

The past is a vast and mysterious land that begins at the big bang and ends in the present, expanding with each passing moment.

It is the home of everything that came before, the key to understanding our present.

Here we find the most amazing creatures to ever roam our planet, hundreds of millions of species so diverse that our imagination cannot do them justice.

Unfortunately the past carefully guards its secrets.

While there are a lot of things about the past we know, there are way more things we know we don't know.

And worse, there are probably even more things we don't even know that we don't know about.

Think of the wonder of life: We now recognize about 1.5 million eukaryotic species but there may be as many as 10 million alive today.

And although we are adding some 15,000 new species to our collective knowledge each year, the vast majority of life on earth is still undiscovered.

This is just what is around today.

An estimated four billion species emerged on our planet in past eons.

But at least 99% of them died out, way before humans spoke the first words.

The vast majority of all the different species that ever existed are so utterly deleted that they have become part of the "unknown unknown" part of the past, lost to us forever.

Or are they?

Could we use science and imagination to glimpse a shadow of the unreachable past?

Let us start with what we DO know.

To learn about creatures of the past we need

fossils, any sort of remains preserved from

past geological ages – bones or shells,
impressions or imprints, things preserved

in amber.

The totality of all fossils on earth is called
the fossil record and it is the most important

window on the past we'll ever have.

For a dead animal to fossilize a number of
things must go just right: The right environment,
timing and conditions.

And then the fossil needs to survive for millions
or hundreds of millions of years and then

get back to the surface – and then be discovered
before natural processes dissolve it.

So it is kind of a miracle that we have what
we have and know what we know.

Take the dinosaurs since they were one of
the largest and most successful groups of

animals for some 165 million years – and
are also a lot of fun to animate.

What were they really like and what are we
missing?

In the last 200 years we've found tens of
thousands of fossils from over 1000 dinosaur

species..

Lately we've entered a golden era of discovery
and about 50 new dinosaur species are discovered

each year, expanding what we know and what
we know that we don't know about them, which

is amazing.

But it also makes us aware of all the things
lost to the past forever.

Imagine if we took all the animals that lived
in the last 50 million years and randomly

chose 10000 individuals from 1000 species
to fossilize.

Think about all the things that would be missed,
or that seem too weird to be true.

Like the Giraffe, a yellow animal with brown

patterns that looks like a horse and an antelope

had a baby, with a long neck and two tiny hairy horns.

How many "dinosaur giraffes" were there?

Animals so weird and selected for ecological niches so specific that evolution molded their

bodies very absurdly - today they might seem made up to us.

We know a lot of species are lost forever just because of the environment they lived

in.

For example, lush jungles basically prevent fossilization as the chances that an animal

will be buried here is minimal.

Countless scavengers of all sizes break down freshly deceased animals extremely quickly

and the soil is often so acidic that bones are dissolved.

And so fossils of dinosaurs from jungles are practically nonexistent.

Today half of all known species live in the few remaining rainforests that only cover

2% of earth's landmass.

Millions of years ago when dinosaurs roamed earth, jungles covered much more of the planet.

So besides some insects and other small animals trapped in amber, there should be millions

of species that emerged and vanished, without leaving any trace.

Trapped deep inside the unknown, unknown.

But just in general biology trips us up.

Look at your body.

It's mainly squishy, gooey, soft stuff.

Which does not preserve well.

What remains the longest are the crystalized parts of your bones and so most dinosaur fossils

are bones or teeth – usually fragments, not entire skeletons.

This means that almost all boneless or shell-less animals are practically wiped from the fossil

record.

If we take a look at the stunning diversity of weird animals like worms, jellyfish and

slugs alive today we can only speculate what we are missing.

Although thankfully many mostly soft and gooey species also left us an incredible diversity

of shells that tell us an amazing amount about our past, so at least we have that.

Still when we think about all the boneless species that may have existed in the last

half billion years even our best attempt at imagining them falls short.

But it's not like reimagining something based on its bones is straightforward and so the

way we envisage what dinosaurs actually looked like has changed a lot in the last few years.

In the past many illustrations had a bony, minimalistic look, with a toothy grin to signify

fierceness and danger.

But if we draw today's animals in a similar way, based on their skeletons, just for the

fun of it, we get the most bizarre creatures.

Elephants, swans and baboons that look like monsters right out of nightmares.

So similar to animals today, we should imagine dinosaurs with much more soft tissue, fat

bellies or chests, weird soft parts like skin flaps, lips and gums and just more pronounced

features that would make them seem like much more pleasant fellows.

Some soft features actually leave distinctive traces on bones that we can look for in the

skeletons of extinct animals, which is where today's animals with similar features are

really helpful.

It's a similar story with color.

Because we know what the feathers of living birds look like, modern technology combined

with the exceedingly rare fossils with preserved remains of fuzzy feathers give us a glimpse

of the real colors of extinct dinosaurs.

We know that tiny *Sinosauropteryx* had a striped tail and its tiny dino buddy *Anchiornis huxleyi*

was white and black with gorgeous red feathers around its head.

Still, for the vast majority of really any ancient extinct species we have no real clue

what color they were.

But we know what modern dinosaurs, birds, look like and here we find the most amazing

variety.

So some dinosaurs will have tried to blend into the background, while others might have

fielded aggressive color schemes to attract mates or to appear dangerous.

Some might have had impressive decorations or colorful beaks.

Some may have been striped or patterned.

Similarly we don't know that much about dinosaur behaviour, although once again we

can draw conclusions from existing animals.

For example even apex predators like lions spend a lot of their time lying around and

cuddling and licking each other and playing.

Why would dinosaurs be so different?

When we first found the skull of *T. rex* with its mighty teeth and probably the strongest

bite of any land animal ever, we imagined a fierce and stupid beast.

But modern scanning technology has revealed that *T. rex* had a larger brain-to-body ratio

than some earlier giant meat-eaters.

And it probably had very sharp hearing, vision and sense of smell and was in all likelihood

not a stupid animal.

So maybe T.rex was a cuddly fellow that spent a lot of time playing around or impressing

potential mates when it was not hungry.

Likewise, while their horns and shields might have made ceratopsids appear to be natural

born fighters, they were probably much more than that.

Based on the behaviour of modern animals and the complex dances some have to go through

to mate, maybe their shields were amazingly colorful, maybe it danced for its mates like

many birds do today.

How intensely amazing these creatures must have been.

And what a loss it is to us that we don't get to experience them first hand.

What an even greater loss that there is so much we will never know about them and even

more tragic, all the absurd and beautiful beings that disappeared without a trace.

But such is life – time marches on without any concern for our feelings and the past

expands with every moment that passes.

Most wild animals alive today will in all likelihood not leave fossils behind and also

just disappear forever.

We can do something about that though – instead of accelerating the extinction we are witnessing

we could become the guardians of life and preserve it where we find it.

If possible in the wild, if not then in museums, movies and in our minds.

Because as amazing as our imagination is, and as fascinating to think about the animals

that are part of the unknown unknown – it is even better to witness them in the present.

The land that we actually inhabit, where we get to experience life as it happens.

There is one more exciting way to experience
Dinosaurs though this year: The 12,022 Human

Era Calendar: Eons Edition.

As always, we're adding 10,000 years to
the regular calendar to represent the Human

Era and include all cultures around the world.

But this year we're expanding the scope
beyond humanity to showcase forgotten animals

and plants from all across the Phanerozoic
Eon, like giant armoured fish, scythe lizards

or giant sloths, on 12 elaborate pages.

Witness how multicellular life has persisted
for over half a billion years, surviving asteroid

impacts, volcanoes and frozen oceans.

And of course, pandemics.

In the end life, uh, finds a way – and we
want to celebrate that!

You can get the very shiny, high-quality,
limited Edition now until we sell out and

then never again.

To support what we do on this channel, to
fill the void in your soul or just to have

something beautiful to look at.

As every year, we also have bundles and special
calendar deals with some of your favorite

products.

Thank you so much to all of the thousands
of birbs who get the calendar every year,

you enable us to create videos and to publish
them for free, for everyone.

We wish you a happy year 12,022.