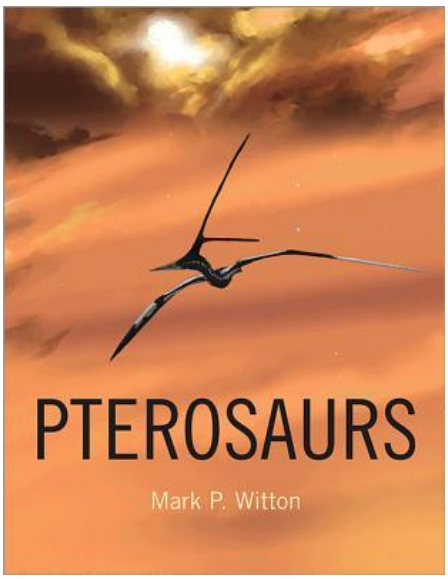

Pterosaurs: Natural History, Evolution, Anatomy

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For 150 million years, the skies didn't belong to birds--they belonged to the pterosaurs. These flying reptiles, which include the pterodactyls, shared the world with the nonavian dinosaurs until their extinction 65 million years ago. Some pterosaurs, such as the giant azhdarchids, were the largest flying animals of all time, with wingspans exceeding thirty feet and standing heights comparable to modern giraffes. This richly illustrated book takes an unprecedented look at these astonishing creatures, presenting the latest findings on their anatomy, ecology, and extinction.

Pterosaurs features some 200 stunning illustrations, including original paintings by Mark Witton and photos of rarely seen fossils. After decades of mystery, paleontologists have finally begun to understand how pterosaurs are related to other reptiles, how they functioned as living animals, and, despite dwarfing all other flying animals, how they managed to become airborne. Here you can explore the fossil evidence of pterosaur behavior and ecology, learn about the skeletal and soft-tissue anatomy of pterosaurs, and consider the newest theories about their cryptic origins. This one-of-a-kind book covers the discovery history, paleobiogeography, anatomy, and behaviors of more than 130 species of pterosaur, and also discusses their demise at the end of the Mesozoic.

The most comprehensive book on pterosaurs ever published

Features some 200 illustrations, including original paintings by the author

Covers every known species and major group of pterosaurs

Describes pterosaur anatomy, ecology, behaviors, diversity, and more

Encourages further study with 500 references to primary pterosaur literature

Pterosaurs: Natural History, Evolution, Anatomy Details

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From Reader Review Pterosaurs: Natural History, Evolution, Anatomy for online ebook

Wastrel says

No, I'm not a pterosaurologist. Not even a palaeontology fan. Haven't read a book about dinosaurs (not that we're meant to use that word for pterosaurs, but you know what I mean) for probably 15 years, or more. Picked this one up on a whim, on realising how little I knew about the (bizarre) subject, and seeing all the great reviews for this book.

Supposedly, this is both an up-to-date general overview of what people know about pterosaurs, from a researcher at the cutting edge of the (very small) field, and an introductory book with pretty illustrations that a layman can understand. I can't really speak for the first, but it's certainly (almost entirely) the second.

The writing is as clear as it can be, particularly early on (although he does forget to define a few things as the book progresses) and with some welcome humour - he combines a conversational manner of speech with technical subject matter and terminology. The layout and appearance are very attractive, and the hand-drawn illustrations, while maybe not fine art, are both appealing (beautiful and often endearing) and very effective at conveying the nature of the things described: Witton's emphasis here is very much on pterosaurs as living animals, not merely as a puzzle for scientists, and there are far more life-reconstructions here than photographs of fossils (though there are quite a few of them as well).

Sort of feels half like a good textbook, half like a coffee-table book.

One slight problem is with the structure, can feel a bit repetitive as he describes each family of pterosaurs in turn; maybe a book to be read one chapter at a time rather than in one burst.

If you think you might want to learn about pterosaurs (hint: the largest were the size of giraffes, and look like sort of a combination of a bird, a bat, a giraffe, concorde, maybe a gorilla, and perhaps with an element of snake in there somewhere, or an industrial crane, and would give you nightmares if they weren't drawn in such a charming way), but are starting from the perspective of knowing nothing about pterosaurs whatsoever (though I guess a rough awareness of some biological stuff, like what a genus is, might be helpful) this is a good book to pick up. If nothing else, you can look at the pretty pictures.

Last Ranger says

Gargoyles and Harpies.

There once was a time that dragons flew through the air. Not the dragons of myth and legend but real flying reptiles that prospered and diversified during the Age of Dinosaurs. They didn't breathe fire but they were magnificent, marvelous creatures non the less. In Pterosaurs, Author/Paleontologist Mark P Witton has written what is probably one of the most comprehensive treatment of these unique animals to date. Although this well written book is accessible to the lay reader, I think it was meant primarily for the professional or student paleontologist. In depth and up to date (as of 2013), Pterosaurs delves into the anatomy, evolution and behavior of these "Dragons of the Air". Parts of the book are quite technical, the chapters on skeletons

and soft tissue are rather daunting but Witton does a good job, giving the reader a kind of "Anatomy 101". Chapters 10 through 25 spotlight the various kinds of pterosaurs and the author pulls no punches when it comes to naming body parts and the scientific names of each species, so be prepared. Over the years since their discovery in the mid 1700s professional interest in pterosaurs has waxed and wained but some new discoveries in the early 20th Century has brought them back into the lime light. Flight is the pterosaurs signature behavior, but how did it come about? They must have had a non flying ancestor that somehow took to the air. Although there are no fossils (so far) of a protopterosaur (HyPtA) the search is on and specialist all over the world are digging in Triassic formations for their elusive remains. Were pterosaurs good or poor flyers? Over the years opinions have fluctuated back and forth but at this point in time the consensus seems to be that they were active, competent flyers. On every aspect of pterosaur study there seems to be a vast difference of opinion among the specialists on; relationships, anatomy, flight ability, fossil analysis, etc, etc, etc.. Each one has his or her own opinion and can make a convincing argument to support their view. Witton is very good about telling all sides of the story as well as his own. Everything we know about pterosaurs comes from fossils of one kind or another. Bones and teeth, all the hard parts, are readily fossilized and have much to tell us. The soft parts; skin, organs, fur, feathers and, in some cases, the remains of the animals last meal can also be fossilized but are very rare. Then there are the so called "trace fossils"; track ways, foraging impressions and the like. When properly analyzed these can reveal many secrets of animal behavior. Witton covers all aspects of fossil interpretation and what they have to say about relationships, flight, reproduction and diet. Interpretation of fossils can lead to speculation on various aspects of the organisms life style but Witton urges caution on that front. For example: is a specimen male or female? Are two slightly different pterosaurs different species or just variation of the form-type? Do head crests indicate male-female difference or growth patterns or different species? This book covers a lot of ground but, still, it doesn't answer all the questions, no book could. In addition to the text, the book has many fine illustrations: maps, graphs, charts, skeletal reconstructions and technical restorations to help you visualize the animals. Additionally, there are some beautiful water-color plates done by the author himself and some exceptional photographs of various fossils under both normal lighting and UV. In spite of some very difficult parts this was a good read and I highly recommend Pterosaurs to anyone with a strong background in science reading. I had no technical or formatting problems with this Kindle edition.

Last Ranger

Steven Heywood says

A very accessible and readable overview of this group of prehistoric reptiles.

Let down a bit by the production of some of the charts: if you're told to look for a blue line, for instance, it helps if the line is actually coloured blue. There are a couple, particularly the aspect ratio/wing loading chart, which the author could have done with reworking from scratch to make it useful for the lay reader.

Laura Cooper says

Good comprehensive, up to date survey of pterosaurs, scholarly enough, with lots of references to articles to look up if you need more detail, but also a good introduction to the field. The anurognathidians were a revelation (an adoreable one at that). The bad jokes are just the right side of endearing too. The art work isn't too great, but it's not Witton's day job, so it is excusable.

Kattato Garu says

Excellent modern overview of the extraordinary pterosaur radiations. Beautifully illustrated. Well done.

Bill Leach says

Amazing book with great illustrations. Comparative anatomy and flight modeling have revealed much about the pterosaurs. Much information on soft tissues of pterosaurs has become available in recent years from the examination of fossils under UV light.

Best guess is that pterosaurs were a parallel development with dinosaurs, but no "proto" fossils have yet been found.

Many species of Pterosaur have pneumatized bones were they have become larger in size, but with thinner walls. These types of bones are also found in birds and sauropod dinosaurs.

It appears that pterosaurs had internal air sacs and had a respiratory system like that of birds where air passes over the lungs in one direction only. This design yields high efficiency, needed for flight.

As the flight muscles are anchored on the pelvis, pterosaurs probably had thin, non-muscular tails. On the other hand, the neck appears to have been well muscled and relatively thick.

It appears that pterosaurs were fairly densely feathered with small pycnofibers, including around the head but little on the wings. As they differ from the feathers of theropods, they appear to have evolved independently. The pycnofibers seem to have evolved to provide insulation and suggest that they were warm blooded.

The wings of pterosaurs are complex (more so than bats) with a layer of fibers to strengthen and stiffen the wings.

Studies of flight mechanics based upon the slenderness of the wings and body mass ratios show that many pterosaurs were likely gull-like soarers, although subsequent research suggest more active flight styles: aerial predators and short-burst fliers. It appears that most launched from their front limbs, as do many bats especially the vampires. Trackways show that they landed on both feet, as opposed to landing at a run.

Trackways have also given detailed information on their walking postures. They walked upright with the legs directly below the body, giving a narrow track. The fourth digit of the front ankle, being part of the wing, was folded back against the body while the other three toes touched the ground. When running, they leaned forward and splayed the front legs. Trackways of swimming pterosaurs show they held their front legs high, sometimes touching bottom with their rear legs.

Apparently, pterosaurs laid soft-shelled eggs suggesting wet area nests as in crocodilians. The limbs are well formed at birth indicating they could fly soon after. Bone growth rings indicate that they took 5 - 7 years to mature.

It seems now that sexual dimorphism was present in the pterosaurs. Studies of Pteranodon show that a third of the specimens had large crests, narrow pelvises and were 50% larger - probably the males. UV examination of a Pterorhynchus shows color banding of the crest.

The book examines each group of pterosaurs in more detail. Examination of the anatomy has revealed much about the probable life-styles.

Dimorphodontidae - The early Dimorphodon with well developed legs was probably a poor flier that spent much time moving around the forest under-story.

Anurognathidae - Anurognathus was likely a small insect-hawking animal. Broad-headed and hairy.

Campylognathodids - Campylognathoides had well developed teeth, showing signs of having chewed it's food, and likely fed on a broad diet.

Rhamphorhynchidae - Rhamphorynchus was a large animal with wingspans greater than 2 m. which fed on fish.

Wukongopteridae - Darwinopterus shows characteristics midway between early pterosaurs and later pterodactyls. It appears to have flitted around the forests eating invertebrates.

Istiodactylidae - Istiodactylus had notable interlocking teeth that would be effective for shearing, and would have been well adapted for scavenging carcasses.

Ornithocheiridae - Some Ornithocheirus had a 4 m. wingspan and was likely an oceanic dip-feeder.

Boreopteridae - Little studied, Boreopterus had small feet suggesting that it spent much time in aquatic environments.

Pterandontia - Noted for it's large crests, Pteranadon was likely an oceanic soarer. Nyctosaurus was more so, probably possessing the highest glide ratio of any pterosaur - ill suited to walking, it probably spent most of it's time in the air.

Ctenochasmatoidea - With long necks, large feet and unusual dentition, animals of this group were likely wading birds. Pterodaustro appears to have been a filter feeder.

Dsungaripteroidea - Chunky skulls and robust teeth suggest a powerful bite - Dsungaripterus was likely a wading bird that fed on shellfish.

Lonchodectidae - Little studied with fragmentary fossils.

Tapejaridae - Tupandactylus had the largest head crest of all the pterosaurs. This group appears to have been seed, fruit and vegetation eaters, perhaps important for seed dispersal.

Chaoyangopteridae - Medium sized pterosaurs with large skulls and straight bills, these were likely omnivores.

Thalassodromidae - With a large skull and an impressive crest, Thalassodromeus may have been a raptor-like predator.

Azhdarchidae - While the bodies were not large, these pterosaurs had very long necks and wings. They may have been ground foragers similar to present day storks and hornbills.

The pterosaurs first appeared 225 mya in the Triassic, diversified greatly in the Cretaceous and disappeared by the KT event 65 mya.

Traummachine says

3.5 stars:

I love me some prehistoric beasties, but it's hard to find a book that finds a good middle ground between books geared toward children and books geared toward scientists. I think this book largely succeeded, though there were definitely sections where Witton strayed too far in the direction of *Scientific American* for me. He did a really good job of explaining why a particular bone shape indicated X, and what this theory is based on and why it opposes that theory. I felt like I followed his narrative and understood, but there were limits. Most chapters included a section specifically about the bones, and it got to be a bit of a chore to wade through those sections chapter after chapter. I also found the nomenclature and history of bone fragment discoveries to be dizzying, but that might have been his point!

The book was only about 1 year old when I read it, and it was kind of exciting to read about discoveries and theories from only a couple years before. I definitely learned a LOT about Pterosaurs from this book, and one thing that really helped with that were the plentiful supply of illustrations and photographs. This is most definitely a coffee table book, but with plenty of text packed into its 300 pages.

Witton's passion shows through in his writing, and you can see how he tries to pull the reader in with some humor, too. His explainations were very clear, the illustrations were fun and sometimes even playful, and the historical background was great. I'd happily read another book by Witton.

Miroslav says

220 rokov pterológie v kocke: všetko o anatómii, spôsobe obživy, krá?aní po zemi, spôsobe vzletu a hniezdení vrátane rozdelenia 130 druhov pterosaurov do rodov pod?a príbuznosti. Jazyk je silno vedecký, no je to typ knihy na záujmové ?ítanie a teda netreba ju ?íta? od prvej strany po poslednú

Ann Keller says

Outstanding book! What a wonderful resource.

Jake Leech says

This is easily a five-star book, with the caveat that you have to have some interest in pterosaurs.

One of the reviews of this book described it as being part coffee-table book, part textbook. As a coffee-table book, it excels. Witton's illustrations are gorgeous and amazing (image-search "quetzalcoatlus witton" for some pretty astonishing examples), but the scientific content is very high. I'm no pterosaurologist, so I can't assess whether this would be a graduate-level review, or something that old, bearded professors would refer to, but it was plenty for me. Over half of the book is devoted to reviews of 16 different pterosaur groups; their paleontological history, anatomy, possible ecology, and refreshingly frank discussions of the current state of their taxonomy. This is obviously pretty tedious and not something you'd want to read straight through, although a chapter a day is pretty interesting. Two chapters cover anatomy in some depth. For example, in Chapter 4, Witton takes the reader's hand and walks them through the general pterosaur skeleton bone-by-bone. I mean that almost literally--for example, it turns out that the typical pterosaur has four different types of vertebrae, and Witton will tell you all about the differences, and how those vertebrae change as the animal ages.

That said, the book is written in a very accessible manner, there is plenty here for the layman and non-scientist (chapters on where pterosaurs probably came from, and how they probably lived), and, again, the pictures are very impressive. I'm not entirely sure what the target audience for this book is, but it seems like I could pull this book of the shelf when I needed to make a point in an argument with a paleontologist, OR when I needed to distract my three-year-old nephew for an hour. Even besides the up-to-date scientific review and the pretty pictures, I didn't need much convincing that the pterosaurs are just an intrinsically interesting bunch of animals in and of themselves (I mean, look at the front cover of the book! What kind of thing even is that?!)

Douglas Summers-Stay says

I've been reading a lot about pterosaurs lately. This is the most technical of the books-- he uses words like "dorsoventrally" a lot.
Mark Witton's most famous illustration is the one where a queztlcoatlus is standing quadrupedally next to a giraffe. Their necks are of similar lengths, and the tops of their heads are in roughly the same place. Of course, the pterosaur's beak reaches more than halfway to the ground. The book is filled with his lifelike illustrations, which really adds a lot to the mostly dry text.
A few things I learned from the book: pterosaurs were quite good at running, but moved their legs like a camel or giraffe-- first the legs on the left side, then the ones on the right. (the wing folds in half and acts like a leg.) They laid soft, leathery eggs, probably buried in sand, and the hatchlings could fly not long after birth. Only male pteranodons had large head crests, and there are more female than male pteranodon fossils found. Nobody knows how pterosaurs folded up to swim.
This is the most up to date book about pterosaurs you can buy, published 2013. One reason I like reading about fossils is I enjoy seeing the steps of deductive reasoning laid out. It's like a Sherlock Holmes story.
The others I have read in the last year or two are the
Illustrated Encyclopedia of Pterosaurs
and

Pterosaurs from Deep Time
both of which were really good. As near as I can tell, those three are the only books ever written for an adult, nonexpert audience on pterosaurs. Well, unless you count Dragons of the Air from 1901.
I want to read a book about fossil sea reptiles now.

Jonathan says

That such a detailed, scientifically solid book (according to all the paleontology blogs I read, anyway) is so readable to someone who is not a specialist is delightful. That it's full of great art (largely Witton's) is just gravy. Thanks, Mark Witton!

I still don't know just how I'm going to tell my kid (when he's a little older) that Tiny, Shiny, and Don were probably largely quadrupedal, when they walked at all. Maybe I'll just think of it as payback for the Brontosaurus thing, about which he teases me mercilessly whenever I read one of my childhood dinosaur books to him.

Sullyaugustine says

3 stars out of 5. Being a very long time dinosaur nerd, I got this book from the library figuring it would be interesting to explore, and it might answer a question that has bedeviled me occasionally for a long time. It was indeed interesting, and even well written. But it is well written in the same sense that a star turn PhD thesis in comparative anatomy of species that are mostly known from fossils squashed flat as pancakes is well written. It's a wolf of a too technical for non-specialists technical tome inside the sheep's clothing of a coffee table sized volume with an arty cover. I spent about fifteen hours skimming the parts that seemed comprehensible to me. I don't recommend you do the same unless you have a long history of being annoyed by the nagging question of why pterosaurs weighing something like 500 pounds could fly but the largest bird, an extinct one, which was able to get off the ground weighed in at only about 170 pounds. I still don't know the answer to that question, by the way. But I'm only 69 years old, so I still have some time to get to the bottom of it.

Mills College Library says

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