



BEHIND BAARS

A publication of
The Bay Area Amphibian and Reptile Society
sponsored by the Palo Alto Junior Museum
1451 Middlefield Road, Palo Alto, CA 94301
Vol 8 (Aug 2008)
(408) 450-0759 (BAARS Voice-mail phone)

FORKED TONGUES

In the English language, speaking 'with a forked tongue' was a synonym for telling a lie- as if the two ends of a forked tongue were independent of each other and couldn't be relied upon to speak truly. The tongue of a snake was once considered to be the instrument which delivered venom to its victims. And even today, its pretty common to see uninformed people cringe away when one of our 'handleable' snakes sticks its tongue out. But in fact, this is an aid to the sense of smell, developed due to the snake's odd physiology.

In a deaf, short-sighted animal such as a snake, the sense of smell is likely to be highly developed, from the idea that a deficiency in one sense is often made up in nature by another. And so it seems with the snake. But smell in most animals including humans is done by the inhalation of micro-particles floating in the air into the nose. There, the particles are analyzed and identified chemically,

Snakes being an animal of low metabolism, they have much lower respiration rates than other animals, so air inhalation doesn't happen that often. A breath is taken perhaps every 60 seconds unless other factors intervene. By comparison, resting humans take a breath 16 times per minute and relaxed hummingbirds breathe 250 times per minute! To make up for infrequent breaths, snakes flick that thin, agile tongue out and collect micro-particles of 'scent' on it.

The tongue is then withdrawn into the mouth where two special processors known as Jacobson's organs (one for each fork of the tongue), which do the analysis and identification of scent particles usually done in the nose. The Jacobson's organ is sometimes called the vomeronasal apparatus.

Snakes use their noses as well; it's just that the tongue and the Jacobson's organs *supplement* the nose to sharpen the sense of smell without requiring fast, heavy breathing, thus saving the organism some energy. A snake's head is usually located on or very near the ground, which may also reduce the number of scent particles floating around, so being able to use two scent-collection and processing methods must help the sense of smell's efficiency considerably.

Have you ever felt a snake's tongue? The touch is so light, most people can't really feel it on them, even on fingertips where we are extremely sensitive. Nocturnal snakes when hunting, flick the tongue over small sleeping lizards or mice to identify them as prey in total darkness, and the tongue-touch doesn't normally wake them up- until far too late.

Strangely, sea snakes and the entirely aquatic freshwater filesnakes also tongue-flick underwater. Both these reptiles have unusually long tongue-tips with hair-fine ends, apparently to use on sleeping fish, which are their main prey. The fine ends likely do not generate currents in the water and wake their prey in that way.

Most snakes have a small notch in the upper jaw to permit the tongue to protrude without the need to open the

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BAARS CALENDAR- Middle of year 2008

- Aug 1 BAARs Board Meeting- @ TBD
- Aug 22 Regular BAARs meeting at Cubberley Community Center, Palo Alto
Speaker: **Dr. Robert Sprackland - Monitor Lizards**
Also, BAARS Members will show their Frogs
- Sept 5 BAARs Board Meeting- @ TBD
- Sept 26 Regular BAARs meeting at Cubberley Community Center, Palo Alto
Speaker: TBA
- Oct 3 BAARs Board Meeting- @ TBD
- Oct 24 Regular BAARs meeting at Cubberley Community Center, Palo Alto
Speaker: TBA

Adoptions Placed This Month

- 1 Leopard Gecko
- 1 Ball Python
- 1 Savannah Monitor
- 2 Corn snakes
- 8 Red-ear Sliders

CONGRATULATIONS TO ALL INVOLVED!

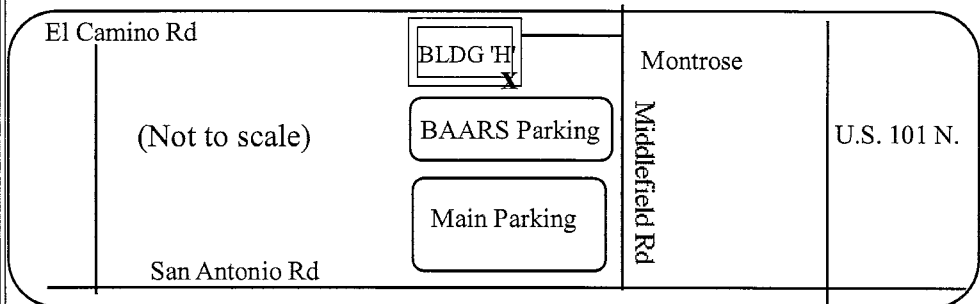
General Meeting Information

Meetings are held at Cubberley Community Center
4000 Middlefield Rd, Bldg H-1, Palo Alto CA
Meetings are on the 4th Friday of each month, except for Nov and Dec.
Meeting starts promptly at 8PM; doors open @ 7:30 PM
Annual Meeting & Holiday Party is held on the 2nd Friday of December

Meeting Guidelines

All people attending meetings must be quietly seated except for the social break in the middle. This is to ensure the speedy completion of the business portion of the meeting, as well as in consideration of our speaker(s). ALL animals brought to the meeting must be in suitable containers, including a source of heat if req'd

All animals must be kept in their containers during the business portion of the meeting. Aggressive animals, sick or in-shed animals or delicate animals, should not be brought to the meeting, both for their sake and that of the humans attending.



mouth. But sea-kraits have gone backward in this trait: they have a small scale that fits into the notch and seals up the opening. It's known that sea kraits occasionally dive to 150 or more feet of depth in hunting, so apparently the seal-scale keeps water out of their mouths and lung(s) when hunting in deep water.

The tongue is almost dry (in terrestrial snakes); experiments have shown that almost no detectable residue is left behind when a snake 'licks' something. The tongue is normally quite long, but a snake will usually only protrude its tongue a short distance to collect scent particles.

Unless the animal is upset or feels threatened for some reason; then much more of the tongue's length comes out of the mouth, in a slow, wavy up-and-down motion. The forked tips are more widely spread apart, too. Most herpetologists believe this is a threat display by the snake, and it behooves a sensitive keeper to back off until the tongue action changes back to the usual short-duration flicks. Doing so may save you an unnecessary bite.

The number of tongue-flicks per minute can be used to informally determine a snake's interest in a prey-item. Few or no tongue-flicks on first encountering a food offering usually indicates the animal is not hungry or is otherwise not interested in the item at that time.

Higher temperatures will markedly increase the number of tongue-flicks to an item, as will 'scenting' a rejected prey-item with a piece of lizard skin or even chicken boullion!

A snake's tongue is often colored differently on the sensitive tips compared to the thicker shaft area behind the forked part. Many rattlesnakes have coal-black tips with the thick central shaft being bright pink. Some African adders have black tongue-tips and a shocking-blue shaft, appearing as brightly colored as Australia's Blue-Tongued Skink.

The colors add to the threat display as seen by other snake predators who would necessarily be pretty close up, since the contrasting colors are normally hidden when the snake is only 'smelling'. Then the 'shocking' colors appear and may cause a predator to hesitate long enough for an escape.

The combination of a black and pink tongue flicking in, out and waving around, combined with loud hisses and the often slightly moving head held a foot or so off the ground seem for the rattlers to combine into a fearsome threat-display even to a normally fearless coyote. Irascible Bull and Gopher snakes notably have highly visible pink and dark tongues, and attitudes similar to rattlers.

But confusingly for this thesis, the Western Diamond-back rattler and the Ridge-Nosed Rattler from Mexico have entirely black tongues, perhaps in deference to an almost entirely nocturnal life in the mainly hot southwest climate.

In contrast, the Central American Neotropical Rattlesnake found in dark jungles has an almost entirely pink tongue. Working out the correct reasons for an animal's characteristics is not easy nor straightforward!

The forked tongue for which snakes are famous is also found in many (but not all) lizards, and some herpetologists believe lizards developed it first, before snakes separated from the family eons ago. Both lizard and snake tongues function much the same, using paired Jacobson's organs to process odor information.

Whether the heavy, fleshy non-forked tongue of a Blue-Tongued Skink has a Jacobson's organ, I don't know. But it seems the shocking-blue color is also something of a threat-display, compared to the pink tongue of similar Skink subspecies.

AUGUST PRESIDENT'S REPORT

Hello all-

The San Jose Reptile show was a lot of fun – BAARS had a couple of tables there, and we were quite well received. This was put on by the same folks who put on the Bird Shows (at the Santa Clara County Fairgrounds), and was a good show, although not as big as the Sacramento show. Most of the commercial reptile shows have dried up in the Bay Area, with the exception of North Bay's BAZAAR (which is coming up, September 27th).

The August general meeting will have two focuses – Frogs and Monitor lizards. Frogs, since the year 2008 has been designated "Year of the Frog". Some members, including Joanne Peterson, will be bringing some of their frogs for us to admire. It's important that we promote awareness of the rapidly declining amphibians, world-wide.

Then, for the second part of the meeting, we will be hearing from noted author and herpetologist, Dr. Robert Sprackland discussing monitors (genus *varanus*). Dr. Sprackland will be publishing a newly revised edition of his book, "Giant Lizards". This new, expanded edition will have additional content from breeders and keepers with husbandry and breeding tips, in addition to more general information.

I'd also like to thank Al Wolf, for his great rattlesnake presentation at July's meeting. Al Wolf has been bitten several times, and we were fortunate enough not to witness another such event, although not for lack of trying on Al's part. Also, please remember that NBHS' big fund-raiser, their BAZAAR, is on September 28th, in Peteluma. Finally, remember to check the BAARS website calendar for upcoming educational shows.

Sincerely,

Scott Alexander,
BAARS President, 2008

(Tonugues concluded)

And of course we know of the Chameleon lizard's long tongue which is anchored at it's front rather than the rear. It also is not forked and seems to be involved as a hunting, not a smelling tool. Likewise, most Gecko lizards have a non-forked tongue.

I must confess that when I was much younger (7th- 8th grade), I used to roam the Michigan hills searching for snakes and turtles. I once caught a large Garter snake that tongue-flicked more rapidly that I'd seen before. So being an irresponsible kid with very quick reflexes, I grabbed that sensitive tongue between finger and thumb when it next came out of his mouth!

As I remember, it only felt like dry string. That patient snake, likely distressed beyond belief at the insults this giant predator was inflicting on him, *still* didn't attempt to bite me when I let loose of the organ. As I richly deserved...but then, it's also well known that pre-teen boy-kids are not yet fully civilized.

If you were wondering, no turtle, tortoise nor amphibian has a forked tongue, although some carnivorous snapping turtles have sort of worm-like growths on the end of their tongues. They hold their large mouths open under water and wiggle the tongue- apparently to attract curious prey close enough for an ambush. But it is not truly forked and has nothing to do with a chelonian's sense of smell.

J DeRyke

TWO NEW WEBSITES FOR HERPERS

The first is <www.seaturtle.org> which is really a listing of all recent books, movies and (I think) TV commercials published with the reptiles shown.

The second (Parental Control recommended!) is a compilation of sea turtle sketches to be used for future **tattoos** at <www.carettaaresearchproject.org/tattoo.htm>

CONTROVERSY ERUPTS CONCERNING THE WORLDS TINIEST SNAKE

A research team startled the herp-world in July with their discovery of a full-grown snake only a few inches long on the Carribean island of Barbados. That was acceptable; the problem arose when the leader of the team, Dr. Hedges from the University of Pensylvania, named the tiny animal after his wife, Carla.

Local Barbados natives were incensed. 'That little snake has been known on the Island for decades', they said. How dare he claim a 'unique' discovery and name it after his wife? The name should be 'Barbados Thread Snake' as we've always called it.

Said one, I've seen them around since I was a kid. They're not rare, just tiny and hard to find. And there are others on neighboring islands so we never saw much difference in them.

The subspecies is indeed a few centimeters smaller than a similar snake found on other Caaribbean islands. The group is generally known as 'thread snakes' from their small size.

Two very old preserved specimens have since been found in a museum on Martinique, but were mis-identified, said Dr. Hedges. On such little, almost featureless burrowing snakes, DNA checks are the only reliable way of differentiating subspecies.

For now, *Leptotyphlops carlae* is the tiniest snake's latin name. But depending on how strongly the Barbados locals feel about "their" snake, and how much more controversy this arouses, the little animal with the long name may well receive yet another one.

BAARS NOTES

Classified ads

Classified ads are free for members (\$5/mo for non-members)

Display ad rates:

\$7.00 Business card size

\$11.50 1/6 page

\$22.50 1/3 page

\$35.00 1/2 page insert

\$70.00 full pg insert

All display ads should be camera-ready. Electronic submissions should be saved as postscript format (.pdf) for best image quality.

Live Food Items

Feeder animals may be available at the regular meetings. It's recommended that you bring your own containers for transport home.

Frozen Rodents are sometimes available through BAARS as a Group Buy. Details will be available at the meetings.

MEMBERSHIP FORM

- | | |
|--|--|
| <input type="checkbox"/> Individual/Family \$25/yr | <input type="checkbox"/> Contributing \$50/yr |
| <input type="checkbox"/> Sustaining \$35/yr | <input type="checkbox"/> Patron \$100/yr |
| <input type="checkbox"/> Institutional (schools, libraries, non-profit org, service org) | |
| <input type="checkbox"/> NEW MEMBER | <input type="checkbox"/> RENEWAL/CHANGE OF ADDRESS |

NAME: _____

ADDRESS: _____

PHONE NUMBER/AREA CODE: (_____) _____

CITY/STATE/ZIP CODE: _____

EMAIL ADDRESS: _____

HERPETOLOGICAL INTERESTS _____

For more info, visit our website: <http://www.baars.org/index.html>

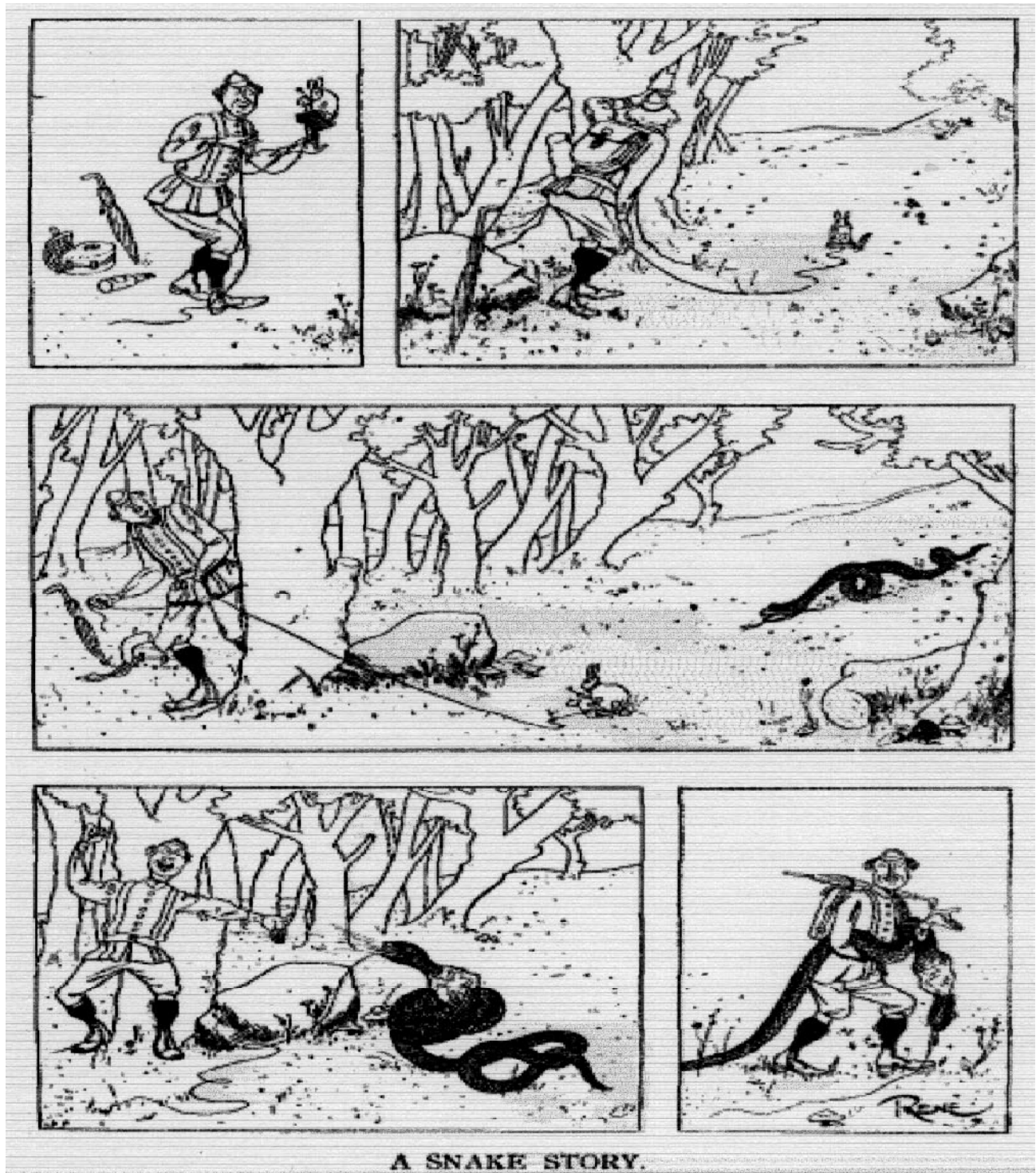
To join **BAARS**, mail this application, with your check to:

**BAARS MEMBERSHIP
SECRETARY**

c/o

Palo Alto Jr Museum
1451 Middlefield Rd
Palo Alto, CA
94301-3351





A SNAKE STORY.

Here's a rare European reptile-oriented cartoon from the 1870s that I ran across. It depicts a hunter tricking his snakey prey by means of a stuffed rabbit with a string tied to it as bait. When the snake swallows the bait (which apparently has fish-hooks attached), the hunter jumps up and pulls the string as if there was a big trout on the line. Highly unlikely to ever have worked, by the way, so don't be too upset. And after all, this *is* from the unenlightened 19th century, herp-wise!

ADOPTIONS & FOR-SALE

[REF # 8801] **Two green anoles**, 1 lg. male, 1 small female, both very healthy. Untame, the male has been held a bit in the past, but not the female. If someone is looking for pets to hold, these are not good adoptees. They are beautiful to look at. Current Diet: Crickets. May be willing to sell a large terrarium with many climbing & hiding structures, lights, substrate, etc with the anoles. Not urgent, they're well taken care of, just looking for a better home-fit for them. In Mountain View.

[REF # 8802]: **Black and White Tegu**, 2 ft long, Gender unknown. 2 1/2 - 3 years old, 10-15 lbs. In good health. Was handled up until about 6-8 months ago. Eating pinky nice, canned dog food, crickets. Vet visit about 1-1/2 yrs ago. Took him to the vet for calcium shots and nutritional advice. Comes w/large cage, 2 heat pads, 2 heat lamps, water dish. I just can't keep him anymore. Urgency: within the next couple weeks In San Jose.

[REF # 8803] **Green Iguana, male**, about 3', about 4-5 yrs. Never any health problems. Becomes rather tame quickly when handled regularly, but at the moment he's a wild one. Diet: Dark Greens, grated yellow squash/carrot mix, a little fruit every few days. No cage. I moved into a smaller home. Medium urgency- no big hurry, am happy to wait for the right person. In Concord,

-and-

[REF # 8804] **Green iguana, female**, one of a pair. About 3', 4- 5yrs. Pretty hefty; gets a full day of sunshine every day and eats like a monster. Tames quickly when handled every day. Diet: dark greens, yellow squash/carrot mix, fruit once in a while . In Concord.

[REF # 80609] **Red Tail Boa, female**, 7ft, 5 +yrs Recovering From A U.R.I. (Mouth rot). Sweet animal Vet Visit? for Mouth Rot/ URI. Accessories (Cage, Food): If Needed. Owner Moved Out of State.

Fairly Urgent. Being Fostered in San Jose (If Interested Contact Diane Flagg)

Numerous Red-Eared Slider Turtles, both male and female, various sizes (typically 4-7"). These turtles have all been taken into foster care; some are rescues from one of the local humane societies; others were recieved from individuals who could no longer care for them. They all appear healthy: they are active, eating well and have no apparent health issues. Current diet: Reptomin turtle sticks and trout chow supplemented with romaine lettuce, worms, snails, crickets and

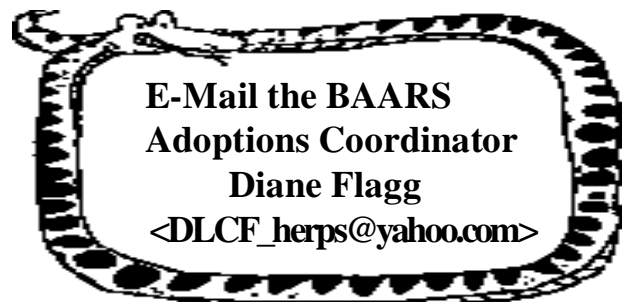
various water plants.

Additional Information: if you want to adopt a turtle and would like to chose from a wide variety, this is your chance. If you think you may want to adopt a turtle but are not sure, send me an email for guidance. For local adoptions only - these turtles will not be shipped. Not urgent.



The animal adoptions listed herein are for the prospective benefit of BAARS club members as adoptees.

No guarantees as to the health, suitability or legality of the adopted animals as pets, is either expressed nor implied.



DID YOU EVER SEE A LIZARD RISE UP ON ITS BACK LEGS IN AN EFFORT TO RUN AWAY?

Experiments in which lizards were prompted to sprint on treadmills showed that they lifted onto their hind legs because their rate of acceleration altered their center of gravity and made it impossible for them to keep four feet on the ground. They were simply accomplishing the reptilian equivalent of a cyclist's 'wheelie'.

Observations of how fast lizards ran on the treadmills showed that speed could be ruled out as the cause since the animals were able to run just as fast -or faster- on four legs. The theory that lifting up on two legs was an evolutionary advance and a step towards an entirely bipedal lifestyle was also quashed when researchers realized that ancient species of lizard likely spent just as much time on two legs as the modern varieties.

Dr Christofer Clemente of the University of Cambridge, said that rising up on their hind legs was the price that lizards had to pay for the speed and maneuverability that turned them into "the jet-fighters of the Australian Outback".

He said: "I think it's just an evolutionary accident. It's a consequence of them wanting to run really quickly for any reason. As they're moving, it causes the front of their body to rise up. The reason we think this comes about is these lizards have adapted themselves to be really quick and maneuverable runners. One of the ways they do that is by moving their center of gravity towards the back – that makes them more agile.

A fighter jet has a center of gravity near the rear. It makes it more maneuverable but less stable. Boeing 747s have a center of gravity much closer to the nose. These lizards are like fighter jets. They are really quick, really maneuverable but really unstable in that position."

The findings of the Anglo-Australian research team were published in The Journal of Experimental Biology.

THE BAY AREA AMPHIBIAN AND REPTILE SOCIETY

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[HTTP://WWW.BAARS.ORG](http://www.baars.org)