

November 21, 2022

News and notes

Before going on to look at amphibians, reptiles, and birds from the [Neogene Period](#), here are some news items that I thought were interesting.

Geopolitics

- [Even a limited nuclear war could devastate the world's oceans: Here's what our modeling shows.](#)

Research

- Mountain building episodes: [Cycles of Andean mountain building archived in the Amazon Fan.](#)
- Stratigraphy: [Cretaceous sequence stratigraphy of the northern Baltimore Canyon Trough: Implications for basin evolution and carbon storage.](#)
- Ancient seawater trapped in rock: Pushing the limits: [Resolving paleoseawater signatures in nanoscale fluid inclusions by atom probe tomography](#); Phys.org summary [here](#).
- Carbon cycle: [Nanoconfinement facilitates reactions of carbon dioxide in supercritical water](#); Phys.org summary [here](#).
- Melting glaciers releasing bacteria by the ton: [Spatially consistent microbial biomass and future cellular carbon release from melting Northern Hemisphere glacier surfaces](#); Phys.org summary [here](#).
- Modelling melting glaciers: [An ensemble of Antarctic deglacial simulations constrained by geological observations.](#)
- Glaciology: [In situ observations of the Swiss periglacial environment using GNSS instruments.](#)
- Surveying, geodesy, research: [Analytical dual quaternion algorithm of the weighted three-dimensional coordinate transformation.](#)
- Geomorphology: [Enhancing the Identification and Mapping of Fluvial Terraces Combining Geomorphological Field Survey with Land-Surface Quantitative Analysis.](#)
- Geotechnical engineering: [A probability prediction method for the classification of surrounding rock quality of tunnels with incomplete data using Bayesian networks.](#)
- Artificial mineral generates electricity from heat: [Engineering Transport Properties in Interconnected Enargite-Stannite Type \$\text{Cu}_{2+x}\text{Mn}_{1-x}\text{GeS}_4\$ Nanocomposites](#); Geology In summary [here](#).

Paleontology

- [Rapid marine oxygen variability: Driver of the Late Ordovician mass extinction](#); Phys.org summary [here](#).

- Surviving mass extinction: [A Late Devonian actinopterygian suggests high lineage survivorship across the end-Devonian mass extinction](#); Eureka Alert summary [here](#).
- Weird animals: [Ordovician opabiniid-like animals and the role of the proboscis in euarthropod head evolution](#); Eureka Alert summary [here](#).
- Not extinct yet! [A fossil species found living off southern California, with notes on the genus *Cymatiosa* \(Mollusca, Bivalvia, Galeommatoidea\)](#); Geology Page summary [here](#).
- Preservation of soft tissue features: [The endocast of *Euparkeria* sheds light on the ancestral archosaur nervous system](#).
- Really big fossils: [New specimens of *Baurutitan britoi* and a taxonomic reassessment of the titanosaur dinosaur fauna \(Sauropoda\) from the Serra da Galga Formation \(Late Cretaceous\) of Brazil](#).

Climate

- Sea level rise predictions: [Observation-based trajectory of future sea level for the coastal United States tracks near high-end model projections](#); Phys.org summary [here](#).
- Consequences of sea level change: [Sea-level rise will likely accelerate rock coast cliff retreat rates](#); Phys.org summary [here](#).
- Climate stability: [Presence or absence of stabilizing Earth system feedbacks on different time scales](#); Phys.org summary [here](#).
- Climate evolution: [Millennial Variability in Intermediate Ocean Circulation and Indian Monsoonal Weathering Inputs During the Last Deglaciation and Holocene](#); Phys.org summary [here](#).
- Climate history: [Aeolian Dust Preserved in the Guliya Ice Cap \(Northwestern Tibet\): A Promising Paleo-Environmental Messenger](#); Eureka Alert summary [here](#).
- Climate modelling: [Are general circulation models obsolete?](#)
- The release of methane from hydrates: [The Model of Cohesionless Sediment Blowout with an Increase in the Methane Flow Rate](#).

Environmental Geology and Hydrogeology

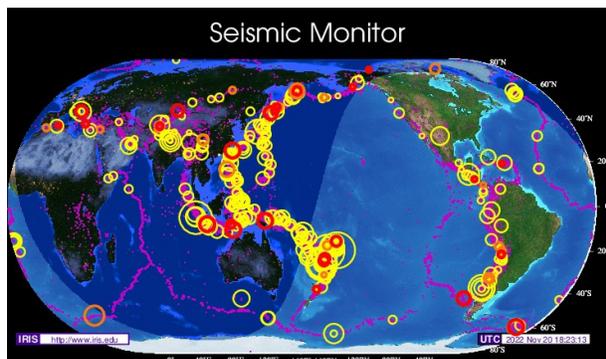
- [Airborne geophysical method images fast paths for managed recharge of California's groundwater](#); Phys.org summary [here](#).

Mining and Energy

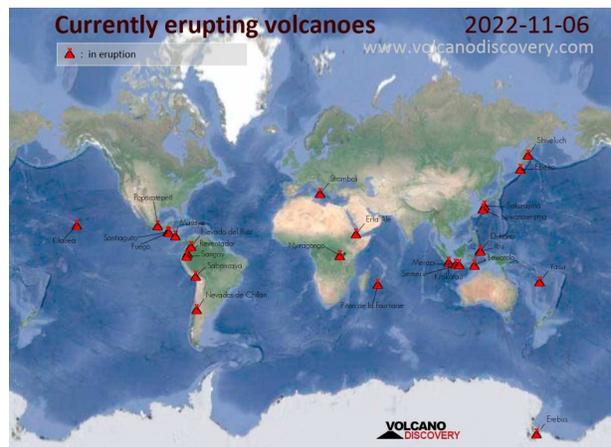
- [How the state of Wyoming could supply the US with rare earth elements](#).
- [Minister denies Baffinland Iron Mines expansion in Nunavut](#).

- Silver is the currency of free men: [Silver heads for biggest deficit in decades, Silver Institute says.](#)
- [US Republicans aim to shorten EV mine permitting after House win.](#)
- Drilling technology: [US-based company plans to use microwaves to tap into deep thermal energy sources.](#)
- Forming a nickel cartel: [Plans for OPEC of nickel finds doubters in Australia, Canada.](#)
- Mining manganese nodules from the sea floor: [Exploration of Deep Ocean Ferromanganese Nodule Fields Using Radon as a Tracer](#); behind paywall, Research Gate access [here](#).
- From the United States Energy Information Administration (USEIA): [Residential heating oil prices start winter heating season higher than last year.](#)
- California’s lifestyle depends on hydrocarbons: [The “Black Gold” Flowing Under Los Angeles.](#)
- COP27: [Commentary: Poor Nations Dealt ‘Slight of Hand’ Trick at COP27 – Irina Slav.](#)
- Energy exploration activity in [Canada](#) and the [USA](#).
- Boom and bust: [European Refiners Now Have Too Much Oil.](#)
- [World Oil Demand Topped Pre-Covid Levels In September.](#)

Volcanoes, Earthquakes and Geohazards



[Link](#)



[Link](#)

- Plate tectonics and volcano mineralogy: [Himalayan zircons resurface in Sumatran arc volcanoes through sediment recycling.](#)
- Plate tectonics and Earthquake swarms: [Slab-derived fluid storage in the crust elucidated by earthquake swarm.](#)

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Terrestrial Vertebrates of the Neogene – Amphibians, Birds and Reptiles

While fossils of [mammals](#) are common from the [Neogene Period](#), and we will look at them in upcoming postings, clearly [amphibians](#), [reptiles](#), and [birds](#) didn't go away. So let's look at some examples of them from the fossil record.

Amphibians

Albanerpeton

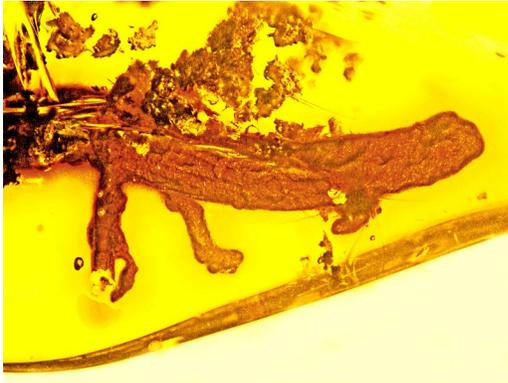


Figure 1 – *Albanerpeton* - Restoration
Credit: [Disneysaurus](#), CC-BY-SA

Albanerpeton was a genus of [lissamphibian](#) that lived during the [Miocene](#) and [Pliocene](#) Epochs only to become extinct during the early [Pleistocene](#). Although resembling modern day [salamanders](#), *Albanerpeton* was from a separate order, the [Allocaudata](#), and is in fact the last of that order. Members of the genus *Albanerpeton* lived in a variety of environments. The head and neck were fairly robust, suggesting that it was a burrowing animal.

R. [Estes](#) & R. [Hoffstetter](#) first described *Albanerpeton* in 1976 in *Les urodèles du Miocène de La Grive-Saint-Alban (Isère, France)*, Bulletin du Muséum National d'Histoire Naturelle, Sciences de la Terre 57:297-343 (not on line). [James D. Gardner](#) re-analyzed the genus in 1999, [based upon new findings from Miocene deposits in France](#). There are eight species in the genus *Albanerpeton*: *A. inexpectatum* (type species), *A. galaktion*, *A. nexuosus*, *A. arthridion*, *A. cifellii*, *A. gracilis*, *A. pannonicus*, and *A. ektopistikon*. *A. pannonicus* was the [last species of the genus](#) to go extinct.

Palaeoplethodon hispaniolae



A true salamander, *Palaeoplethodon hispaniolae*, lived in what is now the Dominican Republic during the Miocene. The fossil of *Palaeoplethodon hispaniolae* came from [Dominican amber](#) mined in the mountain range between Puerto Plata and Santiago.

No salamanders currently live in the [Antilles Islands](#). The specimen in the amber resembles a modern salamander from Mexico, the [Chinanteca salamander](#), *Bolitoglossa chinanteca*.

Figure 2 – *Palaeoplethodon hispaniolae*

Credit: [Oregon State University, Creative Commons Attribution-Share Alike 2.0](#) Generic license

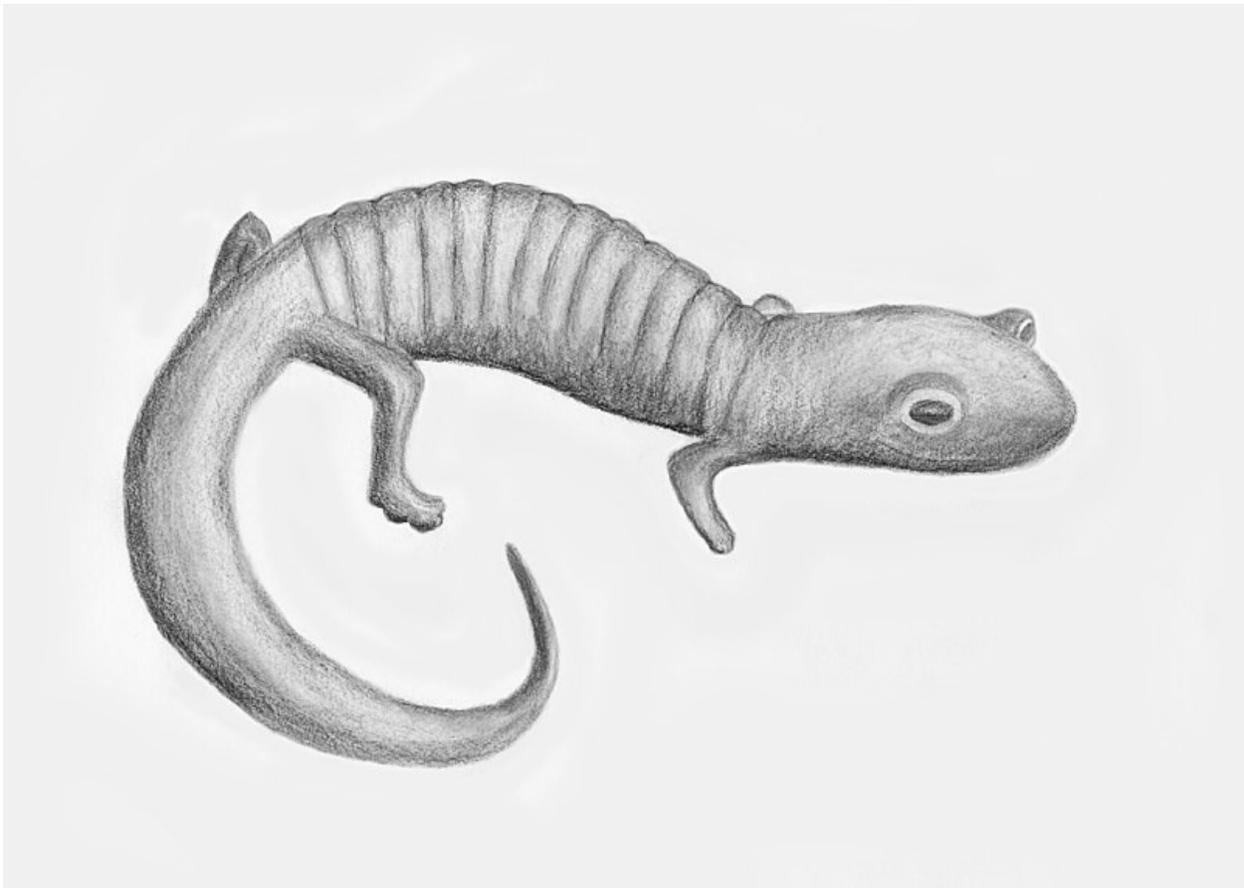


Figure 3 – *Palaeoplethodon* Life Restoration

Credit: [Oregon State University, Creative Commons Attribution-Share Alike 2.0](#) Generic license

George Poinar Jr. and David B. Wake of Oregon State University [first described *Palaeoplethodon hispaniolae* in 2015](#).

Reptiles

Alligator olseni



Figure 4 – Olsen’s Alligator
Credit: [Clumsystiggy, CC-BY-SA](#)

Alligator olseni, also called Olsen’s Alligator, lived during the Miocene in Northern Florida and possibly as far west as Texas. The type fossil of the species was found at Thomas Farm, near Bell, Gilchrist County, Florida. Olsen’s Alligator resembles the modern American Alligator (*Alligator mississippiensis*) but did not grow as large as the modern variety. [Modern alligators grow up to 3 m long whereas the largest specimen of *Alligator olseni* is no more than 2.4 m long.](#)

[Theodore E. White](#) first [described *Alligator olseni*](#) in 1942. The genus *Alligator* contains two living species (*A. mississippiensis* and *A. sinensis*) as well as six extinct species (*A. hailensis*, *A. mcgrewi*, *A. mefferdi*, *A. olseni*, *A. prenasalis*, and *A. thomsoni*). The genus *Alligator* was first described in the scientific literature by [Georges Cuvier](#) in 1807.

Pumilia novaceki



A small [iguana](#)-like reptile found in fossils from the [Anza-Borrego Desert State Park](#) in California, *Pumilia novaceki* lived from the Pliocene to the Early Pleistocene. The species is known from a [fossil of a partially skull](#). However, there is enough in the fossil to link it to modern iguanas.

[Mark Norell](#) first [described *Pumilia novaceki*](#) in 1989. Norell named the species after his friend, [Michael J. Novacek](#).

Figure 5 - *Pumilia novaceki* (top) and *Phrynosoma mcallii* (bottom)
Credit: [Apokryltaros, Creative Commons Attribution-Share Alike 3.0 Unported](#) license

Birds

Osteodontornis orri



Figure 6 – *Osteodontornis orri*

Credit: [Nobu Tamura](#), [Creative Commons Attribution-Share Alike 3.0 Unported license](#)

A fairly large sea-bird with a wingspan of up to 6 m, [Osteodontornis orri](#) lived during the Miocene in the North Pacific. It appears to have lived like modern sea birds such as [albatrosses](#), [tropicbirds](#) and [frigatebirds](#).

Fossils of *Osteodontornis orri* have been found in on both East and West sides of the North Pacific. In California, *Osteodontornis orri* fossils came from the [Late Miocene](#) shale deposits of the [Monterey Formation](#) and the [Middle Miocene](#) deposits of the [Round Mountain Silt](#). *Osteodontornis orri* fossils were found in Oregon in the [Early Miocene Nye Formation](#) and the Middle Miocene [Astoria Formations](#) of Oregon. In South America, fossil similar to *Osteodontornis orri* came from the Middle Miocene [Capadare Formation](#) of Venezuela and from the [Pisco Formation](#) of Peru. On the other side of the Pacific, in Japan, *Osteodontornis orri* fossils were found in the Middle Miocene [Nagura Formation](#), in the Early Miocene [Oi Formation](#) and in the [Mizunami Group](#).

[Hildegarde Howard](#) was the [first to describe](#) *Osteodontornis orri* in the scientific literature from fossils she found in Miocene deposits in California.

Ciconia maltha



Also called the La Brea Stork, *Ciconia maltha* was a [stork](#) that lived from the Pliocene and into the Pleistocene. It was a fairly large bird, with a 3 m wingspan.

In addition to the [La Brea Tar Pits](#), *Ciconia maltha* fossils have been found in the American states of Oregon, Idaho and Florida as well as in Cuba and Bolivia.

[Loye H. Miller](#) first [described *Ciconia maltha*](#) in 1910 from bones that he recovered from the La Brea Tar Pits.

Figure 7 – *Ciconia maltha* on display at the [La Brea Tar Pits Museum](#)
Credit: [Jonathan Chen](#), [Creative Commons Attribution-Share Alike 4.0 International](#) license

Wrapping it Up

There are lots more fossils of amphibians, reptiles and birds from the Neogene Period, so if this interests you, here are a few links that are worth following up on for a start:

- [Neogene vertebrates](#)
- [Neogene amphibians](#)
- [Neogene birds](#)
- [Neogene reptiles](#)
- [Fossil Species of Florida](#)

Standard Caveat

The purpose of my weblog postings is to spark people's curiosity in geology. Don't entirely believe me until you've done your own research and checked the evidence. If I have sparked your curiosity in the subject of this posting, follow up with some of the links provided here. If you want to, go out into the field and examine some rocks on your own with the help of a good field guide. Follow the evidence and make up your own mind.

In science, the only authority is the evidence.