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What is It?

These small fish-like creatures are often found “hovering” in freshwater pans and vleis where they filter feed on plankton and blue green algae.

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"We shall never achieve harmony with land any more than we shall achieve justice or liberty for people. In these higher aspirations the important thing is not to achieve, but to strive." - Aldo Leopold.

Changing Theories behind Mass Extinctions

Ask most youngsters today how dinosaurs went extinct and they will tell you it was because of a giant meteorite strike. This popular theory has until now been largely unchallenged because it is easy to explain and easy to understand. It therefore has all the makings of a plausible theory – but the simple answer is not always the right (or best) one. Now palaeontologists are looking at far more complex models behind these mass extinction events.

According to them, evidence suggests that the great K-T event that killed the dinosaurs took place 300000 years before the mass extinction. The strike is thought to have "sickened" the earth through climate change, while later on, volcanism in India delivered the final blow that caused so many species to disappear. The Great Dying or P-T event of 251 million years ago is believed to have occurred in the same fashion. During that event around 90 percent of all species on earth were extincted. Basically, an already sick earth succumbs to one final shock event. Are we just waiting for this?

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Secrets of the Parietal Eye

Many Lizards (and some frogs and fish) are known to have a third eye, or parietal eye on the top of their head. The eye is not one that we would normally recognise as a seeing and blinking organ, but is a small dot with a scaly covering. In South Africa, the best example of the parietal eye is seen among the agamas.

Interesting new facts about these eyes have been revealed by researchers at Johns Hopkins. Studying the side-blotched lizard, they discovered that the "eye" can distinguish two different colours - blue and green. The eye's cells contain two different pigments which allow it to respond to two different colours of light and process that information within the same cell. When the eye is sensitised by blue spectrum light, a molecule called gustducin is triggered. This is very similar to visual processes in higher animals. However, when the eye sees green spectrum light, it triggers another molecule called G-Other (GO) - something seen only in primitive animals like molluscs.

The triggered molecules work on the pineal body and pituitary gland in the brain and may help the lizards determine time of day and regulate secretion of hormones for breeding. The eye also helps species like iguanas orient themselves correctly towards the sun to make the most of vitamin D production via sunshine. These lizards have large calcium glands at the angle of the jaw, which work in conjunction with sunlight to process calcium from their vegetarian diets.

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The Bad - Chrysler's Chief Economist Questions Climate Change

Van Jolissaint publicly ridiculed "quasi-hysterical Europeans" and their "Chicken Little" attitudes to global warming in a recent meeting of the Big 3 vehicle producers. Mr Jolissaint said that since he started spending more time at the company's corporate headquarters in Stuttgart he had been shocked by the absurdity of European attitudes towards global warming. In response to a question from the floor, he said that global warming was a far-off risk whose magnitude was uncertain. During the meeting, no other vehicle maker questioned his rationale and it was even stated that

global demand for bigger gas guzzling cars could increase, owing to the drop in the oil price. I hope you don't drive a Chrysler! More info at:- <http://news.bbc.co.uk/2/hi/business/6247371.stm>

...and the Good - California Sues Car Firms

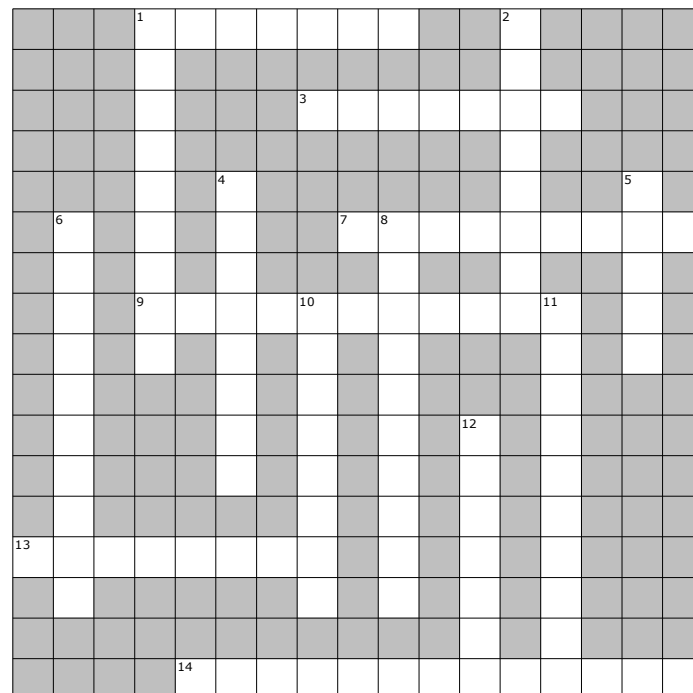
The state of California is suing General Motors, Toyota, Ford, Honda, Chrysler and Nissan for costs associated with their cars' greenhouse gas emissions. The State claims that damage done to its health, economy and environment by these vehicle manufacturers needs to be made good.

The lawsuit, lodged on behalf of the Californian people by state attorney-general Bill Lockyer, alleges that emissions from cars made by the firms in question account for 30% of all carbon dioxide emissions in California. No figure has been specified but it is likely to run into hundreds of millions of dollars. Roda Verheyen of Climate Justice, an international organisation which co-ordinates legal climate cases, said California's suit took action to a new level. *"It is the most significant piece of climate change litigation that has ever been brought,"* she said.

On the other hand, the Alliance of Automobile Manufacturers (AAM) called it a "nuisance" suit and suggested it may be dismissed. Car manufacturers have their own case against California pending over laws requiring them to reduce emissions!

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Crossword – Fishes



Created with EclipseCrossword — www.eclipsecrossword.com

Across

1. Correct name for fish usually referred to as kurper in South Africa (7)
3. Fish that frequent deep waters, usually beyond the continental shelf (7)
7. Bony "flap" covering the gills (9)
9. An organ used by most fish to regulate buoyancy (11)
13. A gelatinous mass in the inner ear of fish containing calcium carbonate crystals which sometimes harden to form "stones" (8)
14. Common name for fish belonging to the Class Chondrichthyes (13)

Down

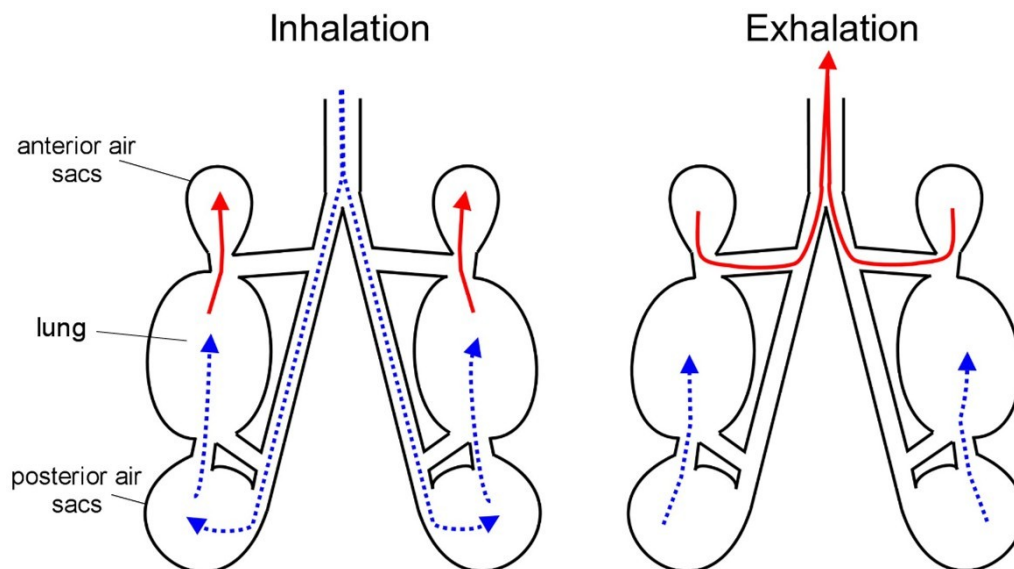
1. Its scientific name means "striped water dog" (9)
2. An unusual opening found on a shark's head between the eye and gill slits (8)

4. Description of body shape seen in fast swimming fish such as barracuda, tuna etc (8)
5. Largest freshwater fish found in Southern Africa (5)
6. "Living fossil" fish first described by Prof J. L. B Smith (10)
8. Name of specialised teeth many fish have at the rear of the throat used for grinding molluscs etc. (10)
10. Common name for fish of the Class Osteichthyes (8)
11. A natural physical phenomenon causing difficulty with underwater vision (10)
12. The sense aided in fish by the Weberian Apparatus (7)

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"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, 1949. A Sand County Almanac.

Things You May Have Forgotten - How Birds Breathe



If you didn't already know that birds are incredible – this should remind you! Flying does not come cheap, and to perform at their best, birds need to take up a lot more oxygen than any other animals. To do this, they have a breathing mechanism that is unique to the avian class.

A series of air sacs are found around the body, which are used to "store" air while they are breathing. Simply put, the process works like this. During inhalation (see image at left) the new air drawn in goes to the rear air sacs. This intake forces air already in these sacs into the lungs and the air that was in the lungs into the front air sacs. As the bird exhales (right) the vacuum created draws air from the rear air sacs

Talking Point

WARNING: Be very careful not to enter into arguments with guests about this sort of subject. There can be no winner!

This incredible physiological structure has long been one of the arguments levelled by creationists at evolution. The argument states that a gradual process of "two-stroke" breathing would have had to evolve from the pre-existing system of one way breathing before it was first seen in its finished form. However, evolution takes a very long time – so an organism that started with anything less than a perfectly formed bird breathing system would die of anoxia. The conclusion is therefore that the mechanism must have been created since it could not have evolved. The system is said by creationists to be irreducibly complex, meaning that it cannot be explained by any gradual changes to pre-existing physiology. For more information on this, see http://en.wikipedia.org/wiki/Irreducible_complexity

into the lungs. In this way, birds are able to absorb oxygen through their lungs on both breathing "strokes".

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Tonight Honey ... I Don't Have A Headache

Imagine slamming your head into a tree trunk twenty times a second at 25 km/h! This is what piliated woodpeckers in America do, and doubtless, so do our species too. An ophthalmologist in California, Ivan Schwab, had seen eye injuries caused in car accidents where sudden head impacts had torn retinas and forced eyeballs out of their sockets. Knowing what woodpeckers did, he decided to investigate why they do not suffer the same symptoms.

What he found is that they have a third "eyelid" that keeps the eyeball still while the bird is hammering. As the bird hammers, it shuts its eyes, which protects the eyeball from flying woodchips and from the retina-tearing damage of sudden deceleration. A split second before impact, dense muscles in the neck contract, causing some of the impact force to radiate down them and away from the skull.

Woodpeckers are recorded as hammering up to 12000 times in a day during the courtship season – so it is unlikely that they ever suffer from a headache.

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Good News for SA Tourism

Speaking at an event in Utrecht, Holland (Jan 9 2006), Marthinus van Schalkwyk announced that tourist arrivals to SA are higher than anywhere else in the world, having risen more than 15 percent as opposed to the global average of 4,5 percent. Recently released statistics for the period January to July 2006 show that more than 4,6 million people visited South Africa during the period under review, outstripping the 2005 half-yearly figure by 636 610.

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Another Attempt to Ban Oil Drilling in Alaskan Wilderness

New legislation, if passed, will make about 500,000 hectares of land along Alaska's Arctic coast a protected wilderness. With the Democrats now in the majority in the US Congress and a number of moderate Republicans on record as supporting the move, chief sponsor of the legislation, Representative Edward Markey, believes he stands a good chance of success. The problem is that the area also has about 10 billion barrels of oil which President Bush is keen to exploit, saying that he believes it is possible to protect the environment while still allowing drilling to take place.

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Other Interesting Stuff

1. *New Bat Species*

A new species of sucker-footed bat (only the second in the world) has recently been discovered in Madagascar where scientists are rushing to try and document the biodiversity in that islands disappearing forests. <http://news.nationalgeographic.com/news/2007/01/070108-bat-sucker.html?source=rss>

2. *Miniature Earth*

"If the world's population was reduced to 100 it would look something like this ..." Visit this site for an amazingly different look at the world and to realise just how incredibly privileged most of us are. <http://www.miniature-earth.com/>

3. *South African National Survey of Arachnida*

The following is an extract taken from the website of SANSA – a project that collaborates with and utilises the efforts of citizen scientists to obtain data.

“SANSA is an umbrella project dedicated to unify and strengthen biodiversity research on Arachnology in South Africa and to make an inventory of the arachnofauna. It runs on a national basis in collaboration with other researchers and institutions with an interest in the arachnid fauna of South Africa.

The aims of SANSA are:

- to discover, describe and to make an inventory of the arachnid fauna of South Africa
- to organize this information in a database and to make the data available to science and society
- to support and encourage systematic research of arachnids
- to develop an on-line identification system
- to use information for sustainable use and conservation planning
- to develop products that meet the need of the community: handbooks, CD-ROMS’s checklists, atlases, catalogues, taxonomic publications and identification manuals
- to make people aware through education and training
- to build capacity and infrastructure”

Visit the site at:- <http://www.arc.agric.za/home.asp?pid=3272>

4. Map folding method for special use

If you ever need to fold a map in a compact way, but still want to have access to all its detail, then this method will interest you. Using this method you can paste the map into a booklet a quarter the size of the map without the risk of it tearing or being blown around as it would be if you just folded it into quarters and then pasted the first quarter down. Obviously this method only works for something that is printed on one side only. Give it a try, even if only to paste something into your scrapbook!

Proceed as follows. Fold the map into sixteenths as illustrated and then cut along the fold line D-G / J-M. The rest is self explanatory. Complete the process by gluing squares A, F, K and P down.

