



BEHIND BAARS

A publication of
The Bay Area Amphibian and Reptile Society
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(408) 450-0759 (BAARS Voice-mail phone)

The Tentacled Snake Turns A Fish's Natural Defense Into A 'Death March'

From the Blog, "Not Exactly Rocket Science" By Ed Yong, June 16 '09

Underwater, fish make very difficult prey. When they sense sudden disturbances in the water around them, they respond within 0.005 seconds with a defensive reflex called a 'C-start'. Their body contorts into a C-shape, and with a flick of the tail, they rapidly zoom away from the potential threat. But one predator has a way of turning the fish's defense against it, persuading the fish to swim towards danger instead of away. It's the rear-fanged Tentacled Snake (*Erpeton tentaculatum*).

The Tentacled snake is a bizarre species, easily recognised by the pair of short "tentacles" or feelers on the front of its head. This snake is a master fisherman and it hunts in the waterways of Southeast Asia. It relies on ambush, anchoring its tail to an underwater snag or plant and twisting the front of its body into a distinctive J-shape. Thus contorted, it waits motionlessly for a fish to swim past. When it strikes, it does so explosively, covering the distance to its prey in 0.015-0.020 second- fast but still slower than the fish's C-start.

So the battle between the Tentacled snake and its prey is a contest between two very fast body movements - the snake's strike versus the fish's C-start. But the snake has a way of tipping the odds in its favour - it feints. As the fish approaches, the Tentacled snake ripples its contorted body towards it, automatically sending the prey darting in the opposite direction, straight towards the snake's angled head. The snake anticipates this reaction and executes a *predictive* strike, aimed at the position where the fish will end up. Sometimes, the fish swim right into the snake's mouth. This is exactly like a human bird hunter who will 'lead' a fast-flying duck with his shotgun. If one fires directly at the moving duck, the pellets- although travelling at high velocity, will always pass behind the waterfowl

For the fish, there is no turning back. Its C-start is driven by two giant nerve-cells called 'Mauthner neurons'. Disturbances in the water excite the nearest of this pair of nerves, which in turn excites a large network of motor neurons on one side of the fish's body and blocks the equivalent network on the other side. That triggers the C-start and sends the fish in the opposite direction from the stimulus. This whole process takes milliseconds and once the direction is activated, it can't be reversed. The snake's feint thus corrupts an otherwise adaptive behaviour, turning it from a defense into a death march.

This amazing behaviour was discovered by Ken Catania from Vanderbilt University. Using high-speed video cameras, Catania filmed the strikes of four Tentacled snakes as they ate minnows. Only through vastly slowed footage did he realise that the snake was rippling its neck and head towards the potential prey 1-3 milliseconds *before* attacking. Recordings with a hydrophone - an underwater microphone that detects pressure changes - confirmed the timing of these movements as predictive.

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BAARS CALENDAR- End of year 2009

- Aug 7 BAARs Board Meeting- @ TBD
- Aug 28 Regular BAARs meeting at Cubberley Community Center, Palo Alto
Speaker: Turtle and Tortoise Night
- Sept 4 BAARs Board Meeting- @ TBD
- Sept 25 Regular BAARs meeting at Cubberley Community Center, Palo Alto
Speaker: Rachel Hurt: Local Wildlife in the Reserves
- Oct 2 BAARs Board Meeting- @ TB
- Oct 23 Regular BAARs meeting at Cubberley Community Center, Palo Alto
Speaker: Nicole Charney on the challenges of reopeing the Steinhart Aquarium which also houses the displays of reptiles and amphibians.

Adoptions Placed This Month:

- 1 – Red Ear Slider
- 2– Bearded Dragons
- 1 - Leopard Gecko
- 1 – Ball Python

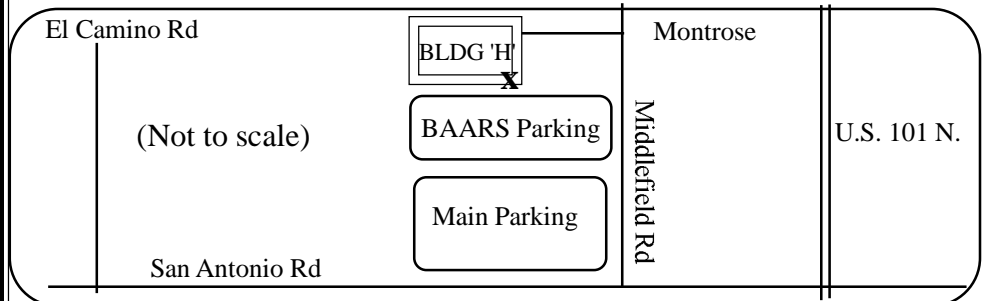
Congratulations to all who helped!

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.



BAARS President's Report- Aug 09

Hello All-

The San Jose Reptile show was a blast, with a lot of great herps and a lot of great publicity for BAARS. Hopefully, we can capitalize on some of that to bring in some new members and get them connected to the club and to herps.

I acquired a couple of little ringed sawback Map turtles (for educational purposes, of course). These little water turtles are the cutest little things that you've ever seen. I've only recently gotten into Map turtles, but think that I've been 'bitten' by the bug.

The August general meeting will be our Turtle and Tortoise Night, and I'm hoping that we get some good participation from the Silicon Valley Turtle and Tortoise club. I'll bring in my ringed map turtles, and some of the back-knob sawback turtles that I've recently purchased.

We'll probably also have time to auction off a few items (hint, hint- donations?), so if you have any clean turtle / tortoise habitats or cage furniture that you want to down-size, we can help auction them off for you.

September's general meeting will feature a presentation from Rachel Hurt, a field biologist with the Fish and Wildlife service, who will be talking about the herpetological fauna found on the wildlife refuges that she manages. One of our favorite herps, the elusive Santa Cruz long-toed salamander is found on some of these wildlife refuges, such as the Ellicott Wildlife Refuge.

In October we will be hearing from Nicole Chaney and Brian F., who are biologists from the California Academy of Sciences' Steinhart Aquarium. They'll be discussing some of the challenges, exhibits, and herps from the newly reopened aquarium. Nicole is responsible for keeping many of the California Academy of Sciences herps in good shape, especially the herps off-display.

Scott Alexander, BAARS pres 2008-2009
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(Death March concluded fm pg 1)

The fish were far more likely to respond to this initial feint than to the strike itself. On around four out of five encounters, the fish swam towards the snake's jaws rather than away from it, a behaviour that Catania cheekily describes as "not very adaptive".

Catania's discovery finally explains the unique and up-till-now unexplained J-shaped hunting posture of the Tentacled Snake. The feint will only work at this angle, when the snake's head is directly opposite the feinting part of the body.

Catania's footage also revealed that the snakes *did* anticipate the probable movements of their prey. They usually attack the fish's head, but they don't aim at its *original* position. Instead, the strike aims at the side of the fish furthest away from the snake's body - the exact position where the head will end up if the fish responds to the feint with its usual defensive C-start.

Regardless of the fish's initial orientation, the snakes always correctly predicted where its head would end up; tellingly, they only missed in a few cases where the minnows didn't launch a C-start or apparently accidentally turned the wrong way.

It's an impressive feat, for the snake has to plan for behaviour that it can't actually see. It starts its attack before the fish initiates the C-start, and the explosive nature of the strike makes it impossible for either hunter or prey to change course halfway through. Indeed, the snake's eyes are retracted at the start of its strike so it can't actually see the fish before it feels it with its fangs.

Whether this is an innate or learned ability is still a mystery. Either way, it's clear that in the space of a few milliseconds, both the fish and the snake are committed to a course of action that will mean life or death for one of them.

NHS Recruits Snakes To Treat Depression (U.K.)

by Sophie Goodchild, 12.06.09, Evening Standard

Snakes are being recruited as animal “therapists” by the NHS to treat depression. A London clinic is the first to use reptiles to help patients overcome low self-worth and “communication issues”.

The Huntercombe hospital in Roehampton has enlisted Angel, a seven-year-old, 5ft female Corn snake (*Elaphe gutatta*), in group sessions where patients can touch, feed and care for her.

The majority of its 38 patients are referred by the NHS for treatment for addictions and eating disorders. Doctors say those involved in animal-assisted therapy (AAT) have already shown an improvement in concentration and mood.

Louise Helsdown, the occupational therapist running the programme, said snakes were a “fantastic aid” in helping people recover from mental health problems.

She said: “We have patients who can’t get out of bed because they’re so depressed. But snakes are a great motivator especially for male patients who often don’t want to look after furry animals.

“Snakes are also unusual and people don’t come across them very often in this country. Handling them gives patients a sense of achievement which they can tell their friends and family about.

“They offer unconditional acceptance. They don’t judge people who have self-harm scars, for example.

“These animals provide a lifeline - the enjoyment of spending time with these animals really lifts their spirits and gives them a real sense of purpose to their day.

‘As part of the therapy, they are an innovative and fantastic aid to the recovery process.’

Known for their placid characters, corn snakes are not venomous and are the most popular type of pet snake. They are ideal in therapeutic settings

because they seem to enjoy being touched and learn to recognise their handler.

And the snakes, which originate from the middle and southern states of the US, are easy to care for as they are extremely hardy.

Huntercombe also uses a dog and two hamsters to help relax patients. Scientific studies have demonstrated that animal-assisted therapy can benefit people suffering a range of conditions.

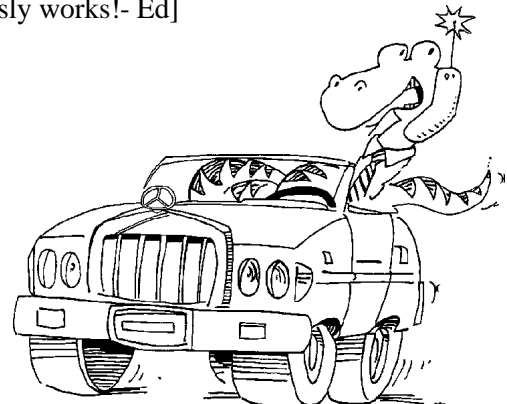
It has also been shown that people who watch fish in an aquarium before a medical procedure had less anxiety. Researchers at the University of Pennsylvania reported that stroking a cat or dog can lower blood pressure in those with hypertension.

In the U.S, animals are used in convalescent homes, hospitals, daycare centres, and prisons. No reptiles are currently known to be used.

Other clinics, including the Priors in north London, have pioneered “equine assisted psychotherapy” using horses to treat patients with anxiety and addiction.

All animals used at Huntercombe for calming therapy have regular health checks and breaks to ensure they do not get distressed themselves.

[Note- this article made *me* feel good, so it obviously works!- Ed]



**Don't cell-phone while driving,
even if you have a prehensile tail!**

New Species of 'Horny Toad' Identified in California

LiveScience.com, Jul 22

For over 100 years, reserchers and herpetologists have argued over the classification of the Baja horned lizard(s). A meticulous review of genetic, anatomical and ecological information has identified 2 new species of horned lizards in California. The findings mean that what was thought to be a single species is actually three. That has implications for how the creatures should be dealt with in conservation efforts.

In the study, published in the online edition of the journal 'Proceedings of the National Academy of Sciences', researchers found that when the coast horned lizard (*Phrynosoma coronatum*) moved north from Baja California and spread into the State, it diverged into at least two new species.

"When you stack up all the known data sets, they all support three separate species," said lead author Adam Leache, a recent University of California, Berkeley Ph.D. now at UC-Davis. "If you were to pick only one data set, you get a different number of species. But one lesson we learned about the speciation process is that you can't rely on one type of data to accurately track a species' history."

Aside from the oldest and original species, *P. coronatum*, found only in southern Baja California, the researchers identified a new species, *P. cerroense*, in central Baja and a third, *P. blainvillii*, whose range extends from northern Baja to northern California.

Within the third more wide-ranging species, the study's authors found enough genetic and ecological differences to suggest there are at least three distinct populations within *P. blainvillii* alone, by law each requiring separate management and protection. The findings have implications for conservation efforts because coast horned lizard populations are in decline from S. Baja California to N. California, due to many factors.

Among these are loss of lowland habitat from agriculture, urbanization and the introduction of Argentine ants which displace the more nutritious Harvester ants, favored diet of the lizards. The lizard is on the International Union for Conservation of Nature's Red List of Threatened Species, as are California's two other horned lizards- the Desert and the Flat-tailed horned lizards.

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



THE MOELENDORFF REPORT-

(Top Secret- for BAARS' eyes only.....)

Over the four months since I acquired my 'dream-snake' -a baby Moelendorff's Ratsnake, also known as the 'Hundred-Flower Snake' or the 'Red-headed, Red-tailed Ratsnake' in its native China & Viet Nam, I've been closely observing him. As most know, I've had two other examples in the past- wild caught animals that were imprinted on unavailable prey, and simply wouldn't eat. Consequently they didn't live long in spite of my best efforts. So observing this new captive-bred example is interesting to me.

The important thing, of course is that he *does* eat- voraciously. At 35 grams and 18" long at 6 months old, he is slim, as many Asian ratsnakes are. And he has a big mouth in a long, vaguely triangular head. His first meal at our home was a live pinky, on the advice of the breeder, followed by a frozen-and-thawed pink. Three days later I observed him out cruising around so I put in two frozen-and-thawed pinks. He gobbled them.

So that's about how it's gone; every 5 or so days, he gets 3 frozen/thawed pinks, in the same area of his terrarium. He's begun hunting there first, so we have some learning capability. He doesn't avidly seize them as my other Asian ratsnakes do, but noses the pink to check its odor, then opens his mouth and lifts the prey up in the air so gravity assists his swallowing! I've only encountered one other snake that took prey this way- my daughter's Miami-phase Corn snake.

Anyway, after two sheds and over a dozen frozen/thawed pinks, we've settled into a sort of routine. I've found he is an early-morning hunter who prefers cool weather. So on hot days, he only comes out in the very early morning (or maybe very late at night- but I'll never know....) He eats every few days and when he refuses prey, I know he's beginning a shed. Since his terrarium is 4" deep in sphagnum moss and he has constructed several burrows, I haven't seen him blue-eyed yet.

He also will not eat if the room temp is over about 75F⁰, so we have him in the coolest room

in the house- our bedroom. This hot-weather-food refusal is something herpers living in China had noted, and the keepers at the San Diego Zoo confirmed that their adult Moelendorffs' ratsnakes do not eat nor breed consistently at ambient temperatures over 75F⁰. Most of our other rat snakes prefer warmer temperatures; some *much* warmer!

Here in northern Nevada, he will likely be quite happy with our 67F⁰ average ambient temperatures most of the year; for the other 3 months, we will have to switch on the A/C now 'n then. Since Judy recently acquired a long-haired Guinea pig-native to the high mountains of Peru, who also cannot stand hot weather, the 'new snake' is not the only animal benefiting from our A/C (we humans enjoy it, too).

The biggest difficulty is, Moelendorffs also need high humidity- at least 45% and preferably more. I knew this from the scanty available literature and was a bit worried, so I bought a good quality humidity gauge. I housed the 18" long baby in a std 20-gallon glass aquarium with a screen top, put the humidity gauge inside along with a 4" layer of well-misted sphagnum moss, a 'standard' water bowl & hide, and made a plexiglas cover insert for 2/3 of the screen top.

I found to my relief that over a period of (now) 4 months, the plexiglas cover has held the ground-floor level to around 52% humidity, with only weekly misting needed. The reportedly-sensitive animal has had four one-piece sheds, indicating the habitat is about right, and is eating more-or-less like a corn snake- having consumed thirty pinkys so far.

The open area of the screen top allows some fresh air and for me to do a daily 'quick-sniff-test', changing the thick layer of moss whenever I detect any odor at all of mildew from moisture. So all-in-all, this 'ultra-exotic' ratsnake has not been much trouble to set up, and it appears that some reported problems do not exist- yet.

J DeRyke

ADOPTIONS & FOR-SALE

REF# 90404 - Multiple Male Ball Pythons

Gender: Unknown, ~30 in., Various ages

Weight: Various

Health Status: Very good

Disposition: Gentle

Current Diet: Live Mice

Vet visits: N/A

Accessories (Cage, Food): None

Do You Have a Photograph?: yes;
Currently In foster Care in San Jose

Level of Urgency: Moderate

REF #90608- California Kingsnake,
Female (I think), 18 yrs old, 5.5ft long, good health but has a scar on her tail from a run in with the cat

Disposition: Very tame

Current Diet: defrosted mice

Accessories (Cage, Food): Glass cage, heating rock, climbing objects, water bowl

Reason for Adoption Request: Family member request.

Level of Urgency: High

Location (City): Mountain View, CA



Clean Solar Energy versus Desert Tortoises?

On March 6, 2008 in the business section of the ultra-conservative New York Times, was published an extensive article on the dramatic increase in the building of solar energy farms in West.

The article was called "The Energy Challenge - Turning Glare Into Watts, By Matthew L. Wald" It contained the following interesting statement:

"If large numbers of plants are built, they will eventually pose some problems, even in the desert. They could take up immense amounts of land and damage the environment. Already, building a plant in California requires hiring a LICENSED TORTOISE WRANGLER to capture and relocate endangered Desert Tortoises."

[No estimate as to how long this ecologically questionable practice will continue.... Ed]

File this under, "No solution ever comes without strings attached."

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.





Life-Like Stuffed Animals Reptiles, Etc.

From **Stuffed Ark**

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.... and there's six pages of these ultra-cute kids toys on this web site. It's not too early to be thinking of Christmas for the small herpers in your family.... Just think- no feedings, no clean-ups, no supervision, no batteries nor assembly required!

<p>Sunny Gecko</p> <p>Doubles as a hand puppet. 38" long. More info</p>	<p>Folkmanis Chameleon</p> <p>Moveable tongue and eyes. 18" long. More info</p>	<p>SOS Komodo Dragon</p> <p>From the "Save Our Space" Collection. 13" long. More info</p>
<p>Green Anole</p> <p>Premium quality from Fiesta Toy. 18" long. More info</p>	<p>Friilled Lizard</p> <p>Life-like look and feel. 12" long. More info</p>	<p>Folkmanis Iguana</p> <p>Award winning lifelike stuffed iguana. 32" long. More info</p>
<p>Alligators & Crocodiles</p> <p>Life-like gators and crocs. Three sizes. More info</p>	<p>Swampy Alligator</p> <p>Two sizes from the Aurora Flopsies Collection. More info</p>	<p>White Alligator</p> <p>Legendary life-like plush. 18" long. More info</p>
<p>Salt Water Crocodile</p> <p>More info</p>	<p>Snappy Crocodile</p> <p>12" long. More info</p>	<p>Sunny Alligator</p> <p>More info</p>
<p>Texas Horned Lizard</p> <p>Uniquely designed. 10" long. More info</p>	<p>Horned Toad</p> <p>Premium quality from Fiesta Toy. 8" long.</p>	<p>Gund "Toady" Toad</p> <p>Colorful, richly textured fabric. More info</p>

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