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Human/Reptile Interface at the Edge of the Third Millennium

Volume 9 Number 2

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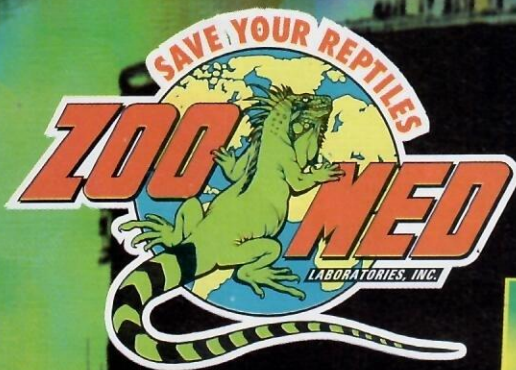
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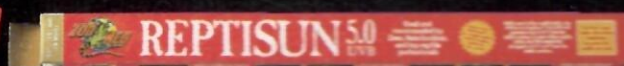


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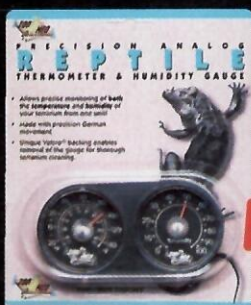


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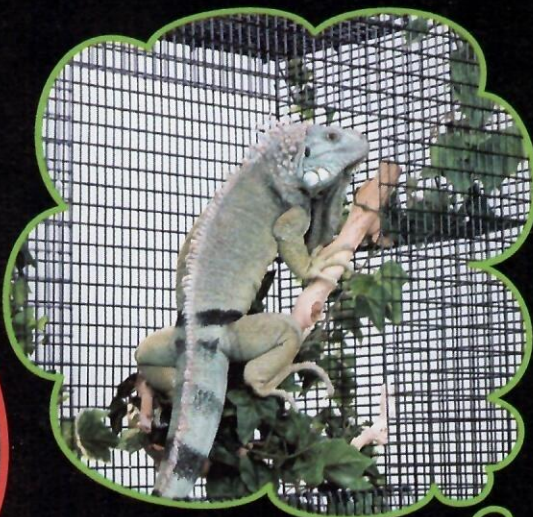


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Volume 9 Number 2

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Manufactured and Printed in the
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THE VIVARIUM, (ISSN 10472665) is published six times a year; December/January, February/March, April/May, June/July, August/September, and October/November issues. Subscription price is \$28 for U.S. and \$39 for all foreign countries, per year. Published by the Vivarium Publishing Group, Inc., 120 West Grand Avenue, Suite 106, Escondido, California 92025. Telephone: (760) 747-4948. Periodical postage paid at Escondido, California and additional mailing offices. POSTMASTER: Send address changes to THE VIVARIUM, P.O. Box 300067, Escondido, California 92030-0067.

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Volume 9 Number 2 February/March



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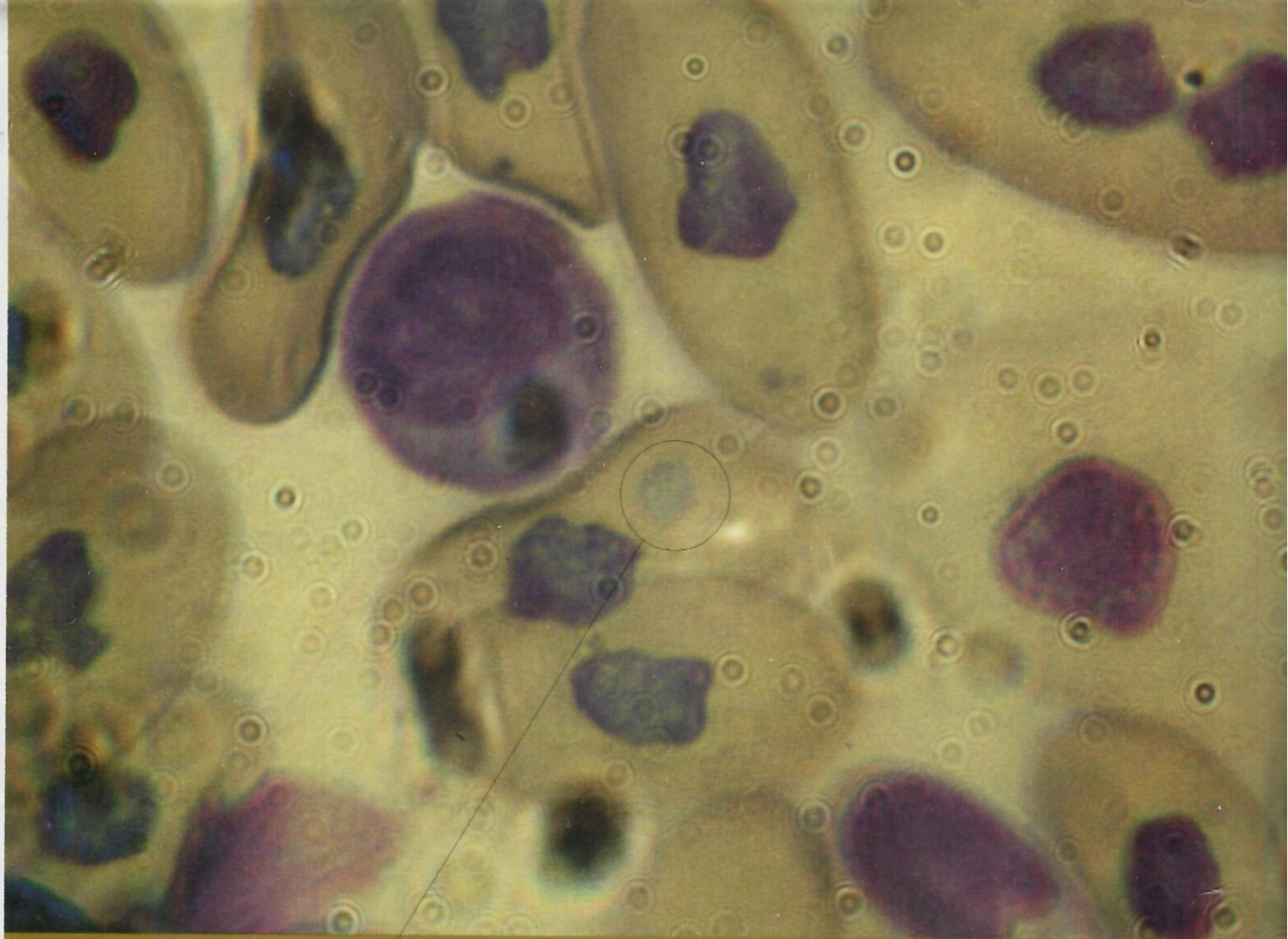


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Inclusion body in the cytoplasm of a red blood cell from a boa constrictor. Photo by the author.

Inclusion Body Disease (IBD) Update

by Roger Klingenberg, DVM

Rumors, innuendoes, and false claims about this insidious disease — the “AIDS” of snakes — are making their way through the herpetoculture community. Have these rumblings, mixed with factual information, made you uneasy? Are you wondering if *your* pets or collection will be next? If so, read on. Let's set the record straight by updating what little we do know about this disease.

Claim: Inclusion body disease was recently diagnosed in a colubrid snake, specifically a kingsnake.

What we know: Inclusions similar to those seen in IBD were recently observed in the hepatic (liver) tissue of an eastern kingsnake (*Lampropeltis g. getula*) that had encephalitis (Jacobson, pers. comm.). This snake was maintained in a room with boa constrictors, and some of the boas were eventually diagnosed with IBD. Does this mean that all colubrid snakes are also susceptible to IBD?

Inclusion body disease appears to be caused by a member of the Retroviridae, the same family of viruses that cause human and feline AIDS. There are at least seven groups of viruses in this family, and the causative agent of IBD has not yet been assigned to a specific group. It would be premature to say that the causative agent affecting the kingsnake was the same as the virus in the boas. However, it is quite conceivable that other reptiles have been exposed to, and have succumbed to, a retrovirus. Immunocompromised reptiles are likely susceptible to a broader range of pathogens than our current knowledge indicates. Until we know more, strict quarantine of known or suspect IBD cases should be rigidly maintained, with total separation from all reptiles.

Claim: IBD is spread mainly by mite infestations.

What we know: It has been presumed that retrovirus infections in reptiles are spread similarly to those in other species. In general, retroviruses do not survive well outside the host, and are spread primarily by intimate contact with body fluids from infected individuals. For example, AIDS infections in people and cats are spread primarily by exposure to blood and by sexual contact — much less frequently by exposure to saliva, tears, urine or feces. It was recently reported at the annual meeting of the Association of Reptilian and Amphibian Veterinarians (ARAV) that there is early (but not conclusive) evidence that mites and feces

curate and should be avoided. Boids and pythons presenting with histories of being *poor doers* and exhibiting weight loss, anorexia, chronic infections, neurological symptoms, and regurgitation should always have IBD as a rule-out on the list of potential ailments. A thorough work-up by a veterinarian experienced with reptiles might reveal other problems (such as parasitism, bacterial, fungal, or protozoal infections, neoplasia, toxicity, and basic husbandry problems) that have nothing to do with a retrovirus infection.

Necropsies, followed by microscopic tissue examination (histopathology) were perhaps the most common and easiest way to diagnose IBD in the past. Boids or pythons presented to the veterinarian

were often in the advanced stages of the disease and invariably died or were euthanized. Necropsies and pathological examination followed. Obviously, you as the snake owner and your reptile veterinarian would prefer to make an antemortem (before death) diagnosis — we're all on the same team in this regard. How can this be accomplished?

A serological test, similar to the blood tests designed to diagnose human and feline AIDS, doesn't exist at this time. Such a screening test will become the most important

tool we will have for diagnosing and limiting the spread of retroviral infections in reptiles. Under the direction of Dr. Elliott Jacobson, University of Florida, a serological test is being developed. Due to the current lack of research funding, this test is potentially years away from commercial availability. However, the herpetocultural community can participate — they must demand support for and help fund the development of serological tests for use in reptiles. Donations from private individuals and herpetocultural groups can be directed to: Dr. Elliott Jacobson, College of Veterinary Medicine, Dept. of Small Animal Clinical Sciences, University of Florida, PO Box 100126, Gainesville, FL 32610-0126.



Inclusion bodies, similar to those found in cases of IBD in boas, were found in the liver of an eastern kingsnake. (*Lampropeltis g. getula*) Photo by John Tashjian.

from infected individuals can transmit an inclusion body-inducing retrovirus in boas (DeNardo and Wozniak, 1997).

Until more work is done in this area, it is imperative that new reptiles are quarantined a minimum of six months and that mites are eliminated. The idea that feces from infected snakes can be a source of infection is even more frightening and points out the need for fastidious handling, cleaning, and disinfection techniques.

Claim: IBD can be effectively diagnosed by veterinarians from clinical signs alone.

What we know: Diagnosing IBD by observation of typical clinical signs is inac-

A serological test is a tool for the future. What can we do here and now? While not as simple or as inexpensive as a serological test will be in the future, veterinarians still have tools available now to diagnose IBD in snakes.

Helpful tests - This author has found basic complete blood cell counts (CBC) to be useful. If a boa or python is caught in the very early stage of the disease, it is not uncommon to see dramatically elevated white blood cell (WBC) counts. This appears to be a significant immune response by the snake to a viral invader. Unfortunately, most snakes are not seen during this acute or early phase and as time goes on it is more typical to see normal rather than elevated WBC counts. This dramatic decline in WBC numbers is likely due to both immune suppression and cell depletion as the virus becomes established. However, another component of the CBC, the blood smear, has provided some intriguing information.

In the last two years this author has found inclusion bodies in the cytoplasm of red blood cells (RBC) in 53 of 56 confirmed cases of IBD. These cases were primarily from boas and pythons from the Colorado and Wyoming region, but also included several cases from imported snakes that were sent from different areas of the country.

It is important at this point to discuss the significance of inclusion bodies, as we are currently diagnosing this disease based on the presence of these structures. It would be neat and tidy if these inclusion bodies could be shown to be the sites of retrovirus replication; viral factories, so to speak. It would then be possible to state that the presence of inclusion bodies was definitive proof of the presence of retroviruses. However, electron microscopy has revealed inclusion bodies to be accumulations of electron dense material, with no evidence of association to the retrovirus. Inclusion bodies may represent cellular changes or damage in response to viral infection. We just don't know. You may be asking yourself, why do we care? The concern over this issue is whether there are other causes of inclusion bodies which might lead us to make an incorrect diagnosis based on their presence. Keep this issue in the back of your mind as we discuss finding inclusion bodies in the cytoplasm of RBCs.

I currently collect blood via cardiocentesis (yes, that's from the heart)

of all suspect snakes to provide a CBC and a blood smear. Cardiocentesis is an established method of blood collection from snakes and presents minimal risk. The blood smear is then stained and carefully reviewed microscopically for the presence of inclusion bodies. The presence of inclusion bodies is best verified by someone with laboratory experience as the inclusions can be confused with erythrocyte refractive bodies, blood parasites, and staining artifacts.

So let's say we've found some inclusion bodies. Is this absolute, positive proof that the snake has IBD? No. It's just a good indicator and we proceed to the next step.

The next step is to obtain a **biopsy** from tissues that demonstrate inclusion bodies in a high percentage of confirmed IBD cases. While the pancreas was shown to be involved in 100% of confirmed cases (Schumacher et al., 1994), the organ is too difficult to find and not amenable to biopsy. It is much easier to obtain biopsies from the liver and occasionally the kidney, stomach, or esophageal tonsils. Inclusion bodies found in these tissues are considered to be diagnostic of IBD.

What if these tissue biopsies are negative? Unfortunately, this doesn't rule out IBD because the likelihood of inclusion bodies appearing in certain tissues may be affected by the duration of infection (DeNardo, pers. comm.). For instance, a liver biopsy taken six weeks post-exposure may have few or no inclusion bodies, whereas at 20 weeks inclusion bodies will be quite evident (DeNardo, pers. comm.).

A negative blood smear and a negative liver biopsy in a suspect animal (exhibiting signs consistent with IBD) usually results in a recommendation to further quarantine the snake for another six months and re-biopsy if needed.

Inconclusive inclusions? - At this point in time, we do use the presence of inclusion bodies to diagnose retroviral infections such as IBD. Initially, this author was quite enthused about the presence of inclusion bodies in the cytoplasm of red blood cells serving as a screening test for IBD. After all, over 95% of the confirmed cases of IBD diagnosed in the author's hospital had inclusion bodies in the RBCs. It's much easier, cheaper, and less invasive to collect blood than it is to obtain biopsies.

Unfortunately, some researchers are

not seeing inclusion bodies in the cytoplasm of RBCs. This may be due to several possible factors. Are inclusion bodies in RBCs time related, that is, appearing at certain points in the course of the disease and not at other times? Could regional variants such as temperature, humidity, and altitude affect red blood cells differently during the course of a viral infection? Are we dealing with different strains of inclusion body inducing retroviruses? Perhaps I'm dealing with a regional variant, or perhaps a completely different virus.

Some of the answers to these questions will be forthcoming after viral cultures at the University of Florida are grown and examined. In the meantime, I'm encouraging veterinarians to screen IBD suspects by using blood smears, but only in the context that the absence of inclusions does not rule out IBD. I have not seen these inclusion bodies in the cytoplasm of RBCs except in IBD cases, so I propose that they may be a valid means of screening for IBD. Time, and more experience with IBD cases, will verify if this is truly a valid diagnostic tool. I'll keep you informed.

Acknowledgement - The author thanks Dr. E. Jacobson for review of this article.

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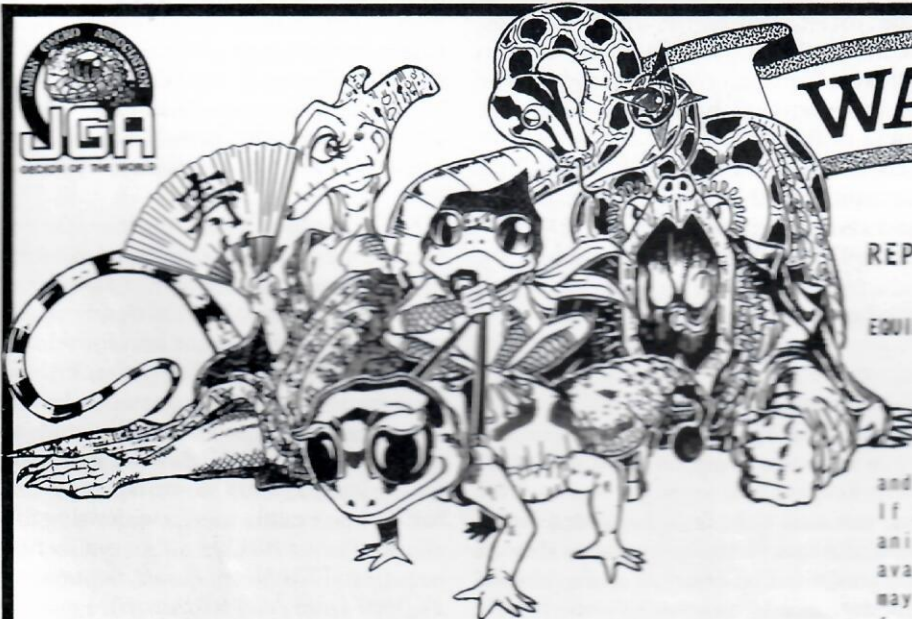
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Herp News From Around the World

by *Ellin Beltz*

The human/reptile interface

- Five Hialeah, Florida men were convicted of slaughtering a sea turtle and also illegally taking one-third of the known breeding colony of queen conch from Biscayne National Park. They were banned from national parks for three years, concurrent with their probation and 100 hours of community service. The men had been caught with the dead turtle, 458 queen conch and 37 other illegal fish in a 25-foot boat near a fishing shoal. [*Miami Herald*, September 3, 1997 from Alan Rigerman].

- Nearly 500 tortoises illegally collected in Greece and bound for the restaurants of eastern Europe were confiscated from a bus along the Czech and Slovak border. Stuffed into suitcases and plastic bags, were the living, and sixteen dead. More tortoises died after being taken to the Bratislava, Slovakia zoo although the staff managed to save more than originally expected. Greek officials arranged for the 423 survivors to be returned, and released the animals into forests north of Salonica. [*Fox News*, September 23, 1997 from Wes von Papineau and Kimberley Heaphy].

- The longest alligator ever killed in the state of Florida since lengths have been officially recorded was recently killed by trappers in Lake Monroe in central Florida. Measuring 14 feet 5/8ths of an inch, the animal weighed about 800 pounds. The animal had not actually attacked anyone; it was killed because its size made it a potential threat and several neighbors had called to complain. [*Naples Daily News*, October 2, 1997 from Alan Rigerman].

- Two well-known alligators, "Yellow Tail" and his three-legged mate "Peg," who lived for years in the National Key Deer Wildlife Refuge were recently found dead. They had been beheaded. Authorities are seeking information related to this incident for prosecution. The refuge telephone number is 305-872-2239. [*Miami Herald*, August 26, 1997 from Alan Rigerman].

- A nature guide from Langkawi, Shan

Mugan, India won the top prize in a snake charmers' "ability" contest for his act, which includes stuffing the head of a python into his mouth. [*The Independent*, September 15, 1997 from Mark O'Shea].

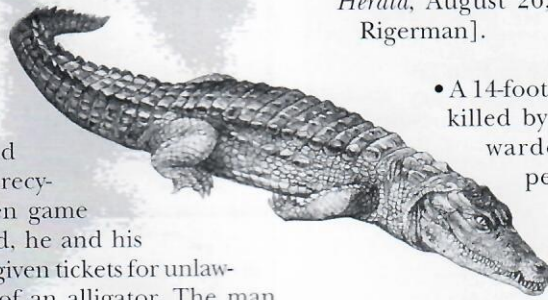
- A Port Charlotte, Florida man thought he was protecting his family by spraying a two foot long alligator that was in a culvert near his house with water from his garden hose, then capturing it and putting it in a recycling bin. When game wardens arrived, he and his neighbor were given tickets for unlawful possession of an alligator. The man plans to fight the citation in court. [*The Miami Herald*, October 12, 1997 from Alan Rigerman].

- Seven suspects arrested in Pretoria, South Africa were involved in what authorities called a wild animal smuggling syndicate with links to Europe and the United States. The South African Endangered Species Protection Unit had spent two years documenting the sources and the buyers involved. The raid netted 150 reptiles, 185 scorpions and scores of birds. One investigator pointed out that some of the venomous snakes found were so rare that "we don't have the antidote [for their venom] in this country" and that some of the lizards were carriers of the equine encephalomyelitis virus which threatens South Africa's horse breeding and racing industry. [Reuters, October 27, 1997 from K&W Herp Haven].

- Large African ticks were found on imported tortoises. The Florida Departments of Agriculture and the Game and Fish Commission as well as the U.S. Department of Agriculture Inspection Services and other agencies are asking all herp keepers and veterinarians to send any unusual ticks found on reptiles to Sandra Allan, IFAS, University of Florida for analysis. The concern is an African disease called "heartwater" which kills livestock and some wildlife. The disease has already spread from Africa to the Caribbean where it is now carried by a local tick. [*Science Daily*, October 21, 1997 from Kimberley Heaphy and Wes von Papineau].

- A father and son quietly fishing on the Manatee River in Florida spotted an alligator near a canoe ramp. As they got

closer, they noticed that it was floating with a human body. The nine-foot alligator was shot to death by sheriff's deputies who arrived in response to their call. An autopsy will be performed to find out if the man was killed by the alligator, or was merely eaten postmortem. The man had been drinking along the shore the previous night, according to witnesses. [*Miami Herald*, August 26, 1997 from Alan Rigerman].



- A 14-foot Nile crocodile was killed by Tanzanian game wardens after local people complained that it had been responsible for the deaths of seven people in two villages and

that four other people were recovering from serious injuries caused by the reptile. [Reuters, October 22, 1997 from Wes von Papineau and Kimberley Heaphy].

- A Jacksonville, Florida veterinarian stepped in to try to save the life of a gopher tortoise that was discovered with 21 pellet holes in the upper shell and eleven more on its underside. John Rossi, DVM, stated "We're already seeing so many [gopher tortoises] injured by cars. Now some idiot has to shoot one. What I would have to say to this person would be unpardonable." The X-rays showed that at least one pellet had pierced a lung, but most of the wounds were superficial. [*Miami Herald*, c. August 1997 from Alan Rigerman].

- A nine-foot long, eyeless, three-legged, starved and dehydrated American alligator was captured on a salt water beach near Miami, Florida by a licensed trapper. A beachcomber had found the animal and alerted authorities. Fishermen had previously reported a blind, three legged alligator, 40 miles away in the Tamiami Canal. High water may have let the animal swim downstream to the bay. A close examination revealed that the alligator's eyes had been shot out by BBs or pellets. [*The Miami Herald*, September 27, 1997 from Alan Rigerman].

- Two Connecticut men have been charged with illegally capturing two timber rattlesnakes (*Crotalus horridus*), which are endangered within that state. [*The Boston Globe*, June 9, 1997 from Christopher J. Knuth].

- A Jacksonville, Florida man has been where few men have gone before and

lived to tell about it. He was snorkeling when he was grabbed on the neck by an alligator and dragged underwater. While doctors were treating the man for his injuries, wildlife authorities scoured the banks of the river near the Ocala National Forest for the alligator. The man suffered a punctured lung and was considered fortunate to be alive. The alligator was hunted down and killed by trappers. [*The Miami Herald*, September 30 and October 6, 1997 from Alan Rigerman].

- A thief in Highland Cross, Texas left the television, stereo and jewelry behind, but took a cup with about \$5 in change and a Burmese python which the owner said was worth \$2,000. [Humble, TX *Sun*, October 8, 1997 from David Headrick].

- The price of python meat in Vietnam dropped to an all-time low as overbreeding by python suppliers led to a glut on the market. Depending on size, breeders presently only get from about \$3 to \$12. [*The Independent*, June 25, 1997 from Mark O'Shea].

- A group of about 25–30 non-native "terrapins" were discovered by a man along the Tay in Perth, Scotland. Wildlife authorities speculated that since they were found in the harbor area, they may have been dumped overboard from a ship. A recovery effort was mounted and the animals were to be prepared for export to their native Portugal. [Dundee, Scotland *The Courier*, June 6, 1997 from K&W Herp Haven].

- A seven year-old first grade student was bitten on the finger by a captive five-foot long Colombian boa being held by her teacher while the class posed for a picture in a nature studies center. A lawsuit followed, and the New York State Supreme Court Justice who wrote the four page decision ruled that the snake is a "wild animal with vicious propensities" and that the school district was responsible for keeping the snake from harming other people. A jury trial for millions of dollars in compensatory and punitive damages may follow. The child's mother said, "They had no business bringing that snake into a classroom of first graders — they are such babies — and letting them play with the snake." The nature studies center still has snakes and says they are being as careful as possible. Curiously, this is the same animal which made the news in 1989 when it was stolen from an Oceanside, New York school and later returned in a library book bin. [Long Is-

land, NY *Newsday*, October 15, 1997 from Steven Pond].

- Volunteers and veterinarians offer care to injured sea turtles at the Marinelife Center in Juno Beach, Florida. The vet "repairs shells cracked by boat propellers, removes fish hooks that have been swallowed or stuck in throats and amputates flippers caught or severed by fishing gear... [D]uring turtle season... [once] lost and weak hatchlings are released weekly in seaweed beds off the coast of the Bahamas when they are strong... [T]he center attracts 50,000 visitors annually, including an average of two bus loads of schoolchildren a day" according to the Fort Lauderdale, Florida *Sun-Sentinel*. [August 25, 1997 from Alan Rigerman].

- Doctors in a Newport, Rhode Island emergency room had to summon a veterinarian to help get a two foot long Savanna monitor (*Varanus exanthematicus*) to release its bite-hold on a woman's chest. The woman had taken the lizard out of the cage at her friend's apartment. The lizard bit her, grabbed her with its legs and wouldn't let go. The vet injected the monitor with a sedative and the animal let go. [*The New York Times*, August 3, 1997 from Beverly Schee].

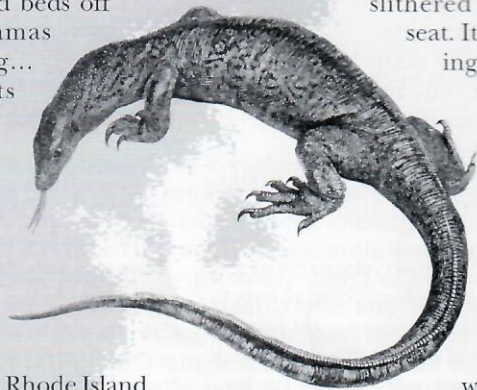
- One-third of the 1,000 reptiles and frogs had already died when authorities discovered the shipment in a warehouse in Lima, Peru intended for Los Angeles, California. Animals found included anacondas, water snakes, crocodilians and several rare species of frogs. The total "street" worth was estimated around \$500,000 U.S. [Tacoma, Washington *News Tribune*, August 26, 1997 from Marty Marcus].

- A Brooklyn, New York man was extremely surprised when a large alligator lunged at him in his backyard. The man quickly covered the animal with a plastic swimming pool, then called authorities who removed the reptile. They suggested it was "an escaped pet, not some mutant spawned in the city's sewers," reports *The Courier-Journal*. [June 29, 1997 from Gary Kettring].

- Cane toads (*Bufo marinus*) and Cuban tree frogs (*Osteopilus septentrionalis*) are now well established in Florida. How-

ever, they occupy two different habitat zones. Cane toads prefer coastal suburbia while the tree frogs are steadily advancing their range from Key West through the Everglades to Lake Okeechobee. [*XS Magazine*, June 10, 1997 from Alan Rigerman].

- Two women were driving along in a car with a ten-foot pet python "snoozing" on the back seat. Somewhere in Jefferson County, Kentucky, the snake "awoke" and slithered into the front seat. Its owner was trying to push it away



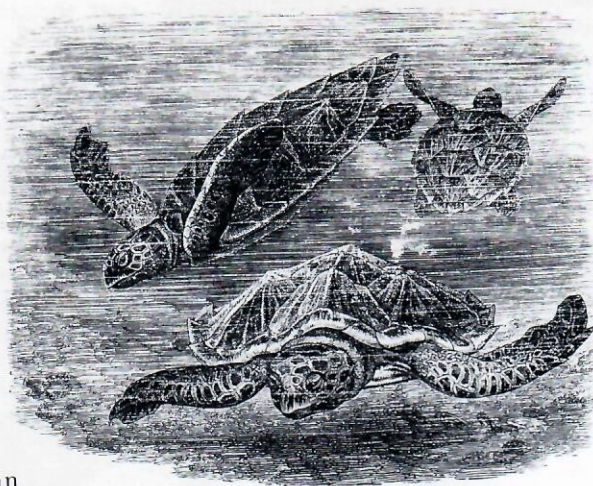
ing to push it away when "she ran into the median on Interstate 71... and her car flipped" according to a county police spokesman. The women were treated for back and leg injuries at a nearby hospital. A local veterinarian was interviewed for the article. He recommended putting the snake in a snake bag, then putting the bag in a traveling cage or stout box rather than just letting the snake roam loose in the car. [*Courier-Journal*, October 5, 1997 from Gary Kettring].

- About 20 percent of people treated with standard horse derived antivenin for venomous snake bite have allergic reactions considered "serious" while 70 to 80 percent have serum sickness and from 35 to 40 percent experience anaphylactic reactions which can be fatal. A new sheep derived serum may have less side effects. About 7,000 people a year are bitten by pit vipers including rattlesnakes, cottonmouths and copperheads in North America. [*New England Journal of Medicine Health News*, August 26, 1997 from Alan Rigerman].

- Firefighters in Frankfurt, Germany captured a 55-pound American alligator snapping turtle in the Main River. Several newspapers had reported on the "killer" turtle spotted by locals as it lived along the river for seven years, eating ducks, fish and animal cadavers. The turtle now lives at the Frankfurt Zoo, alone, because of its aggressive nature. [Reuters news service, August 12, 1997 from Michael Samuels].

- Some condominiums along the

Florida coast voluntarily turned down their outdoor lights this year, while others did not. Exterior lighting can disorient hatchling sea turtles. Every year comes stories of baby turtles dying while trying to cross roads, heading for electric lamps rather than the ocean. One condo decided to install light deflectors and other turtle-safe devices rather than pay court fines, but residents immediately began complaining that it was "too dark" outdoors at night. [Naples Daily News, July 25, 1997 from Alan Rigerman].



- An excess of tourists arriving at Komodo Island in Indonesia to see its famous dragons could potentially put the long term survival of the species at risk. Even though most now arrive by boat from Bali, a new airport is being planned only 40 miles from Komodo and more tourists are expected every year. Scientists are trying to reintroduce captive-bred animals on the uninhabited island of Padar which would stay off-limits to tourists. [The Indonesia Times, August 1, 1997 from K&W Herp Haven].

- Salt Lake City, Utah paramedics revived a two foot long green iguana (*Iguana iguana*) which had been overcome by smoke before being rescued from a burning apartment by firefighters. They used a pediatric mask and about 30 seconds of oxygen. The young owner lost another iguana and his pet rat in the fire which caused about \$20,000 in damage. [Deseret News, October 26, 1997 from Blair Carruth].

- The German envoy in Pretoria, South Africa was bitten by a snake but actually died in the car wreck which resulted from his being rushed in his diplomat's car to a Cape Town hospital for treatment. [The Cape Times, September 1, 1997 from K&W Herp Haven].

- The director of a government funded Mexican turtle center in Mazunte said that it is impossible to stop all the local sea turtle poachers. However, they established alternative businesses and encouraged local people to participate in sea turtle conservation efforts. It's beginning to pay off. This year 35,000 olive ridley sea turtles nested, an increase over nest-

ing numbers before meat hunting of sea turtles was banned absolutely. [The Tampa Tribune-Times, June 29, 1997 from Alan Rigerman].

- In August, 1997 the owner of the tiny two-pound dog eaten by a neighbor's loose 7.5-foot snake sued for \$5,000 in damages in "The People's Court," a U.S. television program where famous lawyers act as judges, and real people bring real cases for litigation in a pretend small claims court under the glare of studio lights. The "judge" awarded no pain and suffering damage, only \$1,500, the cash value of the Chihuahua, pointing out that, "under California law, there is no compensation for bereavement over a dead dog." [August 11, 1997: Shropshire Star from Mark O'Shea and Jefferson City, Missouri Post-Tribune from Vicky Elwood; USA Today, August 28, 1997 from Gary Kettring; Tacoma News Tribune, August 29 from Marty Marcus].

- Authorities at the London Aquarium warn that if temperatures continue to rise in the United Kingdom, introduced semi-aquatic turtles might be able to breed more quickly. An estimated eight million were imported during the Teenage Mutant Ninja Turtle craze in the late 1980s. Many have been set free along rivers and in ponds. Having no natural enemies in their new habitat, the turtles — including primarily American red-eared sliders and painted turtles — are doing quite well at the expense of native fish, frogs and newts. [The Independent, August 22, 1997 from Mark O'Shea].

- "The illegal [frog collecting] activity involving scores of frog catchers, middlemen, traders and processors shows how ineffective the law [in Bangladesh] is in

protecting these endangered creatures whose survival is crucial to the maintenance of nature's balance. It will be naive to assume that the law is being floated only in this area. After years of indiscriminate killing of frogs for export, the catching of these creatures was banned in this country and elsewhere in the region after environmentalists drew global attention to the [frogs] role in maintaining the delicate natural balance and the potential danger in wiping out this form of life from the face of the earth. Adult frogs with their insatiable appetite for insects prevent the unchecked multiplication of flies and other small forms of life which destroy crops and vegetation. Elimination of frogs would inevitably increase the dependence on chemical insecticides much to the detriment of many useful forms of life and of humans. Since the trading in frogs involves transportation, processing and shipping, it is hard to believe that the illegal activity can go on without the knowledge of government agencies which are supposed to enforce the ban..." [An editorial from Dhaka, Bangladesh The Independent, September 13, 1997 from Werner von Papineau and Kimberley Heaphy].

- Illegal trade in animals and animal parts has surpassed all other illegal trades in profitability except for the international drug trade. Even though 136 countries of the United Nations have signed the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) which generally bans 800 species from trade and limits trade in 23,000 other species, the international wildlife business grows every year. The players range from tourists buying illegal parts and pieces of animals like ivory, certain furs, corals and turtle shells to people who actively engage in trade in live animals whether for the restaurant or pet industries. [Cape Town, South Africa The Cape Argus, July 4, 1997 from K&W Herp Haven].

Thanks to everyone who contributed this month. I use what I get and the file is almost empty, so please send whole pages from newspapers and magazines, or clippings with the date/publication slug firmly attached and your name on each page to me in care of *The Vivarium* at the address on the masthead. Large single pages are preferred to newsprint originals, please! Thanks for all the letters, cards, photos, stickers, stamps and decorated envelopes, too. I really enjoy hearing from all of you. Text only to my e-mail <ebeltz@ripco.com>. 🐸

WARNING! THIS IS NOT A TEST

IMAGINE A WORLD

-Where many airlines refuse to carry amphibians and reptiles.

-Where gestapo-like wildlife agents can cite you, persecute you and you can be fined or prosecuted because you or a shipper made an error in packing which was not approved in a ten page set of guidelines on how herps should be packed.

-Where the difficulties and costs of shipping will make many species of herps unavailable to herpetoculture or research.

-Where exotic amphibians can no longer be imported.

THAT WORLD COULD BECOME REALITY

United States Fish and Wildlife Service is trying to pass a proposal to regulate the humane transport of amphibians and reptiles that could have great negative effects on herpetoculture and on herpetological research involving live amphibians and reptiles.

ACT NOW OR WE WILL HAVE MORE BAD WILDLIFE LAWS THAT THREATEN THE CONTINUED DEVELOPMENT OF HERPETOCULTURE

U.S. Fish and Wildlife Service has reopened the comment period on the proposed rule 62FR 341044 related to 50CFR part 14 and extended it to February 17 1998.

Public hearings will be held on January 17, 1998 between 1:00 pm and 5:00 pm at:

NEW YORK CITY

St John's University, Bent Hall Seminar Room
8000 Utopia Parkway
Jamaica, NY 11439

and on January 27, 1998 between 1:00 pm and 5:00 pm at:

LOS ANGELES

Westin Hotel (Los Angeles Airport)
5400 West Century Boulevard
Los Angeles, CA 90045

WHAT YOU NEED TO DO

1) Obtain a copy of this 11 page proposal published in the Federal Register Vol 62, No 109, Friday June 6, 1997 (this proposal would amount to more than twenty pages single-spaced if it were typed in a normal type size) or, if you have a computer and are connected to the Internet, go to <http://www.fws.gov/rdia/herpregs.html> for an abbreviated version.

2) Read our position statement, arguments and other information on the Vivarium website at www.thevivarium.com

3) **Write** an individual letter first to U.S. Fish and Wildlife Service, then to your **congress person** to inform them of your position on this issue.

The position of the Vivarium magazine is that, as with other bad wildlife regulations passed by USFWS (e.g. listing *Dermatemys mawi* under the Endangered Species Act while it is listed under CITES appendix II) and by CITES (directly and indirectly probably guilty of more amphibian and reptile illness and deaths than any "inhumane" shipments of live amphibians and reptiles for the pet trade), this proposal suffers from lack of research and the failure to invite cooperation from those who know the most about the subject and from those most affected by the proposal. The result is a proposal which is in many ways flawed, not based on research and potentially very dangerous in the authority it grants USFWS.

Much good could have come from an invitation to experienced members of the pet industry to cooperatively examine and find practical solutions to problems associated with shipping amphibians and reptiles BEFORE the development of this proposal. Instead USFWS has acted in its typical "us versus them" manner. The belief of congress and the general public is that USFWS is competent in doing the necessary research and analysis prior to proposing such regulations but as this proposal confirms, this is clearly not the case. For example USFWS speculates on the economic effects of the proposal because it failed to ask for input from exporters, importers and airline companies. If the cost of shipping amphibians and reptiles goes up by 500% or possibly by more than 1000% (this was determined by an importer packing a shipment according to USFWS standards), shouldn't the economic effects be assessed?

Although the chances of any cooperative action on this matter seems improbable considering USFWS' position, we are recommending that letters be written to USFWS to request cooperation between USFWS and the pet industry to develop practical regulations without the extensive system of incrimination and potential for abuse of power intrinsic to this proposal. In addition, a careful study of the potential economic impact and of possible restrictions in air transport should be performed. Because USFWS can choose to ignore the request for cooperation toward a sound proposal, we also recommend that you write a letter to your congress person to indicate your concerns.

Go to www.thevivarium.com for more information and specific comments and criticisms of this USFWS proposal.

THIS IS NOT A TEST!

Reptiles Have the Spotlight on South Beach

Who would have thought a few years ago that you could walk down Washington Avenue in South Beach, Florida, for the opening of a reptile store across the street from Prince's Club? South Beach, after all, is where Mickey Rourke, Bruce Willis, and Gloria Estephan, not to mention Stallone and Madonna, hang out. Here are the glitterati of the film, music and fashion scene. This is where over 400 models are on call every single day and where tourists come from all over the world to relax and enjoy the warm tropical atmosphere, topless beach and heated night life. The very enclave of hedonism and chic, where Chris Blackwell of Island Records fame keeps a recording studio and where the *Miami Vice* TV series shot some of its most memorable scenes amidst the streets and buildings of the famous Art Deco district.

The *reptile boutique* is a first and loaded with positive consequences. Reptiles are finally getting the exposure they deserve. Christopher Margolin from Westchester County and Rian Gittman, owner of *Underground Reptiles* in Deerfield Beach, have teamed up to open this chic reptile shoppe, *Wild World. The Vivarium* interviewed Chris Margolin in South Beach:

V: Why South Beach?

Chris: People here at South Beach are trendy, hip, international, affluent, eccentric and educated. There exists such a cultural diversity here. There is no other place like it. Most any place else, people have to take a car to go somewhere. Here, you can walk anywhere. It's like the biggest walking-mall in south Florida.

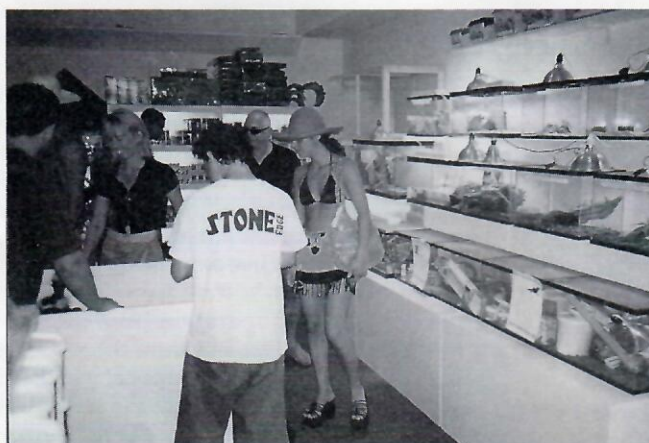
V: A reptile boutique?

Chris: Reptiles have seen an explosive growth in the last seven years. Many thought this would be transient. It's not. Herps are here to stay. There are about 45,000 apartments in the area. Most are

studio or one bedroom and the buildings generally do not allow dogs. Yet people love to have pets and a nice setup with reptiles or amphibians is perfect. Herps are especially attractive to those in smaller apartments. People still want the emotional rewards of having animals around them.

V: What makes you different?

Chris: Quality. Quality animals, quality store and setups, and especially quality staff to give advice to our customers. Aldo



Pacera, for example, is a former keeper of reptiles at the Bronx Zoo and owned, from 1969 to 1986, *Fang and Claw* in New York City. We also provide many options, with herps in all price ranges, for the beginner and the accomplished herpetoculturist.

V: Who are your customers here in South Beach?

Chris: We have customers from old to

young and from local to everywhere. In the first ten days since opening, we had customers from Italy, Germany, Belgium, Peru, Ecuador, Australia and throughout the U.S. It's really quite amazing, the mix of people. Many are here on vacation and enjoy a good time on the beach and come in to shop before going back home.

V: What is your philosophy about selling reptiles?

Chris: Basically to turn people on to reptiles and to educate them. In fact, each of our customers gets a care sheet covering the animal they buy. You know, people don't want aquariums with a newspaper on the bottom. It simply isn't enough anymore. Herpers are getting more sophisticated. It's the specialty retail shops like us which are taking that message and passing it on to the customers. Our store is an example of putting all of our knowledge into reality. Knowledge is really what this business is about. Knowledge of the animals and experience on the business side as well. In order to survive, we have to offer something special.

That translates into a more personal relationship with the customer. Customers want to move up to the more spectacular and more complex herps. It's an accomplishment for them to succeed. They want better and more complex setups, too. It's a typical progression. We don't mind listening to their questions and walking them through the steps it proves helpful. They appreciate that.





V: What kind of herptiles?

Chris: Everything you can think of. Our stock changes constantly but we typically have North African spiny-tailed lizards (*Uromastyx*), a variety of geckos, panther, veiled and Jackson's chameleons, monitors, water dragons, and prehensile-tailed skinks. Also, ball pythons, emerald tree and other boas, many colubrids, tortoises, poison arrow frogs, hellbenders, and a decent variety of tarantulas.

V: Besides reptiles and amphibians, do you carry other types of exotics?

Chris: Yes, we do sell sugar gliders, Ben-

gal and jungle cats, hedgehogs, gerbils, short-tailed opossums, skunks, and marmosets. This is an affluent community that loves all [animals]. The combination of herptiles and other exotics is a good mix. It attracts the same curious minds.

V: What about accessories and other dry goods?

Chris: We carry the typical mix of dry goods such as vitamin supplements, lighting, and decorative items for enclosures. We are always looking for new herp-related items. In fact, we reserved a section of our store to display naturalistic vivaria using Vivarium Research Group's high tech enclosures. We also stock waterfalls, foggers, wood and rocks. We plan to carry plants to use in naturalistic set ups. We stock Advanced Vivarium System's (AVS) books on reptile care, maintenance and, of course, *The Vivarium*.

V: Let's talk more about your business.

Chris: Rian and I [have] over 25 years

in the reptile business. You need a network to have access to quality animals and we have maintained long term relationships in this business which enables us to provide almost any animal a customer requests within 48 hours. We also want to continue our growth by opening similar stores using the same formula in other hip locations around the country.

V: Can you sum it up?

Chris: Provide higher-quality customer care. Continue to educate and to encourage more complex, naturalistic setups. The less maintenance for the owners, the more attractive it is for the people to own herps. Here in South Beach, we are also a provider for the movie production companies and photographers of reptiles to use on their sets. Also, we will be developing vivarium setups for the stores, restaurants and hotel lobbies in the area. We have already had a sizable number of requests.

V: Last words?

Chris: I hope your readers will come to South Beach and visit *Wild World*. We love working with the animals and think it shows. 🦎



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High Quality Reptile Housing

Secrets of the Goanna Man, Part 1

The Vivarium interviews Frank Retes, the person who singlehandedly revolutionized the herpetoculture of monitors.

V. What led you to shift from kingsnakes and later, pythons, over to monitors?

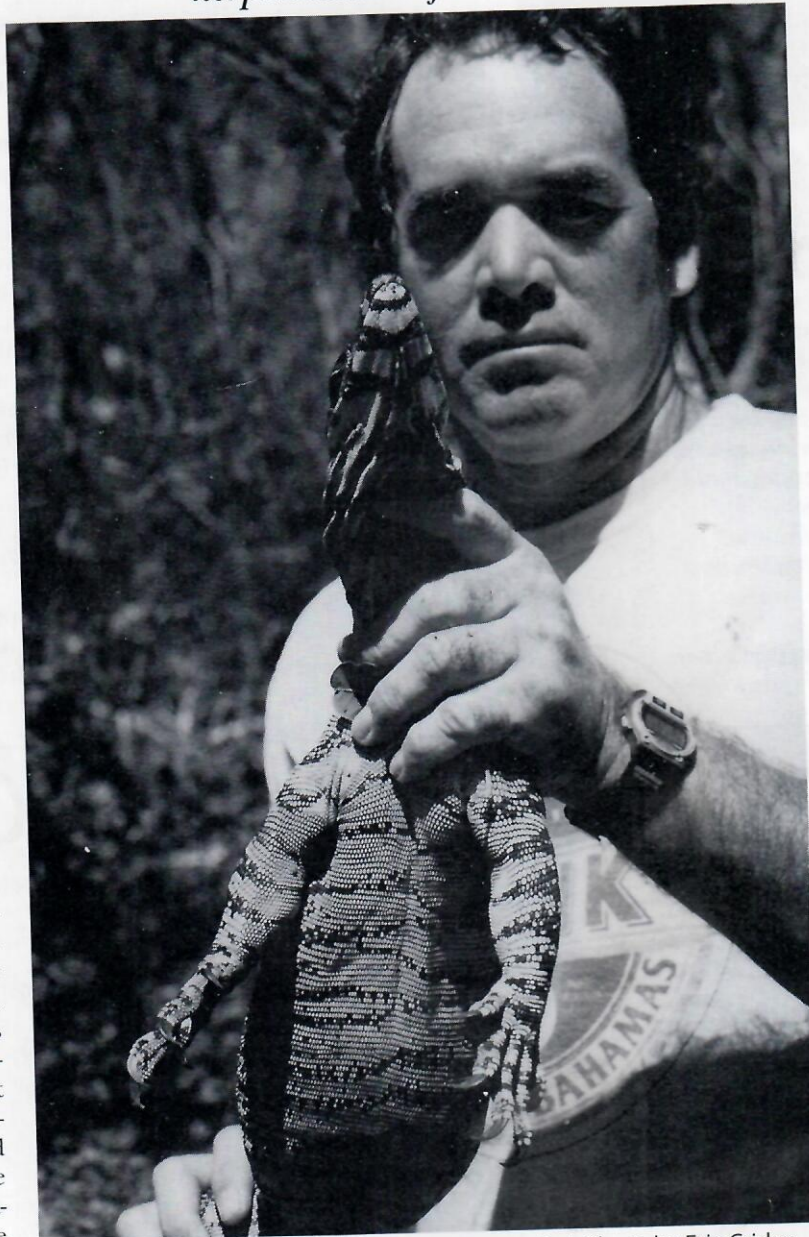
FR. Well, as you know I have worked many years with colubrids and then many years with pythons. Although people have a tendency to say that you're one thing or another, I'm an animal guy, I like them all. The best thing I ever did was back in the 60's when I got rid of a collection of many different kinds of herps and focused on just one genus at a time. What happened was I was working with the pythons. My son was growing up, I guess he was about 12. He decided he wanted to get into keeping some kind of animal. He first started with tortoises but ended up not liking them. He then decided he wanted monitors and it just went crazy. We got a Nile monitor first. Then we got him an argus monitor. At the time, I was also working, producing fiberglass backgrounds and enclosures for exhibits and pet shops. We would be working in these places and there would be all these people bringing back savanna and other large monitors that they raised up. Basically, most people didn't want their monitors after they had grown too large. That's when I thought "what the world needs is smaller monitors" and we decided to specialize in the smaller species of monitors.

V. Was the Australian spiny-tailed monitor (*Varanus acanthurus*) the first species you worked with?

FR. Yes, it was the species most readily available at the time.

V. How difficult was it to find dwarf monitors?

FR. Well, they're protected in Australia, so what I had to do



Frank Retes, holding a lace monitor (*Varanus varius*). Photo by Eric Crider.

was hunt down what I could find in private collections. As it turned out, there were quite a few dwarf monitors both in the U.S. and Europe but it was mostly one male here, a couple of females there, a lot of people with one animal or animals of the same sex. I remember I traded a female captive-bred and raised Boelen's python, originally bred by Paul Miles, to Ron Tremper for a trio of freckled monitors (*Varanus tristis*).

We also bought some Storr's monitors (*Varanus storri*) and managed to hatch a few of them, but they mostly ended up just killing each other. Then, in Florida, I picked up another strain, it was kind of a reddish strain and then finally worked out. What we found with these lizards is that if you raise them from babies together, they don't fight much. Once you get a breeding group, it's important that you keep them as a breeding group. We just kept on trading animals we had including pythons for new stock, slowly pairing up animals and forming viable breeding groups.

V. How difficult was it to find dwarf monitors considering that Australia doesn't allow exportation?

FR. The fact is that there were and are many Australian monitors in the U.S. and Europe just like there are many Australian pythons and skinks. Most of these were brought in the 80's when several U.S. dealers were importing Australian animals out of Europe and then selling them to large numbers of U.S. herpers. These included captive-bred animals such as the bearded dragons which are now so popular.

V. How do you think Australians feel about this? It's kind of funny to think that Americans have become the foremost experts on breeding Australian herps.

FR. A while back, a well-known Australian herpetologist came to visit with some friends and I was nervous about what they would think about our projects. Much to my surprise they were impressed by my success, by the number of eggs and clutches my animals were producing and the early age at which my animals matured. This kind of work had never been done with these monitors. What they said kind of rang a bell in my head. "What you are doing is important!" I sincerely believe that if dwarf monitors are not bred, they are simply not going to happen in herpetoculture. Critical information on their reproduction will not be discovered. In this country, one person may have a male of one species, another may have a female, but nobody puts them together.

Probably 90% of the known monitor species are captive in Europe or in the United States but they don't get put together. So now, when I finally get a pair of something, the only pressure I feel is to establish that species, to breed it and to make them available for other people to breed. That way, we don't have to worry if Australia will ever allow the legal exportation of that species. Whatever happens, we will have acquired a base of knowledge on producing dwarf monitors and can continue to have the animals as part of our experience. I think that's a good thing, and I know you feel the same way.

V. I agree, that's our point of view at The Vivarium. We have become opposed to wildlife laws so restrictive that they remove nature from human experience and enjoyment.

FR. How can we change that? I keep hoping that maybe one day wildlife authorities will realize that we are not the bad guys. Right?

V. Not in the near future.

FR. Not in the near future, but someday, you know. Maybe it won't be us; maybe it will be our offspring. Maybe it will be two generations from now that they'll realize that the best thing they can do is get animals in captivity if they want to stop poaching and large-scale collection. That would be the best way to do it. In the past, I guess they never thought you could breed monitors on a large scale, but it can be done.

V. So the first species you bred in large numbers was *V. acanthurus*?

FR. That's right

V. Some of what you breed, such as the red morph of *acanthurus*, is unlike anything I have seen before. Did that line start from wild-caught animals or is it the result of selective breeding?

FR. No, it is a wild morph that was first imported into the U.S. from Germany. Even my Australian friends didn't know where these monitors came from. In fact, last year they finally found the locality information. It's kind of funny, the first two published reports of them came way after I got my animals. I bought my original animals at a herp show in Florida and nobody knew what they were. They were babies and they didn't initially look that different. I raised them up together and they ended up being beautiful animals which behave differently than

the other *V. acanthurus*. They remind me of hound dogs.

V. How are they different from the typical *V. acanthurus* sold in the trade?

FR. Not only are they different in looks, but they're different behaviorally, in how they breed and in their reproductive effort. The eggs are easily 75-100% larger than usual *V. acanthurus* eggs. The mode of feeding is totally different. They are chasers. They'll run six to eight feet across something to get a cricket and jump after it. If a cricket jumps in the air they will leap to get it. The typical yellow *V. acanthurus* are ambush feeders. They stay under something and move out two to three inches or, at most, a foot, to capture food. The red ones just chase after things and have monster size eggs.

V. So, you have smaller clutches and bigger eggs?

FR. Actually, no. Our record for both kinds of *V. acanthurus* is 18 but generally what I call the yellow, more common *V. acanthurus*, tends to have more eggs.

V. Here's a question a lot of people out there probably want to know the answer to. What's the trick to keeping and breeding monitors?

FR. All monitors?

V. Well, if you have a great formula that can be applied to all monitors, this would probably be a good time to "spill the beans," in a manner of speaking.

FR. Every monitor that we keep, breeds basically the same.

V. An even better reason for you to let us in on Frank Retes' special recipe.

FR. In a nutshell, and this is something I've thought of putting on a T-shirt, the first rule which I would print on the front would say "Feed 'em and breed 'em." The second rule which I would place on the back would state "The more you read the less you breed." Unfortunately, I think people have complicated the breeding issue; they treat everything like colubrids. You know, that's a fallacy to think that everything behaves like colubrids. Most colubrids don't behave like colubrids.

V. Everyone believes that most herps have to be cooled down.

FR. You know, hibernation and cooling is something that I flat don't believe in. I never believed in it. I think it is a misunderstanding of reptile behavior. The basics of reptile behavior is that when an animal needs to do a job, it gathers heat. When it doesn't need to do a job, it gathers cool. Most of their life is spent cool. Even in the summertime when they don't have food in their stomach, digesting food or making an egg, colubrids will select about 65 or 75 degrees. In the winter when there is no food, they select 65 or 75 degrees which has nothing to do with hibernation. What it has to do with is reproductive behavior. I think all reptiles have two seasons. A reproductive season and a foraging season. They do kind of overlap. In the reproductive season, the prime objective is reproduction, they pair up, nest, get nesting areas, socialize. If there's food, they will eat it, but they don't go searching for it. Once that season is done, they move away from the groups, they move out of pairs

Continued on page 65

Herp Technology on the Cutting Edge

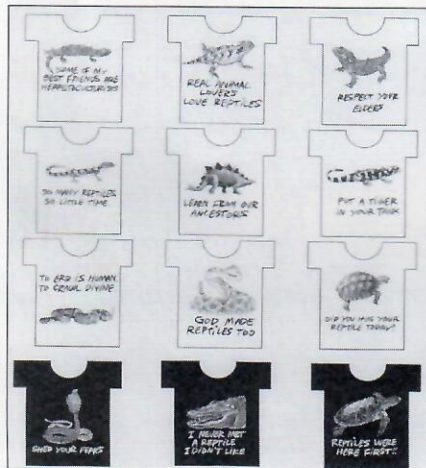
Compiled by The Vivarium Staff

Perhaps nowhere in herpetoculture is there as much change as in herp technology. New concepts are brought to the marketplace so quickly that products which were introduced just a few years ago may now be old news. Innovations, refinements, and relentless competition among manufacturers keep herpetoculture at the cutting edge. We're especially pleased with the new trend in naturalistic vivaria, because showcase habitats used as artistic decor help to ensure superior care of reptiles and amphibians. Take a minute to browse through these pages highlighting some of the hottest products for 1998.

Clothing

Super Tees for a Great Cause

Want to look good and help herps, too? Try one of these outstanding tee-shirts from Sam n Ella's. Profits help to support a nationwide rehabilitation and placement program for abandoned reptiles. These fine folks are the primary placement center for all reptiles coming through the NY Humane Society. SAM N ELLA'S.



"Save Our Species" Tees

Fourteen designs featuring mostly herps adorn these tee-shirts from the U.K. Six sizes are available for these 100% cotton shirts. A portion of the proceeds from sales are used for reptile conservation. B.J. HERP SUPPLIES.

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Vivaria and Accessories

Want a Waterfall in Your Living Room?

Tetra's latest kit "Cascading Creek" easily converts a 10-gallon or larger aquarium into a fascinating terrarium/aquarium habitat for herps. Mechanical and chemical water filtration is provided by an easy upkeep UL® and CUL® listed pump. The kit also includes pre-drilled planters. TETRA/SECOND NATURE.



Tank Cover

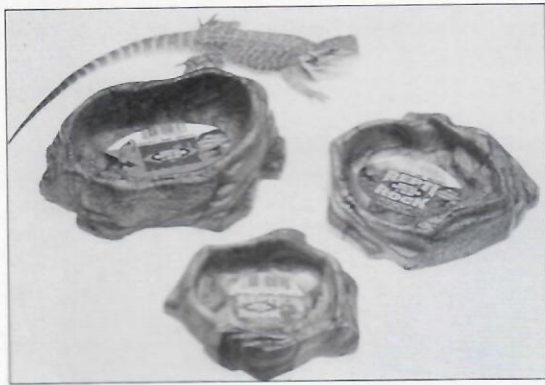
Designed to fit a standard glass tank, this new reptile tank cover features a built-in radiant heat panel which, according to Helix Controls, provides a temperature gradient with no risk of burning. Also included is a Helix proportional temperature controller and an optional lighting unit. Two sizes fit 10 or 15/20 gallon tanks. HELIX CONTROLS.

Desert Daylight Lamp

According to ESU, their Desert Daylight fluorescent lamp offers 7% UVB light and comes with a 180° external reflector. ENERGY SAVERS UNLIMITED.



Naturalistic Water Dish



Repti Rock Reptile Water Dish is constructed of nonporous, foamed polystyrene and designed with a series of "steps" which help reptiles to safely exit the dish. Easy to clean, available in three sizes and in three colors, Repti Rock can be a part of naturalistic vivaria. ZOO MED LABORATORIES.

Humidity Monitor



This new relative humidity measuring system is designed to operate with Helix temperature controllers in incubators and wherever accurate humidity measurements are a must. According to Helix Controls, the system provides continuous readings to 0.1% R.H. with better than 2% accuracy. HELIX CONTROLS.

BioBox

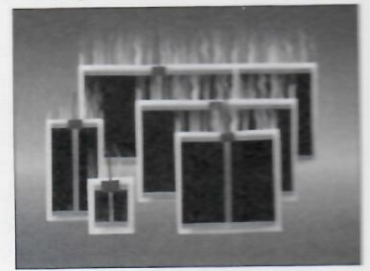
Marketed for herps, biology teachers, indoor gardeners and others, BioBox is made of recycled plastic and wood residue, and can be used indoors or outside as an attractive naturalistic vivarium. Designed to contain water, soil and plants, the BioBox comes with

two fluorescent bulbs and a filter/pump. BIOBOX.



T-REX Cobra Heat Mats: (Europe's #1 heat mats for more than a decade are now available in America).

COBRA HEAT MATS are flexible and durable. T-REX COBRA HEAT MATS are made from incredibly reliable, accurate, copper elements that provide uniform, evenly distributed heat.



COBRA HEAT MATS are designed to operate at a constant 100 degrees Fahrenheit. COBRA HEAT MATS may be used inside or outside the terrarium. T-REX PRODUCTS

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Lidless all plastic acrylic reptile shelving systems are offered by Clear Choice Displays. These light weight, knockdown systems come in a variety of sizes and are available for many standard boxes, such as Rubbermaid® and Phillips. CLEAR CHOICE DISPLAYS.

Superior Substrate

Forest Floor Bedding contains pure red cypress mulch, the substrate preferred by many herpetoculturists. Available in two sizes and containing no fillers, this product is sure to be a favorite with herpers. ZOO MED LABORATORIES.



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An invaluable tool for any herpetoculturist, these hand-held temperature sensor guns allow you to check temperatures instantly. The fact that they are non-contact makes them even better. Use them to check basking areas, heat tape temperatures, ambient temperatures, coil temperatures of pythons on eggs and any other area that you would like to monitor. Just point and shoot and you will instantly know the temperature. Once you use one of these units you will never be able to work without one. Temperature range is from 0° to 750° F switchable from °F to °C. Uses one 9V battery (included). Available

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T-Rex Aquatic Dry Formula is a nutritionally balanced food designed especially for Aquatic Turtles. Like all of our other T-Rex Dry Formula Foods, this product has been researched, developed and tested by some of the world's leading authorities. T-Rex Aquatic



Turtle Dry Formula is a floating, non-greasy, highly palatable, pelted food. The pellets come in a juvenile size (small and bite-size for small turtles) and adult size (large and bite-size for adult turtles). T-REX PRODUCTS.

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Software

ProBreed Software

WinSnake, WinLiz and WinFrog are three new, affordable software packages which automate and organize the care and breeding of snakes, lizards, and amphibians, respectively. The programs run through Windows and interface with Microsoft Office software. PROBRED SOFTWARE.

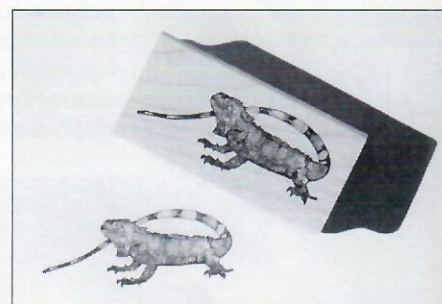
For Herp Collections

TRACS® For Reptiles is marketed as a complete data base maintenance and reporting system for reptile breeders. The software allows herpetoculturists to quickly store and easily retrieve detailed information on their collection. LEAPIN' LIZARDS.

Miscellaneous Herp Stuff

Herp Stamps

These new rubber stamps charmed us and are sure to please you. Featuring thirteen different original illustrations of herps ranging from a chameleon (*Chamaeleo quadricornis*) to several species of frogs, tortoises and snakes, these nifty stamps are constructed of hard maple mounts and carefully trimmed rubber and cushion. CLASSIC STATUS STAMP CO. 



Products Directory

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<http://128.227.242.241/biobox/welcome.html>

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Bush Herpetological

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(800) 451-6178
www.pythons.com/bush/bush.html

Classic Status Stamp Co.

205 Stover Rd.
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rclassic@freeway.net

Clear Choice Displays

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Byron, GA 31008
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(800) 526-0650 ext. 5494
www.tetra-fish.com

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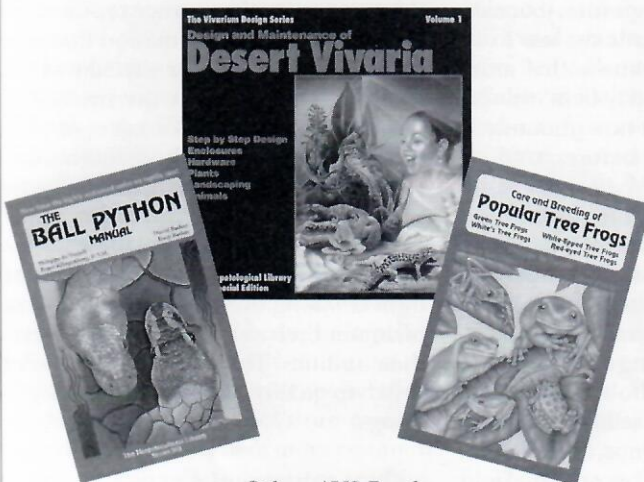
1124 Bay Blvd., Suite A
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The Association of Reptile and Amphibian Veterinarians established a Conservation and Research Committee in 1997. The ARAV has allocated \$4500 to this committee to fund research proposals involving reptiles and amphibians. The committee is responsible for solicitation, review and the final selection of proposals on the basis of clinical veterinary and conservation relevance. This past year, 4 proposals were selected for funding. These included: a study to evaluate topical medications to assist with the examination of turtle & tortoise eyes; a project evaluating the pharmacokinetics of Flagyl in rat snakes; evaluation of a new injectable anesthetic regime for tortoises; a study establishing reference blood values for crocodile monitors.

The ARAV Conservation and Research Committee was able to fund several other worthwhile studies because of limited available funds. The committee is looking for additional sources for funding to increase the total funds available for research and conservation projects. If you or your business is interested in donating funds to the ARAV Research and Conservation Committee please send a check or money order to: ARAV and send to ARAV, c/o Dr. Wilbur Amand, P.O. Box 605, Chester Heights, PA 19017 or contact Dr. Meg Sutherland-Smith, San Diego Zoo, PO Box 151, San Diego, CA 92112, 619-685-3266 (phone).

The Future of Herpetoculture

Compiled by *The Vivarium*
staff

We asked experts from the varied facets of herpetoculture to give their views on the future of keeping and breeding reptiles and amphibians. Here are opinions from several of those poised on the cutting edge.

Veterinarians

Scott J. Stahl, DVM, DABVP

Herpetoculturist and veterinarian in private practice in Virginia.

As a reptile and amphibian veterinarian and fellow herpetoculturist, I am very excited about the current state and the promising future I envision for herpetoculture. Herps have always been an important part of my life, and I cannot imagine not sharing my home with these fantastic animals. I am also excited about the advances we have made in herpetological medicine and surgery. Many herpetoculturists are realizing the need for veterinary assistance and consultation, and more veterinarians are focusing on herps as an important group of animals in need of medical care.

I feel if continued advances are to occur in herpetoculture, veterinarians and herpetoculturists must work together to learn more about the diseases seen in our herps. The avicultural community (aviculturists and avian veterinarians) has worked hard to raise funds for avian medical research at various universities. Their efforts have resulted in the development of diagnostic tests for several devastating avian viral diseases and even an efficacious vaccine for one viral disease. The herp community must follow a similar path if we want herpetoculture to have a promising future.

Leaders in the herp industry such as

Tim and Diane Hoen of the Mid-Atlantic Reptile Show have laid the groundwork to provide funds for necessary herp medical research. They have donated a portion of vendors' registration fees to Dr. Elliot Jacobson's research at the University of Florida on the deadly inclusion body disease (IBD) virus of snakes. There are and will be more devastating diseases looming on the horizon to attack our herps. Uniting together to help develop a diagnostic test for IBD is a first step toward the future management of disease in the herps we all love. The responsibility rests on our shoulders. Funding for this critical research must come from us — the herpetoculturists.

Elliott R. Jacobson, DVM, PhD

Veterinarian in academic practice and research at the University of Florida.

Obviously, herpetoculture has gone through major changes over the last eight to ten years. Having kept amphibians and reptiles as pets since the early 1950s and having followed the pet trade since that time, it is easy for me to say that the changes that have taken place are enormous. Twenty years ago there were only a handful of serious breeders in the U.S. Now, breeding of certain herps is being done by a large number of people who I call the *back-room breeders*. Along with the huge number of herps being produced is a relatively vast body of husbandry-related information in magazines, journals, and books. Most did not exist ten to 15 years ago. The bottom line is that more herps are being bred today than ever before and we know more now about their captive needs than ever before.

The herp captive-breeding industry is comparable in many ways to such industries that have developed to promote and sell chinchillas, rex rabbits, and ostriches. The similarity is their pyramid structure. That is, people purchasing expensive reptiles to sell to others who want to make money by breeding and selling expensive reptiles. The various albinos, amelanotics, and other mutants have become the gold standard of success. Whoever acquires the first albino or piebald emerald tree boa, and can breed it, is set for life. This is a concern, because this is what a big part of the industry has become.

As a veterinarian studying infectious diseases of reptiles, I have, up to this point, said little about the impact of pathogens on captive-bred herps. Disease outbreaks are a product of captive breed-

ing. We see it in all animal industries. Unfortunately, because of the mobility of herps in the pet trade and in breeding programs, pathogens have been spread around the globe. The first report of inclusion body disease (IBD) in pythons in Australia has now been documented and will be published in the near future. The vast majority of diseases in these animals have been poorly studied, primarily because of a lack of funding to do these studies. The herp breeding industry has contributed to this problem but has done little to solve the major health issues affecting these animals. Only time will tell if the industry will respond to this need before more significant outbreaks occur.

Roger J. Klingenberg, DVM

Herpetoculturist and veterinarian in private practice in Colorado.

For those of us who have been in herpetoculture for more than the past decade, it is nothing short of dazzling to see the number of herptiles and herptile products available, as well as publications devoted to our "addiction." However, the euphoria one may feel after attending a reptile symposium or touching/handling a newly acquired prized reptile must be tempered with a reality check concerning some issues threatening our hobby, passion, or for some, their profession.

As a veterinarian, I'm very gratified by the response of the average reptile owner to the husbandry information that is just now becoming easy for virtually anyone to access. Whether on the internet, in magazines such as *The Vivarium*, or within the excellent herptile booklets available (AVS, Barron's, etc.) people are starting to read! Husbandry is the single greatest element involved with reptile care, and I'm seeing a whole new wave of reptile owners willing to do their homework and maintain their reptile pets to the best of their abilities. There has been more of a switch to quality over quantity — all good things!

On the downside, I'm very concerned by the focus of herpetoculture toward a never-ending parade of weird morphs and new caging technology, while ignoring vital disease and looming legislative issues [U.S. Fish & Wildlife Service's (USFWS) attempt to close reptile importation]. Inclusion Body Disease (IBD), basically the "AIDS" of snakes, runs rampant and no matter how much we try to alert and educate owners, we appear to fall short. No one seems to care until it

falls into their lap. Reptiles have recently been implicated as carriers of equine encephalitis viruses, potentially contagious to humans. Coccidiosis runs rampant in bearded dragons, partially due to the lack of concern and discipline required to create a coccidia-free breeding group or to fund research necessary to test promising medications. The list of health concerns is long, and space short. Besides our own losses, we don't want to provide the USFWS with more ammunition in their misguided attempts to shut down reptile importation. Herpetoculturists must face up to and support vital health research as well as support legislative issues on herpetoculture's behalf. Be informed and get involved!

Breeders

Steve and Karen Osborne

Herpetoculturists and owners of Professional Breeders, Inc. Responsible for introducing many popular lines of colubrids.

A brief 25 years have elapsed since the basic beginnings of the first consistent herpetocultural successes. Within the last decade, herpetoculture has experienced major innovations in equipment, husbandry techniques, and veterinary care. Broad dissemination of information pertaining to the understanding of the mechanics of reproduction and the proper application of this information toward successful propagation is also occurring at a rapid pace. The current state of herpetoculture is a continued refinement of these various elements and application of them toward a broadening, domestically cultured, diversity of reptile and amphibian species.

Special concerns in the near future for herpetoculture are two-fold. First is the necessary transition in the worldwide pet trade from mostly wild-caught reptiles and amphibians to mostly domestically-cultured herps. We see direct cooperation between breeders and pet store owners, thus providing breeders of more common species a venue to the general public. Breeders need to be involved at the point of sale, promoting the cultured product and educating about the care of reptiles and amphibians. Pet store owners will benefit from a percentage of the animal sales, associated equipment, and food/prey items, and gain from a satisfied customer base receiving a quality product. The speed in which this transition may occur affects both the status of wild populations and the advancement of commer-

cial herpetoculture overall.

Our second concern is about governmental regulations, in the name of conservation, which restrict or prohibit culturing activities for certain species. Continual lobbying and promotion of the positive aspects of herpetoculture are necessary responses to the efforts that exist to inhibit public and private sector herpetocultural advancements.

The unchanging, driving force for the long term future of herpetoculture is an insatiable desire of many humans to seek out, possess, and visually experience beautiful and unique animals, with propagation of the same. There is a permanent, perfect fit that reptile and amphibian keeping has for a busy, modern world which fulfills basic human needs for animal interaction on a manageable, at-home basis.

Bob Clark

Herpetoculturist, responsible for introducing many of the popular morphs of pythons in herpetoculture, including albino Burmese and albino ball pythons.

Well, as they say "Opinions are like corn snakes, everybody's got one." Despite the ups and downs in our business, the hobby that supports us is continuing to grow in popularity. Of course, that's good for business. Anyone with an interest can buy an inland bearded dragon, leopard gecko or corn snake as their first herp, and succeed with it. Books, equipment and feed are readily available from mail-order shops and many pet stores. Beginners are likely to have contact with others who share their interests. Most have an opportunity to join a local herp club. National herpetocultural magazines spread the latest information on new animals, techniques and equipment. Many of the herptiles offered for sale are captive-born. Today, anyone with an interest can be successful with their first pet reptile. As a breeder, I know this is good for me.

The business part of our industry is like every other business. Some times are better than others. The foundation is strong and interest continues to grow; so does the industry.

This year will see the availability or the several new pythons including the "granite" Burmese python and, hopefully, the albino reticulated python. I expect to hatch tiger retics which will be heterozygous for albinism, the first step to com-

bining these two traits. I'm also working with a smaller form of retic that has been bred for albinism. There are also several geographic variants of reticulated pythons in the works. I'm still struggling to keep up with demand for the albino ball pythons.

On the equipment side, we've just made an addition to the Biostat thermostat line, the Biostat DL. This is a proportional thermostat with a night set back and a photo sensor that automatically switches to the night temperature as the light level decreases.

Randall L. Gray

Wildlife biologist. Author of many articles and an upcoming book on the herpetoculture of desert lizards; Uromastix specialist.

Herpetoculture's growth over the last decade has been phenomenal. The successful propagation of yet another species is almost taken for granted. Many forms now bred commonly were seldom seen in collections just a few years ago. This unprecedented success comes from an accumulating knowledge base coupled with the large number of individuals involved in herpetoculture. With this growing success is a decline in pricing. For example, the cost of inland bearded dragons and even frilled lizards has dropped because of increasing propagation efforts. Although this drop has generated concern, pricing dynamics are nothing more than the economic truth of supply and demand and should be anticipated and, when possible, planned for.

My concerns center on the conservation of herps. I have hoped for decades that the growth in herpetoculture would fuel a greater interest in the loss of habitat and a greater effort made in habitat conservation and protection. Unfortunately, I feel the rapid growth of commercialism in herpetoculture has spawned many who have become obsessed with the "bottom line" and forgotten their fascination and concern for the animal. On the other hand, several herpetological societies and at least one trade show have channeled money into conservation. Hopefully this is the beginning of an increasing and ever so important trend.

Vince Scheidt

Environmental consultant; herpetoculturist responsible for introducing several new morphs and species in U.S. herpetoculture.

Herpetoculture as an industry is cur-

rently experiencing tremendous growing pains. Nowhere is this more obvious than in southern California, an area known for being on the "cutting edge" of our American culture. Out here, colubrid breeders face market saturation, an over emphasis on select genera, and the proliferation of the semi-commercial hobbyist. This is beginning to force many herp hobbyists in this "cottage industry" to reexamine their goals and motivations. Are we breeding for the love of reptiles and amphibians, for the pleasures of interacting with others with a similar passion, or for pure profit?

None of the problems facing colubrid breeders are unique to this hobby or herpetoculture in general. Bird breeders, fish breeders, specialty plant propagators and others have faced the challenges of a changing industry and survived. We need to come to grips with the hard, cold fact that we won't be making much money producing some of the very animals we enjoy so much. While we may still thrill at the sight of a neonatal corn snake or albino king, we must realize that the value of those animals may be more intrinsic than extrinsic, and cannot be defined by an arbitrary dollar amount.

Seek out new taxa to work with. Be willing to take chances with entirely unfamiliar genera. Learn something about the natural history of your animals in the wild. Listen to your colleagues. Share information with anyone interested in listening to you. This will keep alive that passion you felt when you bred your first captive herp. And by doing so, you will be contributing to the next generation of herpetoculturists, and ultimately making your mark on society at large.

Vic Morgan

Herpetoculturist, specializing in Asian mountain tortoises Manouria emys.

The current state of herpetoculture has legitimized the reptile and amphibian pet trade. Consumer demands for captive-bred herps — corn snakes, leopard geckos and African spurred tortoises are examples — have grown. Expos have demonstrated the huge availability and declining prices of superior animals.

With the surge of herps into mainstream America, I am concerned that negative herp-human encounters, such as injuries or spread of infectious diseases, will increase. These could be used to put herpetoculturists into a negative light.

Regional herpetological societies must be ready to provide solutions. Be prepared!

If the general economy remains good, I do not see a decline in the herpetocultural phenomenon. With computer communication and more participation in herpetological societies, there is an opportunity for positive events to happen. Herpetological societies could form a national alliance. Herp-related events could help fund the purchase of land for conservation in the U.S. More efforts could be made to attempt to change illogical and counterproductive wildlife laws.

David and Tracy Barker

Herpetologists; python specialists and owners of VPI Pythons. Authors of many articles and books including the highly acclaimed Pythons of the World: Australia.

Today the force most affecting the "State of Herpetoculture" is generated by captive breeding. Many reptile species are now well established in captivity and hundreds more are on the cusp of being maintained in self-sustaining captive populations. Many people aren't aware of this fact or its importance, but this is an extraordinary achievement of herpetoculture. For the first time ever, most reptiles in the live-animal trade are produced in captivity and not collected in the wild!

Captive-breeding successes are making available an increasing diversity of species. Today the price of many captive-bred reptiles is less than that of wild-caught conspecifics. Just five or ten years ago it would have been difficult to imagine some of the animals that are today readily available at reasonable prices. These are great times for reptile fanciers.

We expect that the herpetocultural community will continue to grow, but the relative numbers of importers and professional breeders will decrease. These businesses are finding strong competition from hobbyists in a climate already made difficult by a tangle of regulations, ordinances, and laws. In the near future it seems likely that most captive-bred reptiles will be produced by hobbyists and not professionals.

As captive breeding becomes less novel we expect that emphasis will refocus on different hobby aspects, such as naturalistic vivaria. Another result will be the establishment of competitive shows, simi-

lar to dog and cat shows. Reptiles and amphibians will be judged on the basis of appearance and conformation, and prizes will be awarded. There will be regional and national competitions. Pedigrees and studbooks for species will become increasingly important.

Ron St. Pierre

Herpetoculturist. Originator of several lines of boa constrictors and responsible for introducing several species, such as blue tegus, to herpetoculture.

Herpetoculture now seems to be in a transition period. We are seeing more established species entering the mainstream pet trade than ever before, and the focus of keeping herps is beginning to shift away from simple setups designed for mass production to more complex artificial micro habitats. As a result of the changes evolving in herpetoculture, breeders must carefully plan their strategies for the coming years. Overproduction is now a possibility and is potentially disastrous. Large scale production of certain "hot" species and diligent efforts to produce "cutting edge" species and morphs will present greater chances of paying off.

My concerns for the near future of herpetoculture are increased restrictive and unfair legislation by the regulatory agencies and bureaucrats. We have faced, and most certainly will be facing, regulations that could have a significant and harmful impact on herpetoculture. It is important that the commercial herpetoculturists, as well as the amateur hobbyists, be able to leave their differences elsewhere and come together to oppose this legislation. If we cannot do this, our days of doing what we love could be numbered.

Hopefully, herpetoculture will enjoy a long life with many exciting things to come. Many breeders are currently working on awesome projects now, and I'm certain there will be more in the future. As advances are made in caging and other husbandry-related items, many formerly difficult species will become established in captivity.

Charles L. Powell, II

CEO of The American Dendrobatid Group, also known as the "Poison Frog Society." Organizer of Frog Day, the only U.S. herp event for frog specialists.

Continued on page 67

THE HEAT IS ON!

Bask 'N' Heat™ CERAMIC INFRARED HEAT EMITTER



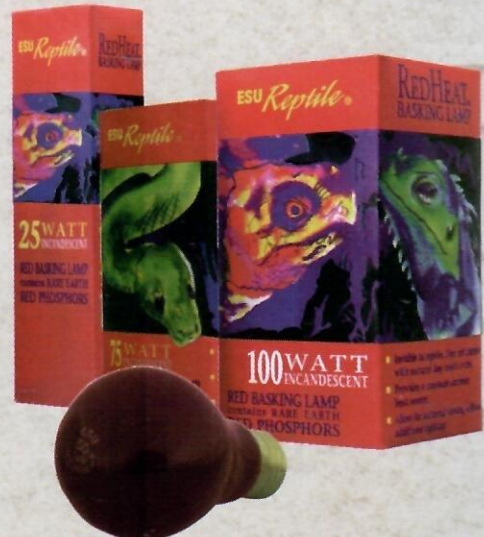
The **ESU Reptile Bask 'N' Heat** Ceramic Infrared Heat Emitter provides therapeutic, penetrating heat to improve reptile health and long life, without transmitting light. The extremely energy efficient thermal insulation of the ceramic emitter can send heat directly to your reptile 24-hours a day and has an unprecedented expected life of up to 12,000 hours.

Medium Ceramic Emitter: 40w (10 - 20gals.), 60w (15 - 35gals.), 80w (29 - 40gals.), 100w (40 - 50gals.). Large Ceramic Emitter: 165w (50 - 70gals.), 215w (70 - 90gals.), 265w (90gals. & larger)

Red Heat™ BASKING LAMP

The new **ESU Reptile Red Heat** Basking Lamp contains rare earth red phosphors which emit high heat at low light levels to satisfy day or night heating requirements. This unique red light is invisible to reptiles and does not disturb normal day/night cycles while allowing nocturnal viewing for the hobbyist.

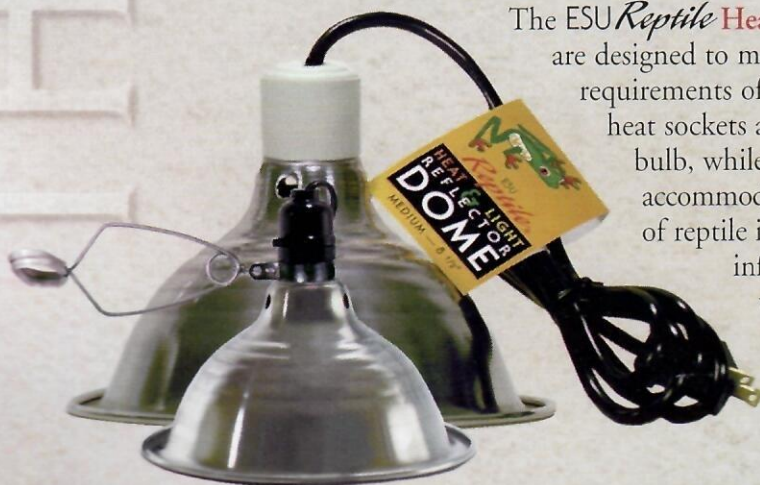
The **Red Heat** is available in 3 sizes and 5 wattages, 15w, 25w, 50w, 75w and 100w.



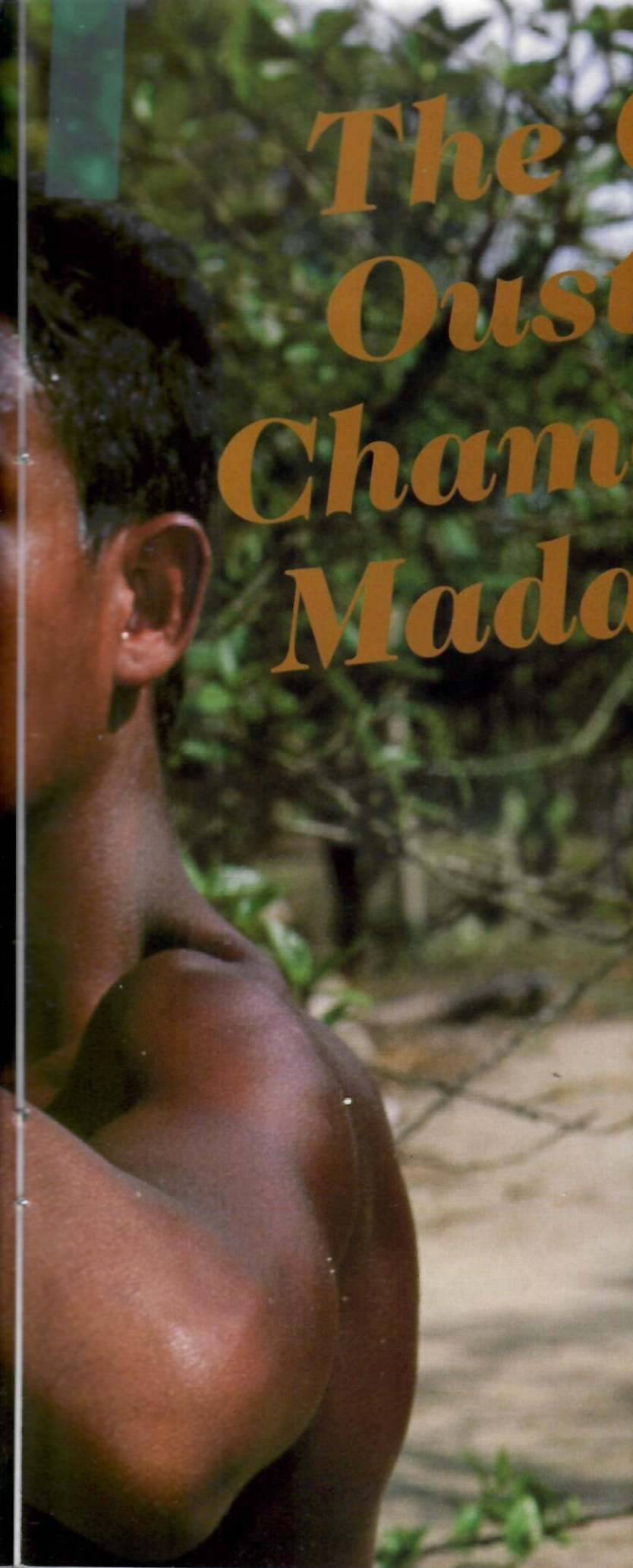
Heat & Light Reflector Domes

The **ESU Reptile Heat & Light Reflector Domes** are designed to meet the unique heat and light requirements of reptiles. Domes with high-heat sockets accommodate up to a 150 watt bulb, while porcelain socket domes accommodate the higher heat requirements of reptile incandescent lamps and ceramic infrared heating elements, 265 watt maximum. The sturdy construction of each dome guarantees long life.

High-heat plastic socket domes: 5 1/2" and 8 1/2". Porcelain socket domes: 8 1/2" and 10".





A photograph of a person's back and shoulder, looking out over a landscape. The person is shirtless, and their skin is dark. They are looking towards the right side of the frame. The background is a blurred landscape with green foliage and a dirt path.

The Giant Oustalet's Chameleon of Madagascar

*Incursions into
the Malagasy
pyro-landscape*

by Philippe de Vosjoli

*All photos by Bill Love,
unless otherwise indicated.*

They're a bunch of pyromaniacs!" my wife states, gazing up at the blackened hillsides. Madagascar in November is an island on the road to hell. The Malagasy people ignite their wasted scrub of a landscape in preparation for the rainy season. The fire denuded and eroding hills will allow for the growth of grasses and weeds to feed the ubiquitous humped cattle known as zebu.

We are driving on dusty red clay roads into that smoky acrid haze, passing little villages softened by the eerie smog into otherworldly pastel topographies. In the distance, large alien forms can be seen drifting in the fields, again zebus, the horned beasts at the gates of Hades, ghostlike intimations of what has yet to come. And then... along fences surrounding a hut... something... movement. It's so smoggy it's hard to tell for sure but as we get closer they become a little clearer, slinky gray beings scuttling along the spindly twine and branch fences, barely perceptible at a distance, weird alien life forms. We stop

A fair-sized male of the giant form of *Furcifer oustaleti* from around Morondava, located on the central western coast of Madagascar.



the car, get out and walk toward the fence. As we approach, the cryptic things slink away and seem to hide behind the railings. It is only as we get closer that we notice that they are large odd lizards with big heads, bulging eyes, tall flattened bodies and long prehensile tails. Their feet are like pincers. Our faces light up. We've finally found them, the giant Oustalet's chameleons of Madagascar.

We westerners are hung up on preservation. At the very least we need to preserve some of our most basic achievements like toilets with running water, hot water and refrigerators. In Madagascar most tourists visit natural preserves, hypothetical fortresses against the destruction of nature by humankind. We make brief excursions into the Malagasy landscape, returning at night into our own preserves, the hotels that shelter us from the population and its archaic way of life, out there. Our preserves have running water, hot water and the toilets that we feel are essential for a civilized life. We are also given the illusion that our food served in a fancy restaurant has been spared or cleansed of the bacterial contamination that seems so widespread. Madagascar is too alien for us to take in large doses. This is a time voyage into a past I suspect many of us would just as soon forget. It is an experience that can shatter delusions of the joys of a simple life. Initially the novelty of it all is exciting but eventually the poverty and, in big cities, the squalor wears thin. Primitive charm soon turns into an overbearing primitive sorrow. The assault of daily waves of poverty starts to suffocate. We begin to feel as if we are drowning in a sea of wants. "Un cadeau" a gift, the children ask.

Chameleons are unique among all lizards as much for their well known color changing ability as their independent eye movements, fused grasping digits and long distance, projectile tongue. They range from the tiniest of lizards, minute enough to fit on a wooden matchstick, to giants over two feet long. Oustalet's chameleons along with Parson's chameleon and the African Meller's chameleon are among the largest of these odd beasts. While most chameleons feed almost exclusively on invertebrates such as insects and snails, the largest species are known to occasionally capture other lizards and small birds when these prey become available.

The Malagasy people are caught in a time warp where tradition and the archaic rule. Life here has a Groundhog Day aspect. Time and life are cyclical and ruled by the laws of zebu herding, rice production and other traditional agricultural or religious practices. Madagascar is a country which will succumb to fields of habit, to the balls and chains of the past. It is an insulated world where novelty ingresses at a snail's pace. The human population with its frantic growth keeps the country ever bogged in the antiprogressive muck of tradition and the culture is stuck at fulfilling the most basic needs. My overwhelming thought is that if there is any hope for humankind it is not in our past but in our technological future.

There is a buzz about animal inhabitants of Madagascar being on the verge of extinction. Yet, we are finding Oustalet's chameleons almost every time we stop. On some fences there is

Opposite Page, captions read left to right:

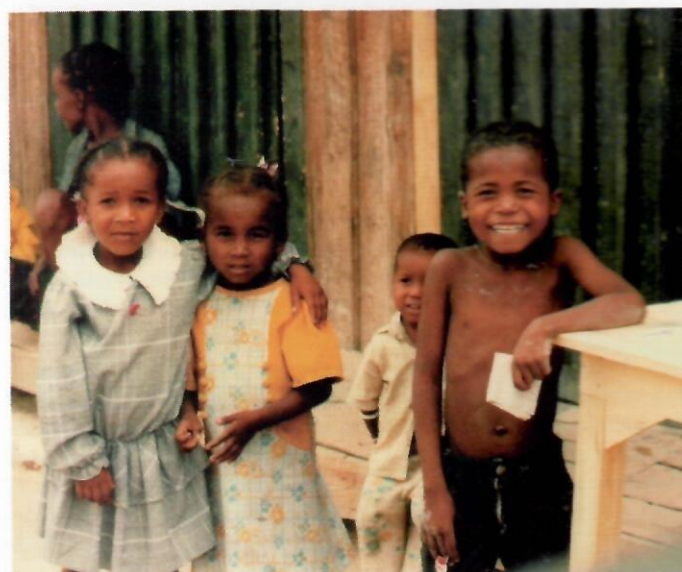
Top Row: 1. Male Oustalet's chameleon from 20 km south of Diego Suarez. 2. A male Oustalet's chameleon from an area north of Ambanja.

Middle Row: 1. The form of Oustalet's chameleon most commonly seen in the pet trade. 2. A female Oustalet's chameleon showing the bright red pattern which characterizes gravid females.

Bottom Row: 1. Male Oustalet's chameleon from Antsiranana. 2. Female Oustalet's from central/west side of Ankarana mountains.



In November, the smoke from the burning landscape gave the sky an unearthly yellow-orange haze. Photo by Philippe de Vosjoli.



The modern world is obsessed with saving Malagasy wildlife but for the most part has ignored the Malagasy people. Yet, the fate of both are closely interlinked. Photo by Philippe de Vosjoli.



The giant starts out small; a baby Oustalet's chameleon.

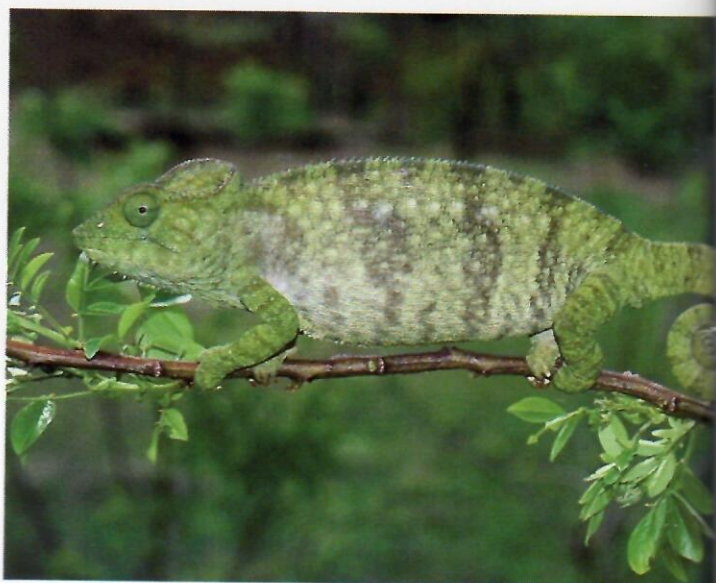
one every ten feet or so. Even in the most desolate areas, the few trees will tend to harbor at least one, sometimes a pair, of these big lizards. Planted fruit trees and the trees that line rice paddies also contain Oustalet's chameleons. As it turns out the transformation of natural habitat wrecked by man has provided alternate niches allowing these lizards to expand their range. How can relatively large predators find enough food to maintain such high densities? In one shrubby area outside of Diego Suarez, Oustalet's and panther chameleons, another large species, are as common as fence lizards in the American West. In biological terms these species over parts of their range are sympatric, they can be found together. However, this is not necessarily a harmonious unspoken agreement. I notice a sudden movement. A large Oustalet's has just captured a subadult panther chameleon. As we get closer to photograph this event, the beast turns and tries to move away, holding onto its helpless prey for dear life, stopping and getting in a chew when it can. The saliva covered panther chameleon before long has had its life crushed out of it and hangs limp as the Oustalet's tries to maneuver out of our sight. Once it has reached a satisfactory distance its jaws knowingly turn the now immobile prey around so that it can be swallowed head first. For a minute or so before the final gulp, the Oustalet's stood there looking at us, a curled tail hanging out of its mouth. "This, is how I manage to survive" it teaches us.

Outside of our hotel on the edge of the local street market we are approached by an old woman wearing a dirty torn dress asking for money. I give her a small bill and she suddenly becomes the kissing bandit. Says thanks and starts to kiss me, then my wife. Thank you, thank you. She then asks for more money. I tell her I already gave her money whereupon she slaps me as I look at her in surprise and then she starts her kissing routine again. People are looking at us and smiling. Others are laughing. We try to get away from this mad woman. Later we give another beggar a sandwich. The same old lady happens along and he tears the sandwich in half and shares it with her. There is a tribal and communal mind at work here that we have lost in the course of our cultural evolution. Over and over there is a sense that there are two states of identity here, the individual and the group mind, separation and belonging. The price of the belonging to a community or tribe seems to be the rule of habit, useful at one time but possibly fatal in the post-modern metamorphosis of existence. However, separation anxiety can leave one frozen in terror. It is as hard to leave the Mama mind as it is to leave the Mama body. Mind wombs and body wombs. Deaths and rebirths. In the West, the rate of change is becoming such that we can be reborn daily. What am I to be today in the great sea of change?

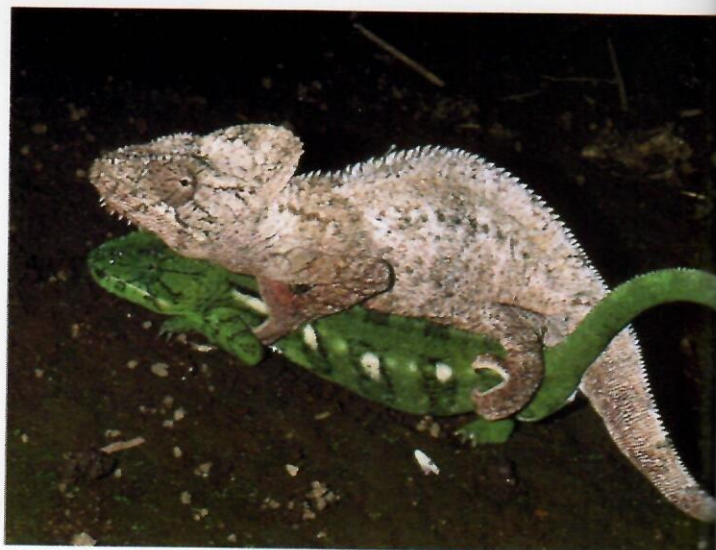
The tongue of the chameleon for all intended purposes serves as a spear; it can strike from a long distance and although it does not penetrate and cause internal damage it seizes, transports the poor victim through midair into the gaping cavernous mouth. Imagine a little bird alighting among a cluster of branches feeling all is well under the great big hazy Malagasy sky. A couple of feet away, a large male Oustalet's, staying still, notices the reflection of the sun against the sheeny feathers and the tiny movements of head, wings and tail and then, suddenly, it goes into hunting mode. The turret eyes focus on the unsuspecting prey, the mouth opens, the hyoid apparatus lifts. The unsuspecting victim is now within aim and the tongue strikes out. The sticky tip hits the body dead center. The bird is barely able to utter a squeak. It is drawn into the cavernous mouth. A flash, a sudden displacement in space/time. First here and safe and on a branch. Now in the jaws of the last of the tree dwelling dinosaurs. With a gulp the tiny bird is swallowed whole.



Female Oustalet's chameleon from just north of Ankaramy.



Female from south of Ambilobe, in the northwestern area of Madagascar.



Caught in the act! A breeding pair of Oustalet's.



We actually found Oustalet's in this degraded scrub area south of Mahajanga, northwestern coastal region of Madagascar.



An adult male Oustalet's chameleon from south-central Madagascar, near Beraketa.



Male of Morondava giant morph.

We pass a small cluster of huts. A bare-breasted black mama is sitting in front of her home, nonchalantly nursing her baby. Little children are playing, running. A little girl is gleefully laughing, innocent joy, her arm extended as she runs with her new toy, a dead rat tied by a string at the end of a stick. Other children are in her wake, all excited about the new game. A little boy is pulling an empty plastic water bottle pierced by two sticks to which are attached large rounded seeds, the wheels of a makeshift toy automobile. Another little boy, warily looks at us. His neck bears the thickened scar of a cut he is lucky to have survived, a necklace of raised skin drawing attention to the fragile connection of head to body, Young Frankenstein, probable victim of a knife or machete. He runs to avoid our further inspection.

Discrete, the giant chameleons scuttle along spindly branch and twine fences. Moving gracefully among the canopy of fruit trees, they survey small cramped villages bustling with activity — children, couples arguing, dog, pigs, fowl and zebu. They slink. They bask. They move like branches swaying in the wind. They stay still. They blend. They creep. They stalk and strike their tongue weapons at unwary prey. They breed. They fight. If attacked they turn. They display their yellow-lined mouths. They bite. They will not lose the battle. Amidst the slaughter of nature, they rule. The apocalypse is their kingdom come.

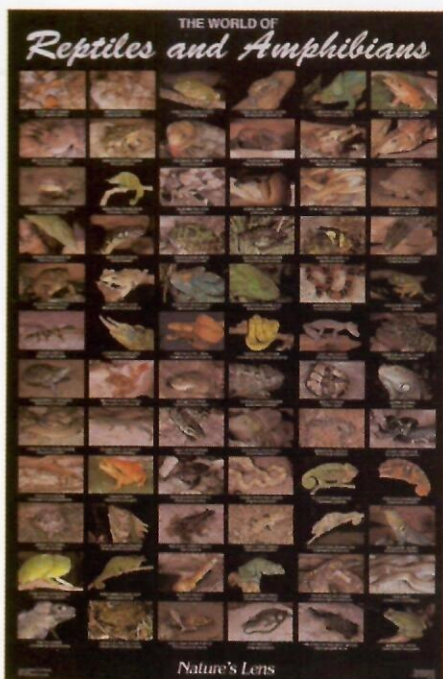
About the article: The goal of this piece was to show the contrast between a species that has adapted and is indeed thriving as a result of the human destruction of nature, and humans living on the very brink of survival. Above all, one of its aims was to draw attention to the Malagasy people. Too often conservationists tunnel-visioned by their drive to save wildlife ignore the fact that failure to help build viable economies in third world countries plays a key role in the ongoing destruction of nature. Since my return from Madagascar, I am questioning many of our conservation values. Ignoring the human condition is a kind of perversity that is too hard to accept. If other nations are so interested in saving Malagasy wildlife, they should make more effort to help Madagascar develop a viable economy. The very isolation which makes Madagascar such a unique and fascinating place in terms of wildlife also has a direct effect on its economic plight. Special thanks to "Wild Bill" and his Blue Chameleon Ventures.



The great Oustalet's chameleon of Madagascar

The Oustalet's chameleon (*Furcifer oustaleti*) is not only one of the largest chameleons in the world, it is also among the most variable. This abundant and adaptable species has generally been neglected by herpetoculturists. Some of the wild morphs have a spectacular beauty which most chameleophiles are unaware of. There are also herpetocultural myths that need to be dispelled. For example the arbitrary grouping of imports into a "small form" and a "giant form" is simply incorrect. This species in its own way is as variable as the panther chameleon. The previous shots are of Oustalet's from different localities, photographed by Bill Love in situ. In the north, Oustalet's chameleons are sympatric with panther chameleons. Males from around Ambanja tend to have yellow eye rims and maroon eyelids. The largest and some of the most spectacular Oustalet's can be found near Morondava on the west coast.

In terms of herpetoculture, the northern morphs that are sympatric with *C. pardalis* can be kept in basically the same manner and, if obtained as juveniles, are as hardy as *C. pardalis*. From observations in the wild, I now recommend that large animals be offered vertebrate prey in the form of lizards (geckos or anoles, but risk of parasites) or pink to fuzzy mice every two to four weeks as a source of dietary D₃. The southern morphs and the giant morph from the Morondava area need to be kept generally warmer, near 90° F (32°C) during the day. Adults have proven more difficult to keep alive than other morphs but starting with juveniles would probably work. Interestingly, the large form of the carpet chameleon [*C. lateralis* (major)] also comes from the same area as the giant Oustalet's and also requires warmer temperatures than *C. lateralis* from around Tananarivo, where most imports are collected.



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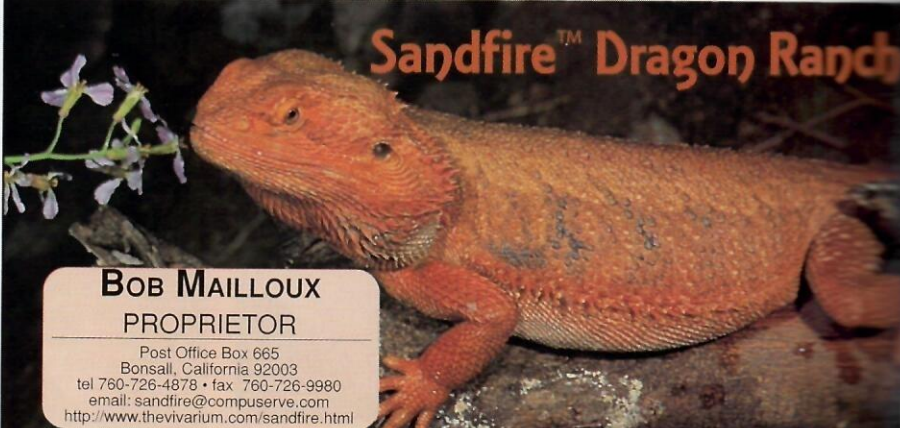
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The Cutting Edge of Herpetoculture

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and
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Note: Names printed in bold are listed in the Breeder's Directory on page 69.

New Caledonian Giant Geckos

Giant Geckos

All Photos by Philippe de Vosjoli except where indicated.

The king of geckos is without a doubt the Grande Terre form of the New Caledonian giant gecko (*Rhacodactylus l. leachianus*). These giants which can reach a total length of 15 inches (38 cm), take three years to reach sexual maturity in captivity and can live at least 35 years. The founder stock of Grande Terre animals in the U.S. is small and the majority of animals captive-bred to date have turned out to be males. As could be expected, demand by specialists for this rare gecko far outweighs availability. There is also the feeling among gecko specialists that the giant form could prove to be a different species than the smaller offshore islands form. Indeed, preliminary attempts to hybridize Grande Terre forms with offshore insular forms have so far failed.

New Morphs of Offshore Giant Geckos

How many morphs of New Caledonia giant geckos are there?

A 1997 expedition organized by Philippe de Vosjoli with Frank Fast and Bill Love led to the discovery of several new forms of *Rhacodactylus leachianus henkeli*, several of which are pictured here. The expedition revealed quite a bit about the behavior and ecology of some of these residents of small islands. They inhabit only tree species which readily form hollows. A tree in the family Celastraceae, *Cassine curtispiculum*, which does not usually form hollows provides the fruit that make up the primary diet of many of these insular morphs for several months of the year. Members of the expedition were able to locate and observe a number of animals inside tree hollows and, much to their surprise, found that animals on four different islands appeared to live in pairs. An article is in the works.



"Light morph" male "Grande Terre" giant gecko.



Adult offshore giant gecko from island "H". Photo in situ by Bill Love.



Adult from island "G".



"Light morph" female "Grande Terre" giant gecko.



"Dark morph" male "Grande Terre" giant gecko.



Small race of offshore giant geckos from island "G".



Big-headed morph from island "I".



Captive-bred and raised specimen from island "D".



A female offshore giant gecko from island "H".

More Geckos

White African Fat-Tailed Geckos

One of the most exciting herp events of 1997 was the announcement of the first captive-breeding of a line of leucistic fat-tailed geckos — white with faint banding and black eyes. These “knockout” animals are sure to increase interest in the commercial breeding of this neat heavy-bodied eublepharid from west Africa. We’ve also seen a hypomelanistic bright orange-banded morph which will be available in the not too distant future. After many years of being mostly ignored in favor of the more colorful and variable leopard gecko, fat-tailed geckos may finally have their day!

A Brief History

One day an off-white head pipped out of a pair of captive-produced African fat-tailed gecko eggs along with a normal colored sibling. Prior to this, multiple clutches of eggs were hatched from the same pair of normal color phase adults and all hatchlings were normal color phase. What a prize! And, it was a male.

Three years later, an adult colony of five leucistics exists, along with several heterozygous groups which are producing leucistic offspring with tremendous appetites and growth rates.

Other Geckos

Geckophiles are establishing geckos at record speed with popularity climbing to an all time high. However, some of the great geckos including frog-eyed geckos (*Teratoscincus*) and Namibian ground geckos (*Chondrodactylus angulifer*) continue to challenge our ability to reproduce them in any kind of numbers and with any kind of consistency. With the threat of ever more restrictive legislation looming over our heads, the pressure to establish such species is now greater than ever.



As adults leucistic, African fat-tailed geckos (*Hemitheconyx caudicinctus*) are mostly white with faint banding. Photo by Nicole Reggia. **Mark Leshock and Daniel Gorman.**



Subadult white fat-tailed geckos showing the more defined and colored banding. Photo by Nicole Reggia. **Mark Leshock and Daniel Gorman.**



3-Striped phase Madagascar ground geckos (*Paraoedura pictus*). Photo by Paul Meyers. **Paul Meyers.**



Namibian ground geckos (*Chondrodactylus angulifer*). Photo by A. St. Pierre. **Ron St. Pierre.**

Lizards

Lizards on the Edge



Jewelled lacerta (*Lacerta lepida*). Photo by Bert Langerwerf. Agama International.



Solomon Island prehensile-tailed skink (*Corucia zebrata*). Unusual red-headed captive born baby. Photo by Linda Hepburn. Pythons Plus.

All is not well on the great herp horizon. Jewelled lacertas (*Lacerta lepida*) are protected over most of their range and virtually unavailable except for small numbers produced in the U.S. Their survival in herpetoculture holds by thin threads, thanks to the persistent efforts of the few breeders who produce them, including herpetoculturist pioneer and lacerta groundbreaker, Bert Langerwerf.

Solomon Island skinks (*Corucia zebrata*) are another species of great concern. They are still imported in some numbers and sold at prices that don't even begin to reflect the cost or time of producing them. One thing is certain: the day will come when the flow of these imported skinks will stop. Any animal with such a low reproductive rate (five to six years to sexual maturity, one to two live babies a year) probably cannot recover quickly if such large scale collection continues. The big question here is whether many of the imports are simply a side-effect of the extensive deforestation for lumber now going on in the Solomons. Whatever the case, the time to set up pairs for captive breeding is now.

Chuckwallas (*Sauromalus obesus*) are the U.S. counterpart of the above mentioned species. They are now protected over much of their range but few are in the hands of competent herpetoculturists. They are one of many examples of native species where too little commitment to captive breeding was initiated too late. 



Chuckwallas (*Sauromalus obesus*) captive-bred by Julie Layton Couch. Photo by Mike McKillip. Pythons Plus.

Frilled Dragons

Frilled Dragons — Up and Running

These wild-looking, semi-arboreal lizards from Australia and New Guinea were the inspiration for the frill-flaring dinosaur in *Jurassic Park*. Perhaps, not unlike some dinosaurs, frilled dragons (*Chlamydosaurus kingii*) will scamper and run on their hind limbs, much to the surprise and amusement of those unfamiliar with the ways of these unique lizards. Until a few years ago, when specimens were imported from Germany and later from Indonesia, frilled dragons were virtually unavailable and had the reputation of being difficult to breed. Today, thanks to the determination and skills of herpetoculturists, frilled dragons have become well established in the hobby with several morphs now bred and offered with regularity. In spite of their neat appearance, frilled dragons are not for everyone. These large lizards, which like to rest on vertical tree trunks, require big enclosures, preferably the size of a large closet or small room.



Frilled dragons (*Chlamydosaurus kingii*). All photos by Jack Therhac. Allen Repashy.



Collared Lizards

Collared Lizards : Made in the U.S.A.

Among the rising stars of the captive-bred herp market are the North American collared lizards. These handsome beasts, a little like mini T-rex, with big heads and the ability to run bipedally, are an ideal size and can become as tame as any bearded dragon. For an increasing number of aficionados, they are the perfect pet lizard and perhaps the most beautiful herp going, with bold patterns and colors ranging from tans, cobalt blues and flaming oranges to creamsicle yellows. Dedicated breeders are currently in the process of working out the details for multigeneration propagation and long term husbandry. As with many other herps, the goal is to reduce commercial collection of wild specimens and incite the buying public with spectacular captive-bred and raised animals. 



Photos above and below: *Crotaphytus dickersonae*. Photo by Tom Jones. **Tom Jones.**



Crotaphytus collaris. Photo by Tom Jones. **Tom Jones.**

Boa Constrictors

Now available in more than 20 varieties!

Boa constrictors in the last ten years have soared to the top position as the most popular large snakes in herpetoculture, leaving in their wake the giant species such as Burmese pythons. Albinos, hypomelanistic, salmon, jungle, red-tailed, black-tailed, short-tailed, anerythristic, Brazilian, Colombian, Peruvian, Guyanan, Suriname and a plethora of crosses and pattern and color morphs are the many variations on the boa theme. These are now available to the ever-growing numbers of boa fans. With all the buzz about boa constrictors, there is also the sense that this is only the very tip of the iceberg and that new mind-boggling morphs are just around the corner. Small boas can be as spectacular in their color and pattern combinations as koi carp and are a sure thing for the twenty-first century; life transformed into art.

What is the downside of boa constrictors? Inclusion body disease (IBD), a fatal viral disease with epidemic potential has been sweeping through boa collections. Unchecked, and without the most urgent attention of breeders to identify and eliminate infected animals from their collections, and quarantine new arrivals, IBD could end up being a disastrous setback for the fast-growing boa market. For more information on this dreadful disease, read Dr. Klingenberg's article in this issue.

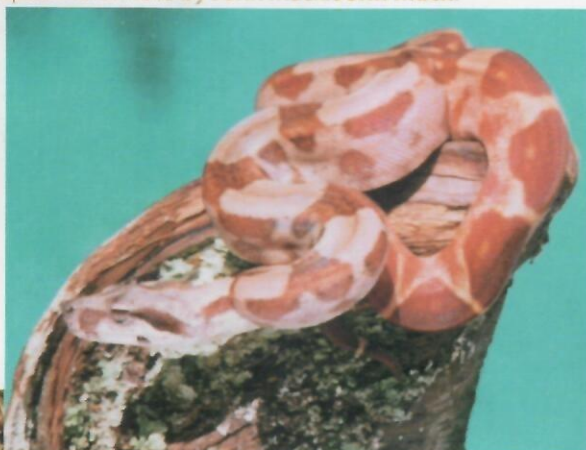
Boa Constrictors



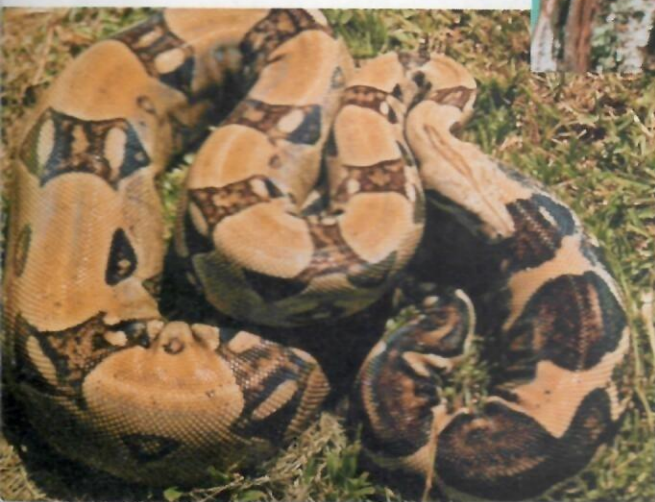
One of the most exciting new boas of 1997. Hypomelanistic Argentine boa constrictor (*Boa constrictor occidentalis*). Photo by John Mack. **John Mack.**



A hypomelanistic Argentine boa constrictor photographed next to a normal specimen. Photo by John Mack. **John Mack.**



Above: Double heterozygous for "Ghost" (hypomelanistic x anerythristic) *Boa constrictor imperator*. Photo by Jeff Gee. **Captive-Bred Wildlife Foundation.**



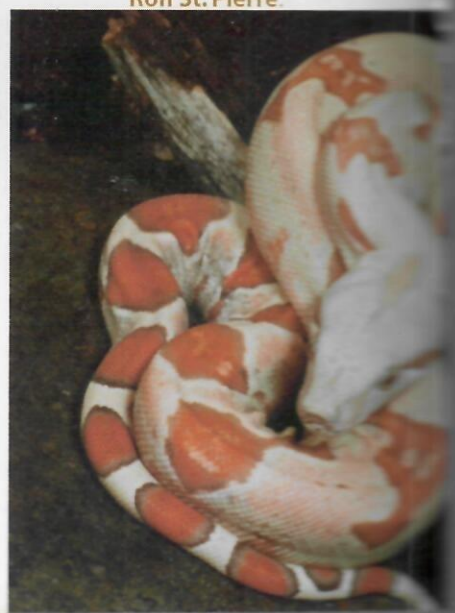
Left: Anerythristic Colombian boa constrictor (*Boa constrictor imperator*). Photo by A. St. Pierre. **Ron St. Pierre.**



Blood boa constrictor (*Boa constrictor imperator*). Photo by Ron St. Pierre. **Ron St. Pierre.**



Patternless boa constrictor (*Boa constrictor imperator*). Photo by A. St. Pierre. **Ron St. Pierre.**



Right: Albino boa constrictor (*Boa constrictor imperator*). A new albino line suspected to be tyrosinase positive. Photo by David Barker. **V.P.I. Pythons.**

Rainbow Boas

Rainbow Boas

When viewed in sunlight or under full spectrum lighting, few snakes match the color and iridescence of a choice Brazilian rainbow boa. For those herpetoculturists who just can't leave nature alone, one can't help but wonder what the results would be if we were able to manipulate combinations of color and iridescence? For years, the hope of rainbow boa breeders has been that new mutations would turn up which would allow a certain creative latitude with these beautiful snakes. Much to everyone's surprise, anerythrism (lack of red pigmentation) was the first herpetoculturally significant mutation to appear in both Colombian and Brazilian rainbow boas. These new morphs have opened new opportunities for selective breeding, playing with the definition, contrast and color of the darker pattern. As multigeneration breeding of rainbow boas increases, other mutations are also beginning to appear. The transformation of rainbow boas into living art has begun.



constrictor imperator). Photo by Jeff Gee.



Diamante Argentine rainbow boa (*Epicrates cenchria alvarezi*). Photo Exceptional Exotics. **Exceptional Exotics.**



Left: Moonbow Brazilian rainbow boa (*Epicrates cenchria cenchria*). Photo by Exceptional Exotics. **Exceptional Exotics.**

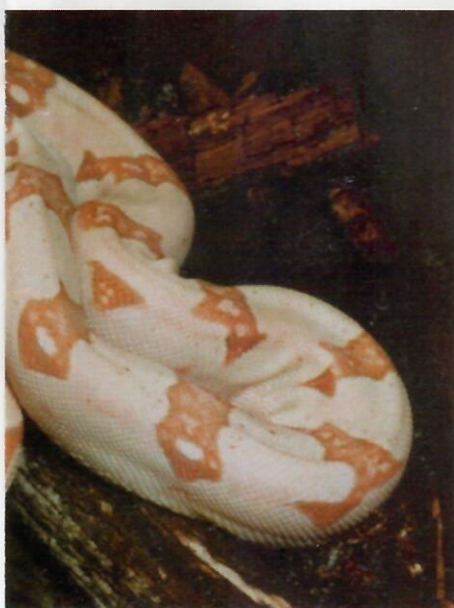


constrictor imperator) from El Sal- Courtesy of John Caprio and

Right: Anerythristic Colombian rainbow boa (*Epicrates cenchria maurus*). Photo by Ian Recchio. **Ian Recchio.**



Right: Hypomelanistic "Pastel" Brazilian rainbow boa. Photo by Darin Bell. **Darin Bell.**



Anacondas & Other Boas

The First Albino Anaconda

Probably the largest species of snake in the world, with a reputation that has been the source of numerous myths and at least one bad movie, the green anaconda, has fascinated *Homo sapiens* since his first encounters with this snake around 15,000 years BCE.

We now have even more cause for fascination. The first albino green anaconda, mostly yellow with pink tongue and orange eyes is now in our midst. It is an unusually docile young male, captured soon after its birth in South America. Owners Mark Leshock and Louis Sangermano, experienced herpeto-culturists, hope to have albino offspring from this spectacular giant in the not too distant future. 🐍

First Albino East African Sand Boa

Until now all "albino" Kenyan sand boas sold in the trade were the descendants of a cross between an albino Egyptian sand boa (*Eryx c. colubrinus*) and a normal Kenyan sand boa (*Eryx colubrinus loveridgei*). Finally a pure albino East African sand boa (*Eryx c. loveridgei*) is on the scene— and what a beauty it is! 🐍



Albino green anaconda (*Eunectes murinus*). Photo by Nicole Reggia. **Mark Leshock and Louis Sangermano.**



Albino East African sand boa (*Eryx colubrinus loveridgei*). Photo by David Barker. **V.P.I. Pythons.**

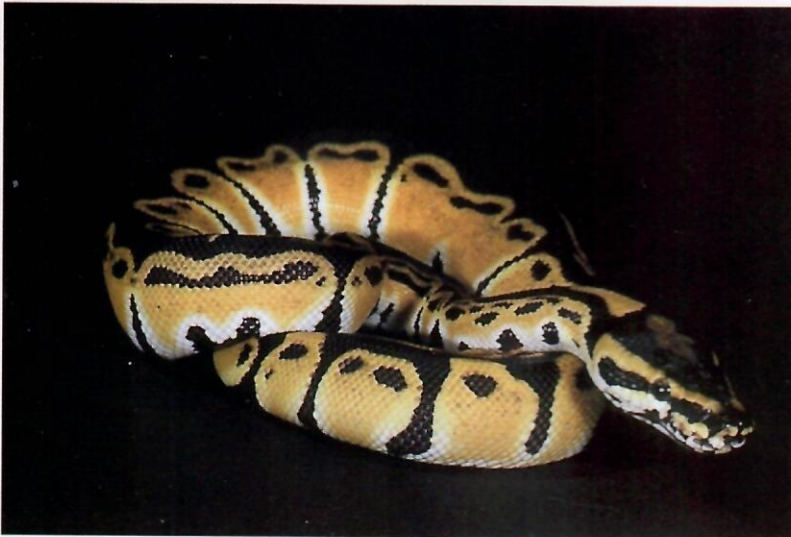
Ball Pythons

Take the Ball and Run With It!

Breeders are in the process of assembling a palette of ball python morphs that is propelling this species to the top of the "living art" market. Indeed, the ball python's moderate size, attractive high contrast pattern, docile disposition and hardiness make it a near perfect subject for the "living art" phenomenon. This species' relatively low reproductive rate also makes the more spectacular morphs a good investment value with demand currently greatly exceeding supply. Ball pythons are hot! 



Melanistic ball python (*Python regius*). Photo by David Barker
V.P.I. Pythons.



Jungle ball python. Photo by David Northcott.
The Snake Keeper.



Hypomelanistic ball python. Photo by A. St Pierre.
Ron St. Pierre.



"Caramel" albino ball python. Photo by A. St Pierre.
Ron St. Pierre.



Tyrosinase positive albino ball python. Photo by David Northcott.
The Snake Keeper.

Kingsnakes/Milksnakes

More?

Just when you think you've seen it all, someone comes up with another *Lampropeltis* morph that catches you by surprise. There are quite a few new beauties out there, with offspring becoming available as early as 1998. Some of the great eye-catchers are anerythristic New Mexican milksnakes (*L. triangulum celaenops*) with their crisp black heads and sharp contrasting bands, red morphs of prairie kingsnakes (*L. c. calligaster*) and a striped morph of the gray-banded kingsnake (*L. alterna*). Give it a few more years and most people won't remember what a wild morph looks like!



Light phase Durango mountain kingsnake (*Lampropeltis mexicana greeri*). Photo by Robert Applegate. **Applegate Reptiles**



Designer "Snow king" California kingsnake (*Lampropeltis getula californiensis*). Photo by Tim Turmezei. **Captive Bred Reptiles**



Anerythristic New Mexican milksnake (*Lampropeltis triangulum celaenops*). Photo courtesy of the Leather Egg. **The Leather Egg**.



Striped Nelson's milksnake (*Lampropeltis triangulum nelsoni*). Photo by Captive-Bred Excellence. **Captive-Bred Excellence**.



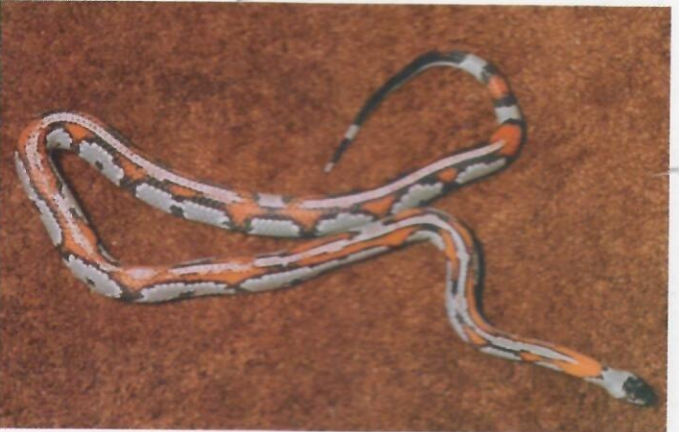
Anerythristic New Mexican milksnake (*Lampropeltis triangulum celanops*). Photo by Tom Stamatina Jr. **Selective Breeding.**



"Red Starburst" prairie kingsnake (*Lampropeltis c. calligaster*). Photo by Jack Dyer. **Jack Dyer and Associates.**



Striped red prairie kingsnake (*Lampropeltis c. calligaster*). Photo by Jack Dyer. **Jack Dyer and Associates.**



Striped gray-banded kingsnake (*Lampropeltis alterna*). Photo by Prairieland Herpetoculture. **Prairieland Herpetoculture.**



Superhypomelanistic Durango mountain kingsnake (*Lampropeltis mexicana greeri*). **T&A Reptiles and Enclosures.**



Melanistic Nelson's milksnakes (*Lampropeltis triangulum nelsoni*). Photo by Brad Tillman. **Brad's World Reptiles.**

Ratsnakes

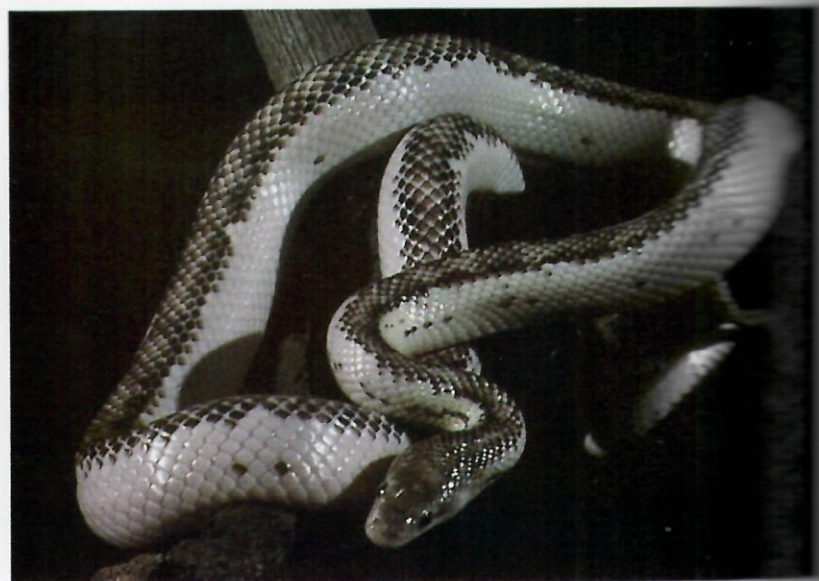
Of the various photo submissions for our *cutting edge* issue, one of the most exciting was this gorgeous calico Chinese beauty snake (*Elaphe t. taeniura*), a color mutation unlike any snake morph we have seen to date. Other neat rat snake submissions include albino Trans Pecos ratsnakes (*Elaphe subocularis*) and the beautiful "Licorice Stick" morph of the black rat snake (*Elaphe o. obsoleta*). The latter combines pure white with an interconnected middorsal pattern in the largest and most docile member of the *obsoleta* complex.



Wild-caught albino Trans Pecos rat snake (*Bogertophis subocularis*). Photo by David Barker. **V.P.I. Pythons.**



Calico Chinese beauty snake (*Elaphe t. taeniura*). Photo courtesy of Prairie Herpetoculture. **Prairieland Herpetoculture.**



"Licorice Stick" black rat snake (*Elaphe o. obsoleta*). Photo by George M... **Strickly Snakes.**

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Corn Snakes & Other Colubrids

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A palette of cornsnakes (*Elaphe g. guttata*). Photo by Bill Love. **Bill Love/Kathy Love.**



Red morph of the common garter snake (*Thamnophis s. sirtalis*). Photo by Philippe Blair. **Eastern Reds Herps.**



Left: Hypomelanistic San Diego gopher snake (*Pituophis melanoleucus annectans*). Photo by Jack Dyer. **Jack Dyer and Associates.**

Candy for the eyes and still the prototypical beginner's snake! After more than twenty years of domestication and selective breeding, corn snakes (*Elaphe g. guttata*) remain one of the most popular snakes of all time. Their reputation as the best pet snake is well deserved. They are docile, hardy, beautiful, easy to care for, and easy to breed. While rare color morphs at one time were pricey and the domain of breeders and collectors, corn snakes with their multitude of colors have now become herpetoculture's version of pop art. Candy corn, creamsicle, blizzard — it's enough to make your mouth water! 🐍

Other colubrids

House snakes, new hognose snake morphs, new colubrid species are increasingly being sought and established in the course of herpetoculture's drive toward novelty and living art. There are also the unexpected surprises which elevate the commonplace to beauty and art that cannot be ignored such as the two morphs pictured here. 🐍

Rock Iguanas

by David Blair

All photos by the author.

David Blair's Critter Corner Inc.

Just a few years ago, only a limited number of West Indian *Cyclura*, rhinoceros and rock iguanas were available to hobbyists. The few that were offered commanded very high prices. As a result of the concerted efforts of just a small group of dedicated herpetoculturists, hundreds of these spectacular lizards, most wild populations of which unfortunately are critically endangered, are now produced in captivity each year. Not only has this made hatchling rock iguanas more affordable, but a larger than ever number of taxa are now available. Rhinoceros iguanas, Cuban rock iguanas, blue Cayman rock iguanas (including many hybrids) and Cayman Brac rock iguanas have become standard herp fare. This success certainly ranks as one of the greatest accomplishments of private herpetoculture. 🦎



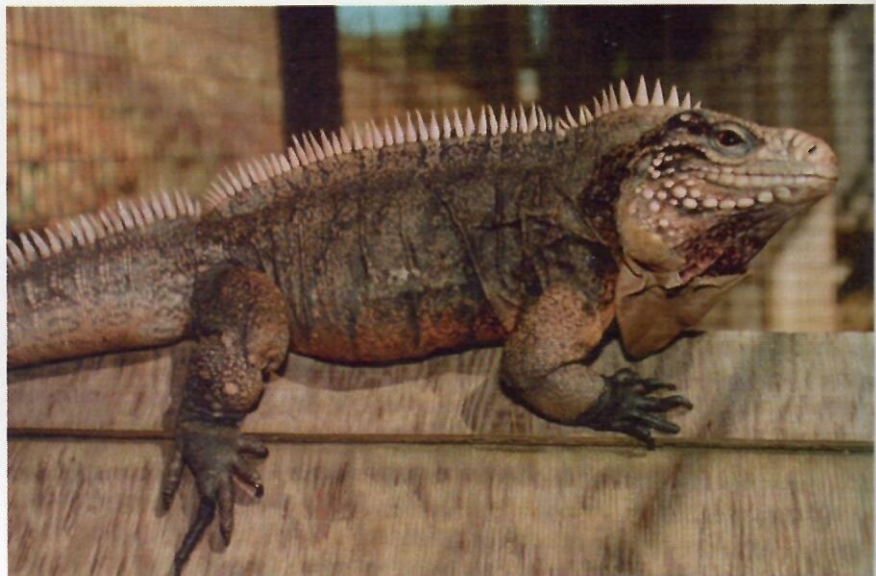
Cayman Brac rock iguana (*Cyclura nubila caymanensis*).



Blue Cayman "hybrid" rock iguana (*Cyclura nubila lewisi* x *Cyclura n. caymanensis*).



Rhinoceros iguana (*Cyclura cornuta*).



Cuban rock iguana (*Cyclura n. nubila*).

Monitors



Argus monitor (*Varanus gouldii horni*). Photo by A. St Pierre.
Ron St. Pierre.



Spiny-tailed monitor (*Varanus acanthurus*). Red desert morph.
Photo by Frank Retes. **Goanna Ranch.**



Sand goanna (*Varanus flavirufus*). Photo by Frank Retes.
Goanna Ranch.

Only five years ago monitors were believed difficult to breed in captivity. This was before what herpetoculturists now call the *Frank Retes era*. Today, at least five species of monitors are captive bred in the U.S. with some regularity. Two spectacular smaller forms, the spiny-tailed monitor (*Varanus acanthurus*) and the freckled monitor (*Varanus tristis orientalis*) are now bred in such large numbers that they're on their way to becoming pet trade fare. While Frank Retes has focused on dwarf monitors, other herpetoculturists have concentrated on medium and large species such as Argus monitors (*Varanus gouldii horni*), Cape white-throated monitors (*Varanus a. albigularis*) and crocodile monitors (*Varanus salvadorii*). The recent availability of rare color morphs such as albino and leucistic Nile monitors, hypomelanistic savannah monitors and others has further fueled the drive to captive-breed these intelligent lizards, reminiscent of the dragons of fairy tales. 



Cape monitor (*Varanus albigularis albigularis*).
Photo by A. St. Pierre. **Ron St. Pierre.**



Crocodile monitor (*Varanus salvadorii*). Photo by A. St. Pierre.
Ron St. Pierre.



Glauert's goanna (*Varanus glauerti*). Photo by Frank Retes.
Goanna Ranch.

Turtles & Tortoises

The Rise of the Giants

Big in size, bigger in appetite and gigantic on personality, the giant tortoises, from African spurred to Aldabra to Galapagos are increasingly becoming resident pets of American backyards. The African spurred (*Geochelone sulcata*) — hardy, prolific, inexpensive, and with high sales appeal as babies — is on the way to becoming the “Burmese python” of tortoises with all the problems of an animal that eventually grows too large. What are all these tortoise owners going to do when their “baby” grows big enough to plow through the walls of their homes? The lesson here is that giant tortoises are not for everyone. However, if you live in one of the warmer areas of the U.S., have room-size (or larger) space for fenced outdoor pens as well as heated shelters for cool weather, and can provide loads of hay and vegetables, giant tortoises may be just the pet for you.

Herpetoculture at a Turtle's Pace

One could argue that the particular symmetry of turtles is artistic enough to satisfy the most discriminating. Yet adding to that neat chelonian geometry such features as purity of color or aberration of pattern are temptations simply too great to resist for novelty-addicted herpers. The problem, of course, is that whether it is growing to maturity or surprising us with mutations, turtles take their jolly time about it all. To date, only one aberrant turtle morph, the albino red-eared slider, is firmly established in herpetoculture. Although other chelonians (hypomelanistic African spurred, albino snapping turtles, etc.) are on the way, turtles in general have yet to elicit the oohs and aahs of the very dynamic designer snake and lizard fields. Among the new morphs beginning to draw attention are mutations of the Florida soft-shelled turtle including the white/gold morph pictured to the left. These highly patterned babies with their disk-like shells and snorkel noses are almost too beautiful and endearing to resist. 🐢



Radiated tortoise (*Geochelone radiata*) displaying the geodesic symmetry which makes it so appealing to hobbyists. Photo by Jeff Gee. **Captive-Bred Wildlife Foundation.**



Galapagos tortoise (*Geochelone nigra*). Photo by Jeff Gee. **Captive-Bred Wildlife Foundation.**



White/gold Florida softshell turtles (*Apalone ferox*). Photo by Bruce Stephenson. **Bruce Stephenson.**

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Issue	Deadline
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Volume 9.4	March 21, 1998
Volume 9.5	May 20, 1998
Volume 9.6	July 20, 1998
Volume 10.1	September 18, 1998

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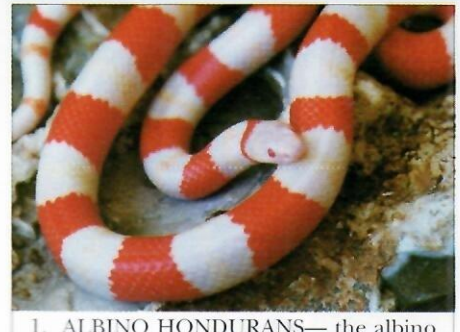


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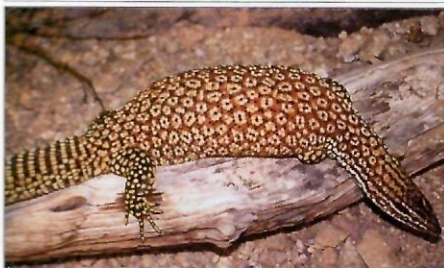
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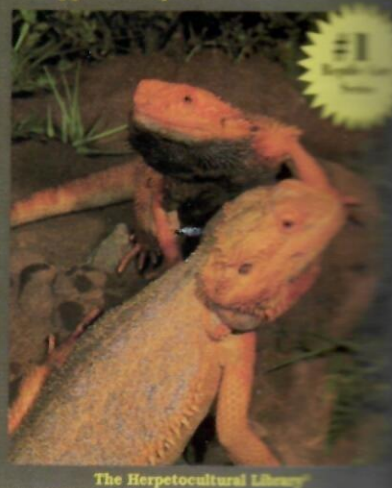
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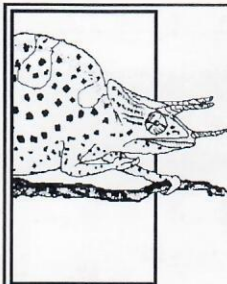
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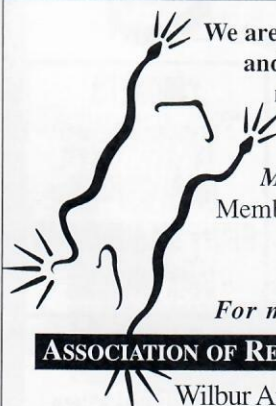


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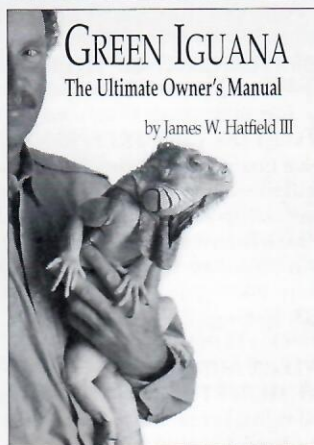
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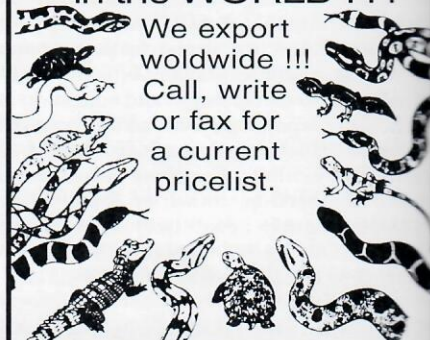


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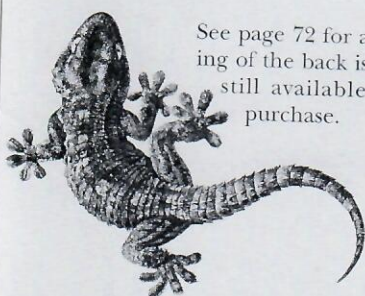
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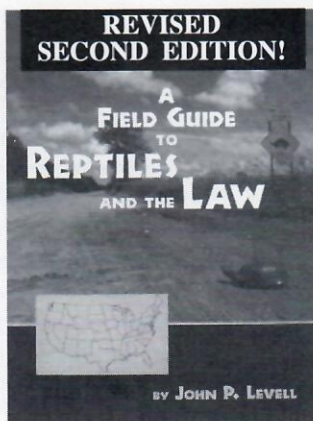
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Continued from page 17

or out of groups, away from nesting areas and just forage. Studying one season doesn't relate to the other season. So, if people are studying them during the foraging season, they can study all they want and they will never observe reproduction because it is not a reproductive season. When they go into a reproductive season, they do it usually in off feeding times. I call monitors food-dependent breeders. You feed them, they breed, year-round. It's as simple as that.

V. How many species of monitors have you bred so far?

FR. We have bred eleven species.

V. You follow the same general principle for all of them?

FR. Everything is exactly the same.

V. Do you cool them at all?

FR. We started by cooling them. We had the most infertility. The most deaths. We started reading the same papers, the same books, and the same info as everyone else. One of my gifts is that I read animals. If an animal tells me that this is right, and you tell me that something else is right. I'll believe the animal. You're just a human, trying to describe the animal. Know what I mean?

V. I know exactly what you mean.

FR. So, I listen to the animal. If they progress successfully by doing things a certain way, I follow that avenue as opposed to what a book says. We have always found that the animals are always right. On the other hand, people may guess right every once in a while but more often than not, they end up being wrong. In the case of monitors, I can't believe how completely wrong most of the published information is. Some of the nonsense published about breeding monitors should almost be illegal. Not going into names, but some of the information in books is simply made up. If you kept the animal, you'd realize the authors had no experience with these lizards and did not know what they were talking about, whether it's behavioral descriptions, food preferences or the husbandry.

V. Do you keep them at the same temperature year round?

FR. Yes, basically we don't do tempera-

tures. People come over and ask at what temperatures we keep them; I don't keep temperatures.

V. So you have a warm basking site and let them do what they want?

FR. Right, the key to monitors is they are 90% secretive and/or fossorial. They are not generally lizards that run around in the open most of the time. Although some of the water monitors such as Niles are like garter snakes in that you can go next to water areas and see them in the open, that's because they have another escape route provided by the water area. Most of the land monitors are 90% fossorial, they live most of their life hiding inside of trees, under rocks or in burrows. To get them to successfully thermoregulate, you can't do it with just a light bulb. They have to have places that gather heat like boards under light bulbs. What we do is put a spotlight over a stack of boards. On top of the top board it will be 150° F, under the next board 125° F, under the next one it is 90° F. This gives the lizards a wide range of opportunities to do what they want to do. They'll often come out and spend an hour basking on the top, then spend the rest of the day under the boards. This is not because it is a lower temperature, but because they can hide and thermoregulate without having to worry about being exposed to potential predators, or whatever.

V. So, you feel it's necessary to provide heated shelters of sorts?

FR. I would say that the smaller Australian monitors don't feel comfortable being in the open because there are bigger monitors out there as well as predatory birds. Even if you're a large African monitor, there will be bigger predators out there. For example, white-throat monitors (*V. albigularis*) don't have a chance against all kinds of big mammal predators, and if they're babies, especially against bird predators. So we found that monitors do much better if they are able to hide. A couple of things I discovered behaviorally go way back. After I got my first *acanthurus*, I went to Australia to study them in the field and found out that in nature they do the same thing that they do in captivity and, that is, they seek heat. In the daytime, they bask under the sun and they lie on rocks heated by the sun. At night, when they need heat, they seek it the same way by using thin rocks that gather heat in the day and disperse it at night. They'll go under or between those

rocks at night to gain heat if they need it. These lizards can do the same thing in a hollow tree if they pick wood that is thin enough where it gathers heat during the day and releases it at night. They use all these tricks when they need heat at night. Seeking heat-absorbing areas is what allows them to keep warm 24 hours a day, all day, when they reproduce.

V. You obviously use heat pads?

FR. We started by keeping monitors outdoors and we later moved them indoors. Outdoors and indoors we keep spotlights and heat pads on 24 hours a day, seven days a week, 12 months of the year.

V. So there's no difference between night and day?

FR. No.

V. Do you keep all your monitors the same way?

FR. Yes, if they want heat, they can have it. Once Ernie Wagner came over and he says "Frank, those light bulbs are on all night. You've got to turn them off for the

photoperiod." I tell him, "Ernie, they're just light bulbs." You know that they know what the sun is and they know what a light bulb is. A light bulb is a heat source, that's all. It's not the sun. Herps aren't so strict. I have a personal experience which shows what I'm trying to say. A few years ago my wife and I were stuck in the mountains of Mexico because of a hurricane. It was freezing cold, so we built a fire in a tin building which allowed us to get warm. My wife stayed close to the fire and ended up melting her tennis shoes. While we are doing this, in the middle of the night, all these spiny lizards (*Sceloporus* sp.) come out and are basking in the light of the fire, the heat from the fire. I'm going "You guys aren't supposed to come out at night." I thought "This is crazy!" 

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The culture of amphibians in the coming year looks to be an exciting time. Dendrobatids (poison frogs) will continue to enjoy their prominent place in amphibiaculture because of their beautiful colors and endearing habits. New forms will appear in the U.S. this coming year. Several captive-bred taxa and color forms are currently being imported from Europe (for example *Dendrobates galactonotus* and *Phyllobates terribilis*). As these are established and captive-bred in the U.S., they will provide a kaleidoscope of new frogs for the general hobbyist. Some larger frogs, in particular Phyllomedusine frogs, should increase their popularity as new species are added to those now generally available. These new forms should be much sought after because of their ease of keeping (for example, *Phyllomedusa sauvagii*). It initially appears that several other species, just as easy to keep and even better looking, will appear in limited numbers in 1998.

Finally, I'd like to plug the American Frog (Amphibian) Day which is held in September each year in San Jose, CA. There you will see what will be new and exciting for the next year in amphibiaculture in the U.S.

Industry Personnel

Mike Gulley

Bush Herpetological Supply/Neodesha Plastics, Inc.

I see an industry in transition. Years ago, a novice herper would purchase a herptile with little realization of its requirements or how to care for it. Today, we generally see a more educated pre-purchase customer who might even have a habitat set up before the herp's arrival. We see this as a refreshing change which improves animal care, a primary concern of us all.

Tied to this transition is a trend often called "vivarium-based herpetoculture". Our business has gravitated into a source for creating naturalistic environments with products such as light timers, cork bark and substrates. Our customers realize that the closer their reptile is to its natural environment, the more it will thrive. Herps have finally been allowed out of the basement and are appearing in high-quality vivaria in living rooms and offices throughout the private sector.

Erik Orup

Rep-Cal Research Labs.

As reptiles and amphibians have become popular household pets, the consumer base for herptile nutritional products has become better educated and, consequently, more discriminating. In 1998, I anticipate that more companies will move in this direction, investing more research in their product design to stay competitive.

Wayne Hill

National Reptile Breeder's Expo.

The herp industry has been growing at a rapid rate for some years, but recently has experienced a period of slower growth, a plateau. This is an expected trend in any industry. The herpers who breed a variety of reptiles and amphibians are doing well. The herpers who breed a narrow selection of reptiles, especially the traditional ones that have been popular for the last seven years, are feeling the pinch of supply and demand.

In the near future, the entire industry will feel the pinch of the increased number of regulations and laws that our federal government wraps around our necks like a hangman's noose. In the next ten years I foresee the importation of reptiles to be largely a business of the past and air transport of captive born reptiles to be difficult or impossible. The good news is that, without planning to do so, the herp industry has set up a network to supply its customers by way of the numerous reptile expos around the country. These expos will allow people to drive and shop for that new reptile or amphibian.

Nicholas Kornblith

Tetra Terra fauna.

One of the "macro" trends that we have noticed with amphibian and reptile consumers is the way people view these animals in their homes. Many of today's hobbyists look at the herptile vivarium as a showcase for friends and neighbors. The desire is to create a small slice of ecosystem for display.

In today's time-starved world, many advanced hobbyists lack the time to study habitats and construct a "zoo quality" vivarium. These consumers are looking for realism constructed easily. I see products such as customizable habitat kits and realistic accessories as the way to gain market share and bring new consumers into

the herp marketplace.

Curators; Current and Emeritus

Kevin Wright, DVM

Veterinarian and reptile curator at the Philadelphia Zoo.

In the coming decade, I believe that the majority of people who keep amphibians or reptiles will not become *herpetoculturists*, just as the typical dog owner is not a dog breeder. People will keep herps because the animals are an accent to their life and meet their specific emotional needs. People who choose a pet reptile because they want the familiar pet-owner bond developed with dogs, cats, rabbits, ferrets, and psittacine birds, are likely to choose a handleable, readily available, hardy herp species. Other people will choose herps based upon aesthetics, and will have a lower emotional investment in the animals, more akin to the attachment afforded tropical fish. The appearance of a lushly planted vivarium containing colorful frogs will be more important to the owner than the actual frogs. The herpetocultural community can best serve its own interests by providing for both types of future herp owners. Making certain herps easy to keep by ready availability of herp-related products, provision of attractive enclosures, and enhancing herps' public appeal should become the driving force of the "commercial" market.

Cornsnakes, bearded dragons, leopard geckos, boa constrictors, White's treefrogs, and ornate horned frogs are well on their way to becoming domesticated, and have become firmly entrenched in the pet trade. Although many other species are being marketed in large numbers, these six species are ubiquitous in pet stores. Well done, moderately priced, prepackaged environments for the six common species would fill a niche in the trade that currently is done poorly, if at all. Similar environments should be developed for smaller colorful herps, such as dendrobatid frogs, day geckos, and anoles. Compared to the package deals for tropical and marine fish, the herp products and package deals are hokey, almost invariably embarrassingly packaged in gaudy colors and bearing silly names that do nothing to sway someone to the herp world instead of the fish world.

A few herpetoculturists can (and do) produce enough specimens of the six spe-

cies mentioned to satisfy the current demand, so someone looking to exploit the commercial potential of herpetoculture should look to development of new products. Money is to be made by the pioneers who make it easy for someone to start with herps, whether it is by developing attractive "practical" products or new ways of presenting current products. As more people become herp owners, the market for products will increase, and ultimately more sophisticated products will become available at reasonable prices as has happened with the tropical fish trade.

On a more personal note, my hope is that herpetoculturists work with under-represented species, and are driven by true interest in the animals rather than monetary gain. Many North American species are poorly known, with regard to both natural history and captive husbandry, yet they are as beautiful or bizarre as the species imported from tropical countries. One other hope is that research on the veterinary care of amphibians and reptiles is financially supported by the various herpetological organizations. There are glaring gaps in our knowledge about normal parameters of amphibians and reptiles, as well as what exactly happens when we perform certain treatments.

I believe that herpetoculture is still a growing field. I hope that the days of *pyramid scheme* economics are over. I hope that the two forces driving the market in the coming decade will be the diversification of breeding efforts (resulting in an increase in the number of readily available captive-bred species) and products that represent major improvements in the quality of care afforded to herps. Both of these forces will result in a broadening of herps' appeal to the world at large, and further ensure that herpetoculture survives the millennium.

Ray Pawley

Reptile curator emeritus, Brookfield Zoo, Chicago.

The ascent of herpetoculture's growth curve has been, and will continue to be, exponential. Herps proliferate much more rapidly than do birds and mammals, which enables the kind of variety that has been seen in parakeets to occur with corn snakes and pythons in a much shorter span of time. This steep growth rate has never been equalled among birds and mammals in terms of expanding diversity and numbers of (a) living forms or (b)

products offered. And this growth is not likely to plateau soon (as has happened in the ostrich and emu business). Breeders should do well in the coming years because of (a) the expanding diversity of need, (b) the increasing controls on importations, and (c) the emerging young people's market. But, because herps are much more prolific than most mammals or birds, many kinds of herps that are scarce today can become overabundant next year.

Support services should continue to do very well, such as, for example, the expanding publisher's market. *How-to* books are proliferating at an ovoviviparine rate. Herp-related coffee-table books, little known ten years ago, are likely to see a greatly expanding demand and a broader appeal, something akin to well illustrated bird books.

The herp field, more so than in any other animal group, experiences great dialogue diversity, including environmentalists, wildlife specialists, veterinarians, government agencies, the medical profession, researchers, zoos, media, the pet industry, authors and publishers, and more. This enhances the growth spin.

To the mainstream populace, herpetoculturists were once thought of as a strange and funny few, with peculiar pets. That attitude has been steadily changing. For the first time, herpetoculture is taking pioneering steps in the domestication of certain species of herps (snakes, green iguanas, and crocodilian farming) and the ramifications are enormous, especially for many conservation issues involving herps. Although we are familiar with cows, horses, chickens, and even goldfish, there has never been a truly domesticated species of herp! And it's not just in the U.S. Similar phenomena, equally intense, are taking place in Russia, Germany, Holland and elsewhere.

The young crowd is pushing and patronizing the field as never before, and with greater knowledge. This is a time for growth, particularly in the herp education field. Children and young adults have advantages (especially technological) as well as problems (such as time constraints) that the rest of us never had and, in part, because of this I believe herpetoculture will continue its rapid growth, and even influence other fields. During 1998 (and at least through the year 2000), we will see the cutting edge continuing to move ahead.

Sean McKeown

Curator emeritus, Honolulu Zoo and Chaffee Zoological Gardens; CEO, Diamond Head Publishing, Inc.

The growth of the herpetocultural and herp natural history literature books, how-to booklets, and magazines over the past ten years is without precedence. With all the competition, clearly a book glut now exists and herp enthusiasts are able to carefully choose which publications they actually need for their personal libraries.

The prospective herp book buyer would be wise to select literature covering those specific areas in which he or she has a long term or special interest or which is pertinent to a region of the world in which he or she lives or will be traveling. Herpetocultural publications are essential for properly managing and breeding reptiles and amphibians. Additionally, a good reference library reflects directly on one's competence and professionalism. Books are an investment which one may continue to use, enjoy and, in many instances, treasure throughout one's life. Many herp books, especially those with high quality color photography throughout and a relatively low print run, will only increase in monetary value over time. Good quality, high gloss paper is preferable when selecting both hardbound and paperbacks. Also, the better made paperbacks have sections of pages sewn rather than glued to the spine which greatly reduces the chances of individual pages becoming loose and falling out.

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With respect to herpetoculture in the 21st Century, if it is to continue to flourish, new alliances must be forged between herpetoculturists and powerful special interest groups already established in mainstream America that oppose "more government regulation."

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February 1, 1998: The NY Metro Reptile Expo. Westchester County Center in White Plains, NY. Hours are from 9am to 4pm, and admission is \$6/adults, \$3/children Under 5 is free. For more info, contact Bruce (914) 526-4845.

February 8, 1998: Great Lakes Reptile Sale & Swap. 4700 N. Grand River, (1/4 mile west of the Capital city airport) Lansing. For info call Jerry (517)339-7908.

March 8, 1998: Great Lakes Reptile Sale & Swap. 4700 N. Grand River, (1/4 mile west of the Capital city airport) Lansing. For info call Jerry (517)339-7908.

March 21-22: Rhode Island PetShow. Rhode Island Convention Center. Osborne/Jenks Productions, Inc., 936 Silas Deane Hwy., Wethersfield, CT 06109, (860)563-2111, outside CT 1-800-955-7469.

March 21-22: TEXAS REPTILE EXPO, the only captive-bred show in the North Texas area. Comfort Inn, 1601 E. Division, Arlington, Texas. For more info call (903)862-2291 or FAX (903)862-2294.

March 29, 1998: The Second Annual Greater Northeast Herpetological Show and Symposium "the VHA Show," sponsored by the upstate Herpetological Association (N.Y.), at the Ramada Inn Convention Center, 450 Nott St., Schenectady, New York

12308. Phone (518)370-7151. For further information, call C.J. Benen at (518)758-1373.

April 18: 21st All Florida Herpetology Conference. Reitz Union, University of Florida, Gainesville, Florida. For info see the Florida Museum of Natural History Webpage (<http://www.flmnh.ufl.edu/natsci/herpetology/afhc.htm>) or contact Dr. David L. Auth (352)392-1721.

April 18, 1998: Northern Berks Reptile Show. Hamburg Field House, Hamburg, PA. Snakes, lizards, turtles, cages, books and more. For additional information contact Walt Loose, 957 Pine Heights Rd, Reading, PA 19605 Phone (610)926-6028.

April 18-19: New Mexico Reptile Expo. Howard Johnson's Convention Center, I-40 & Evbank, Albuquerque, N.M. for more info, call (505)764-9291.

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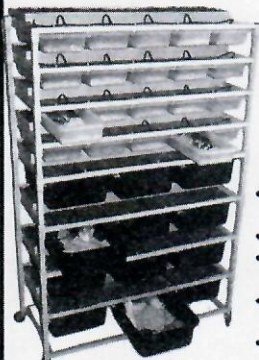
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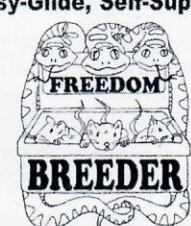
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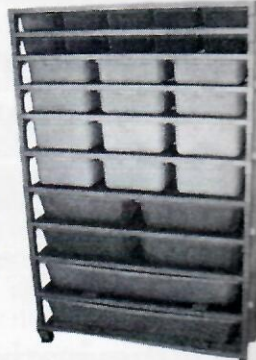
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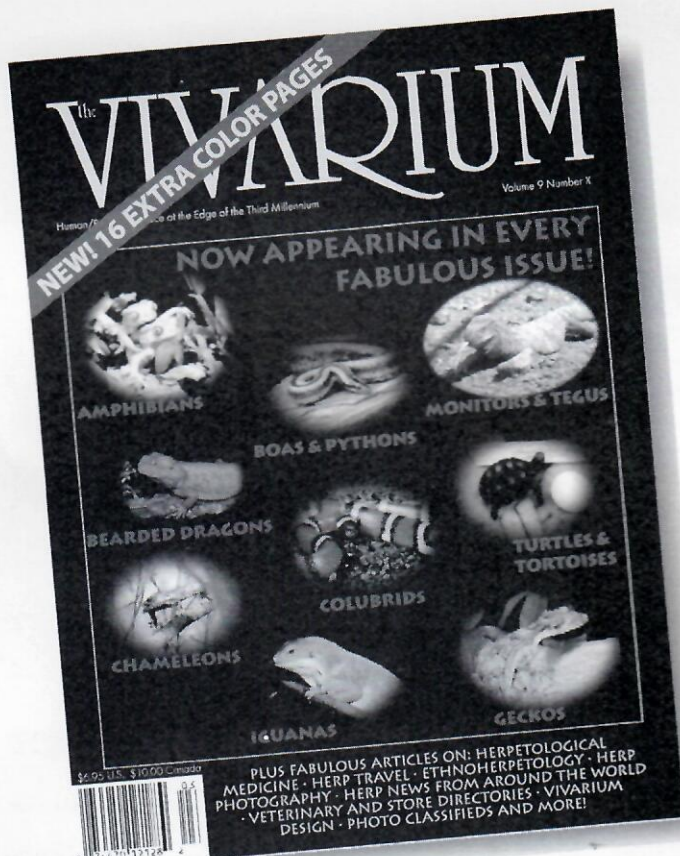


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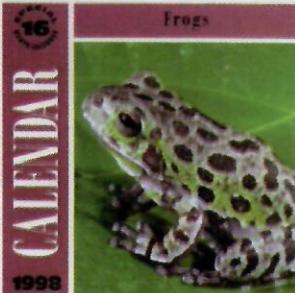
Giant fire-bellied newts (*Paramesotriton*) in naturalistic aquaria. Photos by Jack Therac.



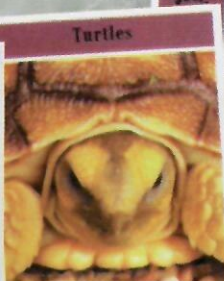
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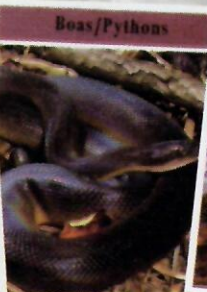
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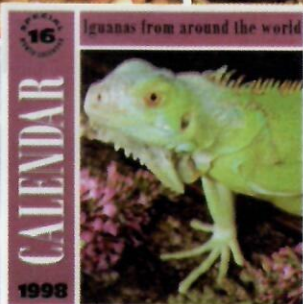
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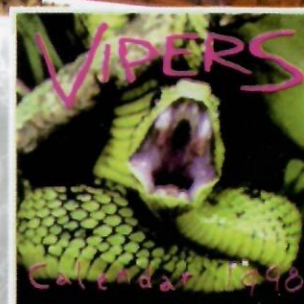
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The Vivarati Movement

Biosculpts™

Vivart: Art that incorporates life.

Vivarati: The vivarium artists and designers who are at the forefront of herpetoculture, a decade ahead of their time, maybe destined always to be part of the herpetocultural underground.

Their goals: Mind expansion; bringing nature back into direct experience; systems thinking; art, education, and lighting; revolution.

Their message: Move away from the little picture. Think of herpetoculture as a bigger picture. Not herps but herp environments.

The magazine of the vivarati: What else, *The Vivarium*.

Their favorite medium of communication: The internet.

Their target for revolution: That part of the pet trade which is herpeto-culturally unsophisticated, ignorant of vivarium systems, guilty of low tech thinking and marketing, dragging herpetoculture down.

Their economic message: If you want herpetoculture to expand and appeal to higher income segments of the population, focus on herp environments as psychotropic or mind moving. The medium is the message.

The main reason people keep herps is mind stuff. Live on the herp edge. Trigger those neurotransmitters and endorphin surges. The trip is the vivarium. The future of herp economy is in the technology. 🦎

Danny Salzhandler's vision of the future.

Metal artist Danny Salzhandler combined skills acquired as an employee at the Houston and Waco zoos and later in steel construction to create vivarati art combining live plants and waterfalls with a design right out of a twenty-first century science fiction movie. Metal and nature as representations of the world that lies ahead. Nature no longer at our doorstep but contained and precious. Planets inside our homes.

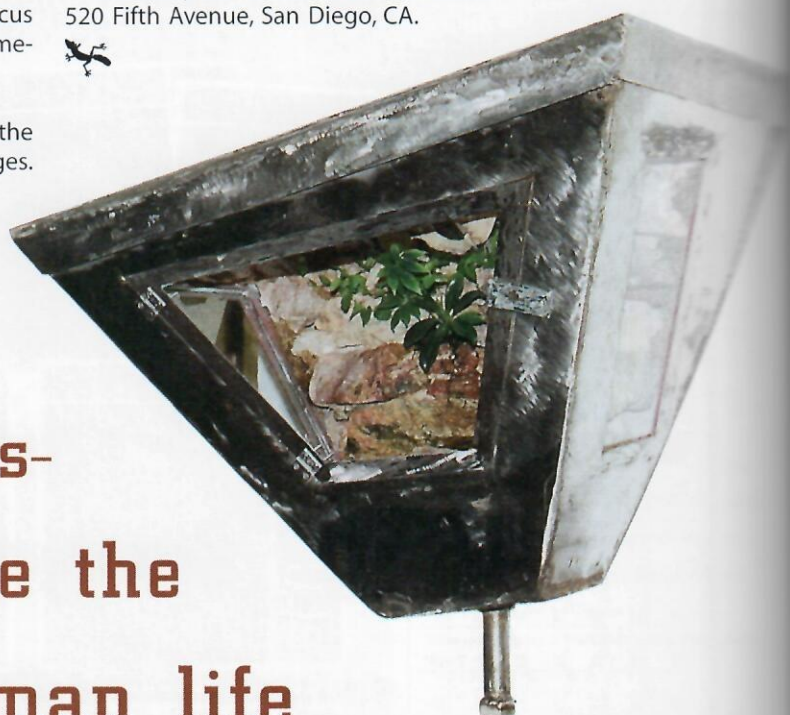
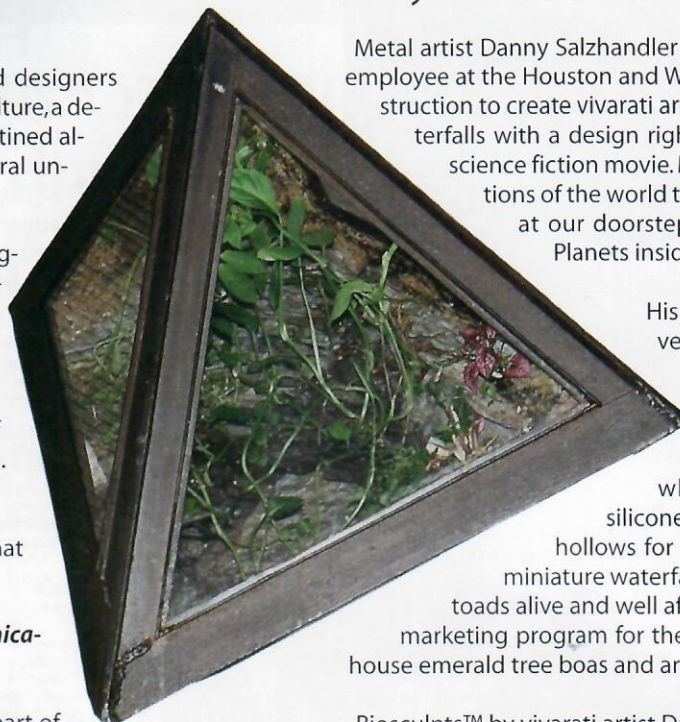
His current work focuses on the inverted pyramid as an enclosure.

The sides are stainless steel and glass. Lights are built in. The background consists of select rocks carefully drilled, which are stacked on pegs or siliconed to the walls, with nooks and hollows for soil and plants. A pump runs a miniature waterfall. One *Biosculpt* has fire-bellied toads alive and well after three years. Others, part of a marketing program for the Cold Blooded® line of clothes, house emerald tree boas and are on display in stores.

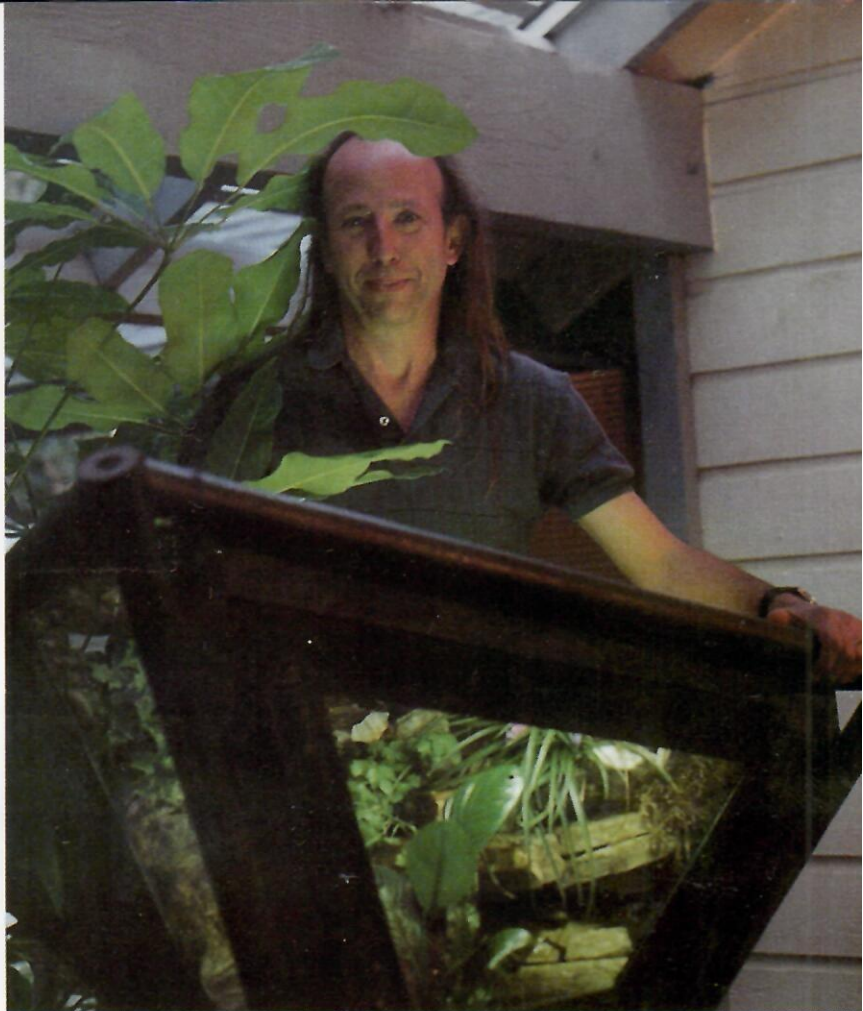
Biosculpts™ by vivarati artist Danny Salzhandler:

- Selected for the 1996 Del Mar (CA) Fair Fine Arts Show where *Biosculpt I* won two awards.

- Currently shown at Golden Pacific Arts, 520 Fifth Avenue, San Diego, CA.



Vivspace = manmade,
contained biological systems which engage the mind with nonhuman life forms = alien-containing pods.



Vivarati artist Danny Salzhandler with his Biosculpts™. A vision of contained worlds.

Vivart ~ What's In

Geckos
Chameleons
Anoles
Poison frogs
Treefrogs
Tree pythons and boas
Tree vipers
Small- to medium-size herps
Large enclosures
Live plants
Multiple lights systems
Full spectrum bulbs
Waterfalls

Hydroponic vivaria
Rock
Wood
Simulated rock backgrounds
Electronic controls
Soil
Gravel



Vivart ~ What's Out

Large herps
Giant constrictors
Large monitors
Small enclosures
Fake rock that looks like fake rock
Fake wood that looks like fake wood
Artificial plants
Shavings
Carpet substrates
Enclosures that look like prison cells

How to be included in the Veterinarian Directory.

There are at least five million Americans who keep some type of amphibian or reptile. Many are at a loss when they need to find a veterinarian qualified to treat their pets. *The Vivarium* is widely read and distributed and is the first publication to offer a state by state herp veterinary directory in every issue. To obtain rates for a listing that also includes a one year subscription to *The Vivarium* magazine, Call: 800-982-9410

Attention Veterinary Clients!

Some veterinarians offer phone consultations. It is becoming standard practice to charge for phone consultations and you should establish a rate and estimate at the outset of your conversation. Please respect a veterinarian's policies on this issue. Their time is as valuable as your's.

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The Vivarium Gift Gallery



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The Vivarium
Gift Gallery

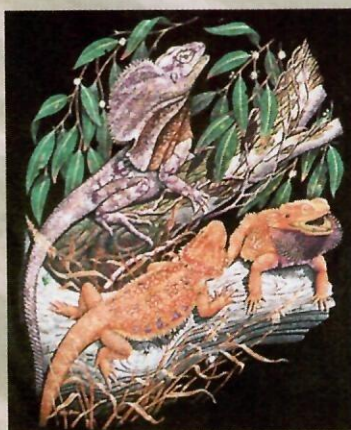


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