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BIOLOGY NEWS

New Species of Bizarre, Extinct **Lizard – So Strange It Was** Misidentified as a Hummingbird-Sized Dinosaur

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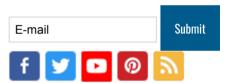
Florida Museum Of Natural History New Species Paleontology

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By FLORIDA MUSEUM OF NATURAL HISTORY JUNE 14, 2021

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Bizarre New Species of **Dinosaur Had Armor Unlike**



Oculudentavis naga, as depicted in this artist's reconstruction, was a bizarre lizard that researchers initially struggled to categorize. They are still unsure of its exact position in the lizard family tree. Credit: Stephanie Abramowicz/Peretti Museum Foundation/Current Biology

An international research team has described a new species of Oculudentavis, providing further evidence that the animal first identified as a hummingbird-sized dinosaur was actually a lizard.

The new species, named Oculudentavis naga in honor of the Naga people of Myanmar and India, is represented by a partial skeleton that includes a complete skull, exquisitely preserved in amber with visible scales and soft tissue. The specimen is in the same genus as Oculudentavis khaungraae, whose original description as the smallest known bird was retracted last year. The two fossils were found in the same area and are about 99 million years old.

Researchers published their findings in *Current Biology* today (June 14, 2021).

The team, led by Arnau Bolet of Barcelona's Institut Català de Paleontologia Miquel Crusafont, used CT scans to separate, analyze and compare each bone in the two species digitally, uncovering a number of physical characteristics that earmark the small animals as lizards. Oculudentavis is so strange, however, it was difficult to categorize without close examination of its features, Bolet said.

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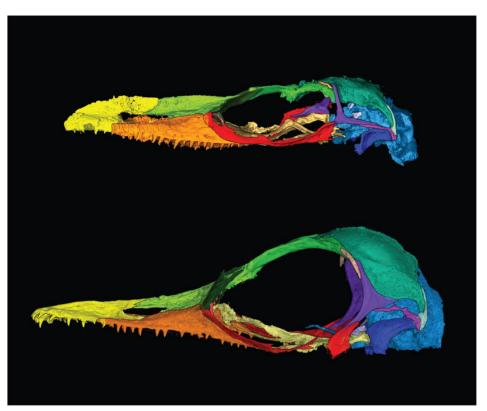
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"The specimen puzzled all of us at first because if it was a lizard, it was a highly unusual one," he said in an institutional press release.

Bolet and fellow lizard experts from around the world first noted the specimen while studying a collection of amber fossils acquired from Myanmar by gemologist Adolf Peretti. (Note: The mining and sale of Burmese amber are often entangled with human rights abuses. Peretti purchased the fossil legally prior to the conflict in 2017. More details appear in an ethics statement at the end of this story).



Oculudentavis naga, top, is in the same genus as Oculudentavis khaungraae, bottom, a specimen whose controversial identification as an early bird was retracted last year. Both specimens' skulls deformed during preservation, emphasizing lizardlike features in one and birdlike features in the other. Credit: Edward Stanley of the Florida Museum of Natural History/Peretti Museum Foundation/Current Biology

Herpetologist Juan Diego Daza examined the small, unusual skull, preserved with a short portion of the spine and shoulder bones. He, too, was confused by its odd array of features: Could it be some kind of pterodactyl or possibly an ancient relative of monitor lizards?

"From the moment we uploaded the first CT scan, everyone was brainstorming what it could be," said Daza, assistant professor of biological sciences at Sam Houston State University. "In the end, a closer look and our analyses help us clarify its position."

Major clues that the mystery animal was a lizard included the presence of scales; teeth attached directly to its jawbone,



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The team also determined both species' skulls had deformed during preservation. Oculudentavis khaungraae's snout was squeezed into a narrower, more beaklike profile while O. naga's braincase — the part of the skull that encloses the brain — was compressed. The distortions highlighted birdlike features in one skull and lizard-like features in the other, said study co-author Edward Stanley, director of the Florida Museum of Natural History's Digital Discovery and Dissemination Laboratory.



Amber can exquisitely preserve small forest animals that would have otherwise decomposed. CT scans of this fossilized Oculudentavis naga showcase the specimen's scales, skin and soft tissue. Credit: Adolf Peretti/Peretti Museum Foundation/Current Biology

"Imagine taking a lizard and pinching its nose into a triangular shape," Stanley said. "It would look a lot more like a bird."

Oculudentavis' birdlike skull proportions, however, do not indicate that it was related to birds, said study co-author Susan Evans, professor of vertebrate morphology and paleontology at University College London.

"Despite presenting a vaulted cranium and a long and tapering snout, it does not present meaningful physical characters that can be used to sustain a close relationship to birds, and all of its features indicate that it is a lizard," she said.

While the two species' skulls do not closely resemble one another at first glance, their shared characteristics became clearer as the researchers digitally isolated each bone and compared them with each other. The differences were minimized when the original shape of both fossils was Biology Climate Change Cosmology COVID-19

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reconstructed through a painstaking process known as retrodeformation, conducted by Marta Vidal-García from the University of Calgary in Canada.

"We concluded that both specimens are similar enough to belong to the same genus, Oculudentavis, but a number of differences suggest that they represent separate species," Bolet said.

In the better-preserved O. naga specimen, the team was also able to identify a raised crest running down the top of the snout and a flap of loose skin under the chin that may have been inflated in display, Evans said. However, the researchers came up short in their attempts to find Oculudentavis' exact position in the lizard family tree.

"It's a really weird animal. It's unlike any other lizard we have today," Daza said. "We think it represents a group of squamates we were not aware of."

The <u>Cretaceous</u> Period, 145.5 to 66 million years ago, gave rise to many lizard and snake groups on the planet today, but tracing fossils from this era to their closest living relatives can be difficult, Daza said.

"We estimate that many lizards originated during this time, but they still hadn't evolved their modern appearance," he said. "That's why they can trick us. They may have characteristics of this group or that one, but in reality, they don't match perfectly."

The majority of the study was conducted with CT data created at the Australian Centre for Neutron Scattering and the High-Resolution X-ray Computed Tomography Facility at the University of Texas at Austin. O. naga is now available digitally to anyone with Internet access, which allows the team's findings to be reassessed and opens up the possibility of new discoveries, Stanley said.

"With paleontology, you often have one specimen of a species to work with, which makes that individual very important. Researchers can therefore be quite protective of it, but our mindset is 'Let's put it out there,'" Stanley said. "The important thing is that the research gets done, not necessarily that we do the research. We feel that's the way it should be."

While Myanmar's amber deposits are a treasure trove of fossil lizards found nowhere else in the world, Daza said the consensus among paleontologists is that acquiring Burmese

amber ethically has become increasingly difficult, especially after the military seized control in February.

"As scientists we feel it is our job to unveil these priceless traces of life, so the whole world can know more about the past. But we have to be extremely careful that during the process, we don't benefit a group of people committing crimes against humanity," he said. "In the end, the credit should go to the miners who risk their lives to recover these amazing amber fossils."

Other study co-authors are J. Salvador Arias of Argentina's National Scientific and Technical Research Council (CONICET – Miguel Lillo Foundation); Andrej Cernansky of Comenius University in Bratislava, Slovakia; Aaron Bauer of Villanova University; Joseph Bevitt of the Australian Nuclear Science and Technology Organisation; and Adolf Peretti of the Peretti Museum Foundation in Switzerland.

A 3D digitized specimen of O. naga is available online via MorphoSource. The O. naga fossil is housed at the Peretti Museum Foundation in Switzerland, and the O. khaungraae specimen is at the Hupoge Amber Museum in China.

The specimen was acquired following the ethical guidelines for the use of Burmese amber set forth by the Society for Vertebrate Paleontology. The specimen was purchased from authorized companies that are independent from military groups. These companies export amber pieces legally from Myanmar, following an ethical code that ensures no violations of human rights were committed during mining and commercialization and that money derived from sales did not support armed conflict. The fossil has an authenticated paper trail, including export permits from Myanmar. All documentation is available from the Peretti Museum Foundation upon request.

Reference: "Unusual morphology in the mid-Cretaceous lizard *Oculudentavis*" by Arnau Bolet, Edward L. Stanley, Juan D. Daza, J. Salvador Arias, Andrej Čerňanský, Marta Vidal-García, Aaron M. Bauer, Joseph J. Bevitt, Adolf Peretti and Susan E. Evans, 14 June 2021, *Current Biology*.

DOI: 10.1016/j.cub.2021.05.040

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4 COMMENTS

ON "NEW SPECIES OF BIZARRE, EXTINCT LIZARD — SO STRANGE IT WAS MISIDENTIFIED AS A HUMMINGBIRD-SIZED DINOSAUR"

Coelophysis | June 15, 2021 at 12:49 am | Reply

By looking at skull photo looks like a bird both of them it look like a modern bird skull were temporal fenestra fuse with eye orbital naga look less bird the giant orbital that looks like crocodile eye or aquatic animal the hump skull by the giant eye .it

looks like no dinosaur skulll or primitive bird like archaeopteryx bird or maniraptoran bird this look like a flight skull modern birds are better flyer they do not need a strong skull it's going to be heavy they can easy defend them self by flying that why modern birds are missing skull bones.look like smalll temporal fenestra smallest I ever seen location is wrong too one of them that mite be muscle it's really one giant hole eye socket were find in modern birds .lizard lost one temporal fenestra .bird do not have scales the scales they have is a different kind of feather that look like scales on the leg on fossil bird on the tail.it is lizard because have no socket tooth lizard do have socket teeth crocodiliandinosaur birds mammal have socket tooth they have gums say gums so can understand this sound like it is modern tuatara of today which is not a lizard or crocodilian it is ancestor of lizard and crocodilian it's a reptile more close to lizard because they have overlapping scales not all tuatara type animal have overlapping scales these won really ancestor of lizard and crocodilian .tuatara have fish teeth the teeth is fuse to the skull they lack gums a primitive feature turtle allso have fish teeth but it's skin is crocodilian so turtle is crocodilian type of animal protothecodont animal thecodont means crocodilian teeth .does it has bird joint found in modern birds archaeopteryx bird maniraptoran birds oviraptor bird for highly kinetic skull maniraptoran oviraptor archaeopteryx was not kinetic as modern bird because they do not have flight skull the bones are not missing .dinosaur do not have kinetic skull at all they do not have that bird joint they skull is as kinetic as lizard crocodilian have akinetic skull because they are superior dinosaur most advance dinosaur ever.and crocodilian is missing this bone found in every lizard bird allso missing this bone the early bird like archaeopteryx velociraptor have this bone but it is reduce all tetanuran 3 finger dinosaur have this bone and it is not reduce bird hip dinosaur some do not have this bone at all early mesoeucrocodylia the true crocodilian have this bone .spinosauridae gator t.rex there skull are going to be different like muscle attachment because they have full palate so muscle have to shift so skull will not look like other reptile because of advance feature.it easy know if it's a dinosaur by the teeth dinosaur have thecodont teeth Cingulum teeth or by skin dinosaur have turtle skin I saw early dinosaur lack temporal fenestra or damage but it had unique turtle skin only found in dinosaur mesoeucrocodylia in thecodont so it's a dinosaur allso had tetanuran wide skull .today lizard that lack overlapping scales is advance lizard.



Babu G. Ranganathan | June 15, 2021 at 8:35 am | Reply

Babu G. Ranganathan* (B.A. Bible/Biology)

NOT MILLIONS OF YEARS OLD! Evolutionary dating (including radiometric dating) is not infallible science, is based on certain built-in assumptions, and has often been proven to be contradictory and inconsistent. Please read my popular Internet article, ARE FOSSILS REALLY MILLIONS OF YEARS OLD? Just google the title followed by my name.

There's a lot of evidence that the fossil layers were not deposited by gradual floods, which would have required millions of years. Rather, the evidence strongly points to a one world-wide flood, just as the Bible teaches. This one world-wide flood fossilized species and unleashed tremendous forces that changed the geology and topography of the earth.

The fossil layers in the real world are not even found in the sequence taught in evolutionary textbooks. There are many places where fossils of complex creatures are found beneath simpler ones, and there are fossils of mixed species existing in the same stratum which classic evolutionary textbooks teach should have been separated by millions of years. Of course a biblical world-wide flood would generally have buried and fossilized marine animals first with amphibians, reptiles and mammals to follow. Evolutionists have interpreted all of this into an evolutionary scenario spanning millions of years.

There is absolutely no proof of macro-evolution in the fossil record. The fossils of all species are found complete (not partially-evolved) with no evidence of actual transition from one kind to another. There are no fossils of fish, for example, with part fins, part feet to show that transition occurred from fins to feet. Besides this, partially-evolved species would be unfit for survival while waiting to be completed over millions of years.

ONLY LIMITED EVOLUTION (micro-evolution or evolution within biological "kinds") is genetically possible (such as the varieties of dogs, cats, horses, cows, etc.), but not macro-evolution, or evolution across biological "kinds," (such as from sea sponge to human). All real evolution in nature is simply the expression, over time, of already existing genes or variations of already existing genes. For example, we have breeds of dogs today that we didn't have a few hundred years ago. The genes for these breeds had always existed in the dog population but never had opportunity before to be expressed. Only limited evolution or adaptation, variations of already existing genes and traits, is possible. Nature is mindless and has no ability to design and program entirely new genes for entirely new traits.

NEW SPECIES: Although new species can come into existence, they don't carry any new genes. They've become new species only because they can't be crossed back with the original parent stock for various biological reasons. A biological "kind" allows for new species but not new genes. Nature has no ability to invent new genes for new traits. Only limited variations and adaptations are possible in nature, and all strictly within a biological "kind" (i.e. varieties of dogs, cats, etc.).

THE FEW "INTERMEDIATE" (SO-CALLED TRANSITIONAL LINKS) IN FOSSILS claimed by evolutionists are highly disputed, even among the evolutionists. If macro-evolution really occurred there should be billions of indisputable intermediate fossils, not a few disputable ones. There's not one example of

a so-called transitional link that all evolutionists can agree on, not one.

What about the duck-billed platypus? It has traits belonging to both birds and mammals, but even evolutionists don't argue that it's a transitional link between birds and mammals.

Some evolutionists use similarities of traits between species as an argument for transitional forms. This is not a good argument because the traits they cite are complete, fully-formed, and fully functional, not in any true process of transition from one type of structure into another.

Genetic information, like other forms of information, cannot arise by chance, so it is more logical to believe that genetic and biological similarities between all forms of life are due to a common Designer who designed similar functions for similar purposes. It doesn't mean all forms of life are biologically related!

What about natural selection? Natural selection can only "select" from biological variations that are possible and which have survival value. It doesn't produce genes or biological traits. That's why it's called natural "selection."

Many people have wrong ideas of how evolution is supposed to work. Physical traits and characteristics are determined and passed on by genes — not by what happens to our body parts. For example, if a woman were to lose her finger this wouldn't affect how many fingers her baby will have. Changing the color and texture of your hair will not affect the color and texture of your children's hair. So, even if an ape's muscles and bones changed so that it could walk upright it still would not be able to pass on this trait to its offspring. Only changes or mutations that occur in the genetic code of reproductive cells (i.e. sperm and egg) can be passed on to offspring.

What about the new science of epigenetics? Epigenetics involves inheritable factors which can turn genes on, but epigenetics doesn't alter the DNA code itself. Modern evolutionists believe and hope that over, supposedly, millions of years, random mutations in the genetic code of reproductive cells caused by environmental radiation will generate entirely new genes for natural selection to use. This is total blind and irrational faith on the part of evolutionists. It's much like believing that randomly changing the sequence of letters in a romance novel, over millions of years, will turn it into a book on astronomy! That's the kind of blind faith macro-evolutionists have.

Mutations are accidents in the genetic code, are mostly harmful, and have no capability of producing greater complexity in the code. Even if a good accident occurred, for every good one there would be hundreds of harmful ones with the net result, over time, being harmful, even lethal, to the species. At best, mutations only produce further variations within a natural species. Even so, mutations are not the best explanation for variations within a natural species.

How could species have survived if their vital tissues, organs, reproductive systems, etc. were still evolving? A partially evolved trait or organ that is not complete and fully functioning from the start would be a liability to a species, not a survival asset. Plants and animals in the process of macro-evolution would be unfit for survival. For example, "if a leg of a reptile were to evolve (over supposedly millions of years) into a wing of a bird, it would become a bad leg long before it became a good wing" (Dr. Walt Brown, scientist and creationist) Survival of the fittest actually would have prevented macro-evolution (evolution across biological kinds!)

All the fossils that have been used to support human evolution have been found to be either hoaxes, nonhuman, or human, but not non-human and human.

The fossils show that all life came into existence as complete and fully-formed from the beginning, which is only possible by creation.

Visit the author's latest Internet site: THE SCIENCE SUPPORTING CREATION (This site answers many

arguments, both old and new, that have been used by evolutionists to support their theory).

Author of the popular Internet article, TRADITIONAL DOCTRINE OF HELL EVOLVED FROM GREEK ROOTS

*I have given successful lectures (with question and answer period afterwards) defending creation before evolutionist science faculty and students at various colleges and universities. I've been privileged to be recognized in the 24th edition of Marquis "Who's Who in The East."

Coelophysis | June 16, 2021 at 12:21 am | Reply

I just fan of dinosaur and want know if they are alive and I found that .I like science too .the million years thing i am not experts on that at this time it's boring .look for the truth about dinosaur creationist seem have best links about that since most are ban by the media or without hype i seen some creationist believe million thing and sound like a nice answer .species turn into new species animal are great surviver i do not trust nature it's strange why would animal stop evolveing were are the rule that what science is trying to find usual they are rules.clearly there is evolution dinosaur did not have a palate the modern kind the gator have two today dwarf caiman is nothing like other crocodilian it's hearing is like a land mammal and one of them have tetanuran dinosaur bipedal tail crocodilian continue to get stronger through history from the fossil record .and two species of today modern crocodilian have primitive feature not found in archosaur deevolution is common in dinosaur.interesting you make some great point

Coelophysis | June 17, 2021 at 12:34 am | Reply

It's a lizard it has common lizard teeth third eye hole in the skull lizard have two type of teeth a teeth simular to crocodilian human deep rooted

teeth a common lizard teeth and second won bird teeth not deep root teeth it's a more advance teeth it's not fish like it's not close to the skull this is teeth maniraptoran bird have and oviraptor bird ancestor have . the first fossil cliam it had tuatara teeth arcodont teeth and common lizard teeth but after critic got a look found no tuatara teeth only common lizard teeth .acrodonta lizard have bird teeth cliam that snake is acrodont animal is false snake have gums it's a lizard type of animal this cliam because has 2 rows of teeth like the tuatara the primitive feature allso dinosaur have 2 rows teeth found in early dinosaur eoraptor pterosaur and archosauriformies it's link to tuatara type of animal .eoraptor teeth is call palate teeth they are some remnants 2 row teeth since eoraptor have the codont teeth it's a the codont and it is a gum animal acrodonta lizard have gums and one row teeth animal like most dinosaur and mammal .reason why oviraptor bird troodon bird is thought to be a dinosaur it has lizard hip not bird hip like velociraptor modern bird archaeopteryx but hip pubis is not same size as tetanuran dinosaur but not all dinosaur have tetanuran size pubis hip pterosaur none mesoeucrocodylia dinosaur with a gator ankle have this feature.not all modern crocodilian breathing system is the same the two alligator common caiman American gator there breathing system is different because caiman is better swimmer that the reason they are dinosaur .dinosaur pubis hip have unique attachment to hepatic piston found in modern crocodilian .spinosauridae is transition dinosaur turn into modern crocodilian spinosauridae is a true mesoeucrocodylia they have greatest dinosaur technology the death roll system. baryonyx and early gator type mesoeucrocodylia have the same death roll system neural arch on neck and tail not like the gator only have it on the tail spinosaurus have no neural arch at all these sagittal crest tyrannosaur were crown group of dinosaur .dinosaur and gator is the same animal scientist have known this since fossil of spinosaurus the lack of neural arch even length of palate of skull and big hump sail neural spine .the gator was never primitive clearly the arm is shorter than the leg a bipedal feature and still has grasping big thumb claw althou the finger is quadrupedal there is nothing primitive about a fully secondary bony palate and have 6 bone fuse to braincase like mammal.dinosaur is the most corrupt animal .modern crocodilian hunt at night have cat eyes live in cave .gator clearly is a advance dinosaur they have lacrimal foramen .the most advance dinosaur ever spinosauridae is the first mesoeucrocodylia.nature magazine stop calling this fossil bird they cliam because the new fossil naga by Wikipedia

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