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Super-organisms?

For the last century, biologists have been using the phrase “superorganism” to describe how swarming insects seem to behave as if they were but individual cells of a larger creature. Even though the concept is an old one, little research has been conducted to test the validity of the idea.

Researcher James Gillooly of the University of Florida has now conducted the first quantitative assessment of the link between social colonies and a single organism.

Gillooly and his colleagues used mathematical equations that are typically used to describe the physiology and life cycle of a single organism, and applied them to whole colonies. These equations, known as the “metabolic scaling theory,” predict the rates of growth, reproduction, lifespan, and many other factors for individual organisms based on that creature's size. The researchers used data from 168 different social insect species, including ants, termites, bees and wasps.

Famous Harvard University biology professor Edward O. Wilson said the study “is notable for its originality and also for its importance. The research certainly adds a new perspective to our study of how insect societies are organized and to what degree they are organized.”

Although they found some interesting correlations and results, the scientific “jury” is still out regarding the results.

You can't keep a good tahr down!

In 2004 the decision was made to cull all 700 or so of the Himalayan tahrs (a goat like ungulate *Hemitragus jemlahicus*) that were roaming around Table Mountain. This was an unpopular decision since in the wild the species is near- threatened. The bunny huggers wanted to catch them all and ship them back to Afghanistan or some such place, but for practical reasons it was decided to employ some sharpshooters instead.

Six years after this decision was made, six tahrs have been filmed once again grazing happily in Platteklip Gorge.

The tahrs were brought to Cape Town by Cecil John Rhodes and were kept in the old Cape Town Zoo next to the University of Cape Town, but two escaped onto the mountain where they flourished.

Why some female antelopes have horns

Biologists think they know why male bovids have horns; their reasoning mostly revolving around weaponry for contesting territory and mates, but the reasons some females also have headgear is much more baffling. There are several theories about this, but until now none have been confidently promoted by biologists. Recently, two evolutionary biologists think they've figured out the reason why.



Theodore Stankowich at the University of Massachusetts Amherst and Tim Caro at the University of California, Davis, studied the question in 117 species of bovids (the family of antelopes, cattle, goats, and sheep.) They tested various hypotheses to see which (if any) could adequately predict the occurrence of horned females in each species. Their results showed

that females of species living in open areas where they are easily visible to predators did not lose their horns - for defence reasons. Also, females that live in forests and contest territories seem to have retained their horns, or "evolved" them. The patterns holds for eighty of the eighty two cases of horned females studied. The research was detailed in the Journal Proceedings of the Royal Society B.

"There is no global, environmental central bank to bail us out if we become ecologically bankrupt."

Andrew Simms (New Economics Foundation)

Outrageous rhino death toll continues

The first 31 days of this year have seen 14 rhinos poached for their horns, seven in the North West and another seven in the Kruger National Park. This attack is organised by well funded syndicates and is not going to go away. The criminals involved are dangerous, ruthless and not scared to defend themselves.

According to the Zimbabwe Conservation Task Force, *"war veterans" near Humani Estates in Chiredzi have resorted to poisoning rhinos since they have failed to make a success out of the farm lands they were allocated in 2000. A spokesman said that the war vets are placing poisoned cabbages at animal drinking points so that the animals will eat them when they come to drink. He said that most of them are working as agents for South African based rhino horn dealers who have flooded the area with firearms. He claimed that they are even poisoning some small dams in the area in the hope that the rhinos will drink from them.*"

New threat to gorillas

Another serious threat to the survival of gorillas has been added to the list. Not only are they hunted for bush meat and pushed out of their ranges by deforestation, now they have been found to harbour the deadly *Plasmodium falciparum* parasite. This micro-organism is the one responsible for malignant malaria (cerebral malaria) in humans.

The danger is that even if the parasite is eliminated in humans, it will still survive in gorillas which act as a reservoir host. The implication is that they will be a threat to humans and consequently are likely to be persecuted because of this.

Deforestation has brought these animals into closer contact with humans over the years and cross-species contamination is becoming more common. One wonders what other pleasures await us? Another Ebola type virus, or a mutant malaria more deadly than any currently known?

The research was conducted in France, Cameroon and Gabon using new genetic sampling methods. The findings are published in Proceedings of the National Academy of Sciences journal.

Frog foam nesting methods revealed

A Trinidadian species of frog called the tungara (*Engystomops pustulosus*), makes a floating foam nest to protect its eggs until they can hatch into tadpoles and escape to the open water. Although the structures may look delicate, they are apparently very hardy and are able to survive about four days, being blown around in the wind and lashed by rain with impunity. Their stability is all the more remarkable when considering that the foam is non toxic to eggs and sperm unlike most other biological foams.

According to researchers who published their results in the Royal Society's journal Biology Letters, knowing more about how the foam is created could help scientists create "bio-foams" for use in medical applications, such as treating injuries at the scenes of accidents.



Malcolm Kennedy, an author of the paper, from the University of Glasgow, said: "These are exposed to full sunlight, high temperatures, all kinds of infections, including parasitic ones, and yet they survive for four days without any damage, until the tadpoles leave - or if there aren't any eggs, they'll last for two weeks. And unlike other foams, they do not damage the membranes of eggs and sperm. They are a remarkable biological material. But until now, we did not know quite how the frogs used these material and made the foams."

The team took footage of tungara frogs making their nests and then analysed this frame by frame. What they found was that there are three perfectly timed and distinct phases of construction. To start with, while in amplexus (mating clasp) the male puts his legs underneath the female and collects a foam-precursor fluid that she releases. He then whips this up, mixing in air bubbles by vigorously kicking his legs. This starts out in short bursts, but the duration increases each time. This is believed to allow the foam time to "set" and to prevent it dispersing as it would do if he frothed too much to start with. During the second phase, the female begins to release eggs which are then collected by the male (using his feet) and incorporated into the foam. This is done about 200 times in a cycle of equal frothing and equal resting. As the nest builds to a meringue-like consistency, the male slows down his frothing sessions until he stops completely and the process is done.

This process and appearance of these foam nests sounds rather like the structures made by our foam nest frog (*Chiromantis xerampalina*) which, instead of floating on the water, are placed in shrubs and trees or attached to rocks overhanging water. It would be interesting to see if the process they use is the same.

"It is in man's heart that the life of nature's spectacle exists; to see it, one must feel it."

Jean-Jacques Rousseau (1712-1778)

What is it?



The bird's foot pictured is one of the most amazingly well adapted feet of any bird you're likely to see. I have included a picture of the bill as well to help with the identification.

This one was downed after a storm and was found on top of a mountain, although this is not a clue to its normal habitat! What is it?



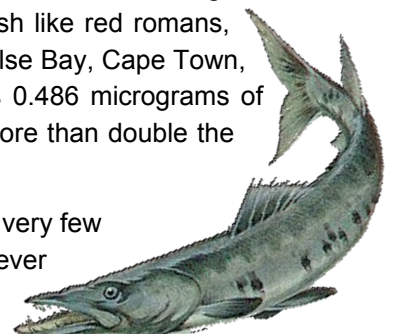
[Answer](#)

Another good reason to give up eating fish

The time has come for us all to think carefully about whether or not we are going to eat fish **at all**. Previously, we got away with it by eating only species whose populations were considered large enough to continue over exploiting. Not anymore.

Research conducted by the Council for Scientific and Industrial Research (CSIR) on fishes caught off Durban, Cape Town and the West Coast showed that they contain mercury levels well above World Health Organisation (WHO) guidelines. Some of the highest mercury levels were found in popular table fish like red romans, silver fish and red panga. The highest levels of mercury were found in samples from False Bay, Cape Town, followed by those from the West Coast and Durban. The highest recorded level was 0.486 micrograms of mercury to a million parts of fish tissue, in a red roman caught in False Bay. This is more than double the WHO guideline of 0.2 micrograms for vulnerable people.

The source of the mercury pollution in South African fish is unclear, as there have been very few published studies on mercury contamination levels in the general environment. If you ever needed another reason to give up eating fish, you now have it.



Five anti-environment arguments to be aware of in 2010

1. "Biological diversity around the world isn't really declining."
2. "Where it is, it's a product of natural cycles such as the normal run of predator-prey dynamics; species have always gone extinct and always will."
3. "Much of the evidence for declining biological diversity comes from eco-extremist groups, so cannot be trusted, as these organisations have a financial stake in portraying a crisis."
4. "Moves to protect biodiversity are just an excuse to raise taxes."
5. "Developing countries should concentrate on economic growth first, then use their wealth to repair any damage caused; they have more to gain by ripping down their forests and selling the timber than by protecting them."

Source: BBC Environment Correspondent Richard Black

New fishhooks saving the lives of thousands of sea turtles

In Asian's Coral Triangle, a new circle hook has been introduced over the old "J" shaped hook used in the tuna long-lining industry. Initial results show that it has reduced turtle bycatch by as much as 80% - or several thousand turtles a year.

The new hooks are not as easily swallowed by turtles as the old ones. Also, if they are hooked, the circle hook is a lot easier to remove from the mouth, causing less damage to the turtle (if they find it before it drowns).

"We are extremely pleased with the response from fishing companies in the Coral Triangle region, many of which have shown great support for the circle hook and turtle recovery program," said WWF's Coral Triangle Bycatch Strategy Leader Keith Symington.



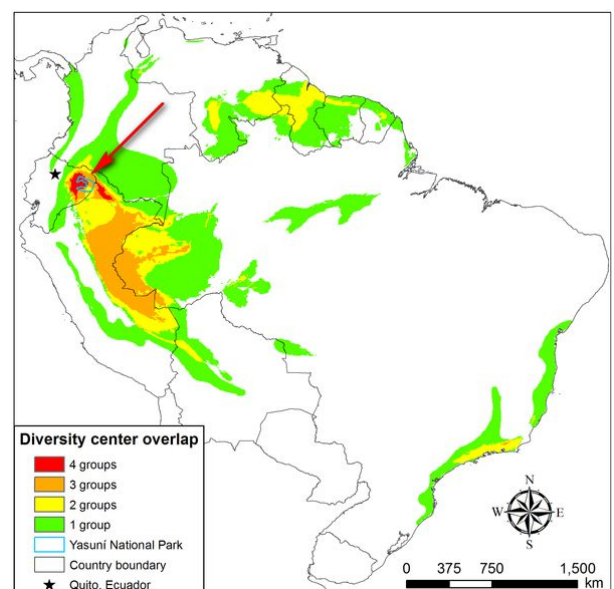
I conceive that the land belongs to a vast family of which many are dead, few are living, and countless numbers are still unborn.

Author Unknown

Yasuní National Park of Ecuador probably the most biodiverse place on earth

Between the Napo and Curaray rivers in western Amazonia lies the 9,820 km² Yasuní National Park. The park was proclaimed in 1979 because of its species richness - something unequalled anywhere else in the world. Just within the park is the Tiputini Biodiversity Station where some of this amazing diversity has been catalogued. The findings there are that the area reaches the global maximum species diversity for four taxonomic groups - amphibians, birds, mammals, and woody plants. The area boasts the following stunning figures.

- 150 species of frogs - a world record at that regional scale.
- 382 species of fish live in Yasuni itself - more than in the entire Mississippi River Basin.
- 596 species of birds (remember the area is half



Source: PloS ONE

the size of KNP).

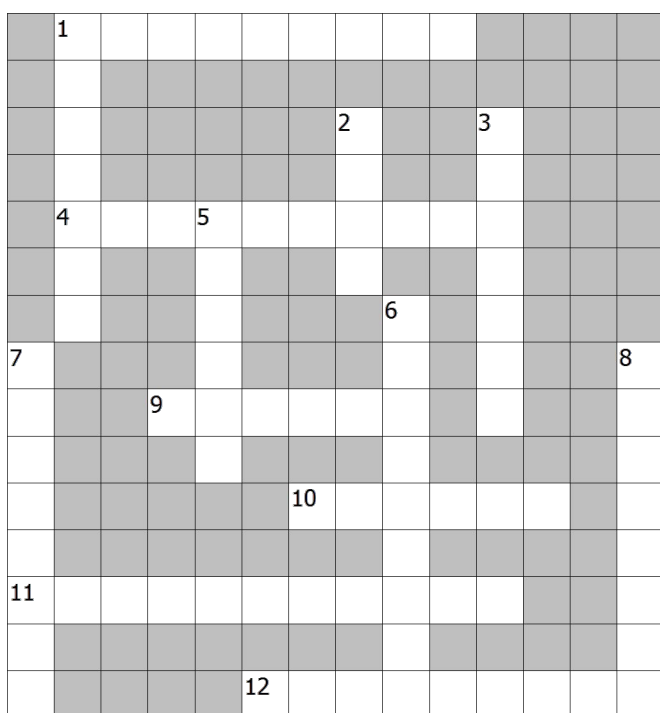
- Over 200 mammals species.
- There are on average, 655 species of trees per hectare, up to 1100 tree species per 25 Ha area and the total for the region exceeds 4,000.
- 100,000 insect species per hectare.

The area is under threat because it holds some 850,000,000 barrels of crude oil ready for the taking. Globally, there has been condemnation of efforts to develop the region. Suggestions have been made that the world's nations should contribute towards a fund to help protect it and to compensate Ecuador for the financial loss it will incur by not developing it.

Why is it that all the good places seem to have oil or coal or some other substance that we just can't keep our hands off?

Details of the study were recorded in the online journal PloS ONE.

Crossword



EclipseCrossword.com

Down

1. The act of imitating the appearance of another species to obtain some protective benefit. (7)
2. The stem of a grass plant (4)
3. The part of the foot between the fetlock and the hoof (7)
5. Situated in or directed toward the part of the body from which the tail arises (6)
6. The hard flap serving as a cover for the gill slits in fishes (9)
7. The hard "outer bone" found especially in the long bones of animals (8)
8. Any small spherical group of cells containing a cavity (8)

Across

1. Any rock of mixed appearance, being an intimate mixture of granite and older rock caused by intense metamorphism (9)
4. The porous "inner bone" where red and white blood cells and platelets grow (10)
9. One of four pointed conical teeth located between the incisors and the premolars (6)
10. The axis of a compound leaf or compound inflorescence (6)
11. Active at dusk or dawn (11)
12. A form of igneous rock consisting of extremely coarse granite resulting from the crystallisation of magma rich in rare elements (9)



An elephant femur - now that's a bone!

The new farmyard animals

For every one of the estimated 3200 free-ranging wild tigers there are three captive counterparts in a Chinese breeding farm. These 10,000 caged animals are unfortunately not waiting for release into the wild, but are waiting to be slaughtered for their bones and skins.

While waiting for this day, they front as tourist attractions in tiger “breeding projects” where visitors may view them close up and pay for the privilege, even paying to watch the tigers catch chickens or cows. In this way, the tigers profit their owners in two ways: the first alive and the other dead.

Breeding farm tigresses produce up to three litters a year, the cubs being taken away early to suckle from pigs or dogs who act as surrogate mothers. The grown tigers are then killed and skinned and their skeletons de-fleshed.



The bones are then soaked in vats of wine to supposedly infuse the wine with magical properties. Tiger bone wine fetches top prices and there is a seemingly endless demand for it even though the Chinese government banned trade in tiger bones and products in 1993.

The 14th of February marks the beginning of the Chinese Year of the Tiger - so as you read this think of the tigers being “processed” right now to provide for the upcoming celebrations.

Rifle feeding problems - Part 3

Over the last two months I have covered some of the most common flaws and problems when it comes to rifle feeding. This month I want to discuss probably the most serious flaw in this regard - YOU! Of all the feeding errors I see on the shooting range, probably half or more are caused by guides “pussyfooting” with the rifle. The action is made of quality steel and will not break if used hard, yet many novice shooters handle the rifle as if it is going to turn to dust.

When chambering a round, any hesitation or forward and back jerky movements of the bolt are likely to cause a problem, so try and concentrate on making firm and positive movements with your operating hand. Also, try not to steer the bolt in a direction it doesn't want to go in. Mauser designed his rifle action to have a lot of what looks like sloppy tolerances when the bolt is opened. On the contrary, this is deliberately designed so that the bolt can find its own way into the action despite dirt that may get in the way. Those of you who firmly grip the bolt knob between thumb and forefinger are more likely to be guilty of this. When cycling the bolt, try and use an open hand so that the bolt knob can swivel in the socket of your palm.

What is it - Answered

The beak and foot shown belong to a Little Grebe (*Tachybaptus ruficollis*) or Dabchick as it was better known. The toes are fringed with a web-like flap that engages the water as the foot is pushed backwards, but folds away alongside the toe on the forward stroke, thereby minimising drag. The hind toe (not pictured) is merely a small tag of skin that presumably acts like a fin.

The pictured bird was probably flying at night from one pan to another when it was downed by a heavy rainstorm. We de-stressed it and gave it electrolytes and some rest before testing its releasability. This involved a quick dunk in the pool. It was amazing to see how it swam underwater - something you never see clearly in the murky water they often inhabit. What fascinated me was that the feet are extended far behind the rump, level with the body-line and are then flapped in unison much as a seal does.

