



Limited resources and unlimited usage.
How can we save it?

Newsletter



**Conserve the energy,
Save our climate!**

March - 2020

Paleontology special

Issue : 37

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Why ???

We the people on the earth are gifted with wonderful energy sources by the nature, which has made our routine much more smother & easier... However, this gift of the nature is ' limited '. What we have done is, with the growth of science & technology, we have started using it extremely, because of which the energy resources are going to finish in near future. Hence, let us take the pledge to conserve the energy - save the energy!!!

Tips of the Month



Establish a green team at workplace

Establish a green team for your company. A green team will give employees an opportunity to contribute to the development and implementation of your sustainability initiatives.



Article - 1 : Alien species are primary cause of recent global extinctions

Alien species are the main driver of recent extinctions in both animals and plants, according to a new study by UCL researchers. They found that since 1500, alien species have been solely responsible for 126 extinctions, 13% of the total number studied. Of 953 global extinctions, 300 happened in some part because of alien species, and of those 300, 42% had alien species alone listed as the cause of their demise. Data from the 2017 IUCN Red List on the total numbers of species that are considered to have gone extinct globally since 1500. In total, 261 out of 782 animal species (33.4%) and 39 out of 153 plant species (25.5%) listed aliens as one of their extinction drivers. In contrast, native species impacts were associated with only 2.7% of animal extinctions and 4.6% of plant extinctions. "Some people have suggested that aliens are no more likely than native species to cause species to disappear in the current global extinction crisis, but our analysis shows that aliens are much more of a problem in this regard." "Our study provides a new line of evidence showing that the biogeographically origin of a species matters for its impacts. The invasion of an alien species is often enough to cause native species to go extinct, whereas we found no evidence for native species being the sole driver of extinction of other natives in any case."

The IUCN Red List identifies 12 broad categories of extinction drivers, including alien species, native species, biological resource use (hunting and harvesting) and agriculture. Alien species ranked first as a driver of animal extinctions, well ahead of the second place driver, biological resource use, which affected 18.8% of those lost. Overall, the number of

animal extinctions caused in some part by alien species is more than 12 times greater than those caused in part by native species. Some of the worst offenders are mammalian predators, such as black, brown and Pacific rats and feral cats, with island habitats hit the hardest. Some of these animals first invaded by stowing away on boats, though some, like cats and foxes, have been introduced deliberately.

Many plants were also intentionally introduced, such as plantation



**Image Source: <https://www.blazingcatfur.ca/2019/03/05/global-warming-off-the-hook-alien-species-are-primary-cause-of-recent-global-extinctions/tree-species-or-ornamental-plants-for-gardens>. Once in place, they start to spread and threaten the native flora and fauna around them; alien plants are several times more likely than natives to achieve a maximum cover of at least 80%.*

**Source: <https://www.sciencedaily.com/releases/2019/03/190303211423.htm>*

Article - 2 : Paleontology: Diversification after mass extinction

A team led by Ludwig-Maximilians-Universitaet (LMU) in Munich paleontologist Adriana López-Arbarello has identified three hitherto unknown fossil fish species in the Swiss Alps, which provide new insights into the diversification of the genus *Eosemionotus*. Monte San Giorgio in the Swiss canton of Ticino is one of the most important known sources of marine fossils from the Middle Triassic Period (around 240 million years ago). The new and exquisitely preserved fossil fish specimens, which Dr. Adriana López-Arbarello (a member of the Institute of Paleontology and Geobiology and of the Geobiocenter at LMU) has been studying in collaboration with colleagues based in Switzerland were also discovered in these dolomites and limestones. The first member of the genus *Eosemionotus* was discovered in the vicinity of Berlin in 1906, and was named *E. vogeli*. Almost a century later, in 2004, a second species was described from Monte San Giorgio as *E. ceresiensis*. Detailed anatomical studies of new material from this locality, carried out by López-Arbarello, have now enabled the recognition of three further species that can be assigned to same genus -- *E. diskosomus*, *E. sceltrichensis* and *E. minutus*. All five species are small in size, but they can be clearly distinguished from each other on the basis of the relative proportions of their bodies, the position of the fins, the morphology of the skull, and the disposition of teeth and scales. "These differences indicate that each species was adapted to different ecological

niches," López-Arbarello concludes.

These findings provide new insights into the evolution of the



**image Source:*

<https://www.sciencedaily.com/releases/2019/03/190301101830.htm>

genus. "Our phylogenetic analyses demonstrate that *Eosemionotus* is the oldest known member of an extinct family within the Order Semionotiformes. Although the Semionotiformes were a species-rich and highly diversified clade during the Mesozoic Era, the order died out in the Cretaceous. Only a few members of its sister group have survived down to the present day, and this ancient lineage is now represented by a single family, the gars," says López-Arbarello.

**Source: <https://www.sciencedaily.com/releases/2019/03/190301101830.htm>*

Article - 3 : Drilling results reveal global climate influence on basin waters in young rifts

Young rift basins, such as the Gulf of Corinth, are known to be sensitive recorders of past changes in climate and sea level and of the chemical and biological conditions of the waters they contain. Nonetheless, the changes observed in the Gulf of Corinth, published in the journal *Nature*, were more dramatic and complex than anticipated. The volume of sediment filling the rift basin increased dramatically when the Earth was experiencing glaciated conditions compared with periods when the Earth was not glaciated. This is an important discovery for understanding the impact that global climate fluctuations have on the history of sedimentation, particularly for the earliest sediments deposited as new ocean basins form. The process of continental rifting is fundamental for the formation of new ocean basins, and these basins are the source of a large proportion of the Earth's hydrocarbon resources. Therefore their history of sedimentation informs how hydrocarbons are formed and where they may collect.

The results come from a new scientific ocean drilling expedition conducted as part of the International Ocean Discovery Program (IODP) and are published this week in the journal *Scientific Reports* in an article entitled "High-resolution record reveals climate-driven environmental and sedimentary changes in an active rift." IODP Expedition 381 went to sea from October to December in 2017 on the drilling vessel *Fugro Synergy*, and the sediment cores and downhole data retrieved were analysed in February, 2018 by a 35-member team of international geoscientists. The Expedition and new publication was led by Professor Lisa McNeill from the University of Southampton, UK and Professor Donna Shillington of the Lamont-Doherty Earth Observatory of Columbia University, USA.

This is the first long and high-resolution sediment record of the early rifting process ever obtained," Lisa McNeill comments. "At one site, an expanded 700 m section records the last 800,000 years of rift basin history." The cores have revealed how the

conditions changed as global-climate and ice sheet growth reduced sea level and isolated the Corinth basin from the open ocean. The reduced salinity severely restricted the range of organisms that could inhabit the waters under such stressed conditions. These fluctuations occurred about once every



**Image Source:*

<https://www.sciencedaily.com/releases/2019/02/190228113625.htm>

100,000 years as global climate changed. The most striking result is that the rate of sediment flux into the basin increases by a factor of 2-7 during the globally glaciated periods relative to the non-glaciated periods. This is recorded in the relative thicknesses of the sedimentary fill of the rift basin during these different periods. The science team also found that the sedimentation rates in the Holocene (the last 10,000 years) were much higher than earlier non-glaciated time periods. This is probably due to the human impacts on the landscape of mainland Greece, deforesting the landscape and increasing slope erosion rates over a period of about 4000 years.

**Source:*

<https://www.sciencedaily.com/releases/2019/02/190228113625.htm>

Article - 4 : Biodiversity on land is not higher today than in the past, study shows

A team of paleontologists led by Virginia Tech's Michelle Stocker and Sterling Nesbitt of the Department of Geosciences have identified fossil fragments of what are thought to be the oldest known frogs in North America. The fossils are comprised of several small pieces of hip bone, called an ilium, from Chinle frogs, a distant long-extinct branch of, but not a direct ancestor of, modern frogs. The fragments are packed into rock and are smaller than a pinky nail. They represent the first known and earliest equatorial remains of a salientian -- the group containing living frogs, and their most-closely related fossil relatives -- from the Late Triassic, roughly 216 million years ago. The name of the fossil derives from where they were found, the Chinle Formation of Arizona.

Coming from multiple individuals, the hip bones are long and hollow, with a hip socket offset rather than centered. The bones of the frogs show how tiny they were: Just a bit over half-an-inch long. "The Chinle frog could fit on the end of your finger," Stocker added. The Chinle frog shares more features with living frogs and *Prosalirus*, an Early Jurassic frog found in sediments from the present-day Navajo Nation, than to *Triadobatrachus*, an Early Triassic frog found in modern day Madagascar in Africa. "These are the oldest frogs from near the equator," Stocker added. "The oldest frogs overall are roughly 250 million years old from Madagascar and Poland, but those specimens are from higher latitudes and not equatorial."

ecosystems and lead to a balance between rates of speciation and extinction. After the origins of major groups of animals, or large-scale ecological disruptions like mass extinctions, though, increases in diversity may happen abruptly on geological, if not human timescales

-- and are again followed by long periods where no increases occur. Contrary to what you might expect, the largest increase in diversity within land vertebrate communities came after the mass extinction that wiped out the dinosaurs, 66 million years ago, at the end of the Cretaceous period. Within just a few million years, local diversity had



**Image Source:*

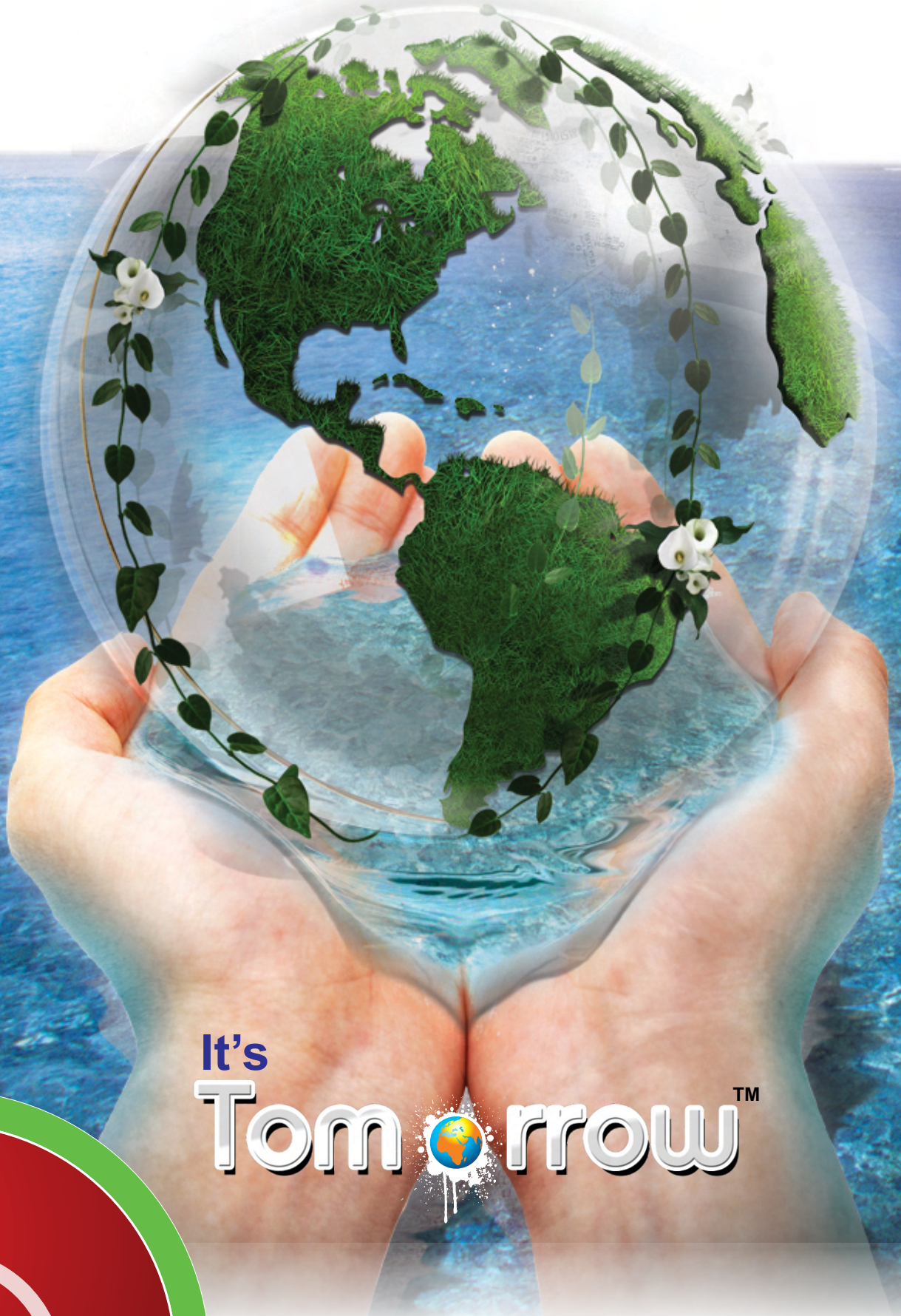
<https://www.sciencedaily.com/releases/2019/02/190227081545.htm>

increased to two or three times that of pre-extinction levels driven primarily by the spectacular success of modern mammals.

Source: <https://www.sciencedaily.com/releases/2019/02/190227081545.htm>

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