ft. Big Sandy River, 10 km NW Wikieup, T14N, R15W, NW, Sec. 12. Mesquite Bosque, 30 May 1979. BLM 2400 Extends range established by Stebbins (1966) by 150 km to the northwest.

**Xantusia arizonae**—Mohave County, Arizona, ca. 4,000 ft. Southern end of Hualapai Mountains, 12 km W Wikieup, T15N, R13W, SE, Sec. 7. Juniper w/Yucca interiora and Nolina sp., 18 September 1978. (3 records) BLM 2369-2371 Extends distribution ENE 50 km of that reported by Fowlie (1965). Not collected.

**Xantusia arizonae**—Mohave County, Arizona, ca. 4,700 ft. Hualapai Mountains, off Peacock Mountain Road, 26 km ESE Kingman, T19N, R15W, SW, Sec. 12. Interior Chaparral, 3 May 1979. BLM 2407 Extends range 75 km to the WSW (Stebbins, 1966).


**Sceloporus undulatus**—Mohave County, Arizona, ca. 7,045 ft. Hualapai Mountains, 25 km SSW Kinghan, T19N, R15W, SW, Sec. 5. Pineoak, 28 September 1978. BLM 2186 The most common lizard in the Hualapai Mountains above 4,500 ft. Extends range of this species 50 km WSW (Stebbins, 1966).

**Cnemidophorus velox**—Mohave County, Arizona, ca. 5,300 ft. Hualapai Mountains—Blue Tank Wash, 60 km NW Wikieup, Arizona T19N, R15W, SW, Sec. 33. Interior Chaparral (5 records), 28 September 1978. 12 October 1978 and 11 June 1979. BLM 2192, 2209, 2261, 2270, 2401 Extends range established by Stebbins (1966) 125 km to the west.

**Cnemidophorus exangus**—Mohave County, Arizona, ca. 4,700 ft. Hualapai Mountains, off Peacock Mountain Road, 26 km ESE Kingman, T19N, R15W, SW, Sec. 12. Interior Chaparral, 14 May 1979. BLM 2402 Extends distribution 100 km (Stebbins, 1966).


**Cophosaurus texana**—Mohave County, Arizona, ca. 4,600 ft. Cerbat Mountains, 15 km NNW Kingman, T22N, R17W, NW, Sec. 28. Mohave Desertshrub, 13 May 1977. BLM 5001 Extends range 50 km to the NNW (Stebbins, 1966).

**Sceloporus clarkii**—Yavapai County, Arizona, ca. 2,100 ft. Santa Maria River, 85 km SE Wikieup, T12N, R9W, NE, Sec. 10. Mesquite drainage, 10 October 1979. BLM 1710 Extends distribution 100 km to the NW (Stebbins, 1966).

**Xantusia nigrofasciata**—Mohave County, Arizona, ca. 3,200 ft. Hualapai Mountains, 14 km W T14N, R15W, NW, Sec. 10. Mesquite Bosque 7 July 1977, BLM 5002. Extends record by Hahn and May (1972) by 125 km to the NW. One additional record at the Boriana Mine.


**Masticophis bilineatus**—Mohave County, Arizona, ca. 4,800 ft. Hualapai Mountains, 24 km ESE Kingman, T20N, R14W, SW, Sec. 18. Interior Chaparral—Pinyon-Juniper integrade, 5 May 1979. BLM 2412 Extends distribution by Stebbins (1968) 75 km to the west.

**Thamnophis cyrtopsis**—Mohave County, Arizona, ca. 4,700 ft. Hualapai Mountains, 40 km SSE Kingman, T19N, R16W, NW, Sec. 33. Old Camp Well, Interior Chaparral, 11 August 1977. BLM 2413 Extends range (Stebbins, 1968) 150 km to the NW.

**Crotalus viridis cerberus**—Mohave County, Arizona, ca. 5,240 ft. Hualapai Mountains—Blue Tank Wash, 40 km NW Wikieup, T19N, R15W, SW, Sec. 33. Interior Chaparral, 24 May 1979, BLM 2414 Extends the range established by Fowlie (1965) 60 km to the SW. Not collected. Photos of this specimen available.

LITERATURE CITED


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The Society for the Study of Amphibians and Reptiles is pleased to announce that proposals are now being accepted for the 1981 Grants-In-Herpetology Program. This program is designed to provide financial support to deserving individuals or organizations engaged in research or conservation of amphibians and reptiles. Grant proposals will be considered in the following areas:

1) HERPETOLOGY-ORIENTED CONSERVATION. Proposals should address research on endangered or threatened species at the state, national or international levels, or address research on critical herpetological habitats. Proposals may be received from individuals only.

2) GRADUATE STUDENT HERPETOLOGICAL RESEARCH. Proposals may address any herpetological research endeavor and may be submitted by individual graduate students only, with a letter of support from the student's major advisor or committee chairperson.

3) REGIONAL HERPETOLOGICAL SOCIETY PROGRAMS OR PROJECTS. Proposals may address any herpetological research endeavor or project, provided said endeavor or project concerns herpetology within the implied geographic limits of the regional society. Proposals may be submitted by regional herpetological societies or by individuals. If the latter, a sponsoring letter from the current societal president or an advisor should accompany the proposal.

4) HERPETOLOGICAL RESEARCH IN ZOOS. Proposals may address any herpetological research endeavor which is conducted at a zoo. A letter from the representative zoo or supporting institution should accompany the proposal.

Each proposal should include the following information: A) Background & Objectives of the proposed project, in terms of its relevance to herpetology, B) Methods of carrying out the research or conducting the project, C) Budget for the project, according to the guidelines set forth below, and D) Letter of Support (if applicable). Proposals should be relatively brief (approx. 5 typed pages).

Budgets for the proposals should not exceed $250 in each category. The budget request should specifically relate to the project under consideration.

Successful applicants will be expected to submit to SSAR a written report of the results of their research or project, within a reasonable time after the project year is completed. They are also encouraged to submit for publication the results of their research or project, preferably to The Journal of Herpetology or Herpetological Review.

Members of the SSAR Grants-In-Herpetology Committee will evaluate all proposals, projects or programs. Committee members are: Martin J. Rosenberg (Chairperson), Douglas Fraser (Regional Herpetological Societies), Terry Graham (Conservation), John Groves (Zoo Research) and Ralph W. Axtell (Graduate Student Research).

Individuals submitting proposals should designate to which of the four areas their proposal applies. All proposals must be typewritten and submitted in duplicate no later than 15 APRIL 1981 to:

Martin J. Rosenberg
Department of Biology
Case Western Reserve University
Cleveland, Ohio 44106

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FIRST SUCCESSFUL CAPTIVE PROPAGATION OF SCHNEDER'S SMOOTH-FRONTED CAIMAN, PALEOSUCHUS TRIGONATUS

INTRODUCTION

Of all the crocodilians, the genus Paleosuchus is perhaps the least known. Neither of the two species assigned to the genus, P. palpebrosus (Cuvier, 1807) and P. trigonatus (Schneider, 1801) is well known. Specimens of the genus are found in South America, in swift moving, often turbulent waters of the tropical rain forest. The southernmost locality appears to be Bahia; to the west it is found from Rio Abuna, Bolivia, and from the Hualalga and Ucayali in Peru. In the north, it is known from the Rios Sanja and Ocoa, Colombia, and as far north as Angostura on the Río Orinoco, Venezuela. To the east, it is found mainly in Guiana, Surinam and Mexicania Island. Both species apparently occur together not only over most of the Amazon and Orinoco basins, but even as far as extreme eastern Brazil (Medem, 1958).

Although their hide, because of its osteoderms, is of little value, they are hunted by natives for use as food and such activity very likely has reduced their range since the above distribution was recorded. Medem (1958) noted that individuals, even juveniles, were always solitary. It is known that they hide most of the day and hunt in late evening (Medem, 1958). There are a few Paleosuchus in captivity. In a survey of American zoos only 15 animals were located: 5 males, 3 females and 7 of unknown sex (King and Dobbs, 1975). Information on reproduction in the genus is incomplete. Only recently has work been done on P. palpebrosus (Medem, 1972), resulting in successful propagation, and only preliminary reproductive data from eggs found in the wild are available for P. trigonatus (Dixon and Soini, 1975). Here I report the first successful captive propagation of Paleosuchus trigonatus.

MATERIALS AND METHODS

The Zoological Society of Cincinnati obtained a juvenile male P. trigonatus in March, 1966, and a juvenile female in May, 1967. Both were purchased from the same individual but no locality data are available. Eventually they were placed in a circular pool, with a concrete island, located in the Reptile House lobby. The pool housed many other species of crocodilians of varying ages and sizes. Breeding...
was first observed early in 1975. Eggs were laid on the night of 24 March, 1975, on the island. Unfortunately they rolled into the water and all were broken but one, which proved to be infertile. It was then decided to concentrate efforts with these *Paleosuchus* and isolate them in a separate enclosure, which was provided in September, 1975.

The new enclosure is a large indoor exhibit located at one end of the Bird House. The area is densely vegetated with live plants and covered with a large skylight which provides a natural photo-period. The enclosure consisted of a pool 3.35 X 3.56 X 1.22 m in depth, rising at a gradual incline to a land area of 3.66 X 2.44 m. The water temperature ranged from 21°C in winter to over 27°C in summer. The air temperature was about 21°C in winter, with the summer temperature determined largely by the outside natural conditions. The area was readily open to the public, with only a railing fence as separation. Prior to isolation in the new enclosure, the female specimen was 1.22 m in length and the male specimen was quite large at just over 1.83 m. Their diet consisted of blue fish, horse meat, and rats as supplements. They were fed twice a week in the new enclosure, the female specimen was 1.22 m in length and the male specimen was 1.83 m long.

The male specimen was broken but one, which was a sheath of glass. Incubation temperature fluctuated from 29°C-31°C and from 92-100% humidity. Periodically the peat moss was sprayed with water. Temperature and humidity of the peat moss were monitored twice daily (early morning and late afternoon) and a visual check of the eggs was made weekly. The artificial incubation resulted in the hatching of six caiman.

### RESULTS AND DISCUSSION

Seventeen eggs were observed on 8 January, 1979, at 0200. The eggs had apparently rolled into the water, but could not be retrieved until 0700. Water temperature upon removal was 15°C. When removed, the eggs were covered with a clear gelatinous substance. Because it was unknown if the five hours in water had ruined the eggs, one egg was opened after 28 days. It was found to be fertile and there was visible body development (eyes and beginnings of leg protrusions and a visible heart beat).

Since the incubation period for *P. palpebrosus* is known to be 90-92 days (Medem, 1972), the eggs were candied on 4 April, after 94 days of incubation, and of the 16 eggs remaining, 7 were found to be fertile. All eggs were uniform in size and weight with a rough calciferous surface (Fig. 1). With no signs of hatching after 102 days, another egg was opened on 10 April. This particular egg was called "hatching after entering water." Fred Straub, Cincinnati Enquirer.

Table 1: Weight and Length Measurement for Six Hatching *Paleosuchus trigonatus*, on 9 May, 1979

<table>
<thead>
<tr>
<th>Snout-Vent (mm)</th>
<th>Tail (mm)</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 112.0</td>
<td>110.0</td>
<td>45.5</td>
</tr>
<tr>
<td>2. 111.0</td>
<td>110.0</td>
<td>46.2</td>
</tr>
<tr>
<td>3. 111.0</td>
<td>96.0</td>
<td>46.5</td>
</tr>
<tr>
<td>4. 110.0</td>
<td>112.0</td>
<td>43.5</td>
</tr>
<tr>
<td>5. 110.0</td>
<td>110.0</td>
<td>44.0</td>
</tr>
<tr>
<td>6. 109.0</td>
<td>112.0</td>
<td>47.5</td>
</tr>
</tbody>
</table>

The adult female caiman is known to aid in the cracking of the shell if the hatchlings cannot get out on their own (Medem, 1971). In the present case, the hatchlings readily cracked the eggs themselves. Actually, at the point of hatching, the hard, brittle outer shell seemed to be visibly weakened with the hairline cracks and fell away easily from the thick inner membrane as the young emerged. Of the six hatchlings, one developed an abdominal problem and died two weeks after birth. The animal was preserved (CVG - A. 38131). The remaining five were alert and healthy in appearance and were offered a first food of crickets dusted with vitamins after 14 days. When these were readily accepted, live gold fish and live juvenile mice were added to the diet and kept available to the caiman at all times. As of 19 October, 1979, all five are doing well and growing rapidly.

![Figure 1. Unhatched and hatched egg; note inner membrane separated from outer shell in hatched egg. Janet Ross, Zoological Society of Cincinnati.](image1)

![Figure 2. Young caiman after entering water. Fred Straub, Cincinnati Enquirer.](image2)
ACKNOWLEDGMENTS

I would like to thank Edward Maruska, Kraig Adler, Leslie Garrick, and Richard Davis for reviewing this manuscript, and those others who gave helpful comments. The two dead embryos (CVG - A.38089, CVG - A.38131) are in the Cincinnati Zoo's preserved collection.

LITERATURE CITED


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REPRODUCTION OF THE BALL PYTHON, PYTHON REGIUS IN CAPTIVITY

Nothing is known concerning the reproduction of the Ball python (Python regius) in the wild and information on breeding this species in captivity is scant. Logan (1973) reported successful hatching of several clutches of ball python eggs incubated artificially at about 80°F (27°C). We are not aware, however, of any published accounts of hatchings from eggs that were tended to by the parent. There is a single, curious report of a ball python that was said to have given birth to 11 young (Anonymous, 1941).

Recently we had the opportunity to observe two instances of reproduction of P. regius in captivity in which both females were allowed to remain with the eggs.

MATERIALS AND METHODS

The first pair of ball pythons was quite small: two individuals, each weighing 980 g, were placed together in a 60 X 30 X 30 cm aquarium tank. The bottom of which was covered with a 2 cm layer of packed damp sphagnum moss. In this tank was also an insulating layer of weathered driftwood. The temperature was kept at about 24°C. An incandescent light bulb mounted in the cage was usually but not always turned on during the day. No matings were observed. The female refused to feed after March 1978 and there was a gradual change in temperament. The ordinarily timid and inoffensive animal became irritable, struck at being disturbed, actually biting on several occasions. There was an increasing tendency to bask under the lights and to turn the mid and rear portions of the body sideways or upside-down while basking. This behavior continued after transfer to the aquarium tank.

Late in the morning of 19 June, 1978, four white eggs were laid. Three of these adhered to each other, the fourth was separate. Two of the eggs could be measured (Table 1), the other two appeared to be of about the same size. After egg laying was completed the female coiled tightly around the eggs. Ambient temperature at oviposition was 29.5°C. During the first 18 days of brooding, the ambient temperature was allowed to fluctuate between a mean low in early morning of 27.6°C (lowest 26.2°C) and a mean high in late afternoon of 32.5°C (highest 33.2°C). Corresponding mean nesting site and coil temperatures were respectively: low 28.1°C and 28.5°C, high 32.7°C and 33.0°C. Lowest measured temperatures at these sites were 27.0°C and 28.0°C, highest temperatures were 32.7°C and 32.3°C. The body temperature of the female therefore fluctuated in the range of 32.5°C, with a mean of 32.0°C. Highest temperature at oviposition was 29.5°C. Dur-
fication these eggs were not removed.

The two remaining eggs began to hatch on 21 August after an incubation period (between oviposition and hatching) of 63 days. Both young had left the shell two days later and exhibited typical ball python behavior. One shed 11 days after hatching, the other two days later. Live, newborn rats were taken after the first shed and by one year of age on a diet of rats, the young had increased their weight six-fold (Table 1).

The two collapsed eggs contained a firm mass which resembled hard boiled egg white. There was no evidence of decay nor was there any trace of an embryo in either egg. Two days later and exhibited typical ball python behavior. One shed 11 days after hatching, the other two days later. Live, newborn rats were taken after the first shed and by one year of age on a diet of rats, the young had increased their weight six-fold (Table 1).

The peculiar and pronounced local enlargement at midbody which lasts for about 24-36 hours and which occurs some 50 days prior to oviposition, we have also seen in P. molurus. The explanation for this phenomenon could be that ovulation occurs at that time and that the eggs migrate anteriorly, crowding together, in order to enter the oviducts.

We have found no evidence that the ball python becomes temporarily endothermic. Pitman (1973) stated that the "brooding female African Pythons are similar to those of P. molurus, the python species which has been studied most often and in the greatest detail. As in P. molurus, and most if not all other python snakes (Benedict, 1932; Lederer, 1944; Ross, 1973; Ross and Larman, 1977; Sclater, 1826; Stemmler-Morath, 1956; Valenciennes, 1841; Van Mierop and Barnard, 1976, 1978; Walsh, 1977), the female ball python stops feeding deep brown where the shell rested on the peat substratum. The pH of the substratum as measured with a Radiometer Model BMS 3 Mx2 blood gas and bicarbonate analyzer was 4.9. No organisms were seen.

On 13 July, the eggs, including the one incubated before, began to hatch and three days later all young had left the shell. The young snakes shed between 28-30 July.

DISCUSSION

Some features of the reproductive cycle of P. regius are similar to those of P. molurus, the python species which has been studied most often and in the greatest detail. As in P. molurus and most if not all other python snakes (Benedict, 1932; Lederer, 1944; Ross, 1973; Ross and Larman, 1977; Sclater, 1826; Stemmler-Morath, 1956; Valenciennes, 1841; Van Mierop and Barnard, 1976, 1978; Walsh, 1977), the female ball python stops feeding deep brown where the shell rested on the peat substratum. The pH of the substratum as measured with a Radiometer Model BMS 3 Mx2 blood gas and acid-base analyzer was 4.9. No organisms were seen.

On 13 July, the eggs, including the one incubated before, began to hatch and three days later all young had left the shell. The young snakes shed between 28-30 July.

Table 1. Measurements (cm) and weights (g) of females, eggs and young of Python regius.

<table>
<thead>
<tr>
<th>Female #</th>
<th>VM76-02RG</th>
<th>EB77-04RG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight of ♀ before oviposition</td>
<td>980</td>
<td>2010</td>
</tr>
<tr>
<td>Number of eggs</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Total weight of eggs (est.)</td>
<td>320</td>
<td>595</td>
</tr>
<tr>
<td>Weight of ♀ after oviposition (est.)</td>
<td>660</td>
<td>1415</td>
</tr>
<tr>
<td>Egg length, after oviposition</td>
<td>6.5</td>
<td>7.8</td>
</tr>
<tr>
<td>Egg weight, after oviposition</td>
<td>3.8</td>
<td>4.3</td>
</tr>
<tr>
<td>Egg length, before oviposition</td>
<td>8.2</td>
<td>7.2</td>
</tr>
<tr>
<td>Egg weight, before oviposition</td>
<td>4.1</td>
<td>4.8</td>
</tr>
<tr>
<td>Hatchlings, length</td>
<td>38</td>
<td>43</td>
</tr>
<tr>
<td>Hatchlings, weight</td>
<td>56</td>
<td>67</td>
</tr>
<tr>
<td>Juveniles, length at one year</td>
<td>75</td>
<td>—</td>
</tr>
<tr>
<td>Juveniles, weight at one year</td>
<td>359</td>
<td>—</td>
</tr>
</tbody>
</table>

* Single ♂, all other measurements and weights of eggs and young are mean values.
LITERATURE CITED
Valenciennes, A. 1841. Observationes faeiles pendit l'incubation d'une femelle du Python a deux rales (Python bivittatus Kuhl) pendant les mois de mai et juin 1841.

BOOK REVIEWS

This book reminds me in so many ways of Gordon Wallis's The Vertebrate Eye: it is comprehensive; it is profusely illustrated; it is lucidly written; it has universal appeal; and it is bound to become a classic. The book is divided into four parts. The introduction describes the techniques used for studying the ear, and the reader is led through a variety of extraordinary methods of dissection, fixation, and sectioning. Prior to dissection, sensitivity was measured on the intact ear of the anesthetized animal as the sound pressure required to produce a standard cochlear potential of 0.1 V. When these pressures are determined over a spectrum of sound frequencies, the plot is U-shaped and the bottom of this curve represents those frequencies to which that particular ear is most sensitive. Anyone who has worked with reptiles knows how frustratingly incomprehensible their reaction to sound stimuli can be. The above technique overcomes this problem and enables comparison of auditory capabilities among different species. The General Anatomy of the Reptilian Ear and Sound Transmission to the Cochlea and the Stimulation Process conclude the introductory part.

Part II, by far the longest, describes the ear in the various families of lizards; part III includes snakes, amphibians and reptiles, and Part IV concludes with a summary of the writer's interpretation of the probable evolutionary history of the ear: the vertebrate cochlea emerged independently out of the non-auditory labyrinth in three different vertebrate groups: fishes, amphibians and reptiles, and the ear of birds and mammals followed the pattern of the reptilian ear. However, among the reptiles, especially the lizards, diversification has occurred in a number of ways, especially in the means of restraint of the clirary tufts of the hair cells.

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This two-volume facsimile publication of collected rare works on the herpetology of the western United States (and Mexico) is a valuable compilation for anyone interested in North American amphibians and reptiles. The geographical area treated in these two volumes spans from Arkansas to the Pacific coast, and from the Canadian border into Mexico. As in other volumes of this series by Arno Press, the lack of overall consecutive pagination causes difficulty in locating a specific paper—one must search for a title page to locate the desired work. Otherwise, the two volumes are tastefully bound, well-organized and easy to read.

Included in this collection are herpetological portions of seven works by Baird, Cooper and Hallowell devoted to explorations for a railroad route from the Mississippi River to the Pacific Ocean. I feel their inclusion is of tremendous value since they had previously created (for me) a bibliographic nightmare. The seven papers are fully referenced and organized, and should eliminate much of the confusion regarding these surveys and their dates of publication. Also included in volume days reported by Logan (1973). This difference undoubtedly is related to the higher heat production temperatures of 30.6 and 30.1°C as compared to about 27°C in Logan’s study.

The above technique overcomes this problem and enables comparison of auditory capabilities among different species. The General Anatomy of the Reptilian Ear and Sound Transmission to the Cochlea and the Stimulation Process conclude the introductory part.

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No reptile is deaf. Even those without external ears can perceive aerial vibrations, but quite well. Considering that reptiles as a group are not renowned for their vocalizations, the role that the ear plays in their survival is still mostly conjectural; that indeed it must have an important function is convincingly documented in this fascinating monograph. A copy of this book belongs in the library of every herpetologist.

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two) is the complete 1865 work of Maximilian, Prinz zu Wied, on his explorations in North America. This study alone commands prices of over $100.00 from book dealers, and, when this is considered, the price of $75.00 for these two volumes seems quite reasonable. I consider these collected works a good buy and a useful addition to any herpetological library.

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This book, written by one of America's most distinguished herpetologists, is not only a useful field guide to the salamanders and anurans of the United States and Canada, but is also a compact handbook of North American amphibians, of value to both amateurs and professionals.

*Amphibians of North America* begins with a general introduction to the amphibia, including sections on habits and habitats, collecting techniques, and an important paragraph on "Ethics for the Enthusiast." A chapter on the physical characteristics of the families of American amphibians follows, accompanied by generalized drawings indicating the important characters used in species identification.

Of special interest to amateur readers are chapters explaining basic taxonomy and the use of identification keys. The author also describes the "policies of the book," including his decision to de-emphasize the naming and description of subspecies. This is a significant deviation from other popular field guides on amphibians.

The "Identification" section for each order of amphibian is preceded by a general discussion of the structure and life history of the animals. All points are clearly illustrated and labeled, allowing readers untrained in amphibian biology and physiology to comprehend the text. For example, the section on frogs and toads includes descriptions and illustrations of the "topography of an anuran," "typical anuran life history," "kinds of vocal sacs," and "distinguishing the sexes." A key to tadpoles is offered, allowing identification to the genus level.

Illustrated keys are an integral part of the identification system used in this book. To be useful and accurate, keys must often refer to characters which are difficult for the untrained amateur to visualize and understand. Smith and Barlowe have at least partially overcome this problem with the use of diagrams numbered to correspond with statements in the keys.

Identification of a specimen could be accomplished by going through a series of keys. Thus, the description of each order includes a key to the families; where necessary this leads to a key to the genera, and the introductions to the larger genera include keys to the species. The author, however, realizes that most users of this book will first rely on the illustrations of the species to identify a specimen, thus the recommendation that the keys be used to "verify" a proposed identification.

The descriptions and illustrations of species are arranged as in other field guides in the Golden series, i.e. with the range map and text for a species on the left-hand page, and its illustration(s) on the facing page. This system is certainly more convenient than one which requires the user to flip through a book to check illustrations, text, and range map for a species, but it is not without its costs. It limits the space available for descriptive text—and may partially explain the need for de-emphasizing the descriptions of subspecies in this guide, which are often terse. Greater reliance must thus be placed on range maps for determination of subspecies, which leads to one of the few problems in using this book. The maps are very small and do not show state or provincial boundaries. Ranges of subspecies are "color-coded" to the text descriptions to reduce difficulty in interpreting the maps may be encountered, particularly for forms with very limited ranges. A reader who is color-blind might also have some problem with the color-code system.

In general, the species descriptions are adequate, and Barlowe's illustrations are accurate and skillful. All species are shown in color, with color variations included where necessary. Diagrams are used to show morphological details useful in identification.

Following the species descriptions, Smith has included interesting and well-written chapters on "amphibian evolution, distribution, and anatomy," "reproduction" (including growth and longevity), "behavior" (amphibians do not hibernate, it seems—they instead "brumate"!), "enemies and self-defense" (including a rather depressing section on "Entomological Status"). Smith notes that "total eradication of amphibians is not likely, but their diversity will be greatly diminished. There appears to be no practical means of preventing this outcome.

There is no bibliography, but the section entitled "Other Sources of Information" lists addresses for selected museums having important herpetological divisions, and mentions a number of good, generalized texts and literature references dealing with amphibian identification and biology. There is also a useful cross-referenced index.

Many of the common and scientific names used in *Amphibians of North America* differ from "Standard Common and Current Scientific Names for North American Amphibians and Reptiles" (Collins, et al., 1978). Published by the Society for the Study of Amphibians and Reptiles in 1978, Smith was a co-author of that report. As mentioned previously, no common names were assigned to subspecies in this new field guide, and a few species names have been changed. Smith has "arbitrarily" restricted the name "frog" to the advanced anurans (true frogs and treefrogs), while all other anurans are considered "toads."

It will be interesting to see if the herpetological community will accept this usage; there will almost certainly be some resistance to a few of the common names chosen by Smith. For example, he uses the name "Peeper Treefrog" for the species *Hyla crucifer*, rather than the established name "Spring Peeper." *Ambystoma talpoideum* is called the "Talpid Salamander" instead of the more familiar name "Mole Salamander" (perhaps to avoid confusion with the common name for the family to which this species belongs?).

The scientific names in this field guide are as current as possible, but in a few cases Smith has chosen to differ from Collins, et al. (1978). For example, the genus name *Spa* is adopted for several of the western Spadefoot Toads (*S. hammondi, S. intermontana, S. bombifrons*); *Spa* has been considered a subgenus of *Scaphiopus* by previous workers, and Collins, et al. (1978) retained *Scaphiopus* for all of the North American Pelobatids.

Smith has figured range maps for the problematical species *Hyla versicolor* and *Hyla chrysoscelis*, though the map for the latter species is described as "largely conjectural." The ranges depicted for these two species are mutually exclusive, although recent work has shown that *H. versicolor* and *H. chrysoscelis* may occur sympatrically in some areas (i.e. Jaslow and Vogt, 1977, and Johnson, 1977). In the present book, the latter species' name is spelled "*chrysoscelis*" in apparent error.

A Guide to Field Identification: the Amphibians of North America will inevitably be compared to the amphibian sections of previous American field guides, such as Stebbins (1966) and Conant (1975). This reviewer feels that the Smith/Barlowe guide should be considered a valuable companion volume to these previous works, and not a competitor. Smith and Barlowe have made a fine contribution to popular American herpetology with this new field guide, and it definitely deserves a place in the library of all persons interested in the amphibia of North America.

LITERATURE CITED


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Bloomfield Hills, MI 48013 U.S.A.
AMS Publications
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TURTLES IN KANSAS
by
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This book presents complete and concise information on the fourteen kinds of turtles currently known to occur in Kansas. Each of these turtles is treated in an account which contains one or more color photographs, common and scientific name, and descriptions of its size and identifying characteristics, habitat, breeding habits, food preferences, predators, defense mechanisms, general range, species with which it might be confused, how to observe it in the wild, and a detailed map of its distribution in Kansas.

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Please send me ______ copies of “Turtles in Kansas” at $5.25 each, postage paid. Enclosed is my check for $________. (Kansas residents add 3.5% sales tax. Outside United States add 5% handling.)
The following are addenda to the last Legislative Alert column (HR 11(4):105): Hyla andersonii is listed as Endangered only in Florida, not throughout its range as implied. Gopherus agassizii is listed as Threatened only on the Beaver Dam Slope in Washington County, Utah, not throughout its range. Chelonia mydas is listed as Endangered in Florida and the Pacific coast populations of Mexico and Threatened everywhere else (such as in Hawaii and the Trust Territories and Puerto Rico). Lepidochelys olivacea is listed as Endangered only on the Pacific Coast of Mexico and Threatened everywhere else. Alligator mississippiensis is listed as Endangered in Oklahoma, North Carolina, Arkansas, Alabama, Mississippi, and inland portions of Texas, Louisiana, Georgia, and South Carolina. Threatened in Florida, central Louisiana, and coastal portions of Texas, Georgia, and South Carolina; and Threatened by Similarity of Appearance in 12 parishes in coastal Louisiana. Crocodylus porosus is not listed as Endangered in Papua New Guinea.

The author and editor regret any confusion caused.

The Herpetologists’ League has instituted a new publication series — the Herpetological Monograph Series — that is intended to serve as an outlet for manuscripts that, owing to their length, are not suitable for publication in traditional scientific periodicals. Contributions should be of broad appeal to the herpetological and scientific communities, and should address topics of amphibian and/or reptilian biology at the organismal level. Although symposia proceedings are not excluded from consideration, preference will be given to monographic works. By establishing the Herpetological Monograph Series, the Herpetologists’ League proposes to (1) produce publications of scientific merit and quality, (2) make such publications available at a reasonable cost to the herpetological community, and (3) utilize proceeds from sales of publications to subsidize subsequent monographs.

Persons desiring additional information about this new publication series are invited to address inquiries to the Managing Editor, Linda Trub, at the Museum of Natural History, The University of Kansas, Lawrence, Kansas 66045, USA.

Dear George:

I would like to bring to the attention of the SSAR membership a series of ads by the Nocona Boot Company of Nocona, Texas, that have been appearing in Playboy magazine for over a year that I know of. These may also have appeared in additional periodicals, but if so, I have no knowledge of them. These ads depict the suggested beheading of a western diamondback rattlesnake by a Nocona-shod figure (page 62 of the September, 1979, and again on page 98 of the January, 1981, issues of Playboy), and the suggested “removal” of a Gila monster from a Nocona-booted figure with a pair of fence-cutting pliers (page 70 of the December, 1980, issue of same). These same ads may have appeared at other times as well. I don’t get the opportunity to thoroughly scan each month’s issue of Playboy, so can’t say for certain. However, I have seen at least one other, similar, ad depicting a scorpion as the victim. I am especially disturbed by these ads appearing in a periodical with a circulation and impact of the magnitude of Playboy’s. That magazine wields a great deal of psychological influence, whether intentional or not, and hence, helps to mold many readers’ attitudes about a great many subjects. These ads are especially insidious in such an influential source. Not only is this type of advertising offensive, but it is totally unnecessary as well. In addition, it is counterproductive from the standpoint of the preservation of these animals and in the case of the Gila monster at least, an endangered and protected species is involved.

If other readers are as disgusted by these ads as I am, I urge them to write to each of the following and express their dissatisfaction and to try to bring an end to this ad campaign:

Mr. Enid Justin, President
Nocona Boot Company, Inc.
P.O. Box 599
Nocona, TX 76255

Mr. Dale Gordon, Sales Manager
Nocona Boot Company, Inc.
P.O. Box 599
Nocona, TX 76255

Mr. Russell Weller
Playboy Magazine
Playboy Building
919 North Michigan Avenue
Chicago, IL 60611

Hopefully, with enough SSAR members’ support, we can force both Playboy and the people at Nocona to realize the destructive nature of these ads and to discontinue them at the earliest possible date.

Thank you very much.

Sincerely,
Joseph R. Dinardo

The editorial staff wishes to thank the following persons for reviewing manuscripts over the past several months: James P. Bacon, Joseph Bielitzki, R. Bruce Bury, Gary Carl, Charles Carpenter, Archie Carr, Roger Conant, Joseph Collins, William E. Duellman, Stan Dyrkacz, John L. Fernal, Gary Ferguson, James Gillingham, Gary Harwell, Larry Hunt, John Lynch, C. J. McCoy, James B. Murphy, George Nace, Hugh Quinn. Their investments of time are much appreciated.

The Division of Herpetology, Museum of Natural History, University of Kansas, anticipates a position for a full-time collection manager for a period of two years with the possibility of continued funding for a permanent position. The starting date can be from 1 July to 1 September 1981 with a starting annual salary of $18,000 plus fringe benefits. Candidates must have a Bachelor’s Degree or Master’s Degree in vertebrate zoology, demonstrated knowledge of systematic herpetology, and minimally two years curatorial experience in a herpetological collection in a museum, including supervision of other personnel. Duties will emphasize reorganization and taxonomic updating of collection, preparation of cross catalogues, preparation and curation of osteological and histological materials, and supervision of student employees. This is not a research position. Send curriculum vitae and names, addresses and telephone numbers of two references by 1 May 1981 to Dr. William E. Duellman, Museum of Natural History, University of Kansas, Lawrence, Kansas 66045. An Equal Opportunity/Affirmative Action Employer. Applications are sought from all qualified people regardless of race, religion, color, sex, disability, veteran status, national origin, age, or ancestry.

ANTI-HERP AD

HERPETOLOGICAL MONOGRAPH SERIES

NEWSNOTES

CORRECTION

HERP REVIEWERS

POSITION

COLLECTION MANAGER

REPTILE HUSBANDRY SYMPOSIUM

HR REVIEWERS

REPTILE HUSBANDRY SYMPOSIUM

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Joseph R. Dinardo

30 Crystal Road
Levittown, PA 19057
December 4, 1980

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CURRENT LITERATURE TRANSITION

Beginning with this issue, we have a new section editor for Current Literature, Joseph Dinardo. I would like to extend my sincerest thanks to Richard Worthington, past CL section editor, for the outstanding job he did in developing and maintaining this valuable part of HR. I doubt if it is possible for me, even as editor, to fully appreciate the arduous task of preparing all those citations for publication each issue.

ERRATA

HR 11(3):76, col. 1 Harold A. Dundee, not Howard.

BRACHYLOPHUS MOVIE

The Fiji Film Unit is currently producing a 13 minute film on "Brachylophus vitiensis, the Crested Iguana." This unique film contains the first-ever recorded film history of the Crested Iguana and spans a whole year of animal observation, from birth to behaviour in its natural environment on an off-shore island in the Fiji group. The film contains scenes of the animal in its natural environment and in captivity, and includes shots of feeding, (natural), territorial behaviour (natural) and egg hatching (captivity).

The hope is to have the film completed by March/April 1981. The producers can supply a 16mm Eastman colour print or a 1/4" U-matic cassette with English commentary at a cost of U.S. $250.00, payable to the Ministry of Information, Suva, Fiji. If you are interested in purchasing a copy of this film please write to the Director of Film Production, Fiji Film Unit, Government Buildings, Suva, Fiji.

Southwestern Herpetologists’ Society

The Southwestern Herpetologists’ Society is open to anyone having an interest in the study and conservation of reptiles and amphibians.

The Society meets on the third Monday of each month at 7:30 p.m., at the Reseda Recreation Center, 18411 Victory Blvd., Reseda, CA.

Monthly newsletter

HERPETOLOGY, our journal
in its 14th year.

Membership $8.00 annually.
Make checks payable to SWHS
Send to Southwestern Herpetologists Society
P. O. Box 7469
Van Nuys, California 91409

CURRENT LITERATURE

As of March, 1978, approximately 87 researchers are scanning 450 journals. Titles are published four times per year. Searches are encouraged to submit titles for inclusion at three month intervals to assure approximately equal listings in HR.

Anyone publishing in a journal that is not widely distributed is invited to submit a complete citation or send a reprint to insure that the reference is published in Current Literature. Complete citations to obscure references are also welcome. Senior author addresses that are submitted will be included. Addresses following citations are those of first authors unless otherwise noted. Citations should be sent to

Joseph Dinardo
Current Literature
16 Iderwild Road
Levittown, PA 19057


INTERNATIONAL HERPETOLOGICAL CONGRESS


Organised by the Cotswold Wild Life Park and the Association for the Study of Reptilia and Amphibia. To be held in the large Lecture Theatre, Department of Zoology, University of Oxford.

Provisional Programme

Days 1-2 Captive husbandry and breeding (World Wide); Days 3-4 Conservation and Field Research in Europe; Days 5-6 General Herpetology (World Wide); Day 7 Visit to Cotswold Wild Life Park, Lunch, Discussion and Dispersal.

Offers of papers for the various sections of this congress are now requested. Papers read should be of no more than 30 minutes duration and manuscripts for publication should be limited to 5,000 words and not more than five figures or tables.

Suggested titles should be sent without delay to:


JOHNSTON, J. W. and A. M. JUNGREIS.

JOHANSEN, K., G. LYKKEBOE, S. KORNERUP and JOANEN, T. and L. McNEASE.

JIM, J. and U. CARAMASCHI.

JENNY, J., C. JENNY-DESHUSSES, A. LE MARRÉC.


JANZEN, D. H. 1976. The depression of reptile bio-

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JIM, J. and U. CARAMASCHI.

JENNY, J., C. JENNY-DESHUSSES, A. LE MARRÉC.


PENDLEBURY, G. B. 1978. The western hog nose snake, Heterolops dumerili nasicus, in Alberta. CAN. FL. INV. 9(10):416-422. (304 Manora Rd. NE, Calgary, Alberta T2A 4R6, Canada.)


SHARMA, B. D. and T. SHARMA. 1980. Myriapods and ants found in the gut contents of Agkistrodon hysbamus (Gunter) in Kashmir Himalayas India. SNAKE 12(1,2):54-55.


SOKOLOV, V. E., V. P. SUKHMOV and Y. M. CHERNY-


ULMER, M. J. and H. A. JAMES. 1976. Studies on the helminth flora of Iowa II. Centodes of amphibians. PROC. HELMINTHOL. SOC. WASH. 43(2):191-200. [Image 0x0 to 603x798]


The Society for the Study of Amphibians and Reptiles is a non-profit, international organization established in 1967 to advance the study of amphibians and reptiles. Although begun in 1958 as a regional society, the SSAR rapidly gained a world-wide membership. Today it is recognized as having the most diverse society-sponsored program of professional services and publications for students of herpetology. Membership is open to all persons interested in learning about amphibians and reptiles.

**activities**

An annual meeting is held each summer on a university campus or at a biological station in the United States. The Society especially wishes to attract students to its meetings by providing inexpensive and informal facilities. In addition to the papers given by members at these meetings, a symposium or other invited speakers are usually planned which allow for detailed discussions of an important area of contemporary study. Workshops for regional society representatives have been organized for the purpose of exploring common problems and sharing new ideas. Live animal, photographic, art, and other exhibits are organized, as well as field trips.

The Society makes a concerted effort to involve a diverse segment of its membership in Committee activities designed to further our knowledge of amphibians and reptiles and manage the affairs of the Society. Committees include: Nominating, Student Award, SSAR Grants-in-Herpetology, Common and Scientific Names, Legislative Alert, Regional Society Liaison, Zoo Liaison, Editorial, Translations, and Annual Meeting.

**publications**

SSAR sponsors one of the most diversified series of publications of any scientific society. Each series is described on the reverse of this page. Back issues of most publications are available; a detailed price-list can be obtained simply by checking the appropriate box on the membership application.

All persons with an interest in amphibians and reptiles are welcome to become members of SSAR. Members vote on society matters, attend meetings, and participate in other Society activities. Each year members receive the following publications: *Journal of Herpetology* (4 issues, totaling about 500 pages), *Facsimile Reprints in Herpetology* (1-2 issues, about 50 pages), *Herpetological Circulars* (1-2 issues, about 50 pages), and *Herpetological Review* (4 issues, about 130 pages).

In addition, SSAR members receive a substantial discount on all book-length *Facsimile Reprints* and *Contributions to Herpetology* issued during the year. Members may also place standing orders for accounts in the SSAR Catalogue of American Amphibians and Reptiles. Those persons electing the higher membership categories (Sustaining and Contributing members) receive the same publications and services, but provide additional financial support which allows the Society to expand and improve its programs more rapidly than would otherwise be possible.

**membership privileges**

- **INDIVIDUALS:**
  - Student member $15.00
  - Regular member $18.00
  - Sustaining member $25.00
  - Contributing member $30.00
  - SSAR Catalogue of American Amphibians and Reptiles, standing order $6.00

- **INSTITUTIONAL:**
  - Publications set: *Journal, Facsimiles* (booklet series), *Circulars*, and *Herp Review* $30.00
  - SSAR Catalogue of American Amphibians and Reptiles, standing order $12.00

**membership/subscription**

Please mark those boxes opposite the items you wish to subscribe to or order, fill in your name and address, and return to:

Dr. Henri C. Seibert
Department of Zoology
Ohio University
Athens, Ohio 45701

Your name and address: ____________________________

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Please check here if you want a list of all SSAR publications available for purchase. □

Make checks payable to "SSAR"; receipt sent on request only.
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Department of Herpetology
Houston Zoological Gardens
P.O. Box 1562
Houston, Texas 77001

HERPETOLOGICAL REVIEW EDITORIAL POLICY

The following statement-of-purpose appeared in the Introduction to the first issue of Herpetological Review in 1967 (Corson Hirschfeld, Editor):

"Herpetological Review incorporates the Ohio Herpetological Society Newsletter. Its primary function, as the name states, will be to review herpetology, past and present, in terms of the individuals, institutions, literature and other components of the field. Perhaps equally important, the Review will provide a unique means of communication among persons interested in amphibians and reptiles. We believe it will be of interest to all persons in herpetology and we hope all members will find it informative and entertaining."

Herpetological Review still remains true to that purpose. We will continue to publish semi- and non-technical articles (original research should be submitted to the Journal of Herpetology—see inside front cover for address), book reviews, institutional and regional society news, research requests of SSAR members, letters from readers directed to the field of herpetology, illustrations, and photographs. Manuscripts submitted must be typed, double-spaced, on 8½ X 11 paper, and should be sent in duplicate. Unpublished photographs of an unusual nature or of uncommon amphibians and reptiles may also be submitted. Submissions should be black-and-white, 8 X 10, glossy prints, and should be accompanied by a descriptive caption and exposure data. The name and address of the contributor should be typed or penciled on the back of each print. Please DO NOT send photographs before corresponding with the editors about them. Return of the unsolicited photographs cannot be guaranteed unless adequate return postage is provided. Unused photographs which the editors have requested to examine will be returned at our cost.

Reprints of contributions cannot be supplied. Contributors may reproduce up to 200 copies of pages containing their own articles for private distribution only. No reproduction for sale purposes is permitted. Herpetological Review will accept commercial advertising (except live animal ads). Rates and copy information are available from Barbara Paschke, HR Associate Editor, 731 Tennessee Street, Lawrence, Kansas 66044 USA.

GRP & JTC

SSAR CATALOG OF AMERICAN AMPHIBIANS AND REPTILES

THE CATALOG: Imprinted binder, taxonomic tabs,
accounts 1-245
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Please make checks (U.S. Funds only, please) payable to SSAR and mail to:

Douglas H. Taylor
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Miami University
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USA