

T H E VIVARIUM

American Federation of Herpetoculturists Vol. 4 No. 5 \$7.00

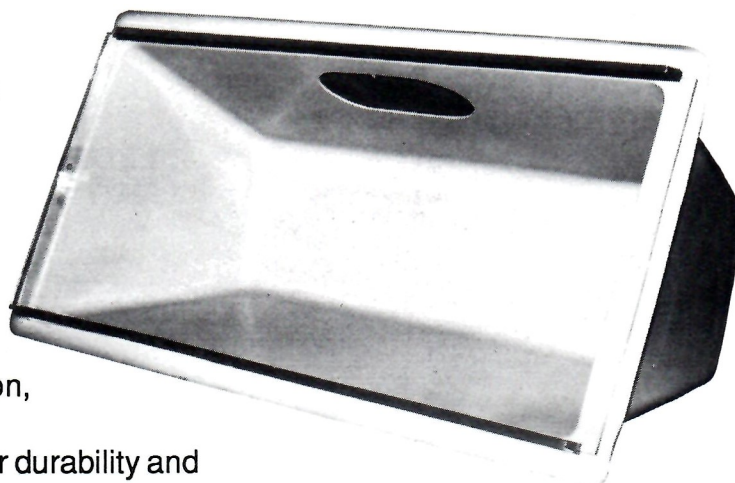
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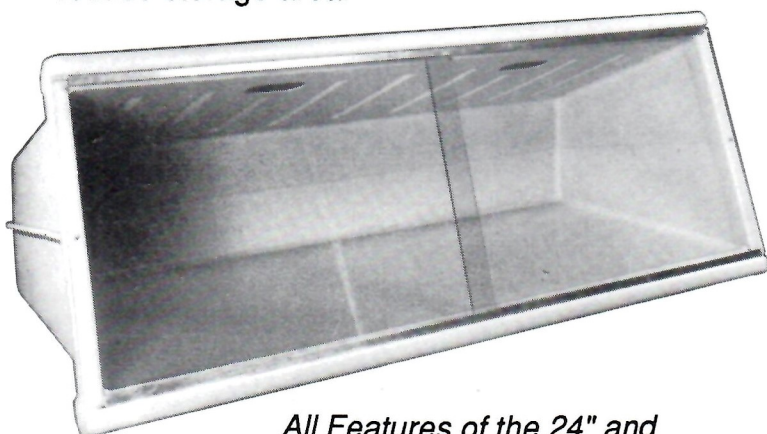
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THE VIVARIUM, (ISSN 10472665) is published six times a year January/February, March/April, May/June, July/August, September/October and November/December issues. Subscription price is \$26 for U.S. and \$32 for all foreign countries per year. Published by American Federation of Herpetoculturists, P.O. Box 1131, Lakeside, CA 92040-0905 Tel# (619) 561-4948. Second-Class Postage Paid at Lakeside, CA and additional mailing offices. POSTMASTER: Send address changes to THE VIVARIUM, P.O. Box 1131, Lakeside CA 92040-0905.

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March/April 1993

AFH Perspective

Dear AFH Member,

A new day is dawning for the American Federation of Herpetoculturists (AFH). The AFH has begun to lay a foundation upon which we will strive to build a vital and influential legislative presence.

Over the past eight months, the AFH board has been considering applications for the position of AFH Legislative Representative. On February 6, 1993, five AFH members were chosen to serve as your AFH Legislative Representatives. They all possess special knowledge, experience and skill, coupled with an ardent desire to assist you with legislative challenges.

Each representative will be featured in the legislative columns of upcoming issues of *The Vivarium*, but the following serves to introduce them:

Louis D'Armas; Brooklyn, New York.

Louis is presently focusing his attention on monitoring state and federal legislation which may adversely affect the rights of herpetoculturists. His goal is for the AFH to become instrumental in the creation of herpetocultural legislation which would serve as a model for all states.

Phil Jones; Jefferson City, Missouri. Phil has worked with Missouri herpetological societies to defeat unreasonable legislation (see *The Vivarium*, Vol. 4 No. 4) directed at herpetoculturists and others in Missouri. Phil is assembling a data base from which to mail legislative alerts to AFH members.

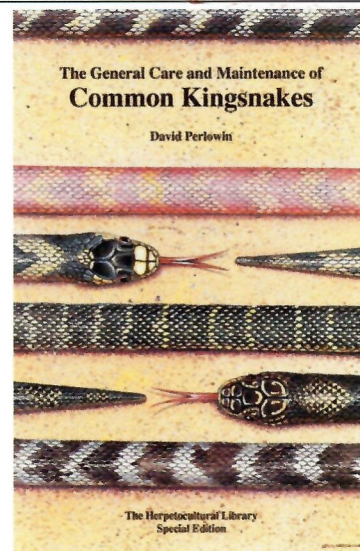
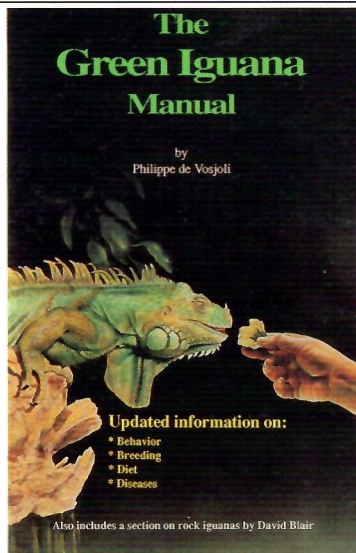
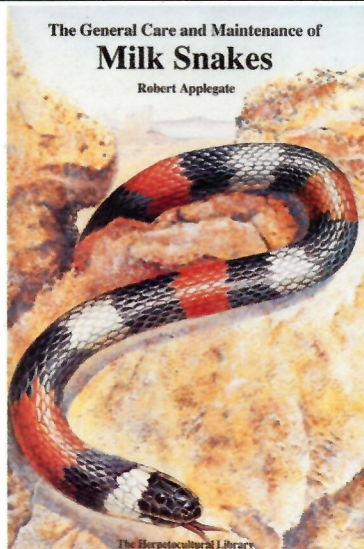
Richard Strieber; San Antonio, Texas. Richard assisted the San Antonio City Attorney in drafting a new animal control ordinance affecting the keeping of large boids and other herps. A lawyer by profession, Richard will bring valuable knowl-

edge and perspectives to the AFH. His legal work has involved representing pet retailers and a non-profit animal welfare organization.

Gaylon Holmes; Casper, Wyoming. Gaylon is the founder of the Wahsatch Alliance of Herpetoculturists (WAH) organization and publisher of the official journal of the WAH, *The Amateur Herpetoculturist*. Gaylon recently played a significant role in implementing new herp related legislation regarding the importation, possession and sale of wildlife in Wyoming. His success underscores the importance of cooperating with agencies responsible for the protection of wildlife, informing them of the herpetoculturalist's perspective and submitting reasonable and workable proposals to legislators.

Glen "Jake" Jacobsen; Oakdale, Minnesota. Jake is an attorney and is also

continued on page 8



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Herp News

from Around the World

by
Ellin Beltz

WORK HARD, HAVE FUN

• Volunteers are needed immediately for five, fascinating herpetological projects around the world. Sponsored by Earthwatch, a non-profit organization that provides funding to field scientists worldwide, the projects are led by scientists and last from 10 days to three weeks. You must be 16 years or older, and project contributions of \$800 to \$2,200 are tax deductible and include food, lodging, and field equipment. Transportation to and from the site is not included. There are several departure dates for volunteers in the range of times listed below. Please mention *The Vivarium* when you contact Earthwatch at Box 403, 680 Mount Auburn Street, Watertown, MA 02272, or phone 617-926-8200 for more information. The projects are: 1) Beach-walking to locate females, measuring nest temperatures, and chaperoning hatchling leatherbacks to the sea on St. Croix, U.S. Virgin Islands, from April to July 1993; 2) Determining the effects of lizards on spider abundance and diversity in communities on Baja Island, Baja California, Mexico from June to August, 1993; 3) Capturing and tagging rainforest animals including the endangered broad-nosed caiman in Mata Atlantica, Brazil from January to July 1993; and 4) Surveying, weighing, measuring, photographing and observing the behavior of Madagascar's amphibians and reptiles in October, 1993.

WE'D PREFER THEY DIDN'T DO THIS

PART ONE: According to University of Colorado researcher, David Chiszar, drug dealers are using rattlesnakes, cobras, and other venomous snakes to guard or booby trap money or illegal drugs. A Burmese python was confiscated by Denver police. The dealer that formerly owned it had deliberately wounded it to make it more aggressive. Another widely publicized incident occurred when drug dealers released a Gaboon viper in their premises after hearing of a potential raid by police. In the import end of the business, drugs have been

force-fed to reptiles which are transported across borders and subsequently killed to remove the merchandise. [*Rocky Mountain News*, October 27, 1992, contributed by Monte McEntee and *Seattle Times*, October 26, 1992, contributed by John R. Stebbins.]

PART TWO: Steve Frantz of Mount Vernon, Ohio wrote: "At the last Reptile Swap Meet in Columbus, Ohio, workers at the Ramada Inn found a snake cruising the hotel several days after the swap. They put the snake in a bucket and called T-turtle Pet Shop, just down the road. R. Fraker came, identified the snake as a California kingsnake and took it to his pet shop. He called the Columbus Zoo to look at his new find. He also called the media to inform them of his heroics. The hotel workers had a gag order from the hotel [management]. When people from the Columbus Zoo came over to T-turtle, Mr. Fraker reached into his tank and pulled out his California kingsnake. It turned out to be a banded krait! It was promptly put back into the tank and [it] is now residing at the Columbus Zoo. The [ads for] the swap meet state "No Venomous Animals"... Boneheads insisting upon having a hot room which I've never seen, but have heard about, at these events, will only ruin our opportunity to keep and enjoy our own animals in our homes. It only takes one person to cause legislation which will affect us all. I'm sorry I don't know who brought the krait. It would be nice to crucify him [by publicizing the name]... At any rate, I feel people should be informed to look out and stop these boneheads, before they stop us." Agreed, Steve, but crucifying is too good for anyone dumb enough to lose a venomous snake in a hotel, at an event where 'hot stuff' was prohibited. As I wrote in an article with Tom Anton that was published in a *League of Florida Herp Societies January, 1991 Bulletin*, venomous animals must be maintained in locked containers. Anything less is totally irresponsible. For reprints of "About Venomous Snakes in Captivity" please write Wayne Hill, c/o the Central Florida Herpetological Society, P.O. Box 3277, Winter Haven, FL 33881. Don't forget to send a stamped, self-addressed, business

size envelope.

PART THREE: A man was arrested after a traffic stop when police found 48 rattlesnakes, a Gila monster, 45 nonvenomous snakes, 67 scorpions, several tarantulas, some lizards and a parrot in the car. The 35-year-old Arizona man was charged with four counts of illegal possession of wildlife and venomous reptiles. The police said he had been weaving all over the road before they stopped him. [*New York Newsday*, October 13, 1992, contributed by Melicia Phillips.] Is it possible this dude was on his way to the swap meet?

VIRGINIA LEGISLATION TAKES EFFECT IN 1993

• Brenda Frye of Hopewell, Virginia wrote: "... As a lesson in the costs of apathy, as of January 1st, it is illegal to buy or sell or keep more than five specimens of a number of reptiles native to Virginia including *Lampropeltis getulus* (all subspecies) and *Elaphe guttata*. I fail to see the purpose of a law that forbids the

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buying and selling of captive-bred animals but allows people to collect wild specimens of species threatened with extirpation over much of the state. It is unfortunate that more people did not object."

WANT TO MEET 2,000 PEOPLE?

- The Southwestern Herpetologists Society (SWHS) presented their 11th Live Reptile and Amphibian Exhibit and attended by 2,407 people, including 795 children. The Education Committee had a table, and 266 taxa were exhibited by SWHS members. [SWHS Newsletter, November 1992, contributed by Mike McNeil.]

LOS ANGELES' SALMONELLA RUMORS LAID TO REST

- Another item of interest from SWHS was a letter I received from Melissa Kaplan: "I am on the Education Committee of the SWHS. A few weeks prior to our exhibit in October, several people in the society expressed concern about the major iguana-related salmonellosis outbreak in Los Angeles. In every instance, these individuals were unable to provide concrete information substantiating their statements. Therefore, I decided, to contact the Los Angeles Health Department. I was put in contact with Dr. Roshan Reporter, who emphatically stated that there is no epidemic or outbreak. In 1992, they have had only 5-6 cases referred to them. As a result of my interview with Dr. Reporter, I wrote [an article which will be published in an up-coming SWHS publication] and created a poster on *Salmonella* for our interactive education corner at our exhibit. Liz Baronowski of the Pasadena Humane Society saw it and asked for a copy to give to the Pasadena Health Department; one woman there was most insistent that Liz stop taking her iguana around because of the "slime" it "oozes" - and incorrect interpretation of "shedding virus." Dr. Reporter stated that she notified surrounding health departments about the iguana-Salmonella issue to try to help them save time and focus their investigation when they receive

reports about unusual strains of *Salmonella* ssp. She stated that the iguanas in her cases did not come from the same pet stores nor from the same dealers." Melissa included a copy of her article. Readers interested in a copy can contact SWHS, P.O. Box 7469, Van Nuys, CA 91409. As always when writing to a not-for-profit group, enclose a stamped, self-addressed, business size envelope and a friendly note.

HURRICANE ANDREW UPDATE

- Florida state inspectors contacted about half of the 240 dealers, breeders and importers who held exotic-animal permits in Dade County and compiled a list of what those people said they had lost during the storm. One reptile dealer reported 60 boa constrictors missing, while others have lost reticulated and Burmese pythons. Lizards are also on the loose, from geckos to monitors to tegus. And the list doesn't include people who lost pets. Some of these animals may establish themselves as did the South American cane toads, the infamous *Bufo marinus*, which live and breed in Florida after hopping away from a broken shipping crate in Miami Airport during the 1950s. Native animals may have also been affected. American crocodiles have used canals near a nuclear power plant to build nests and lay eggs. Parts of the facility were damaged, although the reactors themselves are fine, and biologists have been trying to determine whether the baby crocodiles survived the storm. There are only about 450 American crocodiles left, and they are on the endangered species list. [Orlando Sentinel, September 13 and September 20, 1992, contributed by Bill Burnett.]

OFFICIALS CLEAR ON THE CONCEPT!

- Local officials in New Jersey voluntarily halted construction work on a sewer project that only had ten days left to completion to allow wood turtles to breed without interruption. Their constituents were moved by their action, many telephoned or wrote letters of thanks to members of the borough council. The council's action was not prompted by a threat of adverse publicity, and state law did not require it. Instead, the council decided to wait based on the environmental concern of its members. The wood turtles liked it, too. They bred and have gone to higher ground where they traditionally overwinter. Borough Councilwoman Rose Murphy said, "As utility chairwoman, I couldn't go out of my house without people stopping me, saying they saw the turtles. People took videos of turtles. We got a letter from someone out of town who is a fan of turtles who sent our mayor a turtle made of [sea] shells." Even the construction company cooperated. The delay was not billed because the company had previously worked for the borough and had no problem with the delay. Murphy said, "We're just sur-

prised that people are reacting the way they are. We don't feel as a council that we did anything extraordinary... We didn't even discuss, 'What happens if we wait?'" [Asbury Park Press, September 30, 1992, contributed by William P. Mara.]

ISN'T IT SUPPOSED TO BE A HORSE HEAD?

- A police officer stopped to see why a car was parked on the side of the road near Clermont, FL and found a man sleeping with a dead alligator in the front seat. The man was charged with driving under the influence and underage possession of alcohol, and illegal possession of an alligator. [Leesburg Daily Commercial, September 27, 1992, contributed by Bill Burnett.]

SNAKE SPECULATIONS

- Two readers have responded to the request a while ago for information on WWII airmen with a large snake. The airmen are still unidentified, but Mike Dloogatch of Chicago suggests the snake may be an Indian ratsnake, *Ptyas mucosus*, and Greg Longhurst of Loxahatchee, FL thinks it may be a King Cobra, *Ophiophagus hannah*.

LETTERS, LETTERS

- Mark Bayless writes: "I almost choked to death when I read the 'Ontario collection's new home in Quebec' piece, especially the statement '...We make every effort to maintain the natural characteristics of all animals in the zoo... It is the animals that are our first priority.' I know for a fact that the Bengal monitors (*Varanus bengalensis*)...are kept in 6-foot rectangular metal drums completely covered and heated with french fry lamps at one end. Their previous enclosure was a roomy 12-foot square cage where [they] had room to engage in reproductive behavior (and had been observed doing so!)... I understand the animals are in the care of the pachyderm keeper, who has not as much experience with these animals as would be optimistically preferred... A large *Varanus salvator* is also kept at this zoo in this manner. I believe the monitors should either be moved to larger quarters or perhaps to USA zoos with larger facilities and staff who can properly care for/possibly breed them."

- John A. Rybak writes: "My friend and I just saw a TV show on rattlesnake roundups and were completely infuriated by the ignorance and destruction of these gatherings. The roundups MUST be stopped, not only for the innocent snakes, but the other fauna in the areas that are gassed by these people (not even mentioning all the danger the people are in). There is *Save the Whales*, and other similar projects with all that hype, but no *Save the Snakes*. Aren't snakes important, too? These things need to be ad-

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dressed in *The Vivarium* so concerned herptile enthusiasts will make donations and be aware of the deliberate destruction that is happening RIGHT NOW! And hopefully we can stop it!" Actually, John, there are courageous souls who go out to the roundups every year to protest. It doesn't do much good. What is needed, in my opinion, is for the Environmental Protection Administration and Texas Parks and Wildlife to start enforcing laws that are already on the books which prohibit certain aspects of these events. These events are the mainstay of their communities, both culturally and financially, according to organizers. Limiting or eliminating them may require more "backbone" than some lawmakers and law enforcers are willing to expend.

- Nathan P. Gursky writes: "I am a pre-vet student in my fourth year at UC Davis... Enclosed is an essay that I discovered in my English text (Comely, Hamilton, et al., *Fields of Writing*, 3rd edition, St. Martin's Press, New York, 1990), based on Isak Dinesen's reflections after killing a large lizard. The last paragraph of the essay delivers a powerful argument worth sharing. '...it was as if an injustice had been done to a noble thing, as if truth had been suppressed... In a foreign country and with foreign species of life, one should take measures to find out whether things will be keeping their value when dead. To the settlers of East Africa I give the advice: for the sake of your own eyes and heart, shoot not the Iguana.' I've...spent a considerable amount of time researching this. Not once did I come across mention of an iguana that lives in Kenya. Any insight into this dilemma that you might be able to provide would be greatly appreciated." [People often use names for animals that are similar to what they may be familiar with in an incorrect manner. Hence "goana", a variation of the word iguana was used by English settlers in Australia for monitor lizards there. As you correctly surmised, no iguanas live in the wild in Kenya-Ed.]

- Two other letters deserve comment but not quotation: 1.) I stated that there was a gag order in place on a Florida trial. That statement was taken directly from a newspaper article, and I stand by my use of that article as a source. 2.) I will most probably continue to use the word "pet" when referring to animals maintained by individuals in captivity. According to my dictionary, the word dates back to the Middle Ages and is not incorrect in the above context.

- Personal to T.V. who asks how to get letters to editors published: be brief, be interesting, and be patient!

SOMALI SNAKES SCORE FIRST

- A U.S. Marine was in sick bay aboard the *USS Tripoli* for treatment of a snakebite inflicted by a mole viper in Somalia. The Marine was the first casualty in the humanitarian campaign currently underway in that African na-

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tion. The bite reportedly occurred when the man rolled over in his sleeping bag. [Delaware State News, Dover, December 19, 1992. Contributed by Jim Merli.]

AUSTRALIAN HERPS IN NEWS

- Euan Edwards of Queensland sent a clipping from the December 17, 1992 *Courier-Mail* which mentioned the recent rediscovery of the blue-tongued pygmy skink in the stomach of a road-killed brown snake (*Pseudonaja textilis*). This species of skink was last noted by science in 1959. He also sent a clipping from the November 22, 1992 *Sunday Mail* which reports that a lizard, new to science, has been discovered in Queensland. We look forward to hearing more about this animal which is reputed to live in burrows in a semi-evergreen vine thicket in a forestry reserve.

AND THEY WONDER WHY?

- Bryan I. Lorber of Vermont sent a copy of an article sent to him by a friend in Sri Lanka. Attached to the article which notes that Sri Lanka has the highest death rate from snake bite in the world (5.7 per 100,000 population) was a letter from his friend describing a fashion show that "had a live snake 'exotica' in cages around the runway. There were kraits, vipers, and cobras. The most amusing point was that one cage was empty...men were poking around the tables and chairs!"

CAN PYTHONS EAT PEOPLE?

- Roger Syriste of Alberta, Canada sent a clipping from the *Edmonton Journal* [December 31, 1992], and a letter wherein he asks if large snakes really do eat humans. It seems that a provincial judge fined a man \$300 after convicting him of keeping a Burmese python over 8-feet long without an exotic animal permit. Testimony was taken from John Accorn, identified as a snake expert who indicated that pythons can eat humans.

SNAKE BITE VENOM EXTRACTORS INEFFECTIVE

- According to a letter to the editor in the *New England Journal of Medicine* [October 29, 1992, contributed by William Gurske], investigators have found that claims made by the manufacturers of suction type snake-venom extractors are "misleading at best and potentially dangerous to the unwary. Venom extractors have not been scientifically evaluated, and their increasing use is unmerited... The extractor's unintended effects include spreading venom if the device is used incorrectly, exacerbating tissue damage, and possibly infecting wounds made by nonvenomous bites... Antivenin is the only specific proved treatment of snake-venom poisoning and should be used for all severe bites."

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POSSIBLE "NEW" MARINE REPTILE

- Two scientists presented a report of a long-necked, small headed "marine reptile" which they named *Cadborosaurus* at the annual meeting of the American Society of Zoologists in Vancouver, British Columbia according to an article published in the *Morning News-Tribune* of Tacoma, WA [December 28, 1992, contributed by Marty Marcus]. The researchers compiled 80 published sightings and accounts of sightings of the animal described by some as a sort of Pacific Northwest "Loch Ness" monster. One of the researchers believes it is probably a cold-blooded air breathing reptile. Other scientists pointed out a lack of specimens. One said, "There's not a single bone of any of these animals, or a piece of skin."

BUT HOW DO YOU PLOW 'EM?

- Fred Millard, a farmer in Birmingham, Iowa has recently appointed himself "America's Turtle King," as he starts his third decade producing turtle meat. He began catching turtles as a youngster, later he began the farming system which now produces 30,000 to 40,000 turtles a year at the Millard Turtle Farm. The meat is distributed around the nation and live turtles are shipped overseas. He said, "I'll fight harder than anyone to keep the turtle from becoming extinct. I'm the last one who would want to see that happen. Turtles are my business and I think the more turtles there are, the better off all of us are." [Des Moines Sunday Register, November 22, 1992, contributed by Tom Weidner.]

FIELD NOTES

- India's flesh-eating turtle release in the Ganges has generated an enormous amount of press in recent months. The turtles were released with the stated intent that they would help clean up the river by eating any leftovers from partially cremated corpses thrown into the Ganges. Newspaper writers and editors appar-

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ently just can't resist "turtle bites man" stories and have offered this grisly morsel in many guises. In answer to several inquiries, yes, the story is true. Thanks to everyone who contributed this story, including Dorothy DeLisle, whose envelope bore the earliest postmark.

- Sea turtles with their throats cut are washing up on southern beaches, a possible "retaliation" by shrimpers for the Bush administration's surprising, last-minute order to begin enforcing Turtle Excluder Device (TED) implementation late in 1992. "Under this new rule, shrimpers can be immediately punished when they have not been given any prior notice that they would have to begin using TEDs in their nets on December 1," complained D-LA Representative Billy Tauzin in an angry letter to Commerce Secretary Barbara Franklin. He has proposed a sweeping change of the Endangered Species Act which will be up for a vote in Congress in 1993. He hopes to get the TED rules overturned at that time. [*Memphis Commercial Appeal*, December 27, 1992 and *Leesburg, FL Daily Commercial*, December 6, 1992]. Meanwhile, in Nicaragua, armed soldiers patrol turtle nesting beaches to prevent poaching of eggs and laying females. [*Orlando Sentinel*, November 7, 1992, all from Bill Burnett.]

- Fewer alligators were killed in this year's commercial harvest in Florida than during 1991. Only 1,491 alligators were killed in 1992, compared to 2,402 in 1991. The market for hides and meat is depressed leading officials to specu-

late that economic reasons were responsible for the decline in participation. Alligator farmers are also facing tough times due to overproduction and a weak market for meat and leather. [*Orlando Sentinel*, November 11 and December 7-13, 1992, contributed by Bill Burnett.]

LOOSE SNAKE ROUNDUP

- A 4-foot ball python which had slipped out of an Oceanside, NY pet shop was recovered by Nassau police. [*Newsday*, July 29, 1992, contributed by Paul J. Kayser.]

- A dead reticulated python was pulled from Biscayne Bay, FL by a lifeguard who said it was the "biggest snake I ever saw." Ron Magill, assistant curator of reptiles at Miami Metrozoo speculated that Hurricane Andrew may have been the cause. He said, "Many of people in South Florida have strange, exotic pets. A lot of their enclosures were blown away in the hurricane and they [the animals] escaped." [*Miami Herald*, November 13, 1992, contributed by Alan W. Rigerman.]

- A 6.5-foot python slithered out of a pile of wood-chips in South Jordan, Utah. Police have asked the owner to come forward and claim the animal. [*Salt Lake Tribune*, November 11, 1992, contributed by L.D. Gritton.]

In addition, I'd like to thank those who sent duplicate articles or interesting articles which I couldn't use this time: Robert Sprackland, Chip Miller, Bill Burnett, Ernie Liner, K. Thom Slack, Matt Aikawa, Bruce Hannem, Tom Devitt, Mike McNeil, Dan Adams, Melody V. Smith, Alan Rigerman, Dennis Sheridan (thanks for the cartoon!), Theron E. Magers, Steven L. Frantz, Paul J. Kayser, and Sue Black of the Upstate (NY) Herpetological Association. To become a contributor, send clippings with the name of the paper, date of publication and your name (all firmly attached) to me in care of the AFH. I have very few items left in the file, so if you've been waiting to contribute, now's your opportunity. Send to: Ellin Beltz, c/o AFH, P.O. Box 1131, Lakeside, CA 92040-0905. Trivia fans may note, this is my 12th appearance in The Vivarium! Seems like only yesterday ...

ERRATA

We apologize for the erroneous duplication of Vol. 4 No. 2 Herp News in Vol. 4 No. 4 Herp News column.

Ellin Beltz suggested a condensed version of two columns may help rectify the error. Under her good suggestions we have done just that. Hope you enjoy.

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Perspective continued from page 4

serving as president of the Minnesota Herpetological Society. Jake has a strong interest in Convention on International Trade in Endangered Species (CITES) and with other Legislative Representatives will advise the AFH regarding appropriate positions on this important and often controversial treaty. He has worked as both a prosecuting and defense attorney in criminal cases, understanding and appreciating the difficulties and nuances of both perspectives.

All AFH Legislative Representatives are now available to give our members information, ideas and support regarding legislative problems. The AFH freely offers this service but requests that you please address all correspondence to AFH, Legislative Assistance, P.O. Box 1131, Lakeside, CA 92040-0905. Your issue(s) will be assigned to the appropriate representative who will respond either by correspondence or telephone.

Also, please purchase and become familiar with the AFH Legislative Packet, \$16.00 including shipping. We have kept the price as low as possible so any member may take advantage of the many hours of successful experience reflected in its pages. It is both a costly and inefficient use of your Legislative Representative's time if he must answer questions or reiterate suggestions or positions already stated in the Legislative Packet. We must use our resources wisely if we are to build an effective national network.

In an effort to further educate and enlighten our members, the AFH will soon introduce a new occasional column in *The Vivarium* entitled "Open Forum." This column will give members, legislators, wildlife law enforcement agencies/officers, etc., an opportunity to state their opinions and share their perspectives on upcoming legislation, wildlife enforcement procedures, etc. The AFH believes that only after carefully considering all sides of an issue will our members be able to formulate reasonable, fair and acceptable positions on matters of vital importance.

I believe if we work with our new Legislative Representatives the American Federation of Herpetoculturists will be able to address herpetocultural issues in a manner that will have positive and lasting effects for ourselves, our animals and our environment.

Jeff Nunan

**Legislative Action
Coordinator**

THE VIVARIUM

Raymond L. Ditmars

by
Roy Pinney

I was about thirteen at the time, a New York City kid with a passion for snakes who had the chutzpah to call Raymond Ditmars, the legendary Curator of Reptiles at the Bronx Zoo, for an appointment. My excuse was that I had a blacksnake and would he be willing to serve it up as dinner for his well publicized king cobra. He said "sure, bring it over." I cut classes and went to see him.

A couple of months earlier I had spent two weeks at a Boy Scout camp in nearby Bear Mountain, my first trip out of New York City. While the other city youngsters were learning how to swim, canoe, or play baseball, I was out in the woods looking for snakes. One day, I caught a gigantic black rat snake (well, maybe it was slightly more than four feet long). Another day, I caught my first timber rattlesnake, proudly marching into camp hand-holding the venomous reptile. These specimens were given to the Bear Mt. Trailside Museum, and I was warned to quit searching for snakes or be sent home. The day before my allotted two weeks at camp ended, I caught a black racer, put it in a pillow case, and brought it home. It seems some adult blacksnakes, it seems, don't make good pets, and this one kept striking at me as I attempted to tame it. After an hour or so, I was a bloody mess, and I concluded it deserved to be given to the 'cannibalistic' king cobra.

I found Ditmars to be a man of serious, even brusque mien. I realize now that he was always more than generous with his time and knowledge, especially in view of his time-consuming duties at the reptile house. He also had a heavy schedule of lectures, collecting trips, writing, film making and involvement with antivenin



Dr. Ditmars with insect cages, 1934. New York Zoological Society photo.

production. He introduced me to his assistant, Charles Snyder, who took the blacksnake. A few years later Snyder would be fatally bitten by a timber rattlesnake within hiking distance of where I had caught my first rattler.

Born on June 22, 1876, in Pensacola, Florida, Raymond Lee Ditmars' boyhood interests, besides snakes, included meteorology, fire engines, and collecting butterflies. It was his expertise in the latter that, incongruously enough, was a prime factor in opening the door to what was to become a lifelong career as a herpetologist. His parents were adamant in their initial refusal to tolerate the presence of live snakes in their home. Mounted butterflies had their sanction, however. This sparked the interest of Dr. William Beutenmiller, the American Museum of Natural History's entomologist, when he saw Ditmar's collection of Lepidoptera. Ray was hired to work on the museum's insect collection, but his overwhelming interest in snakes soon made itself felt.

At seventeen, he wrote a paper on the snakes found in Central Park, which he delivered as a lecture before a museum audience. He was encouraged by such world-famous naturalists as William Beebe, William T. Hornaday, Morris K. Jesup, and Henry Fairfield Osborn. Dr. Beutenmiller suggested that he enlarge the report to cover snakes of the entire state. Ditmars did so, and it became the first of a voluminous output of books, articles, lectures and motion pictures demystifying reptiles and amphibians.

One day while working in the museum, young Ditmars received a request from a Port-of-Spain, Trinidad herpetologist named R. R. Mole. He was offering a collection of tropical snakes in exchange for an equal selection of North American specimens. Ray was more than delighted to swap a shipment of rattlers, copperheads, black racers and eastern indigo snakes for exotic coral snakes, fer-de-lances, boa constrictors, a bushmaster and other tropical prizes.

continued on next page



Dr. Ditmars and assistants force-feeding a reticulated python. New York Zoological Society photo.

Little by little, the fame of young Ditmars began to spread. A newspaper article of his experiments with snake venom resulted in a visit from the distinguished Dr. Weir Mitchell, who was a pioneer in the search for effective antivenins. His interest gave great impetus to Ditmars' investigations into snakebite remedies which then were in an early stage of development. He could not afford to do much collecting and research on his meager assistant's salary from the American Museum of Natural History, but continued with his passionate interest in herpetology.

He left the museum to become a reporter for *The New York Times*. After a period of routine assignments he was asked to interview his old acquaintance Dr. William T. Hornaday, Director of the New York Zoological Society about the new Bronx Zoo-in-the-making. Ditmars found Hornaday's enthusiasm for the project contagious, and his resultant story in the *Times* inspired Hornaday to offer him a new post as keeper of reptiles.

On July 7, 1899, at the age of 23, Ditmars became the Bronx Zoo's first Keeper of Reptiles. His personal collection of 45 snakes became the nucleus of the zoo's reptile exhibit. He designed the cages, acquired additional snakes, lizards, turtles and crocodilians. Among his duties he managed to sew back together a disemboweled alligator (which lived for another thirty years), healed the mouth rot of a reticulated python, and went on a series of

collecting trips. Newspapers covered his repeated expeditions to Trinidad in his unsuccessful quest to capture a bushmaster, the largest neotropical pit viper (said to attain a recorded length of nearly 12 feet).

Meanwhile, Ditmars was working on his first book, based on notes he had compiled. *The Reptile Book*, dealing with North American species, was scientifically accurate yet comprehensible to amateur herpetologists. It became a world-famous classic. By 1907, the reptile collection numbered 900 specimens and the zoo was drawing immense crowds. Two years later Ditmars made a European tour and returned with four dozen crates of reptiles, birds, and mammals. Ditmars started augmenting his lectures with his motion-pictures. So successful were his films that commercial motion-picture companies bought and showed them - many decades before Marlin Perkins' *TV Zoo Parade* and *Wild Kingdom* were regarded as innovations. Ditmars, by now married and a family man, achieved another dream - the construction of a large home in Scarsdale, New York, which included a movie studio for filming small animals. Andrew Carnegie was so impressed by a private showing of Ditmars' films that he contributed \$100,000 to the Zoological Society's pension fund.

As the curator of reptiles at the Bronx Zoo, Ray Ditmars was regarded as the font of knowledge by budding herpetologists. He was famous among the general public as well. A prolific writer, he was also much

written about, and had a way of finding himself in situations that made excellent newspaper copy.

DITMARS SHARES PULLMAN BERTH WITH KING COBRA, proclaimed a headline in *The New York Times*. When the National Zoo in Washington, D.C. was preparing to open a reptile house, officials appealed to Ditmars to provide what would be the star of any display collection of the time: a king cobra. Ditmars could sympathize. No one knew better than he how hard that spectacular snake was to come by in those days. He sent the word out and soon an animal dealer in New Jersey called to offer two king cobras that had just arrived as part of a shipment from Singapore. Although they were in poor condition - undernourished and bruised - he purchased both, one for the National Zoo and the other for the Bronx collection. When the new reptile house in the nation's capitol was ready, the intervening weeks of expert care had restored both cobras to their natural splendor.

The next problem was how to get the National Zoo cobra to its destination. It was early winter, and a cold one. To ship the tropical cobra would entail a freezing journey of many hours which, might prove fatal to the snake.

Ditmars decided to take it with him on the sleeper, a feasible plan provided Pullman personnel remained unaware of the contents of their passenger's extra piece of luggage. The king cobra thus rode first-class as befitted its nomenclature, and arrived at its new home without incident.

Although most of Ditmars' field trips were within two hundred miles of New York City, he did on occasion extend his collecting as far afield as Panama, Honduras, Brazil and Trinidad. While in Trinidad, he was given the unique honor of having a calypso song extolling his activities composed and performed.

Ditmars continued to write books and give lectures about reptiles and also never relaxed in his efforts to advance the work of the Antivenin Society. He died in Manhattan in 1942 from pneumonia at age 66. How many lives he enriched through sharing his knowledge and interest in herpetofauna remain incalculable.



THE VIVARIUM MAILBAG

Dear AFH:

Pertaining to the Phil Jones article, "Exotic Animal Legislation" Vol.4 No.4, pg. 30: An all-encompassing bit of proposed legislative such as this could seriously endanger the possibilities of captive breeding.

The proposal he mentions states that it is meant to prevent threats of disease or bodily harm to humans, agriculture and wildlife. It is a shame that so much public fear has been generated among people who don't understand the very animals that they will in effect "ban."

One cause of this public fear is the irresponsible public display of snakes and other reptiles. In one such incident, I noticed a young man carrying a ball python through a city park. This could cause intense fear in some people. It cannot be denied that "snake-phobia" is just as real and valid to some people as is claustrophobia or acrophobia, etc. Irresponsible displays are detrimental to the image of herpetoculture.

Another thing, I've seen people buying reptiles as "fashion pets." They are unaware of the requirements of maintaining such "pets" and not properly informed by the pet shop owner in many cases. Very often these animals die soon after purchase.

This brings up another point. Many animals are taken from the wild. It shocks me to see Senegal chameleons (*Chameleo senegalensis*) in a pet shop. The purchase of such animals from a pet shop only supports their removal from the wild in large numbers.

So, herein lies the complexity of the matter:

1) I am fundamentally opposed to this "Exotic Animal Legislature."

2) I am also opposed to the large scale removal of animals from the wild for indiscriminate sale. This especially includes rare or endangered species.

3) I am opposed to "fashion pets." Perhaps the only solution is some sort of permit which would require at least a rudimentary knowledge of reptiles.

Conservation is the issue. We should speak out *en masse* against restrictive legislation and look for ways to solve these other issues from within.

Let's not lose the right to responsibly own herptiles.

Bill Stamey, Memphis Tennessee

Dear AFH:

I am writing this letter as a concerned medical doctor, American citizen, and a long term herpetoculturist. I am concerned about what appears to be a governmental "crusade" on the federal level pushing state level "exotic animal legislation." Although I now work as a dermatologist, I completed an internship in pediatrics and at that time hospitalized numerous children for severe and life-threatening injuries resulting from domestic animals such as horses and dogs. I have also treated two children with congenital blindness that resulted from toxoplasmosis that was acquired in utero because their pregnant mothers had contacts with kittens. I have also treated many children for severe dog bites and falls from and kicks received by horses. In fact, my own son spent three days in the hospital because of severe facial bites due to a neighbor's dog. It is of interest that the Humane Society, which also seems to be pushing for "exotic animal legislation," was of absolutely no help to me when I sought advice from them in an attempt to get the dog that severely bit my child removed from its owner.

As an American citizen I am concerned that we are getting "regulated to death." Much of this is well intentioned but simply results in over-regulation which harms more people than it helps. It is certainly commendable to try to and prevent accidents before they happen. However, there is a point to which such attempts are taken to the extreme, resulting in over-regulation. The rain forests of this world are being decimated at an alarming rate. Without

American and European herpetoculturists there would be far less known about snakes, lizards and tortoises from threatened ecosystems.

In summary, I believe the intention behind the "exotic animal legislation" is commendable. However, I believe that the results will be disastrous to our efforts to maintain endangered and soon-to-be endangered species of reptiles. Furthermore, it will not significantly decrease the amount of injuries sustained by people from animals to any degree in this country. This is based on ten years as a medical doctor and almost 30 years as an herpetoculturist.

Norman R. Friedman, M.D.

Dear AFH:

A couple of weeks ago I visited an reptile importer's warehouse. It was the most repulsive sight I have ever witnessed. Not only was the place filthy and overcrowded, there were dead animals mixed in with live ones, and the animals were handled in the most appalling manner possible. One worker dropped a lizard, accidentally stepped on it, then just kicked it out of his way. When I complained to one of the workers (owners?), he asked me to leave. When I continued to complain, he told me to leave.

I immediately wrote to each member society of the Florida League. A member from one of the 12 chapters contacted me and asked if he could forward my letter to the appropriate state agencies. While

continued on page 36



THE GOURMET RODENT

RATS AND MICE FOR YOUR HERPS

BILL BRANT
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Mealworm Heretic

By
Dorothy M. DeLisle

Mealworms appear to have become a dirty word in herpetoculture. More and more people are recommending the complete banishment of mealworms (*Tenebrio molitor*) from herp diets. Whenever I encounter disciples preaching this religion, I always ask the rationale behind their doctrine. Usually, I am given the argument that mealworms have a high amount of chitin in their exoskeletons, making them indigestible and, therefore, worthless as a food item for herps. Before this religion enters mainstream herpetoculture, I must disagree and call the original preacher of the indigestible mealworm religion a false prophet.

Mealworms vary considerably in their chitin content over the course of their development. Smaller mealworms have less chitin than larger ones, and freshly molted mealworms have less chitin than less recently molted ones. Indeed, freshly molted mealworms are easily recognized by their light color (white at first, darkening as the chitin builds up) and soft flexible skins.

When I bring up that freshly molted mealworms have almost no chitin, the preachers all readily admit it. However, they often claim that searching for white mealworms is too much of a bother and unlikely to produce the quantity needed to feed a collection because of the low percentage of white worms present at any one time. In reality, the culture has to be searched anyway for worms of the appropriate size. As for the low proportion of white worms, increase the size of the culture. This is simply easy to do because of the low expense and low maintenance involved with raising mealworms.

Furthermore, there are ways to increase the actual percentage of white worms in a culture. I have observed that when you warm up mealworms that have been kept in a refrigerator (a standard practice in pet shops), a large proportion will go into molt

within 24 hours. Apparently, the larvae continue to develop at cold temperatures until they are stopped by a temperature-dependent step. Thus, the colony becomes somewhat synchronized. When warmed up, the previously halted development continues, and the worms who had reached the halt phase proceed to molt. Obviously, with a little experimentation in terms of the timing, this property of mealworms can be utilized to produce a high proportion of extremely low chitin mealworms on demand.

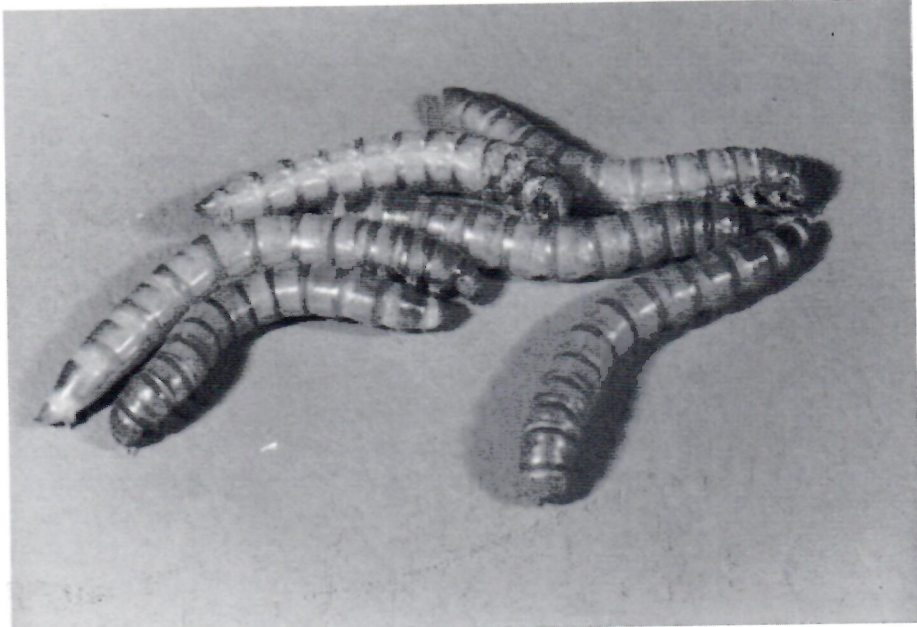
I make it a practice to visually examine the feces of my captives. I regularly feed mealworms and have seldom seen regular mealworms pass through herps undigested. This was noted in only one of several groups of Japanese fire-belly newt (*Cynops pyrrhogaster*) I have kept. When I use last stage larvae, I occasionally see segment flakes in the herp's excrement, but have never seen anything more. This is certainly nothing to worry about. It is only when I have fed the hormone-induced "jumbo" or "giant" common mealworms that I have seen significant digestion problems, but even this is limited to certain herp species,

i.e., the smaller ones.

Furthermore, there is a relatively new species of mealworm on the market known as the "king" mealworm (*Zophobas* sp.), developed for herpetoculturists by Professor Bert Langerwerf of Montevallo, Alabama. This species naturally grows to the size of the artificial jumbo common mealworm, but according to claims, contains less chitin than the common mealworm. Presumably, the king mealworm can be digested by many of those herps who cannot digest jumbo mealworms. I haven't personally done the test here because I haven't kept insectivorous herps of the proper size since king mealworms came on the market. I should add here an obvious, but often overlooked point; both regular and king mealworms start off life rather small, and the younger ones can be fed to the smaller herps. One answer to the question, "What do I feed herps too small to eat mealworms?" is, "very small mealworms."

Many herpetoculturists also raise miniature species of mealworms, such as *Alphitobius diaperinus*. These are the bugs that frequently infest bags of flour.

continued on page 14



The common mealworm (*Tenebrio molitor*). Photo by Dennis Sheridan.

THE VIVARIUM



A hatchling Komodo dragon (*Varanus komodoensis*) pokes a nose into the world at the National Zoo.

KOMODO MONITORS HATCH AT THE NATIONAL ZOO

by Trooper Walsh and Roger Rosscoe

On 13 September, 1992, the first baby Komodo dragon (*Varanus komodoensis*) ripped its way out of a leathery egg shell and into lizard history. Over the next few weeks a total of 13 dragon pups emerged from the clutch which had been laid at the National Zoological Park (NZIP) in Washington, D.C. eight and a half months earlier.

For safety and security reasons the majority of the eggs were setup in three separate incubators scattered throughout the Department of Herpetology at NZP. To further ensure the safety net, a portion of the clutch

was incubated and studied by reptile egg researcher Dr. Geoff Birchard at the George Mason University in nearby Fairfax, Virginia.

This successful dragon breeding was hailed in the press as "the zoo event of the decade" and "the herpetological event of the millennium." The dragon hatch marks the first time these amazing reptiles have bred in captivity outside of their Indonesian homeland.

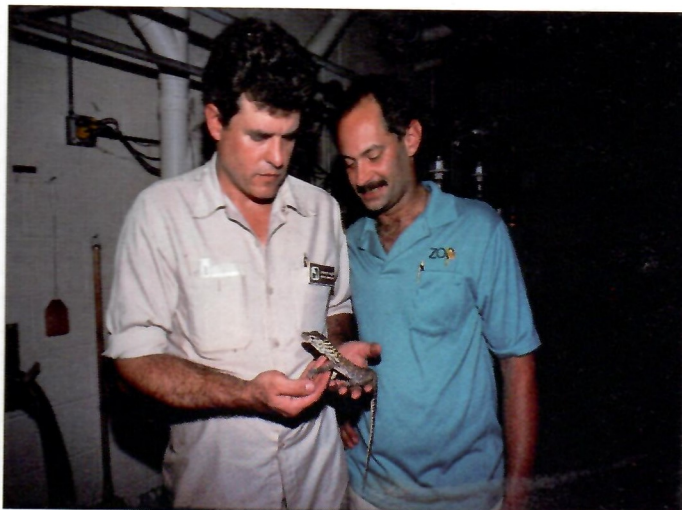
The now six month old lizards (referred to by their keepers as "little slashers") are

growing fast and doing well. The NZP is in the process of placing some of the young in other zoos. We are also preparing for the next wave of hatchlings which are expected in the late summer of 1993 as the result of cooperative efforts between the NZP and the Cincinnati Zoo.

Look for a detailed article in a future issue of *The Vivarium* on the husbandry and breeding of Komodo monitors at the NZP by project coordinators Trooper Walsh and Roger Rosscoe.



The young monitors tore out of the eggs quickly once pipped. After emerging they lay quietly beside the shell for up to 24 hours. Most were found still attached to the egg by the umbilical cord. In one instance, a hatchling was observed eating its own cord and afterbirth.



Department of Herpetology keepers Trooper Walsh and Roger Rosscoe admire "Kracken," the first Komodo monitor hatched in the Western Hemisphere.

Mealworms *continued from page 12*

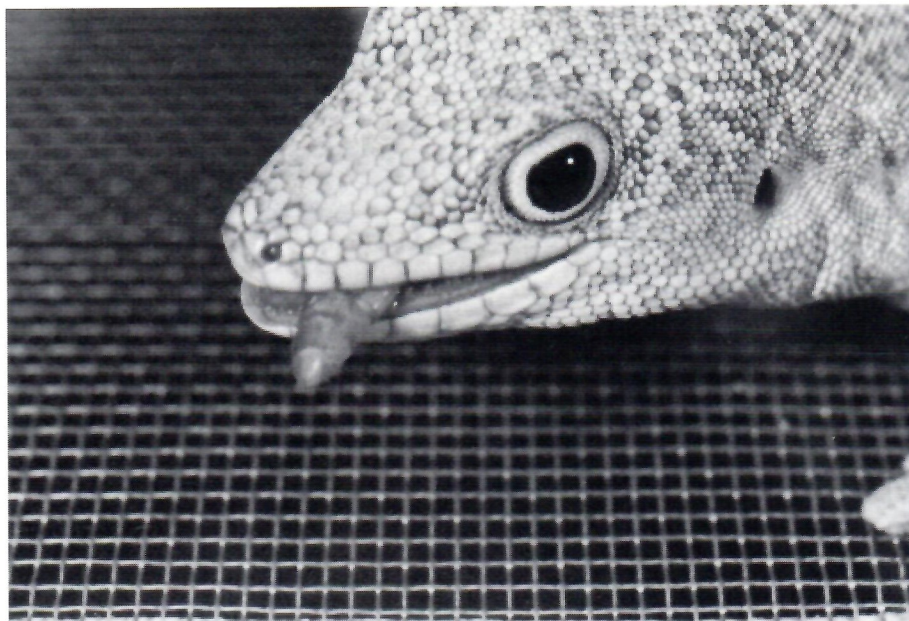
Unfortunately, no one seems to sell them commercially. If you can't get a starter culture from a friend, you will have to find your own starter stock in your kitchen cabinet.

It is my personal belief, from questioning people who have experienced the problem, that most cases of poorly digested mealworms are caused by feeding worms at or near the maximum size limit that a herp can ingest. Even though a herp may be capable of swallowing a large (last stage) mealworm, you shouldn't be feeding them that large. Medium sizes are more appropriate for the majority of animals fed mealworms. Large mealworms should only be fed to herps large enough to eat at least ten at one feeding. These digestive problems should completely disappear once one steps down to smaller, more digestible worms.

Having dismissed the myth of universal indigestibility of mealworms, my antagonists will then counter with some comment about their alleged low nutritional value. This is actually a moot point because we don't really know the nutritional requirements of most herps and thus don't know how well any food item fulfills them and because the nutritional value of insects is heavily influenced by their diet.

There are two basic ways to increase the nutritional value of mealworms. The first is to feed them high quality foods. Many people who practice this use chick starter (the dry stuff, not the mash) or hen laying (especially Purina Layena®) feeds because of the high nutritional value as well as the fine particle size. I use chick starter as my base and add to it the dust left when I finish off my other animal feeds (dog, mouse, rabbit, and horse, but not trout or monkey chows as they are too high in fat content). Some of the nutrients will be incorporated into the insect's body; the rest will pass completely through the gut and then be excreted. However, as the food will be in the process of traveling through the gut when the insect is eaten by the herp, this extra nutrition becomes part of the herp's dietary intake. This effect is known as gut loading.

Increasing an insect's nutritional value through feeding it quality foods does have its limitations. It cannot be used for non-feeding stages (not a problem with mealworm larvae) and really high concentrations of certain nutrients, including that all important calcium, are fatal to the insects.



A Standing's day gecko (*Phelsuma standingi*) consuming a mealworm. Photo by Dennis Sheridan.

The latter problem is caused by people who supplement their cultures with vitamin/mineral powders. Don't do this. The prepared feeds contain sufficient nutrition. People who want to super enrich get around the toxicity problem by withholding food from the insects for a day or two, then transferring them to a super enriched food source such as Kreiger Cricket Diet for a few hours, and then immediately feeding the insects to the herps before the high nutrient concentrations can kill the insects. Obviously, this is done with concentrations that do not kill herps. This method also allows one to use more moist food stuffs than would be possible in a culture due to mold problems.

However, to get around both problems one can use an alternate technique of nutrient enhancement known as dusting. (Some use dusting in addition to gut loading.) To dust, one places insects just prior to being fed off into a clear plastic bag or jar, adds vitamin/mineral mix and gently swirls the container until the mealworms are coated. Unfortunately, the dust comes off pretty easily if the insects are not eaten straight away, and the technique is worthless for feeding in water. Dusted mealworms are best fed in a dish containing a small amount of extra dust. Some reptiles and amphibians may initially reject dusted insects, but normally soon adapt to the taste.

I am not advocating the exclusive use of mealworms in the insectivorous herp diet, but I am questioning the exclusion of a cheap, easily obtained, easily stored, easily

cultured dietary item for reasons which in most instances don't hold up. Mealworm usage should be discontinued only when individual cases of indigestibility of properly selected mealworms are observed. Mealworms should be but one item in a varied, mineral (especially calcium) and vitamin supplemented diet. Variety is the key to good nutrition. *The Editor generally agrees with the author concerning the use of mealworms. As noted, mealworms if fed, should be offered along with other feeder insects at each feeding, rather than offered alone.*

Suggested Reading

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The Inland Bearded Dragon

(*Pogona vitticeps*)

by
Dave Fogel

Australia is home to the endemic genus *Pogona* (formerly *Amphibolurus*) which contains six species of bearded dragon lizards. These are widely distributed on this unique island continent.

When intimidated, bearded dragons dorsally flatten their body and typically stand erect with their mouth agape. The light-colored lining of the mouth, spines bordering the lower jaw and puffed-out blackish beard present a formidable appearance. When viewed from the front, this makes them appear larger and more threatening than they really are. It is this defensive display that has earned these lizards the common name 'bearded dragon'.

Over the past two to three years many hatchling Inland bearded dragons (*Pogona vitticeps*) have become available in the United States as a result of successful captive reproduction both by zoos and private individuals. This species is a mid-sized, heavy bodied agamid with prominent spines along its sides and a large, essentially triangular shaped head. Its ground color varies from shades of brown, gray, and reddish brown to bright orange. This is a wide ranging species with considerable geographic variation. Inland bearded dragons have the ability to change shades from light to dark. These changes help them to regulate body temperature.

Juveniles possess a distinct pattern which becomes less prominent with age. The dorsal pattern usually consists of bands, with some individuals having a bright orange stripe on the side of the head near the eye.

The coloration of the ventral surface ranges from pale to dark gray with white elongated spots edged laterally with black. Sexually mature males have dark beards which become black at times of courtship and breeding. Males also possess both femoral and preanal pores which are enlarged.



An inland bearded dragon (*Pogona vitticeps*) displaying its well known puffed beard. Photo by Bill Fogel.

At birth, hatchling Inland bearded dragons measure between 4 and 5 inches (10-12 cm) in length, and weigh 2.1 to 3.6 grams. Adults can grow as large as 10 inches (25 cm) in snout-vent length, and close to two feet (.67 m) in total length.

In the wild the preferred habitat is semi-arid to arid woodlands. *Pogona vitticeps* spends time both on the ground and in trees, bushes and on fence posts. This lizard is omnivorous and consumes many types of invertebrates, small vertebrates and vegetation including fruits and flowers.

Sexual maturity is achieved at one to two years of age. Mature females typically lay clutches of eleven to sixteen eggs in early summer. The eggs are deposited in nests excavated from sandy soil.

Inland bearded dragons do extremely well in captivity when their needs are properly met. I prefer to house hatchlings individually as they may sometimes attempt to nip siblings' tail and toes. If you choose to house juvenile bearded dragons together, only keep individuals of approximately the same size in with each other. The juveniles must be initially monitored and gently tapped on the snout if they

attempt to bite an enclosure mate. Such prompt actions should discourage any future such behavior. An escape proof container such as a large, well-ventilated ten or fifteen gallon vivarium is adequate for one or more hatchlings. A top opening cage is the most functional. This will help prevent quick escapes by both lizard and live invertebrate food items.

Astroturf®, top soil or paper are the recommended substrates. When using Astroturf® be careful of loose threads, and fraying of the perimeter as this can be accidentally ingested. The high quality double woven backed Astroturf® is a worthwhile investment. The less expensive rubber backed turf deteriorates over time. Avoid any substrate which could possibly be ingested, as well as any dust-producing substrate such as pine shavings, dried corn cob, or cypress mulch. The dust may cause respiratory problems. Substrates such as gravel are difficult to properly clean. Inland bearded dragons have high a metabolism and their enclosures should be serviced daily.

Branches that are secure and large enough for climbing must be provided. A hiding area is also useful and will be utilized from



Juvenile western bearded dragon (*Pogona minima*) eating a roach. Photo by Jim Bridges.

time to time. Full-spectrum lighting such as Vita-lite® (Duro-Test Corp., Fairfield, NJ) is a necessity, and can be set on a timer with twelve hours of daylight. The fluorescent fixtures should be as close to the top of the enclosure as possible to ensure the beneficial rays are reaching the lizards. The Vita-lite® tubes must not be filtered by glass, and should be replaced once a year to provide peak efficiency.

A year round daytime temperature of 76° F to 80° F (25° C-27° C) has worked well for me. Aside from this, the enclosure must be equipped with supplemental heat sources. A heat pad large enough for all inhabitants should be located at one end of the enclosure and operated twenty four hours a day. The heat pad should produce a substrate temperature of 90° F (32° C) or slightly higher. A 75 watt spotlight should be suspended above the heated end of the enclosure and operate twelve hours per day in conjunction with the Vita-lites®.

The spotlight should create a basking area (or hot spot) by raising a portion of the substrate (near the heating pad) to 110° F (43° C). The inland bearded dragons will then be able to thermoregulate or choose their optimum temperature by moving from one end of the enclosure to the other. A shallow water container large enough to accommodate an entire lizard is most helpful because bearded dragons often defecate in the water. The container should be changed frequently as needed.

Young bearded dragons increase rapidly in size. As they grow, it is helpful to provide them with larger enclosures. At times, they are quite active, and a 2 x 4 foot cage

should be a minimum to house from two to three adult lizards. When housing adults of both sexes, be sure to include an easily entered container filled with several inches of damp sand. This will provide an ideal nesting site for any females which may have successfully copulated and that are ready to lay.

Inland bearded dragons are diurnal and should be fed during the day. It is recommended that feedings take place early in the day. Remove any food not eaten later that same day.

Hatchlings are quite hardy and should be offered appropriate size food items. This can consist of two to three week old crickets dusted with a good quality vitamin/mineral powder, and a calcium carbonate supplement. Cuttle-bone scraped with a knife to a powder consistency is an excellent source of calcium. Prior to dusting, it is beneficial to lightly coat the crickets with Linatone® (Lambert Kay, Cranbury, NJ) as this will provide additional vitamins and help the vitamin and calcium powder to adhere to the crickets until they are consumed. A small amount of Linatone® can be added to a clear plastic bag containing the crickets. Gently shake the bag to lightly coat all of the crickets, and then add powdered vitamins and minerals as well as calcium. Repeat the shaking process. Waxworms, and new born (pink) to one-week-old mice can also be fed to small inland bearded dragons. A wide variety of vegetables, and some fruit (about 10 to 20 percent) should be prepared in salad form and fed at least three times per week. Recommended vegetables are: dandelion greens and flowers, carrots, green zucchini squash, yellow squash, bean sprouts, green beans, Swiss chard, escarole, endive, and romaine lettuce. When including fruit, it is advisable to avoid the more acidic types. For hatchling and small inland bearded

dragons, the "salad" preparation must be finely chopped. This can be speeded up with the aid of a food processor. Always add vitamin and calcium supplements to the salads and mix thoroughly. Young *P. vitticeps* should be fed at least five times per week. Always offer the salad at least one hour prior to offering insects or rodents, as the salad may prove less interesting than the live food.

Adult inland bearded dragons should be fed at least three to four times per week. Adults should be fed all of the aforementioned foods. It is not nearly as critical to present chopped or small food items to adults. Fuzzy (two week old) mice are also ideal for adult dragons. Large Madagascan hissing cockroaches (*Gromphadorrhina portentosa*) make an excellent supplemental food item and are generally relished.

P. vitticeps are social animals and there is considerable interaction between enclosure mates. If an adult male is interested in courting a female, his beard becomes black. He will typically approach the female bobbing his head. He may dorsally flatten and angle his body inward while circling the female, presumably making himself appear larger. If the female is receptive, she will press her body to the floor with her tail slightly raised. The male may then mount the female. He may bite or nip her head or neck. At this point, he typically encircles her tail with one hind leg and aligns his cloaca with that of the female.

In captivity, a temperature cycling period is useful in achieving fertile egg production. This consists of a cooling period which initiates spermatogenesis in males and ovulation in females. The cycling period can take place during the winter months, and should last from four to eight weeks. I prefer to gradually reduce the photoperiod during temperature cycling, achieving a minimum of eight hours of



A group of inland bearded dragons in captivity. Photo by Bill Fogel.

THE VIVARIUM



An adult bearded dragon (*Pogona barbata*) from eastern Australia. Photo by Jim Bridges.

light.

There is no set formula which can guarantee successful captive reproduction, as many variables exist from one set-up to the next, as well as the cycling and compatibility of the individual lizards themselves. Temperature/photoperiod cycling can be approached in different ways and still achieve equally successful results. It is typical for female inland bearded dragons to go off feed prior to egg laying. Laying females should be given additional calcium carbonate supplements, as egg formation can rob bones of calcium. Bearded dragon eggs can be incubated at 77° F-80° F (25° C-27° C) in moist vermiculite or potting soil. Be sure to add water to the medium as needed to keep it slightly moist.

Inland bearded dragons are quite animated lizards. They may display a "hand" waving in a circular motion to signal non-aggression between each other. Additionally, they may flick out their tongue and touch each other as a gesture of recognition.

Captive *P. vitticeps* tend to act secure and even inquisitive around humans. They rarely display the defensive act of erecting or "throwing-out" their beard which is so common in wild specimens. If startled, captives will usually only flatten their body.

Inland bearded dragons are one of the most suitable mid-size lizard species to maintain in captivity. They are hardy, alert, personable, and recommended to almost any lizard enthusiast.



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The Natural History and Captive Husbandry of the Trans-Pecos Rat Snake (*Bogertophis subocularis*)

by
Thurgess Cranston

"Come here!!!" I heard my herping partner yell at me from across the dark, desolate highway in west Texas. As I approached him, I could see by the size of his eyes that he had just spotted an interesting snake. "What we have here is about five inches of a *suboc* sticking out of a crack!" My partner then shined a light on the animal and sure enough, it was the head and neck of a *Bogertophis subocularis* sticking out of a crack in the limestone road cut. The year was 1990. We had just spent several days in the Langtry area seeing long-nosed snakes, bull snakes, and rattlesnakes. We were now looking at what would end up being the nicest snake we would see on the trip. Of course, the imminent problem was the removal of the animal from its secure spot. Carefully, after a matter of minutes, we were able to extract the Trans-Pecos rat snake from the

crack with only superficial damage to both the snake and the layered rock formation at the road cut. Our catch turned out to be a non-descript male which was subsequently released. Its capture made me think of the snake that was so highly revered by Carl Kauffeld (1969) in the herp collecting "bible," *Snakes: The Keeper and the Kept*.

The Trans-Pecos rat snake (*Bogertophis subocularis*) has been a desirable species to maintain in captivity for many years. This may be in large part due to the here-to-fore mentioned work by Carl Kauffeld (1969). In fact, C. Kauffeld wrote an entire chapter on his search for the Trans-Pecos rat snake in his ever popular treatise. In the book, Kauffeld relates the difficulty he had in capturing his first specimen of this handsome snake.

In 1988, the Trans-Pecos rat snake and the Baja rat snake, formerly members of genus *Elaphe*, were assigned their own genus, *Bogertophis* (Dowling and Price, 1988). This reclassification was based on data from scanning electron microscopy of

dorsal scales, karyotype analysis, and immunological comparisons with members of the genera *Elaphe* and *Pituophis*. The Trans-Pecos rat snake is a medium large (up to 5 1/2 ft long (1.7 m)), tan or yellowish serpent, famous for a series of H-shaped dark blotches down its dorsum. The scientific name, *subocularis*, is derived from the characteristic row of small scales between the bottom half of the eye and the labial scales on the edge of the mouth. A very rare morph, the pale (or more popularly, 'blonde') phase, is found in the Big Bend region of Texas. It is an almost uniformly yellow snake with very pale blotches down the back. For many years, the Trans-Pecos rat snake was thought to be extremely rare. Today, it is known that this snake is actually quite abundant. In fact, I've personally observed well over 60 live specimens over the course of several years of "herping" in the Trans-Pecos region of Texas. In many parts of its range, *B. subocularis* may be the most common large snake observed in the region.

Trans-Pecos rat snakes range from Coahuila, Mexico, up through Texas and into extreme southern New Mexico (Conant, 1975; Tennant, 1984). In Texas, preferred habitat includes the predominantly rocky terrain in the northern Chihuahuan Desert. These snakes have been found at elevations up to 5,000 ft (1,500 m) in the oak-juniper woodland of west Texas (Tennant, 1984). It is thought that Trans-Pecos rat snakes typically spend the majority of the day in the intricate passageways and air pockets beneath the surface. They may also be found during daylight hours (Tennant, 1984).

Bogertophis subocularis are almost always active nocturnally (Switak 1984; Tennant, 1984; and many others). These reptiles are relatively active during the



Trans-Pecos rat snakes hatching. Photo by the author.



Trans-Pecos rat snake (*Bogertophis subocularis*), normal color phase. Photo by G. P. Merker.

dark phases of the moon during late spring and early summer. At this time, up to five or six individuals can be observed during one night of road-cruising. Trans-Pecos rat snakes seem to prefer calm dry nights. They have been found from dusk to dawn, with the majority active between 10:00 P.M. and 3:00 A.M. (Merker and Gartwaite, pers. com.)

Prey items of the Trans-Pecos rat snake in the wild consist of (1) lizards, such as side-blotched (*Uta stansburiana*), crevice spiny lizards (*Sceloporus texana*), canyon lizards (*S. merriami*), and earless lizards (*Holbrookia texana*) (Tennant, 1984); (2) mammals, such as deer mice (*Peromyscus* sp.) (Tennant, 1984); kangaroo rats (*Dipodomys* sp.) (Merker, pers. com.), bats (Tennant, 1984); and (3) birds, such as cliff swallows (Tennant, 1984). According to Shaw and Campbell (1974), Trans-Pecos rat snakes have the adaptively significant capability to utilize separate coils to capture several prey items simultaneously.

Wild-caught *Bogertophis subocularis* have been found to typically harbor several parasites. Internal nematodes frequently infest Trans-Pecos rat snakes (Merker, pers.

com.) (See Cranston, 1989 for treatment regime). More interesting and remarkable is the tick, *Apomonna elaphensis* (Degenhardt and Degenhardt, 1965). These ticks are unique in that to date they have been found on no other animal. Almost all wild-caught *B. subocularis* have been noted to have a mild tick infestation (Merker, pers. com.). One of the more notable side-effects of these ticks is their propensity to congregate near the end of the Trans-Pecos rat snake's tail, causing the tip to fall off, leaving the adult slightly stub-tailed (Degenhardt and Degenhardt, 1965). Of the more than 70 specimens I've seen in the wild, 3 had this affliction.

Trans-Pecos rat snakes are oviparous, depositing 3 - 11 eggs approximately $3/4$ in x $2\ 3/4$ in (2 cm x 7 cm) (McIntyre, 1977). The young are approximately $11\ 3/4$ - $13\ 3/4$ inches (30 - 35 cm) in length at hatching and appear to be more delicate than their parents. Sexual maturity is attained in two to three years (Tennant, 1984). Juveniles are commonly seen crossing the road, not displaying the more secretive nature of juvenile gray-banded kingsnakes (*Lampropeltis alterna*) (Cranston, 1991; Miller, 1979).

Captive husbandry of the Trans-Pecos rat snake is typical of any temperate climate member of the family Colubridae, with one noteworthy exception. For reasons unknown, it has been shown that *B. subocularis* does best if it is not provided with drinking water on a regular basis. Several keepers of this snake have had difficulty maintaining this animal for lengths of time if they were provided with drinking water. These difficulties include regurgitation of food and a loss of muscle tone. The practice of not providing water to captives is safe if the animal is fed regularly. (Note: the author has maintained an adult male for a period of 3+ years on a diet of one mouse per week with water provided to the animal on only three occasions.) It should be pointed out that many keepers of the Trans-Pecos rat snake do keep water in with their animals with no difficulty. Various substrates have been used including pine shavings, newspaper, and gravel (Switak, 1984). As with most captive reptiles and amphibians, a hidebox is frequently utilized by these retiring animals and ensures better overall condition and feeding.

Captive *Bogertophis subocularis* have



Trans-Pecos rat snake (*Bogertophis subocularis*), blonde color phase. Photo by G. P. Merker.

been induced to eat various food items including lizards, mice, rats and various species of birds. If the snake is well-adjusted to captivity, it will almost always feed on rodents of one variety or another. Most adults will maintain body mass on a diet of one or two small mice per week. Juveniles start by eating pink mice (often lizard scented), but soon grow enough to feed on seven-day old mice. Juveniles have reached reproductive maturity in 18 months; maturity is more typically reached at 30 months of age.

Captive propagation of the Trans-Pecos rat snake has been accomplished since the late 1960s (Tennant, 1984; Tryon, 1976; Campbell, 1972). Many breeders of *Bogertophis subocularis* successfully reproduced their animals without prior cooling. (Campbell, 1972; Tryon, 1976; Mackin, pers. com.). However, I strongly recommend a cooling (or brumation) period of 2 - 3 months during the winter. The background temperature should range from 50 - 61 F (10 - 14 C). My reproductive success with this taxon has been good (albeit, two females during the 1992 breeding season produced infertile eggs despite strong sperm samples from the male).

Males should be warmed up two weeks prior to females to insure enough time for proper development of sperm. Craig McIntyre (1977) found that females were receptive to breeding only during a very narrow time frame (June 18 - June 30). Another time noted for reproduction has been May 8 (Tryon, 1976). In my collection, copulation occurs very late: late June through early August. As with many snakes, most reptile breeders feel it is best to introduce the female into the male's cage, rather than vice-versa. Courtship in *B. subocularis* is typical of most temperate colubrids. Males pursue females with jerky movements; copulation itself lasts approximately 1 hour. Eggs are deposited five to six weeks after breeding and can be incubated in peat moss, vermiculite, or damp paper towels (I've used all three with equal success). The eggs will hatch approximately 85 days later at an incubation temperature of 80 - 81 F (27 C). Several weeks prior to hatching, the majority of the *B. subocularis* eggs change shape dramatically (e.g., they sink in at various points). After the hatchling has pipped, it will remain in the egg for up to 24 hours absorbing the substantial energy in the yolk sac

and clearing its lungs of fluid (see figure 3). Approximately one to two weeks after hatching, all offspring undergo the post-hatch shed, at which time they are ready to feed for the first time (almost always, the hatchlings will eat unscented pink mice). Captive longevity has been up to 23 years (Tennant, 1984).

In conclusion, the Trans-Pecos rat snake, *Bogertophis subocularis* is an ideal reptile to maintain under captive conditions. It is a beautiful and docile snake and is hardy in captivity. Both as a result of refined collecting strategies and an increase in captive propagation, Trans-Pecos rat snakes are now frequently displayed in both zoos and private collections.

Acknowledgements

I would like to thank Doug Brown for helpful suggestions during the writing of this paper. Also, I would like to thank Ron Garthwaite and Ben Dial for help with acquiring several of the references. Furthermore, I would like to thank Ron Garthwaite for aiding in the observation of many of the specimens. Finally, I would like to give my heartfelt thanks to my lovely wife, Eunice, for help in all aspects of this article.

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In Search of Tokage Modoki, The Japanese Leopard Gecko (*Goniurosaurus* [*Eublepharis*] *kuroiwa*)

By
Steven L. Frantz

The tokage modoki (*Goniurosaurus kuroiwa*) is a medium-size eublepharine gecko that grows to 2.5-3.5 in (65-90 mm), or about the size of a subadult leopard gecko (*Eublepharis macularius*). Very little has been published about this species because it has rarely been studied, has secretive habits, and lives in fairly inaccessible habitat. The three recognized subspecies differ most conspicuously in color and pattern, which is generally gray or brown with orange, yellow, or pink stripes. The type specimens and original descriptions were destroyed during World War II, making these geckos a difficult group for study.

Tokage (=lizard) Modoki (=false lizard), *Goniurosaurus kuroiwa*, occurs on the islands in the Ryukyu Archipelago. This island group consists of about 25



Entrance to one of the branches of Gykusendo cave. Photo by Steve Frantz.

major islands including Okinawa and hundreds of smaller ones, stretching for 800 miles (1,300 kilometers) into the Pacific. Only a relatively small number of these islands are inhabited by this unique gecko. In fact, this lizard to a certain extent has been a mystery to both Japanese and Western herpetologists and taxonomists since its discovery in 1912. Available information is generally in Japanese, with the only habitat information stating that they live in thick jungle, mountains, in caves, under rocks or surface objects. Armed with this scant lead, I began my search for these geckos in August, 1990, beginning on Kume Island, some 3.5 hours west of Okinawa by ship.

Kume was home to the Madara (spotted) tokage modoki, *Goniurosaurus kuroiwa orientalis*, first described in 1930. The first thing I noticed about Kume Island was its lack of thick jungle, so I spent my first evening exploring the pine windbreak along the beach near my hotel. I encountered an Okinawan skink (*Eumeces m. marginatus*),



Steve Frantz on Iriomote Island.



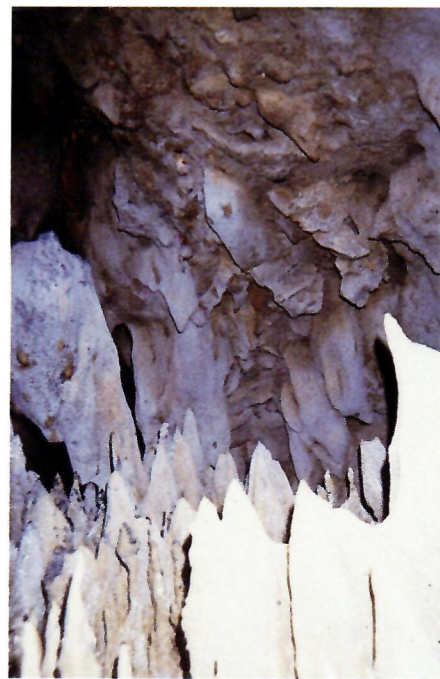
An adult *Goniurosaurus k. kuroiwae*. Photo by Thomas Muller, International Gecko Society.

which I observed for about twenty minutes before it disappeared into the thick underbrush. The next day, I continued my search, encountering hand-sized spiders and their two-meter webs, and the omnipresent, bright green slender grass lizards,

(*Takydromus smaragdinus*). Still, it was a day and a half before I found any second growth forest approaching maturity.

I was particularly sensitive to the total calm this place had to offer, because I lived in Kobe with 1.4 million other people, which had dulled my senses. However, I soon realized why there were no other people here as hordes of mosquitoes quickly began draining the blood from my body. Liberal use of insect repellent didn't appear to deter them all, but at least reduced the number of bites.

To the left of what appeared to be an old logging road was a high wall cut out of the mountainside. There were many skinks (*Lygosoma* (*Ateuchosaura*) *pellopleurum*) which closely resembled the American *Lygosoma laterale*. There was also one larger skink, Barbour's Tokage, (*Eumeces barbouri*). A few yards away I saw two larger lizards dash up a tree. These were Ki Nobori Tokage (tree-climbing lizards), *Japalura p. polygonata* of the agamid family. They were much easier to identify than catch, but once caught, they became docile and changed from their initial brown coloration to bright green. Continuing down the road, I encountered a Hime Ama Gaeru, or tiny rain frog, *Microhyla ornata*, which was only one inch (25 mm) in length. Also



Gyokusendo cave on Okinawa, prime habitat for the Japanese leopard gecko. Photo by the author.

found here was a wood frog (*Rana sylvatica*) look-alike, *Rana okinavana*.

After a two-hour search, I had found many interesting herptiles, but not the Madara Tokage Modoki. Back at the hotel, I noticed geckos around almost every light, these being either onna dake tokage, *Gehyra*



Japanese leopard gecko (*Goniurosaurus k. kuroiwae*). Photo by Sean McKeown.

mutilata, or the larger Yamori (keeper of the house), *Gekko japonicus*. The Japanese consider both species good to have around the house, not only for traditional good luck, but also because the lizards eat insects.

The next day, I returned to the main nearby island of Okinawa. Although there are numerous caves on the island, the largest and most famous is Gyokusendo Cave on the southern quarter of the island. The cave is about three miles (five km) long, with only 0.5 miles (800 m) open to the public. Associated with this cave is the Habu Museum and Park. This is where I decided to continue my search, this time seeking the Kuroiwa tokage modoki (black rock lizard), *G. k. kuroiwa*.

The Habu Museum had several large aquaria displaying sea snakes, while the second floor is largely devoted to the Habu (*Trimeresurus* sp.) and its relationships with man. Outside the museum is a Habu park, exhibiting all four habu taxa, *T. okinavensis*, *T. elegans*, *T. f. flavoviridis*, and *T. f. elegans*, from the Okinawan Islands. Also displayed were other species of venomous and non-venomous snakes.

At the main office I met Mr. Masahide Nakach, who asked me if I would like to go to the cave and look for Kuroiwa Tokage Modoki. I jumped at the offer.

The cave entrance was narrow, and flashlights were a must as the darkness quickly enveloped us. It was apparent that Nakach's body was better suited to the cave than my own. He quickly moved ahead of me and waited while I kept hitting my head along the top of the passageway. After about 110 ft. (100 m), we came to a cavern where I could stand upright. The walls seemed alive with crickets bearing antennae about 2.5 times their body length. With little warning, they were gone.

Pushing ahead, Nakach said it wasn't much further to a place where the elusive gecko could be found. I took two steps to follow when my flashlight cast a shadow on the wall. "Tokage Modoki!" I shouted. It was so beautiful! It was about 2.75 in. (70 mm) SVL, some 5.5 in. (140 mm) total length. The ground color was dark grayish brown, with a bright orange stripe running down the length of its back, and orange blotches on the head and sides. Its tail was perfect (very unusual for these lizards), black with white rings. Probably the most distinguishing feature was the blood red eyes. This specimen was a female carrying



Tokage modoki (*Goniurosaurus k. kuroiwa*) as encountered in its native habitat. Photo by the author.

two eggs.

After finding, photographing and releasing this gecko, I decided to continue on to Ie Island, another home of the Madara tokage modoki. Ferry service to Ie is limited, so I had only five hours to look before the last ferry returned to Okinawa. Renting a moped, I headed straight for Mount Gusuku.

After a lengthy search, I found a cave that resembled the one I had explored with Nakach. My hopes were shattered as I turned on my flashlight to find a large Habu (*Trimeresurus flavoviridis*). Since my agility in a cave would be limited, I decided not to pursue geckos in this particular cave. The Habu is considered by the local people so dangerous that some islands offer a bounty of Y5,000 (\$35) for them. Distilleries pay a similar bounty for

specimens used in their wines. Ironically, many people are bitten while trying to collect specimens for these bounties. Perhaps, if they were not so relentlessly hunted, these snakes would not be considered



The nominate form of *Goniurosaurus k. kuroiwa* from Okinawa. Photo by the author.

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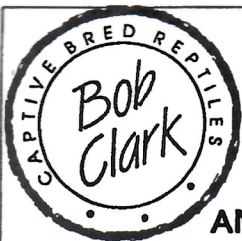
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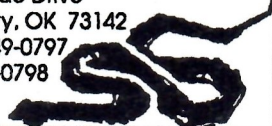
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aggressive.

I walked up Mount Gusuku in hopes of finding another cave, but time ran out and I did not succeed. Madara tokage modoki would have to wait for another time.

In April, 1991, my chance to resume the search for these unique geckos came again. This time I had the advantage of several months' study of Japanese, which meant I could now simply ask local people where the nearest caves could be found. Although I initially returned to Ie Island, I later discovered that no specimen had been collected from there since before World War II, and that only a single preserved specimen exists from that island.



While adventuring through the cave, we came across this *Trimeresurus elegans*. Photo by the author.

Through a translation mistake (my ship was en route to Taiwan!), I became stuck, temporarily, on Ishigaki Island. Eventually, I was brought to an abandoned house, its yard strewn with boards and tin: a herper's dream! Here, I found a blind snake (*Ramphotyphlops braminus*) and a rat snake (*Elaphe climacophora*). It wasn't until the outdoor fireplace was examined that I found the Kuroiwa tokage modoki. The specimens here were much brighter in color than those found in the caves. Finding the geckos away from caves convinced me that they are probably more common than generally thought. Much of northern Okinawa remains forested and uninhabited. As long as it stays that way, there should not be an immediate threat to the Okinawa Island populations of these unique

and beautiful geckos.

Acknowledgements

I thank Mr. Masahede "Cave Man" Nakach for his time and extra effort to help make my dream come true. I also thank Mr. Nishiura and Mr. Yamazato of Habu Museum and Park, Mr. Hayashi for getting me to Okinawa and back, Mr. and Mrs. Yoshida for their support and patience, and Mika Nagayasu, Takashi Terada, and many students at Nova Intercultural Institute for their many hours working with me on English translations. Finally, I thank Mrs. Miyako Tani. Without her kindness, help, and patience, my Japanese would be no better than when I got off the airplane.



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Sake (wine) made with native habu. Sadly, many thousands of *Trimeresurus* are processed by factories each year on these islands. Photo by the author.

Rediscovery of a Solomon Islands Monitor Lizard (*Varanus indicus spinulosus*)

Mertens, 1941

by
Robert George Sprackland



Varanus indicus spinulosus.
Photo by Anthony Wisnieski.

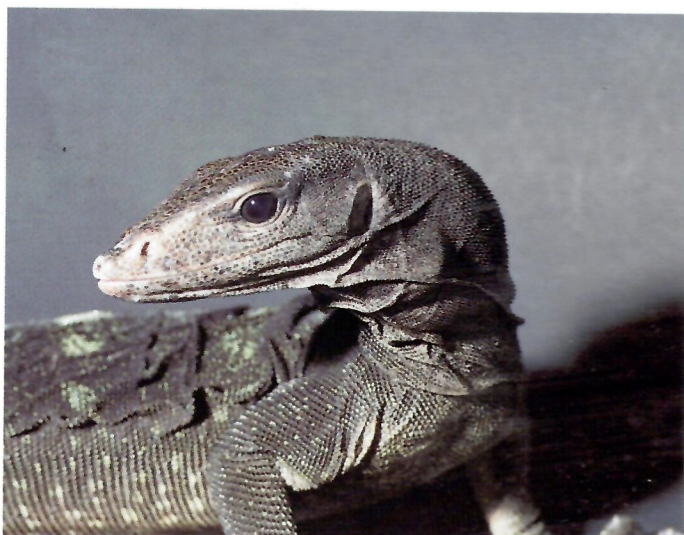
Most varanid lizards are large, conspicuous carnivores, making them important elements in terrestrial vertebrate fauna. It seems unlikely that such animals would go unnoticed by herpetologists. Nevertheless, some of the largest monitors have been unknown to science until rather recently. Examples of such taxa include the heaviest lizard, the Komodo dragon, *Varanus komodoensis*, discovered by western science in 1912, but poorly studied until the 1970s (Auffenberg,

1980); and Gray's monitor, *V. olivaceus*, described in 1856, but virtually unknown until the 1970s (Auffenberg, 1976, 1988). Other large species described since 1980 include a rusty sand monitor (*Varanus gouldii rubidus* Storr, 1980), the New Guinea Argus monitor (*V. gouldii horni*, Bohme, 1988), a black, spiny-tailed monitor (*V. baritji*) King and Horner, 1987), the Yemeni monitor (*Varanus yemenensis*, Bohme, Joger, and Schatti, 1989), and the Queensland tree monitor (*V. teriae*, Sprackland, 1991). In addition, at least one cryptic taxon from New Guinea will be described in the near future. A partial explanation for the hiatus between discovery and study must include the remote localities inhabited by the lizards, coupled with the relative dearth of herpetological work in those areas (in contrast, much of the world's bird fauna, even from "remote" locations, is well studied and described).

Varanus indicus spinulosus was described from a single male specimen from St. George (=San Jorge, =Georgs-Insel)

Island, Solomon Islands (Mertens, 1941). St. George is a tiny islet which lies to the southeast of much larger Ysabel (or Isabel) Island. The specimen examined by Mertens had been collected during the voyage of the "Albatross" in 1897, and deposited in the Natural History Museum in Vienna. When he examined the specimen forty four years later, Mertens clearly felt it was closely allied to the mangrove monitor, *Varanus i. indicus*, and distinguished the new taxon by three morphological traits: (1) a shorter, broader, higher snout, (2) melanism (dark coloring), and (3) distinct, spike-like nuchal (neck) and dorsal (back) scales. Unfortunately, the holotype (NMW 23387) remained unique in collections until 1989.

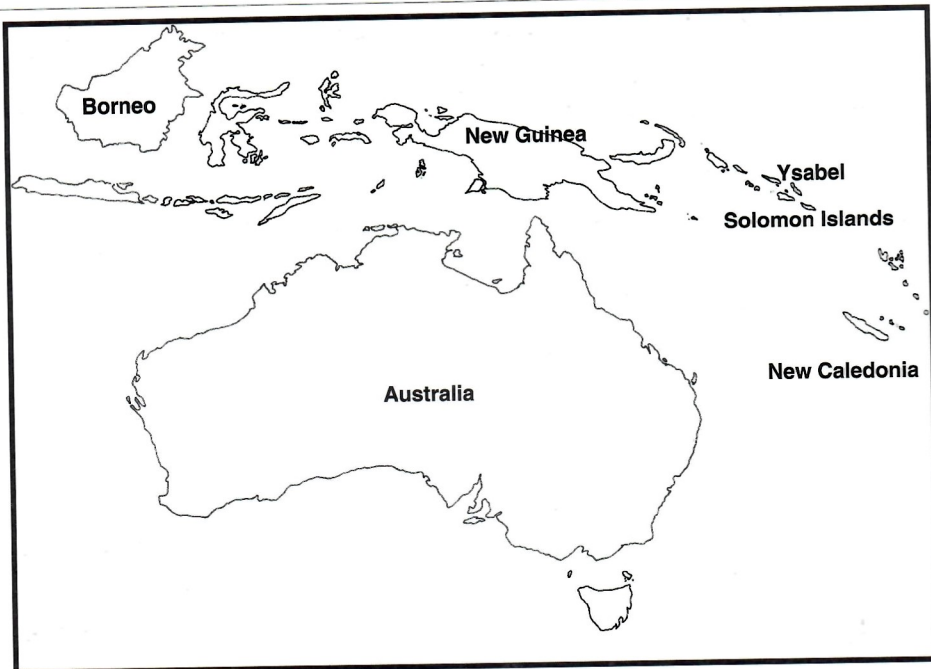
In 1989, I began a phylogenetic review of monitor lizards, beginning by studying the morphology of lizards assigned to the *Varanus indicus* group, e.g., *V. indicus*, its subspecies, and the peachthroat monitor, *V. karlschmidti*. It quickly became apparent that the status of *Varanus indicus* was uncertain. In the original description,



An adult *Varanus indicus spinulosus*. Photo by Anthony Wisnieski.



Typical adult female mangrove monitor (*Varanus i. indicus*) from the Solomon Islands. Photo by Robert Sprackland.



Daudin (1802) provided scant data and a poor illustration representing a single specimen from Ambon Island, west of New Guinea, and no type specimen was designated. In 1991, I reviewed the specimens in the National Museum of Natural History in Paris, where most of Daudin's types were kept, but found no specimen matching the type description, locality, or collection date. Similar specimens were described under new names (e.g., *kalabeck*, Lesson 1830, *douarrha*, Lesson 1830, *chlorostigma*, Gray 1831, etc.), along with several subspecies, so that there are currently twelve names associated with the mangrove monitors (Mertens, 1941). A major goal of my study was to find the "lost" types for these taxa and designate neotypes where necessary.

A holotype, or simply type specimen, is the original specimen used by an author when preparing a scientific description and naming a taxon as new. It serves as a name-bearing reference so later workers may determine if their animals are in fact the same as that described earlier. Because types are so important to taxonomic stability, museums invest special care to house and care for type specimens. In the event a type is lost or destroyed, a competent systematist may petition an international commission to establish a replacement, or neotype, be designated. It is essential that such a neotype be the same taxon, preferably from the same locality where the lost type was collected. It is for this reason that specimens without locality data are worth so little to museum collections. The report

on the status of types and the consequent taxonomy of *Varanus indicus* and its allies will be presented at a later date (Sprackland, in prep).

For now, *Varanus karlschmidti* has been placed in junior synonymy with *V. indicus jobiensis*, Ahl 1932, and has further been elevated to specific status as *Varanus jobiensis* (Bohme, 1991). Meanwhile, five new individuals of *V. i. spinulosus* were discovered, including two preserved animals and three live adult females at the Baltimore Zoo. Collecting data are available for these lizards, expanding the known range to include Ysabel Island, where *V. i. spinulosus* lives in sympatry with "typical" Solomons mangrove monitors (*V. i. indicus*). This report provides additional information on *V. i. spinulosus*, and includes notes on the first known captive specimens.

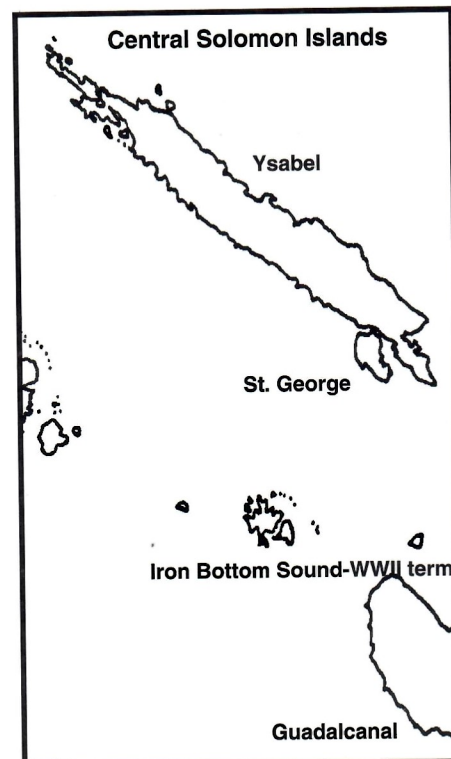
Five *Varanus indicus spinulosus* were imported into the United States as part of a commercial shipment of live reptiles from Levi Tabo, a dealer in the Solomons. The current licensing procedure for animal brokers in the Solomon Islands requires the collector to live within the province from which he may collect. Tabo is a resident of Ysabel Island, and so may take animals from that and nearby islands. During 1990, he shipped at least five specimens of *V. i. spinulosus* that in turn were sold to the Baltimore Zoo (three females) and another animal dealer in the United States. From this dealer I was able to find out about the Baltimore specimens, the sale of another live animal (to Harold DeLisle, Moorpark

College, Moorpark, CA), and obtain the fifth specimen, which had died, for my preserved collection. Upon contacting DeLisle, I was informed that his specimen had also died, and it was arranged that his monitor be deposited in the herpetology collection of the California Academy of Sciences, making it the second known museum specimen (CAS 180743J).

Varanus indicus spinulosus shares several characters that ally it with the mangrove and green and black tree monitors, such as the lack of preanal pores, a series of transversely enlarged supraocular scales, a dark dorsum, presence of green or turquoise coloration, keeled dorsal scales, 22-23 supralabials, and slightly keeled ventrals. The snout is more tapered and the nostril is much more anterior in position than in *V. i. indicus*. In addition, *V. i. spinulosus* lacks light head spots, and has conical, pointed nuchal scales that are never seen in typical *V. i. indicus*. The tail is somewhat compressed above, more rounded in section for the distal half than in *V. i. indicus*, though not as distinctly round as in the green tree monitor, *V. prasinus*.

This varanid has a deep chocolate brown dorsal surface, becoming tan below. The light dorsal and caudal markings may be lime green, yellow, or orange. The distinct pattern of large, solid spots forming broad bands will readily distinguish this taxon from any other known monitor lizard.

Only the holotype is recorded for tiny St.



George Island. The specimens collected in 1990 were all taken on the much larger Ysabel Island, which is also inhabited by *Varanus i. indicus* (McCoy, 1980).

Andrew Wisnieski, of the Baltimore Zoo, noted several differences in behavior between *Varanus i. indicus* and *V. i. spinulosus*.

Specimens of *spinulosus* were reluctant to accept foods other than fish, while *indicus* will consume a wide variety of prey items, including fish, rats, mice, insects, and meat. Male *V. i. indicus* introduced to female *V. i. spinulosus* at the zoo were not inclined to attempt mating. The same males, introduced to female *V. i. indicus*, quickly initiated successful mating behavior. This strongly suggests that reproductive reciprocity between the taxa is rare or nonexistent. This, coupled with the combination of sympatry (sharing range with *V. indicus* but not, apparently, interbreeding) and distinct phenotype (morphology) make strong arguments for elevation of *V. i. spinulosus* to specific rank (Sprackland, in prep.), e.g., *Varanus spinulosus*. As a common name for this lizard, I would suggest Solomons keeled monitor.

It has been extreme good fortune that where we had but one specimen to examine, there are now six. Anecdotal reports from Levi Tabo suggest that *Varanus indicus spinulosus* is not particularly rare, but inhabits rough, forested parts of Ysabel Island. He suggests that coloration of Ysabel lizards differs from those on St. George, but this still requires corroboration via specimens or photographs. R.G. Sprackland is a professor of biology at Skyline College, San Bruno, CA.

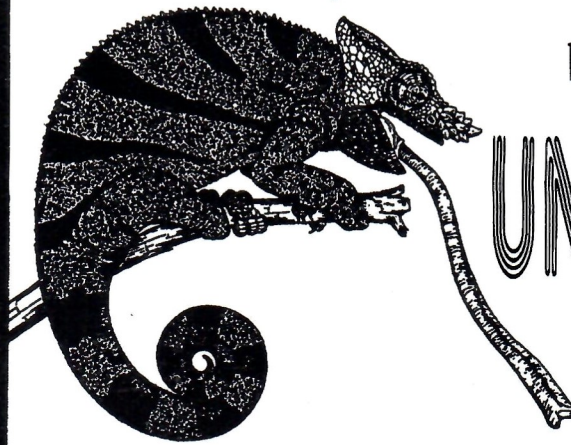
Acknowledgements

I thank Robert Drewes, Alan Leviton, Jens Vindum, and Jim O'Brien, of the California Academy of Sciences, for kindly providing me with laboratory space and access to specimens in their care. Thanks to Richard Wallace and Kevin de Queroz for reviewing early drafts of this manuscript. My special thanks go to Gary Gyaki, for finding the dealer who provided the preserved specimen and locations of other specimens of *V. i. spinulosus*; to Michael Ellard for donating the preserved specimens in the Solomon Islands; and to Andrew Wisnieski, Curator of Reptiles, Baltimore Zoo, for providing photographs and other information on living monitors in his care.

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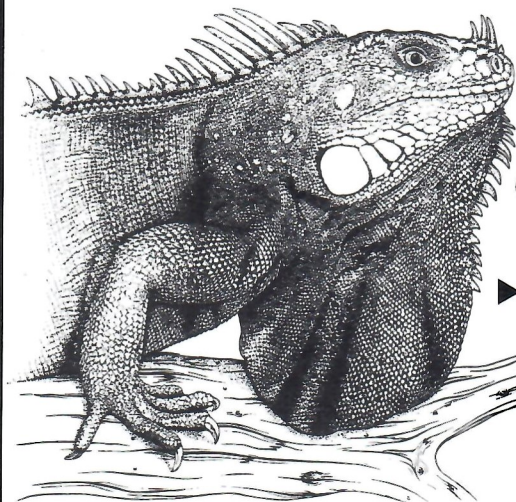
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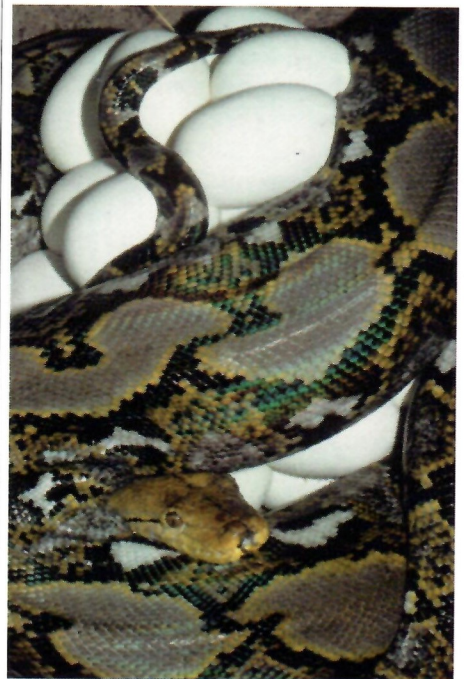
Q & A COLUMN

Ask the Experts

by
Dave and Tracy Barker

David and Tracy Barker have over 40 years combined experience, privately and professionally, with reptiles and amphibians. They each have diverse herpetological backgrounds, including training and work in zoo herpetological collections, field research and graduate school. Both have herpetoculture as their main interest. It would be difficult to find a couple with more extensive experience with such a wide variety of reptiles and amphibians in captivity, ranging from dart poison frogs to ridge-nosed rattlesnakes. At present, they live in the Texas countryside with their collection of 500 pythons. Address questions to this column in care of: **The Vivarium, P. O. Box 1131, Lakeside, CA 92040-0905.**

Q. I have a female leopard gecko. The temperatures where I keep her cage range from 77 F to 95 F. Are these temperatures good for her? She's now about 5 1/2" in length. How long does she have



Reticulated python with eggs. Photo by
Dave Barker. **THE VIVARIUM**

to be to eat pink mice? Also, why doesn't she let me pet her? When I try, she just keeps walking around.

Santa Ana, CA

A. With regard to your temperature variation, we assume that you don't mean that it is a steady 77°F for a month, followed by a month of 95°F temperatures. If you're referring to your daily temperature cycle with 77°F the nighttime low temperature and 95°F the peak daytime high (and most of the time the temperature is somewhere in-between,) then your gecko is probably a pretty happy girl. It's probably best if you don't keep her at those high temperatures for longer than an hour or two each day; 95°F is approaching the maximum temperature that a leopard gecko would choose to tolerate for long. Be aware that usually only fully adult leopard geckos will eat pinks, and that some leopard geckos simply never consider them to be edible. We have seen leopard geckos the size of yours eat pinks, but usually it is the 6 1/2" big heavy specimens that readily eat them. Don't be insulted by your gecko's unwillingness to allow your petting. Leopard geckos are simply not big on being petted. Wait, don't send letters from all over the nation telling about geckos that are glutons for some dorsal stroking. We know that there are really tame specimens around the country, pets so accustomed to being handled that they tolerate a little petting. But for most leopard geckos, it's just not a natural thing to allow. Your leopard gecko would probably much prefer that you show your affection by presenting her with a big fat mealworm.

Q. I have a female painted turtle. I have heard that this species is more susceptible to diseases than many other aquatic turtle species. I want to liven up her tank with some live fish (bottom feeders and algae eaters) and plants. Will some fish carry diseases that harm painted turtles? Also, is it safe to let feeder goldfish live in the tank with her? I have heard that they are often diseased

Seattle, WA

A. We haven't had much experience with painted turtles, so we contacted Greg George at the Tennessee Aquarium in Chattanooga. Greg has extensive experience with aquatic turtles, both privately and professionally, and he made the following

points: North American aquatic turtles, including painted turtles, are a pretty hardy bunch. Wild painted turtles typically carry large parasite loads, and they seem to be able to tolerate considerable pollution. They certainly are able to live with fish and plants. They are equally hardy in captivity if their basic needs are met. Your painted turtle needs a high dry basking spot that allows her to bask at temperatures in the 90''s. She needs clean, filtered water with temperatures of 75°-80°F. She needs an underwater hiding place, perhaps a clump of underwater plants or some driftwood. A proper balance of these environmental factors will create surroundings in which she feels secure. She should respond with good health. Any sudden changes in her environment could cause her sense of security, and her health, to falter. So, don't suddenly do major cage renovations. Gradually introduce the changes you wish to make.

Be aware that painted turtles will eat most live aquatic plants, and a turtle chowing down on a whole tankful of new vegetation can cause quite a problem. Plastic aquatic plants, though not quite as natural, will make a satisfactory aesthetic addition to most turtle aquaria without the imbalance that live vegetation can cause. Some live aquatic plants can be added now and then for your turtle's gustatory pleasure. While they are not dedicated piscivores, a painted turtle will eat fish if the opportunity presents itself. So the fish will need underwater cover, including the plants, to avoid potential predation. Also, aquatic turtles tend to catch fish when the fish are first introduced and are disoriented in their new tank. You can give the fish a better chance to survive if you take out the turtle for awhile, and allow the fish to take stock of their new surroundings. Don't overfeed your turtle, either with the fish you're adding or with the food your feeding to the fish.

Feeder goldfish and bait fish are not necessarily diseased. But because they are kept in extremely crowded and stressful conditions, they are typically not very healthy. Often they are treated with fungicides or weak formaldehyde to control the skin problems that result from crowding and the poor water quality that results. It's probably not a good idea to place these fish in with your painted turtle for multiple reasons. If you're uncertain of a good source of healthy fish, why not get a dip

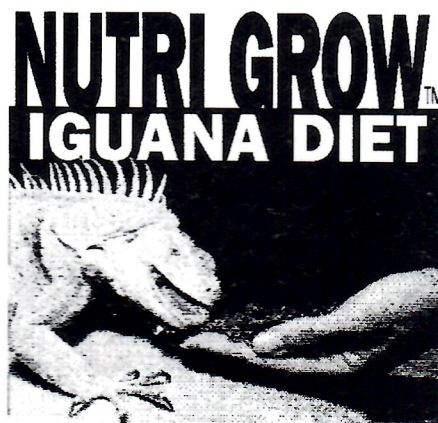
net, go to the nearest clean stream, and catch some local fish? Stone rollers, top minnows, dace, small perch, sunfish and bullheads would all do fine in your turtle tank.

Q. I purchased a reticulated python about two months ago. He is now about 4 1/2' long. How quickly do reticulated pythons grow?

Sunnyvale, CA

A. They can grow very quickly. How quickly? Some years ago, a dealer offered on his price list a reticulated python that, at one year of age, was 17 feet long. Even figuring in some exaggeration (the *herper factor*,) that would still be the largest claim for a yearling snake that we are aware of. We're skeptical, but in light of the potential giant size of some specimens, it just might be possible. We can readily accept that at 18 to 20 months of age some reticulated pythons could attain lengths of 17+ feet, but to achieve that size by 12 months would be pretty astounding.

The growth rate of your reticulated python (and pretty much all snakes) is dependent on a combination of factors, including: the size of the enclosure in which he is housed; the temperatures at which he is maintained; the amount of food he is fed; and the size of the food items he is fed. Less predictable, but an important consideration, is the genetic potential for size of



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a python; like any animal, under equal conditions some pythons will grow to be larger than others. In many snake species the sex of a snake may influence its size potential; male rattlesnakes tend to be larger than females, while female pythons tend to be the larger sex. (Gender does not seem to noticeably influence the maximum size of reticulated pythons, though.) Also, the growth rate of your snake in the first three years, how much you encourage or discourage his growth, may affect his eventual maximum size. If you keep your reticulated python in a small cage at cool temperatures, don't feed it much and feed it small food items, it will stay small. But be aware that *small* is a relative term when talking about reticulated pythons. Even a small adult reticulated python is a big snake.

We offer these examples of the inherent differences between reticulated pythons and their growth potential and maximum size. About two years ago, we obtained three hatchling reticulated pythons from the Moluccas, purportedly a "dwarf" race of this species. Now, despite a relatively small cage and limited diet, one of the three, a male, has grown to 15 1/2 feet in length and about 70 pounds in weight. He shows every indication of becoming a very large snake, despite what we do. In roughly the same conditions, the other two specimens are about 11 feet in length and 25 pounds in weight, a modest size for a reticulated python of this age. Moluccan reticulated pythons, especially from Ceram and Ambon, are especially pretty snakes, but dwarfs they are not!

On the other hand, we have a reproducing pair of reticulated pythons that are nine years old. The female is under 12 feet in total length and weighs about 40 pounds. The male is a slightly smaller animal. These animals have grown very little over the past few years and, considering their age, would qualify as genuinely small reticulated pythons. We do not know with certainty their geographic origin, but they strongly resemble yellow-headed specimens from Java in color and pattern.

Q. I live in the Marshall Islands. We have on the islands two introduced species of herps, a monitor and a toad. No one I have talked with locally is able to identify them. I have heard that the Japanese brought them here from Indonesia during World War II. Can you identify them?

Majuro, Marshall Islands

A. We called on Dr. Tom Fritts, Chief of the Biological Survey, U. S. Fish and Wildlife Service, for the answer to this question. The monitor in the Marshall Islands is *Varanus indicus*, most commonly called the mangrove monitor. Mangrove monitors were indeed introduced to several of the Marshall Islands, including Majuro, by the Japanese. After World War I, the Japanese were given control of much of the region of Micronesia as a trust territory. During the period of their control, they introduced mangrove monitors on several islands in this region, including the Marshall Islands and Guam, as an attempt at biological control of rats. It turns out that mangrove monitors don't eat many rats. They much prefer poultry; in fact, mangrove monitors are considered agricultural pests in most areas where they are introduced because of their taste for chicken. When chicken isn't available, they usually feed on land crabs.

The toad introduced in the Marshall Islands is that world traveler *Bufo marinus*, known as the giant or marine toad here in the U.S., but referred to as the cane toad throughout much of the South Pacific. The cane toad, one of the largest toad species in the world, naturally ranges from extreme south Texas to northeastern South America. It has been introduced to countless locales all over the world, especially throughout the South Pacific, in the mistaken belief that it would control beetles and grubs. Apparently, the theory was that a really big toad would eat a really significant number of grubs. Wrong! Cane toads have become one of the most devastating introductions ever made in some places, such as Australia. Cane toads consume a tremendous variety of vertebrate prey, including snakes, lizards, frogs, various small mammals, birds, just about any small animal that moves in front of them. Native frogs have fared particularly poorly, as they meet up with introduced cane toads at their shared breeding sites. Cane toads further impact local ecologies with their poisonous skin secretions. Many predatory species naive to cane toads consider them to be edible. Their first bite of cane toad is often their last, for the white milky substance secreted by the warty skin contains deadly toxic alkaloids. For example, cane toads are believed to be responsible for the decline of monitor populations in areas of Australia: monitors, opportunistic predators that they are, have been found dead with a cane toad in their mouth. 

April 17, 1993: 16th Annual All Florida Herpetology Conference will be held in Gainesville, Florida. For info, contact: Dr. David Auth, Division of Herpetology, Florida Museum of Natural History, University of Florida, Gainesville, Florida 32611; ph. (904) 392-1721.

April 25-29, 1993: Third Aquarium Congress will be held in Boston, Massachusetts. For info, contact: John Prescott, Executive Director, New England Aquarium, Central Wharf, Boston, MA 02110.

May 27, 1993: First Annual Conference on Horned Lizards will be held in Austin, Texas. For info, contact: Horned Lizard Conservation Society, Box 122, Austin, TX 78767; ph. (512) 327-8181.

May 27-June 2, 1993: Joint Meeting of the American Society of Ichthyologists and Herpetologists and the Herpetologists' League will be held in Austin, Texas and will include a special session on *Sceloporus*. For info, contact: Diana Dobson, Thompson Conference Center, P.O. Box 7879, University of Texas, Austin, TX 78713-7879; ph. (512) 471-3123; fax (512) 471-0647.

June 9-12, 1993: Seventh Annual Meeting of the Society of Conservationists will be held in Tempe, Arizona. For info, contact: Dr. W. L. Minckley, Department of Zoology, Arizona State University, Tempe, AZ, 85287-1501; ph. (602) 965-6518; fax (602) 965-2012.

June 17-20, 1993: 17th International Herpetological Symposium will be held in Miami Beach, Florida. For info, contact: Dr. Richard Ross, Institute for Herpetological Research, P.O. Box 2227, Stanford, CA 94309.

July 11-17, 1993: International Symposium on Turtles and Tortoises - Conservation, Restoration and Management will be held at the State University of New York. For info, contact: Craig Vitamenti, New York Turtle and Tortoise Society, 163 Amsterdam Avenue, Suite 365, New York, NY 10023; ph. (212) 459-4803.

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August 26-28, 1993: Georgia Exotic Animal Association Auction will be held in Atlanta Georgia. For info, contact: Hank Nedza, GEAA, 5770 Holiday Rd., Buford, GA; ph. (404) 945-3810.

September 4, 1993: Fourth Annual Eastern Herpetological Expo will be held in Pottstown, Pennsylvania. For info, contact: G. Leonard Knapp, 215 Lawn Ave., Sellersville, PA 18960; ph. (215) 257-6088.

September 12-16, 1993: Annual Conference of the American Association of Zoological Parks and Aquariums will be held in Omaha, Nebraska. For info, contact: Randy Wisthoff, Henry Doorly Zoo, 3701 South 10th Street, Omaha, NE 68107; ph. (402) 733-8401.

September 25 & 26, 1993: Mid-Atlantic Reptile Show will be held near Baltimore, Maryland. For info, contact: Tim Hoen, Jenkins Hall/Biophysics, Johns Hopkins University, 34th and Charles St., Baltimore, MD 21218; ph. (410) 557-6879.

October 2 & 3, 1993: Second Annual Reptile Breeder's Show and Sale will be held in San Diego. For info, contact: IRBA, P.O. Box 85152-279, San Diego, CA 92186; ph. (800) 497-3550; fax (619) 295-7129.

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November 6 & 7, 1993: Sixth Annual San Diego Herpetological Society Exhibition and Sale will be held in Del Mar, California. For info, contact: SDHS, P.O. Box 4036, San Diego, CA 92164-4036; ph. (619) 689-2582.

December 12-18, 1993: Third Latin American Congress of Herpetology will be held in Campinas, Sao Paulo, Brazil. For info, contact: Comissao Organizadora 3 CLAH, Departamento de Zoologia, IB, Universidade Estadual de Campinas, 13081 - Campinas, SP Brazil

December 29, 1993 - January 5, 1994: Second World Congress of Herpetology will meet in Adelaide, South Australia. For info, contact: Dr. M. J. Taylor, University of Adelaide, Department of Zoology, Box 498, GPO, Adelaide, South Australia 5001, Australia.



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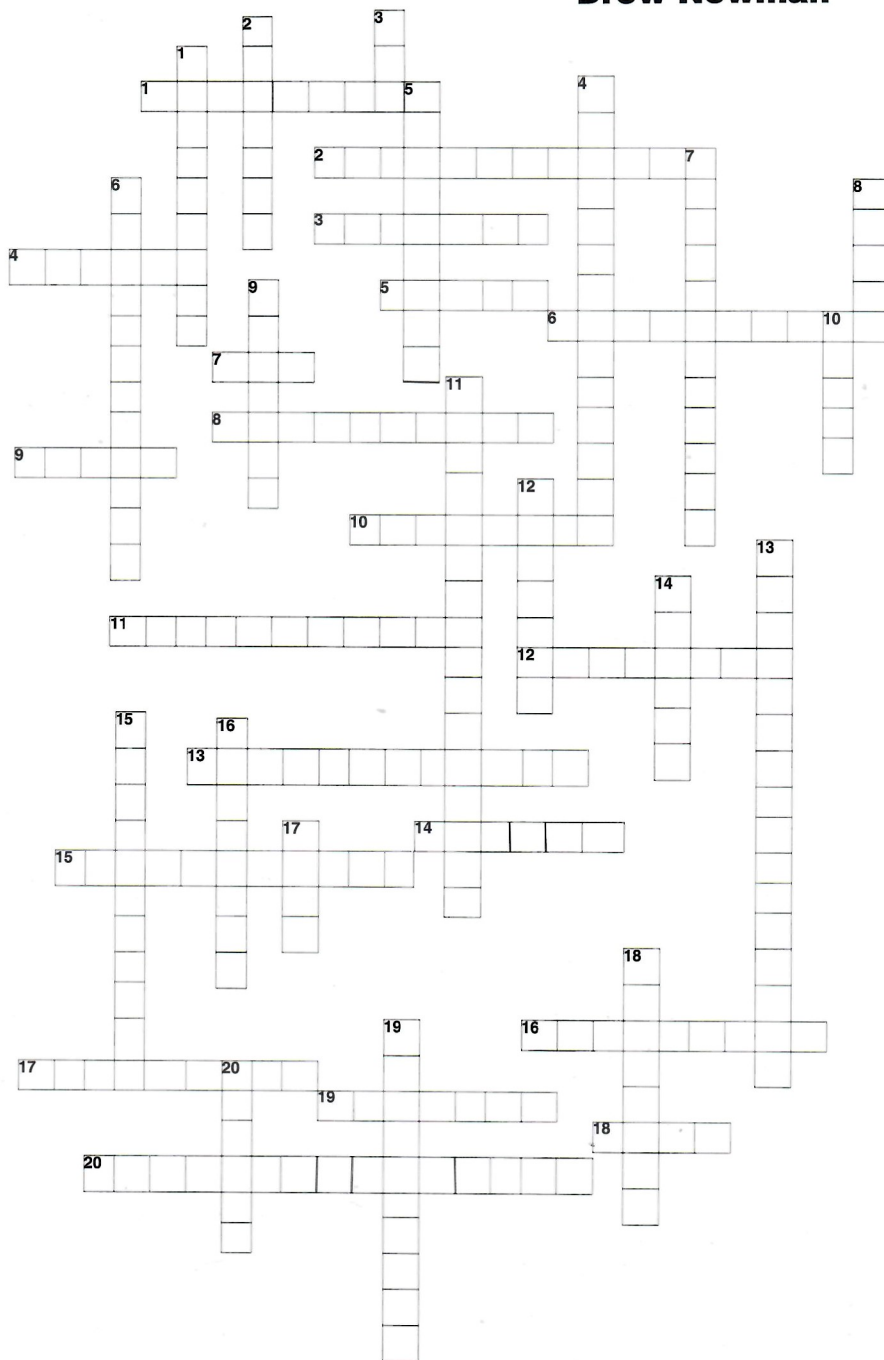
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by
Drew Newman



Across

1. Some herps make a meal of them.
2. One you feed and one you don't need.
3. Where chilled lizards lay.
4. Did considerable work on snakes of *Agkistrodon* complex.
5. Vertical vent invasion.
6. Herps of almost any description can be found there.
7. Slang for venomous.
8. Cheap colubrid carrier.
9. Not a good choice for substrate.
10. Feeding trickery.
11. Light cycle.
12. Cobras and kin.
13. Scientific name suggests this may be a good python for someone named Curt.
14. Turtles trample them and iguanas ingest them.
15. Genus of toxic frogs.
16. Tells turtle tales.
17. Very dangerous rear fanged colubrid.
18. Common names of both a monitor and crocodile refer to this river.
19. Ill tempered python of the *molurus* group.
20. Getting a female to lay twice in a season or a good handling technique for aggressive monitors.

Down

1. Turtle tracking technology.
2. Essential component with reptile supplements.
3. Abbreviation for vet.
4. Rotund ravenous hyliid.
5. "Sister" genus of *Crotalus*.
6. Hot wire.
7. Stackable snake sanctuaries.
8. Some male pythons use these when "riding" a female.
9. Way of handling aggressive snakes.
10. Body of gecko, jaws of tegu.
11. Beautiful baby varanid (two words).
12. Herp finger-food.
13. High heat, usually first course of treatment for this infection.
14. Common name for these lizards denotes their agility.
15. Last resort feeding technique.
16. Medical jargon for egg binding.
17. Turtles use logs to do this, lizards use rocks.
18. Light hearted controversial herp topic.
19. Garden variety amphibian.
20. "Goldfish" of the herp world.

Answers Across: 1 mealworms 2 ratsandmites 3 hotrock 4 Conant 5 probe 6 priceists 7 hot 8 pillowcase 9 cedar 10 scenting 11 photoperiod 12 elapidae 13 pythoncurtus 14 plants 15 dendrobates 16 Pritchard 17 twigsnake 18 mile 19 pimbur 20 doubleclutching
Down: 1 telemtry 2 calcium 3 D.V.M. 4 whistreefrog 5 sistrurus 6 heatingcable 7 sweaterboxes 8 spurs 9 hooking 10 tokay 11 varanusdumerilii 12 pinkies 13 upperrespiratory 14 swifts 15 braincasing 16 dystocia 17 bask 18 vitalie 19 tomatofrog 20 anoles

AMPHIBIANS AND REPTILES OF THE WEST INDIES;

Descriptions, Distributions,
and Natural History.

By Albert Schwartz and Robert T. Henderson.
Univ. Florida Press, Gainesville. (1991).
xvi+720pp. \$75.00

**Reviewed by
Herndon G. Dowling**

This enormous encyclopedia of information on West Indian amphibians and reptiles represents a summary of the work of the two authors in this region over a total of more than 40 years. [Al Schwartz was collecting specimens in Cuba when Fidel Castro's irregulars took over his field vehicle and other equipment in their advance on Batista's Havana in 1959.]

Much more than a summary of their own work, it encompasses a review of about a thousand publications pertaining to the subject and ranging in time from 1748 to the date that this work was submitted for publication in 1990. [Schwartz, himself, published no fewer than 138 of the publications listed.]

As they point out, although the total land surface in the Caribbean is less than that of our state of Oregon, there are many more amphibians and reptilian species [589 is my count] than in the entire Nearctic region (the United States, Canada, and temperate Mexico). This of course is because, besides being in the more hospitable tropics, the Caribbean land area is divided up into dozens (perhaps hundreds) of islands, islets, cays, keys and miscellaneous bits of land, each with its own history, ecology, and fauna.

By contrast, temperate North America is a solid mass of land with only a north-south gradient in temperature and an east-west gradient in precipitation, broken or modified here and there by mountains, rivers, and lakes.

Even so, although it is species-rich, the herpetological fauna of the Caribbean from a larger prospect is much less diverse than that of the United States. Most of the species belong to a few large tropical genera, such as the American "chameleons" *Anolis* and the small terrestrial frogs *Eleuthero-*

dactylus, two of the most speciose genera in the world. As would be expected, most of the genera have relatives in the tropics of Central or South America. Other than the aquatic snake *Tretanorhinus*, which appears to have rafted over to Cuba by way of the Cayman Islands and the North American watersnake *Nerodia clarki* (which is thought to have been introduced by some American visitor), all of the snakes appear to have been derived from South American stocks.

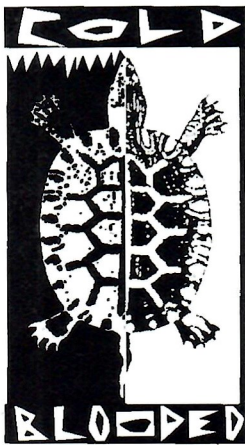
Like most oceanic islands (in spite of the "continental" geology of the Greater Antilles), the Caribbean islands have a very unbalanced native fauna. There are few mammals other than bats, no salamanders or caecilians, no pond frogs (Ranidae), no colubrid, natricine, or elapid snakes, and no pit-vipers except on the islands of St. Lucia and Martinique (and these may have been introduced: see Dowling, 1965). After a brief introduction, the bulk of the book is taken up by the species accounts. These are arranged alphabetically under Class, Order, or Suborder [but not by Family]. Each species account is entitled with the scientific name, including describer and date. [There is no synonymy or bibliographic reference.]

This is followed by subheads: Type Locality, Holotype (where the first described specimen was placed, including museum abbreviation and number), Description (general morphological features in a standard format), Illustrations (references to photographs and drawings), Distribution (general statement of range, plus a map with each known locality plotted), Subspecies (brief descriptions of subspecies differences), and Natural History (collated information on ecology, life history, food habits, predation, etc., from various sources which are listed at the end of the account).

All-in-all, this is a huge compendium of great value. I found the detailed maps and the natural history sections to be of greatest interest. If you want to know the calling sites of *Hyla marianae*, the food habits of *Arrhyton exiguum*, or where *Anolis mastrei* sleeps -- it is all there! On the other hand, of perhaps even greater interest is the lack of pertinent information (often the complete absence of any natural history data) on many of the species listed.

It would seem that a work of this size and kind would be comprehensive; unfortunately this is not so. It leans heavily on

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three previously-published works by these authors. For a taxonomic history and detailed geographic information on the species, one must refer to the Check-list (Schwartz & Henderson, 1988). For identification keys and morphology, one goes to Henderson and Schwartz (1984) for the animals of Hispaniola, or to Schwartz and Henderson (1984) for non-Hispaniolan representatives. But, there is no place to go to find out the fauna of any particular island other than Hispaniola (e.g., the amphibians and reptiles of Jamaica or of Martinique). One must leaf through the text of this or one of the other publications, looking for the appropriate island name or map. It would have been helpful if, at least, the islands had been indexed, but no so. The index is systematic only -- and even that is not well-done. [The first two taxa I looked up either were omitted (*Calypotahyla*) or poorly indicated (of the three page numbers given for *Anolis valencienni* (271, 288, 311), none referred to the main entry, p. 350).]

Perhaps, it would take a multi-volume work to include all of this information -- but maybe that is what should be envisioned. The problem is that almost no publisher is willing to advance the funding necessary for such a project, considering the limited audience for the resulting books.

I also feel that the alphabetic arrangement under higher taxon is a mistake. To find the toads (Family Bufonidae) of the Caribbean, one must know that not only does the name *Bufo* (p. 19) represent a toad (albeit an introduced one), but also that the native toads of the Greater Antilles belong to the endemic genus *Peltaphryne* (pp. 151-162). As for treefrogs (Hylidae), one must look under *Calypotahyla* (p. 20), *Hyla* (pp. 134-139), *Oloolygon* (p. 145), *Osteopilus* (pp. 146-148), and *Pseudacris* (another introduced genus, p. 163). Amphibian and reptilian families are not found in the index.

As a taxonomist, I would prefer to have the species listed by family. As a zoogeographer, I would like to find them by island. And, as a Caribbean naturalist, I would like to have keys and figures to aid me in the identification of local frogs and lizards. This book, in spite of the formidable amount of contained information, offers me none of these.

Nevertheless, this is the most extensive summary of the herpetofauna of the West Indies available. For the apparent object of

the work -- a complete list of the Caribbean species, together with geographic and natural history information -- it is beautifully done. It is just too bad that its organization is flawed. To gain a broad knowledge of the fauna, you must have the other three books mentioned. [Another book of interest is Woods, 1989.] And then you have to do your own island-by-island collation. For anyone interested in any part of the Caribbean fauna, however, this book is a must. On its thorough coverage and its many merits, I can only give the authors my eternal gratitude for producing such a valuable work.

Literature Cited

- Dowling, H. G. 1965. The puzzle of the *Bothrops*; or, a tangle of serpents. *Animal Kingdom* 68 (1): 18-21.
Henderson, R. W., & A. Schwartz. 1984. A

guide to the identification of the amphibians and reptiles of Hispaniola. *Spec. Publ. Milwaukee Public Mus. Biol. Geol.*, (4):1-70.

Schwartz, A., & R. W. Henderson. 1985. A guide to the identification of the amphibians and reptiles of the West Indies exclusive of Hispaniola. *Milwaukee Publ. Mus.* 165pp.

Schwartz, A., & R. W. Henderson., 1988. West Indian amphibians and Reptiles: a checklist. *Milwaukee Public Mus. Contr. Biol. Geol.* (74):1-264.

Woods, C. A. (Ed.) 1989. Biogeography of the West Indies: Past, Present, and Future. Sandhill Crane Press C.A., Gainesville, Florida. xvii+878 pp.

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Mailbag continued from page 11

readily agreeing, I was also a little concerned. By contacting government agencies we are admitting that herpetoculturists can not regulate themselves, so the government must do it for us. Let's face it: one reason suppliers like the one I encountered continue operating is because some wholesale buyers consider the animals expendable as long as they make a profit. I have since learned that poor and unsanitary conditions are the norm for some importers. I can now understand how the animal rights fanatics can make a case for closing the importers and not allowing us to own herps. Our inaction is giving them more ammunition for their legal battles against bringing exotic pets into this country.

It is time herpetoculturists organize to start controlling this situation. We could learn a lesson from the sport SCUBA diving industry and how they avoided strict regulations imposed by the government.

In the 1970s when sport SCUBA diving started to become popular, associations such as PADI and NAUI were formed to offer proper training and certification. A diver must show his certification card from a recognized association to rent or buy

equipment or to book a dive with a dive shop in the U.S. There are no exceptions. Yet this is not a legal requirement. Rather, it is imposed by the dive industry itself. Diving is a potentially dangerous sport. The dive shops would not survive if their customers were getting seriously injured or dying. Recognizing this, they took steps to ensure that it would not happen. These precautions also forestalled laws regulating and possibly prohibiting sport diving.

What can we learn from this example of self-regulation? Well, the animal rights activists would have everyone believe that owning exotic animals is too dangerous for both the owners and for the animals. As long as individuals continue to deal with businesses such as the one I recently visited, we leave ourselves open to attack from the Humane Society and others. How can we fight against the charges made by them when some of their charges are true? If we profess to care about these animals, then we must show it.

I propose that we set up a system of self-regulation. First, we should set up minimum standards. (These must be objective, which will require much debate). Second, representatives from the certification agency should regularly inspect all partici-

pating dealers and wholesalers. Only those individuals and companies passing the minimum standards would be certified. Third, publications should refuse advertisements from non-certified companies.

Hopefully, the above proposal will address the economic injustice that caring dealers face: a company that maintains high standards obviously has additional expenses, and therefore must charge a higher price than a company with no standards. We must monetarily reward and encourage the better companies and boycott the substandard ones.

If we do not do something ourselves eventually the government and/or the Humane Society will do it for us.

Laura Corriess

Dear Laura:

We generally agree with your views and your concerns. Many herpetoculturists have been appalled by the conditions under which amphibians and reptiles are maintained by certain reptile distributors and pet stores.

The AFH has approached PIJAC (Pet Industry Joint Advisory Commission) and proposed that we jointly develop a certification program for pet trade personnel involved with amphibians and reptiles. PIJAC claims that they have a certification program in the works. The AFH has decided to pursue its goals of improving the care of amphibians and reptiles in captivity. Its first effort will be a manual entitled "The AFH Guidelines for the Captive Management of Amphibians and Reptiles for Pet Businesses." This hopefully will be completed and published by year's end. In 1994, the AFH plans to develop training and certification programs aimed at both pet trade personnel and herpetoculturists.

One effect of these programs, we hope, will be a reverse domino effect. If customers expect more from stores and if stores expect more from distributors and if distributors expect more from exporters, pressure can be brought to bear. Because reptile distributors are disunited and highly competitive, the prospects of an effective self-regulating association being formed in the near future is highly unlikely. Nonetheless, we agree with your conclusions.

Philippe de Vosjoli
AFH President



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For Sale: Custom cages. Reptile cages, plans, instructional video, heat tape, snake hooks, 100% quality guarantee, lowest prices anywhere, dealers welcome. Call (800) 766-6354.

For Sale: U.S. reptiles captive and wild stock. Only healthy, quality reptiles offered. Wholesale only. High Desert Reptiles, 2688 Grangemont Rd., Orofino, ID 83544. Tel or Fax (208) 476-7384.

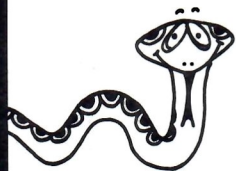
For Sale: Chameleons, captive-bred *C. minor* expected March, *C. calytratus*, *C. quadricornis* to follow. Free care sheet and price list. Send SASE to: DK Chameleons, P. O. Box 542, S. Pasadena, CA 91031.

For Sale: Quality captive produced snakes. Large variety 100+ forms (species subspecies, color and pattern morphs) of boids and colubrids should be produced this year! We believe that you will like our prices as well as our quality. Quantity prices available. For 1993 price list: Lloyd and Sunnie Lemke, 25947 Rd. 140, Visalia, CA 93292 (209) 734-6352.

For Sale: Full-spectrum incandescent lighting. Necessary for vitamin D₃ synthesis, calcium utilization, especially for iguanas, other herps. Fits regular screw-in socket. \$9.95 each, 3 for \$24. P&H included. Fourway, P. O. Box 9055, Largo FL 34641.

continued on the next page

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WANTED

Wanted: *The Vivarium* is looking for captive breeding and maintenance articles on amphibians. Compensation or exchanges available. Please call or write for Writer's Guidelines to the AFH, P. O. Box 1131, Lakeside, CA 92040-0905, (619) 561-4948.

Wanted: Texas indigo snakes (*Drymarchon corais erebennus*) legal, captive born only. Juveniles or young adults to 2 years only. John Middaugh, 3010 Glacier St., Anchorage, AK 99508. (907) 333-9349.

Wanted: Investor/Partner for reptile zoo and ranch in Las Vegas, Nevada. Bob F. Pierson (702) 457-4747.

Wanted: Information on Brazilian rainbow boas, annulated boas and albino boas for breeding and purchase of taxa. Please write to: John Young, 537 South 13th St., New Hyde Park, N.Y. 11040.

Wanted: "Dinosaur Gallery," selling paintings, sculptures, jewelry, fossils, etc., is looking for reptile and dinosaur artists or related items. Mail info to: 220 E. Valley Parkway, Escondido, CA 92027 tel# (619) 741-3260.

Wanted: Boa, python and colubrid snake husbandry and captive breeding articles for *The Vivarium* magazine. Write for Writer's Guidelines, P. O. Box 1131, Lakeside, CA 92040-0905 or call (619) 561-4948.

Wanted: Any back issues of *The Vivarium* not available thru AFH will pay \$6.00/issue. Call Ken (908) 291-5140, 7-11 PM EST. Also, yellow anaconda, female 36 in. or less.

Wanted: Male sungazer (*Cordylus giganteus*). Contact Gary Fogel, Chicago, IL (312) 935-6938.

Wanted: Vita-Lite full-spectrum natural light. Distributors wanted. Supply breeders, stores and pet enthusiasts. New Vita-lite spotlight, screws into any fixture. Also available, basking lights and red nite lights. Free replacement warranty. Call Kenny, toll free (800) 937-0900 Ext. 7023.

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The Gourmet Rodent: Rats and mice-pinkies, fuzzies and adults. For info, contact: Bill Brant, 6115 S.W. 137th Ave., Archer, FL 32618. Phone (904) 495-9024.

The Mouse Factory: Quality feeder mice and rats for sale. All orders are properly processed to insure quality control. Prices: Pinkies \$25/100., Fuzzies \$30/100, and Weanlings \$35/100. Ray Queen, P.O. Box 85, Alpine, TX 79831. (915) 837-7100.

The Rat Race: Quality rodents at affordable prices. Your snakes are what they eat! Keith Amelong, 5472 River Ranch Rd., Boerne, TX 78006 (512) 537-5165.

MISCELLANEOUS

Boa Survey: Please write for my questionnaire (specify language) on boa constrictor reproduction. Addresses kept confidential. Even if your animals have not reproduced, please respond if they are at least 4 years old. In return for a completed survey you will receive a chart showing the subspecies, their scale counts and range. William D. Joy, P.O. Box 821433, Dallas, TX 75382-1433 USA.

Book Catalogs and Conferences on Line Computer Bulletin Board System: view, search, download, Join conferences, enter and answer comments and problems. Many topics, including dog, cat, fish, bird, reptile and amphibian, nature, science, new age and much more. Data line (516) 922-9445, Voice line (516) 922-1169, or write The Pet Book Shop, P. O. Box 507, Dept.

AFHCA, Oyster Bay, N. Y. 11771. Make sure you tell us where you heard about us. Thanks, and give us a call.

Reptile Breeders: Have your name added to a list of herp breeders. This list will be sent across the nation and into other countries. Send name, address, specimen name(s), current prices (optional), phone#, other important information to Jon Sullivan, 54 W 1160 N, Orem, UT 84057 (801) 221-1669. All levels of breeding experience welcome.

Whyte Ark Reptile Enterprises, Est. 1983: Offers a large selection of unusual captive bred and imported reptiles, amphibians and other life forms. Highest quality wholesale/retail, buy-sell-trade. Call or Fax for current in stock list. Ph/Fax (415) 387-0927.

LITERATURE RECEIVED AND NOTED

The following is a list of relevant new books the AFH has received in recent months. Some we will review in the future, but because we cannot review all the published material we receive, we provide this section as a resource guide. Readers may inquire with reptile book dealers, retail pet supply outlets or libraries for titles they find of interest.

The General Care and Maintenance of Common Kingsnakes by David Perlowin. Lakeside, California: Advanced Vivarium Systems, 1993. 51 photos, 2 illus., 72pp., \$10.50 (softcover).

The General Care and Maintenance of Milksnakes by Robert Applegate. Lakeside,

California: Advanced Vivarium Systems, 1993. 47 photos, 12 illus., 72 pp., \$10.50.

The Proper Care of Amphibians by John Coborn. Neptune, New Jersey: T.F.H. Publications, Inc., 1993. 256 pps., \$14.95 (hardcover).



INTERNATIONAL GECKO SOCIETY

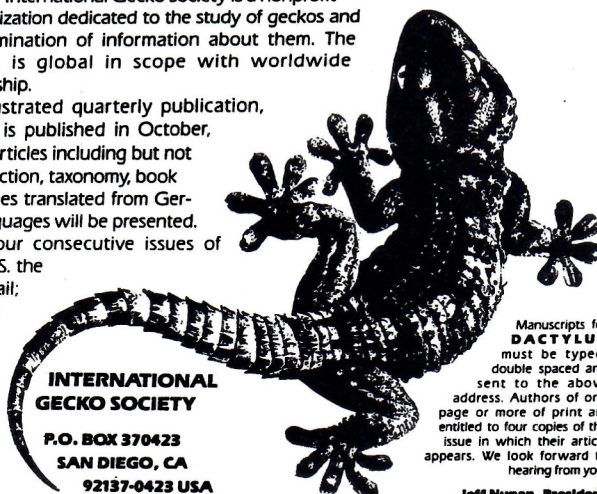
The International Gecko Society is a nonprofit organization dedicated to the study of geckos and dissemination of information about them. The I.G.S. is global in scope with worldwide membership.

Our illustrated quarterly publication, **DACTYLUS**, is published in October, January, April and July. It features articles including but not limited to: captive care and reproduction, taxonomy, book reviews and historical pieces. Articles translated from German, Chinese, Italian and other languages will be presented.

I.G.S. membership includes four consecutive issues of **Dactylus** and costs \$20. In the U.S. the journal will be sent bulk rate mail; upgrade to first class is available for an additional \$5. Outside the U.S. the journal will be delivered by surface mail; an optional air mail upgrade (cost determined by destination) is available. Send checks and drafts in U.S. currency to:

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Manuscripts for **DACTYLUS** must be typed, double spaced and sent to the above address. Authors of one page or more of print are entitled to four copies of the issue in which their article appears. We look forward to hearing from you.

Jeff Numan, President

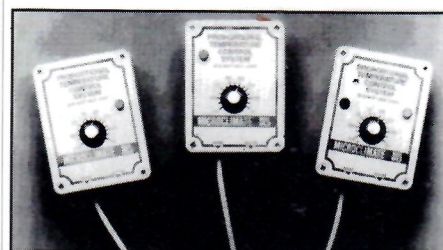
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