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Sea Monsters: A Prehistoric Adventure

By Mose Richards

[Woman] The National Science Foundation,
where discoveries begin.

[Man Narrating]

Beneath the earth we know...

lie other worlds...

hidden from sight...

lost in time.

But sometimes we can

glimpse a lost world...

through remnants of the past.

We definitely got a skull.

Lower right. What do you think?

It's hard to say.

[Narrator] This story begins

with a discovery of unidentified bones.

Depositional environment?

A team of paleontologists will try

to figure out whose bones they are...

and what world they came from.

So we got a time frame.

That's a start.

[Narrator]

They were discovered in Kansas-

mostly farmland today.

But once, Kansas lay

beneath a vast sea.

It was 82 million years ago...

during the age of the dinosaurs.

[Roaring]

But there was another world

of giants on Earth...

a submerged world...

where enormous reptiles ruled seas

filled with incredible creatures.

These...

were the most dangerous seas

of all time.

No living thing was safe.

The great marine reptiles

disappeared long ago...

and time has buried their world.

But any of us might still

encounter a sea monster.

- [Dog Whining]

- Buddy!

[Whining Continues]

[Whining Continues]

[Narrator] As if from nowhere,
the distant past returns.

The scientists hope to find not just
the fossil of an ancient creature...

but a story recorded in its bones.

Grab your tools.

Rain washed some of the chalk away
and exposed it.

This is great.

Okay-

[Narrator]

They recognize it as something special...

a rare Dolichorhynchops-

a dolly, for short.

It was a marine reptile
of the late Cretaceous...

a little bigger than a dolphin...

and a fast swimmer.

To unravel any story
the bones may tell...

the investigators will draw on
everything they know about marine reptiles.

Yeah, it looks like Hesperornis.

[Narrator] Their fossils have been found
around the world over decades.

It could have been over 30 feet long.

The matrix materials we've got in the lab
seem to indicate-

[Narrator] These finds will help the team
piece together the story of the dolly...

and picture the moment in time
when it swam in the sea.

In many ways, the dolly's world
was far different from ours.

The climate was warmer.

Sea levels were higher,
and more of Earth was submerged.

This dolly would have lived
in a vast inland sea...

that cut North America in two.

Marine reptiles were also found

in the waters around Europe...
which was a scattering of islands...
and throughout the world's oceans.
In time they died out...
and sea levels retreated...
exposing vast areas of seabed.
Fossils from the ancient oceans
turned up on every continent.
A discovery in the Australian outback...
offers clues to how the dolly's life
may have begun.
It seems to be laying out in
a pretty consistent pattern.
are the bones of juveniles.
[Narrator]
So many small bones in one area...
suggests that marine reptiles
gathered in protected shallows to give birth.
And in North America,
that's how the story of this dolly...
begins to unfold.
Imagine that one of
the creatures in the shallows...
is a pregnant Dolichorhynchops.
She gives birth to a male...
and colored like his mother...
and a female...
darker in color
with light patches below her eyes.
And it's her life we begin to follow.
She and her brother
are air breathers.
Instinct tells them what they have to do
in their first minute alive.
From the beginning...
the little female and her brother practice
skills they'll need one day...
when they'll have to leave the safety of the shallows
for the dangerous seas beyond.
If she survives the perils to come...
she'll return here one day
and have young of her own.
Already she finds
competition for food.

There's the Hesperornis...
a bird that can't fly
and has a beak full of sharp teeth.
And the Styxosaurus...
a distant cousin of the dolly's...
with a supersized neck.
An adult can reach 35 feet in length...
more than half of it neck.
Its shape makes it
a slower swimmer...
but it's great for catching fish.
The little dolly soon comes across
creatures that move...
by pumping jets of water
from their shells.
They're called ammonites...
and they thrive in the ancient sea.
They have rock-hard armor
and perhaps another defense.
Swim too close,
like the little female...
and get a face full of ink.
But that doesn't stop
a young Platecarpus...
when it wants a snack.
Ammonites were once abundant.
Their fossils have been uncovered often...
even by a road crew in Texas.
Ammonites.
A lot of'em.
Ammonites.
A lot of'em.
[Narrator]
There were many kinds of ammonites...
and we know
when most of them lived...
so their fossils are like markers in time.
Identify an ammonite and you can date
other less common fossils nearby.
That helps place dollies
in the long history of marine reptiles.
It began some 250 million years ago...
in the Triassic period...
with land reptiles

that moved into the sea.
They developed webbed feet,
then flippers.
Some had elaborate armor.
Into the Jurassic,
they continued to evolve.
To see at great depths...
some had eyes
the size of dinner plates-
top predators
who grew immense and powerful...
reaching their peak
in the late Cretaceous...
near the end of the dinosaur age...
the very time
when the Dolichorhynchops lived.
Months have passed.
The female and her brother
are now juveniles...
but they're still
in the safety of the shallows...
and unaware of the huge predators
in the sea beyond.
For now, they are mastering the art
of catching their favorite prey-
herring-like fish called Enchodus.
Then one day, everything
changes for the dollies.
Perhaps it's a change of seasons...
that causes the Enchodus
to head out to sea on a migration.
The dollies must follow
their main source of food.
And that means the young female
and her brother...
must now set out
on the journey of their lives...
trailing their mother
from the shallows...
out into the Western Interior Sea.
It's about the size
of the Mediterranean...
and only a few hundred feet deep...
but somewhere ahead

are enormous predators.
We know because...
where those predators once swam...
the layered earth holds their remains...
as if a vast graveyard.
Exposed to wind and rain...
it gradually reveals what's within.
A remarkable discovery was made
by Charles Sternberg and his sons...
pioneering fossil collectors
in the American Midwest.
I covered it so nobody else
would notice and disturb it.
Ah. Yeah.
Skull looks like some kind of tylosaur.
Big one.
Levi, be sure to look over there.
[Narrator]
It was a creature like this...
the dolliers might encounter
in deeper water...
waters filled with dangers.
The Tusoteuthis was a massive hunter...
like the giant squid of today...
up to 30 feet long
and abundant in the inland sea.
It was too big to be attacked
by the Platecarpus...
who settles for smaller prey.
Platecarpus itself was fierce...
but not in the same league
as its larger relative...
the creature the Sternbergs had found.
Few ocean predators ever would compare
with the beast they were uncovering.
Think I've got some tail vertebrae
over here.
Could be lower limb bones.
Part of a paddle.
Skull here.
Paddle there.
Tail vertebra over there.
This fella could be giant-sized.
[Narrator]

It was a giant with no enemy...
a great reptile called Tylosaurus...
one of the largest and most ferocious
creatures of any age.
A fossil of a closely related beast
tells us more.
[Speaking Hebrew]
Its eyes were as big as grapefruits.
Cone-shaped teeth filled its jaws...
and the roof of its mouth
perfect for seizing prey.
The tylosaurs were out there...
but there were other predators
more easily spotted.
As fish go, Xiphactinus was gigantic...
up to 17 feet long.
More than twice the size
of the little female dolly...
it was a hunter
that could kill quickly...
and this day one did.

[Radio:

We know what happened from a fossil
excavated in the badlands of Kansas...
by Charles Sternberg's son George.
Mr. Sternberg?
I called from the newspaper.
There's a lot of talk about
what you found out here.
- Glad you could come.
- Well, thank you.
- Caught a pretty big fish here.
- What is it, exactly?
This is a 13-foot Xiphactinus.
But there's more to it.
As I went through
digging out the fossil...
I noticed something beneath the ribs.
I found some vertebrae,
kept on going.
Turned out to be
an entire animal inside.
The victim was a six-foot fish

called a Gillicus-
such a mouthful that swallowing it
killed the Xiphactinus...
a prehistoric victim of gluttony.

[Water Splashing]

Weeks pass, and the dollies
are now far from any shore-
venturing into a sea
turned magical by night.
Microscopic plankton
give off an eerie glow.
Under cover of darkness,
the Enchodus rest...
not quite sleeping.
Below, there's a mass spawning
of straight-shelled ammonites.
The dollies keep their eyes
trained for predators.
And one is about
to change their lives.

[Man]

There's hundreds of sharks' teeth here.

[Narrator]

After a long day hunting fossils...
two amateur collectors
unearthed a wealth of sharks' teeth.
So many have been found
around the world...
that it's clear sharks were thriving
during the age of the sea monsters.
The Cretoxyrhina
is as big and lethal...
as the Great White of our day.
It slices its victims into bite-size chunks,
using razor-sharp teeth.

[Whirring, Clicking]

[Speaking Dutch]

[Narrator]

There is evidence from a Dutch quarry...
that ancient sharks fed
on even the largest marine reptiles...
leaving tooth marks on their bones.
The female and her brother
are being watched.

But it's their mother
who becomes the target.
[Squealing]
Their mother is gone,
but it isn't over.
A smaller shark
goes after the young female.
She's wounded...
but she survives the initial charge.
Perhaps the shark was not as lucky.
Her injury will heal...
though she'll always carry a shark's tooth
embedded in her flipper.
The two youngsters
must now continue on their own.
If the female and her brother
are going to survive...
they'll have to find food
and their way...
in this vast inland sea.
Finally, they see something familiar-
a school of Enchodus
trailed by other dollies...
and by the flightless Hesperornis.
[Squawks]
But nearly anything in the sea-
can be a meal for a tylosaur.
[Man]
This one died with a full stomach.
Yeah, it looks like a, uh' Hesperornis.
Big as a pelican.
Maybe bigger.
[Narrator]
The stomach contents of a single tylosaur...
reveal its enormous appetite.
This looks like the bone
of a three-to-five foot long teleost fish.
Got a bone here
from a small mosasaur.
Probably the size of an alligator.
And it seems like
he swallowed a shark.
Big eater, this guy.
[Narrator]

For several weeks, the travelers push on.
The female's flipper is slowly healing...
the embedded tooth
now surrounded my scar tissue.
The young female is drawn away
by a potential meal of squid.
One escapes among
a colony of crinoids-
prehistoric relatives of sea stars-
perhaps swept up from the bottom
by currents.
The female has put herself
directly in the sights of a giant.
Taking the exposed parts
of the skeleton together-
skull to tail- I make the specimen
about a 29-footer.
Yeah.
There's something in the stomach.
[Narrator]
They had found the monster's last meal...
entombed within its ribs.
Because dollies are fast...
a tylosaur's best bet
is to catch one by surprise.
[Hissing, Roaring]
The female escapes.
But her brother doesn't see
the danger coming.
The Sternbergs had discovered
a story locked in time...
of two ancient lives intersecting.
But why did the predator die
so soon after eating the dolly?
Tylosaurs were likely territorial and aggressive,
even with each other.
Perhaps an older tylosaur
suddenly appeared.
The younger tylosaur
is threatened and tiring...
slowed down by the large meal
in his stomach.
The female dolly is forgotten.
[Bones Snap]

The younger tylosaur is mortally wounded.
But his story isn't over.
His final fate was recorded in stone.
A shark's tooth lay near the fossil.
Look at this.
The female moves on with the others.
Soon the scavenging will begin.
The young dolly has seen
the deaths of her mother and brother...
but she survived.
Each year,
marine reptiles gather again...
in the birthing grounds
of the shallows.
Among them is the dolly
with the wounded flipper...
now fully grown.
She's completed her journey
and returned to the waters of her birth.
And after several seasons,
she becomes a mother.
Her young will grow
larger and stronger...
and, one day, set out on their own journey
through the inland sea.
Day by day, month by month...
life plays out.
She sees several litters
of her offspring mature...
and depart on lives of their own.
Eventually, a year comes
when the mother can't finish the migration.
One quiet day...
when old age has weakened her body...
her life comes to a gentle end.
Millions of years' worth
of days and nights and seasons pass...
as she lies undisturbed.
Sea levels rise and fall.
Around the world, continents shift...
and volcanic activity
changes the face of the Earth.
New species appear,
and old species vanish-

including the last
of the sea monsters.
Beneath the shifting land,
the remains of the great ocean reptiles...
are turned by time into rock.

[Girl]

Buddy!

- And lie hidden until exposed.

- Buddy!

This time, by a summer rain.

[Woman Chattering]

[Man]

It might be a complete specimen.

[Woman]

How are we gonna take it out?

We may have to plaster the whole thing
and take it out in a jacket.

[Woman]

Hey. Come check this out.

[Narrator] There was something unusual
about one of the rear flippers-
a shark's tooth

embedded between the bones.

After 82 million years...

the female Dolichorhynchops
has returned to tell her story.

There are countless other creatures still buried
within the layers of the Earth-
waiting for us to find them...

waiting to tell us stories
of our world when it was theirs.

[Woman Vocalizing]

Looking for clues, traces and signs

Scraping away the dirt

and dust of time #

Oh, yes, a long time

Digging out the mud that conceals

Take it away and it reveals

Hidden stories, hidden lives

Hidden stories

hidden lives #

[Man]

These are the marks and scars of time

We're digging at the mud

These are the fragments
of the long-gone days #
We're digging out of the mud #
[Vocalizing]
Opening stories of a different life #
Beneath the surface the unknown lies #
Stripping away the mark
and scars of time #
Oh, the mark and scars of time #
Scraping away what layers remain #
To touch the level that contains #
Different stories, different lives #
Different stories
different lives #
These are the marks and scars of time #
We're digging at the mud #
These are the fragments
of the long-gone days #
We're digging out of the mud #
[Vocalizing]
Opening stories of a different life #
These are the marks and scars of time #
We're digging at the mud #
These are the fragments
of the long-gone days #
We're digging out of the mud #
[Vocalizing]
Opening stories of a different life #
Of a different life ##
[Fades Out]