



GEOSCIENCE NEWSLETTER

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GRI NEWS

General Conference Booth



Visitors at the GRI booth in San Antonio.

The Geoscience Research Institute and the Faith and Science Council co-sponsored a booth at the General Conference Session in San Antonio in July. The booth featured a life-size replica of a beluga whale skeleton, along with a display of fossils, a video display, and a free souvenir. For more details, visit our website at <http://grisda.org/home/events/gri-at-the-gc/>

Faith, Science & Southern Africa

Drs. Ben Clausen and Jim Gibson visited southern Africa in September, presenting lectures in Botswana, Zimbabwe and Zambia. The trip began in Gabarone, Botswana, with lectures in a local church. The next stop was



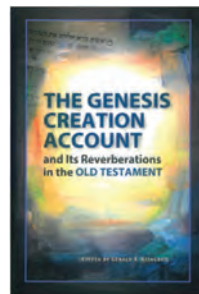
Dr. Clausen explains the meaning of features in the granites near Matobo National Park.

Solusi University in Zimbabwe, where a series of lectures was presented. The group visited the Matobo National Park, a UNESCO heritage site to examine the granites and their famous sculpturing.

From Solusi, Clausen and Gibson traveled to Rusangu University in Zambia, where they presented another seminar on creation and science, along with a field trip to the Chirundu Fossil Forest, a UNESCO World Heritage site with hundreds of fossil conifers buried in Jurassic sediments of the Karoo Group.

NEW EDUCATIONAL MATERIALS

Books On Biblical Creation



Two new books have been published on creation in the Old Testament. The first is a scholarly book, entitled *The Genesis Creation Account, And Its Reverberations in the Old Testament*. A more popular level version of the book is also available, entitled *He Spoke And It Was*. The authors and chapter titles are the same in both versions. These books, produced under the direction of the Faith and Science Council, are timely, well written and highly recommended.

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Design in Sea Creatures

Living Waters is a documentary about the amazing design seen in marine vertebrates. Four examples were chosen – whale, sea turtle, salmon and porpoise. Spectacular photography and animations bring the design to the viewer’s attention and clearly show that intelligent design is the best explanation for these beautiful creatures of the sea. Together with previously released titles *Metamorphosis* and *Flight*, the three films comprise “The Design of Life Collection” from Illustra Media.

GRI BLOG

Recent topics on the GRI blog include:

“Patterns in the Fossil Record, parts 1 and 2” discuss the major patterns in the fossil record and how they may relate to models of origins.

“Conserving Island Earth” appeals to us all to value and care for the world that was made for our habitation.

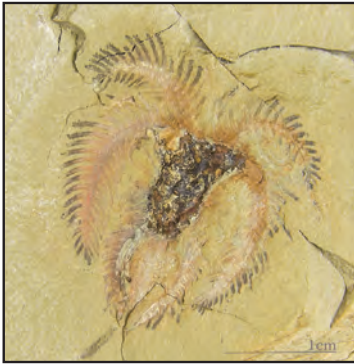
“Is Homo naledi your ‘relative,’ ‘ancestor,’ or ‘part of the human family tree?’” addresses the issues raised by the recent report of another hominid fossil from Africa.

GRI ON FACEBOOK

Please check our Facebook page at <https://www.facebook.com/Geoscienceresearchinstitute/> for notes of interest.

SCIENCE NEWS

A Moroccan Lagerstätten



Furca mauritanica, from the Fezouata fossil fauna. Photo by Peter Van Roy. CCby3.0

Van Roy P, Briggs DEG, Gaines RR. 2015. The Fezouata fossils of Morocco; an extraordinary record of marine life in the Early Ordovician. *Journal of the Geological Society* 172:541-549. DOI:10.1144/jgs2015-017.

Summary. An assemblage of exceptionally well-preserved fossils from Lower Ordovician sediments in Morocco is described here. Outcrops of the Upper and Lower Fezouata Formations occur over a large area of Morocco's Anti-Atlas Mountains. Fossils are preserved as impressions on mudstone, or in concretions showing evidence of mineralization in association with volcanic ash.

The excellent state of preservation has provided new morphological in-



Reconstruction of *Aegioocassis benmoulai*, an anomalocarid by S.I. Cepleanu. CC-SA4.0.

formation, such as showing that the fossil *Furca*, previously known from incomplete parts, belongs to an extinct group known as marrellomorphs, and that an extinct fossil group known as machaeridians are actually polychaete annelids.

The Fezouata fauna also extends the stratigraphic ranges of several fossil taxa. Anomalocarids have been considered typical Cambrian fossils, but are here found in the Ordovician. For other taxa, such as horseshoe crabs, the Fezouata

fauna marks the first known record of the group.

Comment. Much of what we know about fossils comes from lagerstätten - the rare occurrences of diverse, exceptionally well-preserved fossils. Such discoveries provide welcome data that help us better understand the fossil record. The fossils described here corroborate the evidence of complexity, design and catastrophe seen throughout the fossil record.

Sympatric Divergence in Fish

Kusche H, Elmer KR, Meyer A. 2015. Sympatric ecological divergence associated with a color polymorphism. *BMC Biology* 13:82. DOI: 10.1186/s12915-015-10192-7

Summary. Cichlid fish in the genus *Amphilophus* (Midas fish) are found in several lakes in Nicaragua. Several of these lakes are geologically young volcanic crater lakes, and have endemic forms of Midas fishes, which occur in two color morphs – golden and dark. Both forms are found together in some of the lakes, presumably responding to selection in parallel ways. Ten pairs of fishes were chosen for the study, each pair consisting of a golden individual and a dark individual.

The color morphs tend to differ ecologically. Gold-colored morphs had stronger jaws and deeper bodies, and prefer more benthic habitats. Studies of their mating behavior showed that both morphs prefer mates of their own type. Thus color acts as a potential isolating factor because it is associated with both ecological and morphological traits in these fish. Speciation among these fish has not been observed, but it appears that speciation could easily occur under the circumstances described.



The golden form of *Amphilophus citrenellus* by George Chernilevsky. Public Domain.

Comment. The parallel occurrence of both dark and golden-colored forms in several Nicaraguan lakes suggests that certain suites of traits may be favored naturally over others. Such examples of parallelism cannot be tested in fossils, potentially misleading attempts to use morphological traits to infer evolutionary relationships among fossils.

The Orphan Octopus



California Two-spot Octopus, *Octopus bimaculoides*. Photo: Jerry Kirkhart CCby2.0

Albertin CB, Simakov O, Mitros T, Want ZY, Pungor JR, Edsinger-Gonzales E, Brenner S, Ragsdale CW, Rokhsar DS. 2015. The octopus genome and the evolution of cephalopod neural and morphological novelties. *Nature* (13 August) 524:220-224. DOI:10.1038/nature14668.

Summary. Sequencing the octopus genome revealed several unique features. Certain gene families, such as the protocadherins, interleukin-17-like genes, and C2H2 zinc-finger transcription factors, were much larger than in other species compared, including both invertebrates and vertebrates. The arrangement of genes along the chromosomes differed from that in other species. For example, the protocadherins of the octopus were arranged differently from those of the squid, which is thought to be related. Hundreds of genes unique to the octopus were discovered. The unique morphological features of cephalopods appear to be paralleled by unique genetic features.

Comment. The unique features of the octopus genome revealed in this study may readily be explained as due to the intentional design of these unique creatures. Orphan genes – those not found in other taxa – suggest an “orphan taxon” – one not descended from another taxon.