

Swimming in Stone: the amazing Gogo fossils of the Kimberley

Reviewed by Daniel Snitting

By John Long

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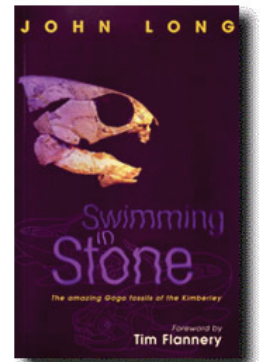
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Since its discovery in 1940 by the German paleontologist Curt Teichert, the fossilized Devonian coral reef near Gogo Field Station in Western Australia has been providing researchers with fossil specimens of a quality that almost defies belief. If like me, you are into fossil fish, there is no way of exaggerating the importance of Gogo. Even if you don't share my particular interest in paleoichthyology, the sheer mind-boggling stupefying beauty of a more than 350 million year old *Gogonasmus* or *Griphognathus* specimen, with bones as pristine as those of a fish captured last week, will surely provoke at least some kind of sense of "wow" or even "what the... how is that possible??"

Over the last 60 or so years, a number of people have worked at Gogo, situated far far away from the nearest... well, anything. It is part of Kimberley, an area three times the size of England, with one living human inhabitant per seventeen square kilometers. The remoteness of the place does give a definite sense of "in the outback, no one can hear you scream." One of the most tenacious Gogo workers of all time is John Long, currently residing at the Museum Victoria in Melbourne, and the author of a new book describing Gogo, both the place itself and the expeditions who have ventured there in search of fossils. Entitled *Swimming in Stone: The Amazing Gogo Fossils of the Kimberley*, the book provides an introduction to the science of paleoichthyology, in the form of an imagined tour of a living, active Devonian reef, and ties this to a historical account

of all the man- and woman-hours spent either at the fossil reef, looking for fossils, or on the way there in vehicles of varying quality.

The first part of the book, which is the one that I found myself devouring with the highest interest, describes the history of the site and the people associated with it. From the early workers, such as Harry Toombs, George Kendrick, and the afore-mentioned Teichert, to the people involved in the latest expedition in 2005, the reader is treated to a wonderful set of characters. Also included in this section of the book is a description of some of the other goings-on in the world of paleoichthyology during the 20th century, most notably the discovery of the technique of acid etching fossils, something that has turned out to be absolutely crucial for the study of the fish found at Gogo. Whatever lies behind the exquisite preservation of the Gogo specimens, which incidentally is not elaborated upon in *Swimming in Stone*, one necessary component in being able to use any fossil specimen is some sort of preparation, for instance to rid the bones of obscuring matrix. With the Gogo specimens, the preferred technique is putting the fossil-bearing nodule in acid, rinsing it in water, applying glue to the bones protruding from their



stony home, dunking the nodule back in the acid, rinsing it again, et cetera. With each acid treatment, more and more of the surrounding matrix will melt away, revealing the fossil inside.

Also included in the first section of the book is John's account of the expeditions where he himself went to Gogo in search of fossils. These stories are my favorite part of the book, and it is actually quite heart-warming to read the writings of someone when it is this clear that they are describing something that means so much to them, both in a personal and professional way. Apart from this, John's tales of the trail are very funny. This is mainly because the number of things that can go wrong when you are driving more or less reliable vehicles to extremely remote places, with a local wildlife including dingoes, venomous snakes, and desperate fugitives from the law, is staggering.

The second part of the book is a crash course in the scientific significance of the Gogo fish fossils. This forms a pretty good introduction to what the study of fossil fishes is all about, even if it is impossible to provide a comprehensive account in such a limited number of pages. The one thing that left me a bit puzzled was the chapter on the preservation of the site from a World Heritage point of view. Here, John argues that Gogo should be included

as a World Heritage site (something I agree with) because both Miguasha (a Devonian fossil site in Canada) and Canowindra (another fish site in Australia) are already on the UNESCO list. As far as I know, Canowindra is in fact not listed as a World Heritage site, although I think an application for this has been submitted. I would also hesitate to compare the scientific value of different sites the way John does, when he argues that Miguasha was selected before Gogo purely for political reasons.

Invariably, when picking up a new book, most people end up looking at the section in the middle where all the color photographs are lumped together (or maybe I'm just projecting my own behavior onto everyone else). With *Swimming in Stone*, this approach is particularly useful. The person who is not lured into reading the book after looking at the incredibly beautiful specimens depicted in full color is... well, not sufficiently interested in fossil fish, I suppose?

To sum up, *Swimming in Stone* is a very enjoyable book. If you are at all interested in fossil fish, or vertebrate evolution in general, there is no excuse not to read it. I would also like to add that I think the book would be well suited to a broader audience. The more people exposed to the joys of Devonian fish, the better...

It has been described for the layman by the driving force behind collecting expeditions at the Gogo Reef for the last two decades, John Long, of Museum Victoria in Melbourne, in *Swimming in Stone: the Amazing Gogo Fossils of the Kimberley* (Fremantle: Fremantle Arts Centre) 2007. Sedimentology[edit].[^] The fossils of the Gogo Formation display three-dimensional soft-tissue preservation of tissues as fragile as nerves and embryos with umbilical cords.[4] Over fifty species of fish have been described from the formation, and arthropods (including phyllocarids[5] and eurypterids[6]) are similarly well-preserved.[4] Nautiloids, goniatites and tentaculids are also known from the formation, but their soft.[^] Among others, these fossils have been recovered from the Gogo Formation The first major collection of Gogo fossils was made in 1963 by an expedition led by H. A. Toombs of the Natural History Museum, London in conjunction with the Western Australian Museum (Rolfe 1966;Long 2006). The collection yielded mainly phyllocarids and some fishes. ...[^] These stones do not occur within the nodules or in other sediments in or around the Gogo Formation, and we believe that these pebbles were used as gastroliths (stomach stones) to process foodstuffs (Long 2006). The diet of placoderms from Gogo is not known; however, Davidson & Trewin (2005) report small osteichthyans and invertebrates in association with gastroliths in the stomachs of arthrodirens from Scotland.