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Enviroscope

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Kenyan Lions Poisoned

A powerful insecticide called Carbofuran has become known among the rural poor in Kenya as an easy way to rid an area of predators. The insecticide has recently been used to kill lions, leopards and hyaenas. Vultures are also the unintended by-kill of the poisonings.

Carbofuran (sold under the trade name Furadan) has already been banned in Europe and is going that way in the US, but in Kenya it is freely available across the counter. According to Dr Richard Leakey, its main supporters are not farmers looking to kill pests, but herdsman wanting to get rid of stock predators.

Among the latest incidents two lions were poisoned and killed in the Maasai Mara game reserve after eating the carcass of a hippo that had ingested carbofuran. Another lion died a few months ago from carbofuran poi-

soning on a private ranch in Laikipia.

Simon Thomsett, a world renowned expert on vultures, eagles and other birds of prey, says there has been a "dramatic drop-off in the number of birds of prey in the past few years", and the finger of blame is being pointed at carbofuran.

He gives the example of 187 vultures that died when they fed on a carcass of an animal that was apparently laced with the deadly poison in an area by the Athi River.

Carbofuran comes from a number of different overseas suppliers, but the main producer is the US firm FMC Corporation. The company said in a statement: "We take stewardship of our products very seriously and condemn any intentional baiting misuse of Carbofuran".

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President Bush to "Phase Out" Environment by 2009

According to comedian and author Andy Borowitz "President George W. Bush confirmed today that his gutting of the Endangered Species Act is part of a broader plan to phase out the environment entirely by the time he leaves office in January of 2009." In his latest "new story" Borowitz explains how President Bush plans to eliminate the environment so gradually that "hardly anyone will notice it's missing."

As part of a speech he delivered to "The Association of Indiscriminate Applauders" in Washington, DC, Borowitz also reports that Bush said "the EPA would henceforth be renamed the Environmental Prevention Agency." Borowitz also has Bush calling for "a gradual reduction in air and water" and "the accelerated extinction of all superfluous organisms by the end of fiscal 2008" to ensure the environment will be completely phased out by the first quarter of 2009.

What is It?



This frog species holds the world record for distance jumping—9m in three leaps. What is it?

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Temperature Dependent Sex Determination (TSD)

Scientists have known since the 1960's that the sex of some reptiles species is determined not by GSD (genotypic sex determination) but rather by the environment in which they are laid and hatch (environmental sex determination). Within this latter category, the majority of species are most influenced by the temperature of incubation, the next most important factor being humidity. The effect of humidity on sex determination may turn out to be very important, but it has not yet been properly and fully researched.

Within species that are temperature determined, there are two variations known, viz. Pattern 1 and Pattern 2.

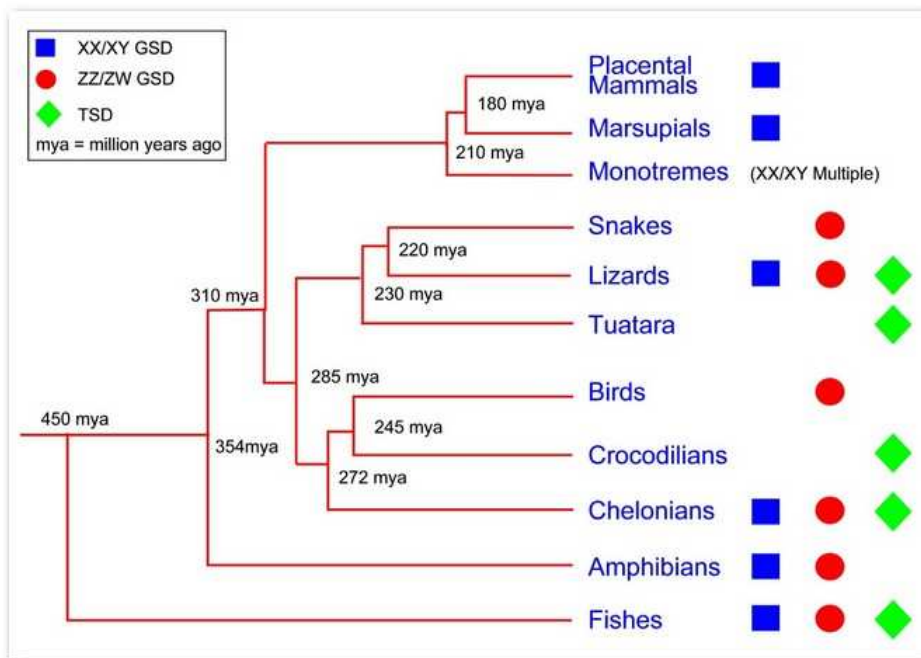
In Pattern 1, males are produced at low temperatures and females produced at high temperature with a single transition zone between. In Pattern 2, females are produced at both low and high temperatures with males produced at intermediate temperatures. In this case there are two transition zones.

The transition zones are very narrow and are usually defined as the range of temperatures, (typically 1-2 degrees Celsius), in which 50% of each offspring phenotype are produced (Pieau et al, 1995). The eggs are only affected by the incubation temperature during the middle trimester of embryonic growth. This critical period of incubation is known

as the thermosensitive period (TSP). At or around the critical temperature "window" mixed sex ratios and, more rarely, intersex individuals are produced.

TSD has been shown to exist in all crocodiles (pattern 2) and the majority of chelonians (Pattern 1 and 2) along with a few species of lizards (Janzen, 1991). Among chelonia, only two species in the mud turtle family have been found to have sex chromosomes and are therefore GSD species (Bull, 1980).

The majority of reptiles have not yet been tested for TSD.



“Since little concern is given to temperatures at which sea turtle eggs are incubated in artificial hatcheries, present conservation practices may be producing all male, all female, or even intersex hatchlings”.

Table showing how the sex of each vertebrate class is determined. The fact that their seems to be no evolutionary link between the clades is still a mystery that puzzles scientists. Adapted from: <http://people.eku.edu/ritchisong/avianreproduction.html>

Scorpion family name change

The scorpion family Ischnuridae has been dropped in favour of family Hemiscorpidae. In 2003, the International Commission on Zoological Nomenclature (ICZN) in Opinion 2037 (cases 3120 and 3120a), changed the name to Liochelidae because the name was in conflict with a Dragonfly subfamily name (Ischnurinae).

The Family was once again revised and it has now been finally given the name Hemiscorpidae. The family includes South African scorpions of the *Hadogenes*, *Opistacanthus* and *Chelotonus* genera.

For more information on ICZN go to <http://www.iczn.org/>



Opistacanthus validus (Family Hemiscorpidae)



When they had all had enough to eat, he said to his disciples, "Gather the pieces that are left over. Let nothing be wasted."

Jesus in John 6:12 NIV Bible

Which is the most dangerous animal in the world?

I often hear guides say to their guests that the hippo is "by far the most dangerous animal in Africa, killing more people than the Big 5 combined". Although this "common knowledge" has been floating around for a while, it is not even close to the truth. Hippos are small-fry when it comes to the really dangerous animals.

At this point I can hear you say, alright already—I know that the mosquito is the most dangerous

animal on earth. This is true, although it is actually the *Plasmodium* parasite (and others like dengue and yellow fever) that do the damage. Mozzies are responsible for around 2–3 million deaths a year.

If we talk about things that can at least be seen with the naked eye, then the most dangerous animals rank something like this (based on the approximate number of human fatalities per year).

1. Snakes — 125000
2. Scorpions — 2000
3. Crocodiles — 2000
4. Big cats — 450 to 800
5. Bees — 500 plus
6. Elephants — 300 to 500
7. Hippos — 150
8. Jellyfish — 100
9. Domestic dogs — 20 to 30
10. Sharks — 10

The figures given here are taken from a variety of sources and their accuracy cannot be confirmed one way or another. The figures are really only best guesses.

"Methuselah" no longer the oldest

The oldest known trees on earth were long held to be the bristle cone pine trees of the White Mountains in California USA. In particular, a specimen called Methuselah was accurately dated at 4768 years old. Now scientists have discovered a spruce

tree on Fulu Mountain in Sweden that is 9550 years old. The tree is one of a group of twenty spruces that are all older than 8000 years. The trees have a lifespan of about 600 years and then die down, sending up a "clone" in replacement. The old trees

all show evidence of about four generations of replacement growth.

Story from BBC NEWS: <http://news.bbc.co.uk/go/pr/fr/-/2/hi/europe/7353357.stm>



We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect.

Aldo Leopold, (A Sand County Almanac)

The tuatara is the fastest evolving animal known

The what you ask? Tuataras are "lizards" from an ancient order of reptiles (Sphenodontia) found today only on the island chain off the northern shore of New Zealand's north island and in the Cook Strait between the two main islands.

Despite the fact that tuataras have not changed their physical appearance for millions of years, DNA recovered from 8000 year old tuatara bones shows that they are changing at a very fast pace. When compared to the old DNA, the DNA from living tuataras shows remarkable differences. The level of change is more than any seen to date among mammals tested in the same way.

The speed of evolution does not imply good or bad evolution, or even the ability to adapt more rapidly. For example, the DNA change will not make it more adaptable to a changing environment such as may be seen with global warming.

The species has undergone many ice ages in the last 80 million years and has probably adapted altering its distribution north or south to suit the conditions. In this case, behaviour is more of an evolutionary driver than DNA is.

One problem that scientists are interested to observe is how tuata-



Image: <http://commons.wikimedia.org/>

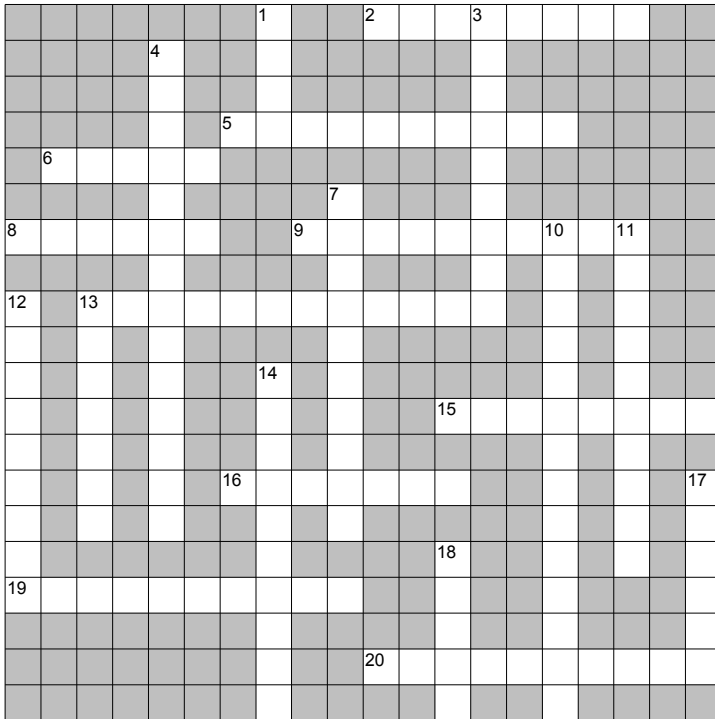
ras adapt or adjust to climate warming which will alter the ratio of male to female hatchlings.

Despite the rapid changes that have been taking place for the last 80 million years plus, the tuatara is still a tuatara. Makes you think ...

Other stories of interest

- **Nearly half of tested captive tigers are "purebred" members of an endangered subspecies ...** (<http://news.nationalgeographic.com/news/2008/04/080418-extinct-tigers.html>)
- **10 Ways You Can Improve Earth's Health.** (http://www.livescience.com/environment/060421_earth_day_tips.html)
- **The tactics used by elephants to keep their cool in extreme desert heat have been caught on camera.** (<http://news.bbc.co.uk/1/hi/sci/tech/7312442.stm>)
- **President George W Bush has called on Congress to end a 27-year ban on drilling for oil in US coastal waters, to reduce dependence on imports.**(<http://news.bbc.co.uk/1/hi/world/americas/7460767.stm>)
- **Plans to use a state-of-the-art camera onboard a satellite to monitor deforestation levels in Africa's Congo Basin have been unveiled.**(<http://news.bbc.co.uk/1/hi/sci/tech/7459472.stm>)

Crossword—Focus on Arachnids



EclipseCrossword.com

Across

- 2. Antenna-like sensory organs found on dorsal surface of a scorpion (8)
- 5. Act of creating a warning sound by scraping the "sting" against rough ridges on the body. (10)
- 6. A larval tick moults and turns into a? (5)
- 8. "Instrument" used by scorpions to sting prey and enemies. (6)
- 9. Generic name of the most venomous scorpions in Southern

Africa (10)

- 13. Zigzag shaped centre found in some spider webs (12)
- 15. The breathing system used by solifuges as opposed the booklungs of spiders. (8)
- 16. The area just above the mouthparts and just below the eyes of a spider (7)
- 19. A genus of aggressive free-living spiders that causes about 80% of medically important spider bites each year in South Africa. (10)
- 20. Afrikaans name for a solifuge, derived from the legend that they sometimes cut the hair of sleeping people. (10)

Down

- 1. The name used to describe an animal or plant which provides the food source for parasites such as ticks and mites. (4)
- 3. The equivalent of baboon spiders, but found in North and South America. (9)
- 4. The name used to describe the survival strategy of small comb-footed spiders that live in the webs of other larger spiders with the purpose of stealing unwanted food items. (14)
- 7. The proper name for arachnid blood. (10)
- 10. Family to which the rock scorpions belong. (14)
- 11. The specialised organs used by spiders to secrete and manipulate silk. (10)
- 12. Appendages used in scorpions as pincers and in spiders for mating. (9)
- 13. The name for the sharp piercing mouthparts of herbivorous mites. (7)
- 14. The chewing mouthparts of some arachnids. (10)
- 17. A word used to describe an animal that transmits a disease to another species, but itself is not affected by the disease. e.g. Ticks heartwater to springbok. (6)
- 18. Spider species named for its ability to capture flying insects by whirling around a blob of sticky silk on the end of a silk thread. (5)

Answer to What is It?

The frog shown is a sharp nosed grass frog (*Ptychadena oxyrynchus*). This frog Olympian is easily overlooked at the waters edge but is quite common in the right habitat. They can be told from the Plain grass frog (*Ptychadena anchietae*) by the more mottled appearance and the very raised ridges down the back. Both species have a pale triangle on the snout, so this is not a diagnostic feature.