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Can a revolutionary new scientific technique identify the Loch Ness monster?

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There's a whole range of animals now that we're finding out are not extinct.

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How did a man survive for over two days trapped in a shipwreck at the bottom of the ocean?

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00:00:19,000 --> 00:00:22,000

The longer he survived, the closer he was to death.

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00:00:22,000 --> 00:00:30,000

And what explains a succession of gruesome discoveries washing up on the shores of British Columbia?

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00:00:30,000 --> 00:00:33,000

These feet could be coming from almost anywhere.

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The underwater realm is another dimension.

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00:00:39,000 --> 00:00:48,000

It's a physically hostile place where dreams of promise can sink into darkness.

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00:00:48,000 --> 00:00:57,000

I'm Jeremy Wade. I'm searching the world to bring you the most iconic and baffling underwater mysteries known to science.

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Shipwrecks can't just disappear, or can they?

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00:01:00,000 --> 00:01:04,000

It's a dangerous unexplored frontier that swallows evidence.

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We know more about the face of Mars than we do our deepest oceans.

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Where unknown is normal and understanding is rare.

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I've investigated monster myths all over the world.

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00:01:30,000 --> 00:01:38,000

But one, the Loch Ness monster, remains the ultimate unsolved underwater mystery.

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00:01:38,000 --> 00:01:47,000

What creature of the deep is behind the endless stream of rumors and reports, the hysteria and the headlines?

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00:01:47,000 --> 00:01:57,000

Now, new sightings and state-of-the-art science promise to finally unmask the most famous monster of them all.

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April 2019.

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Local businessman 36-year-old Rory Cameron is on his way home from a friend's house.

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00:02:11,000 --> 00:02:21,000

He's driving alongside Loch Ness as he's done countless times before, when he sees something extraordinary moving in the water.

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00:02:21,000 --> 00:02:30,000

He grabs his phone and films a huge, mysterious object, travelling at speed across the lake's surface.

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Experts are baffled. It's the 18th unexplained sighting in just 12 months.

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00:02:39,000 --> 00:02:47,000

The legend of Scotland's Loch Ness monster has gripped the imagination of people all over the world.

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00:02:47,000 --> 00:02:54,000

I mean, we've all seen the picture of the arm coming out of the water like that, that looks like the head of the Loch Ness monster.

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Since the first report nearly 1,500 years ago, there have been more than a thousand sightings.

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00:03:02,000 --> 00:03:06,000

Every few years it would seem some new picture would come to light.

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00:03:06,000 --> 00:03:11,000

It would be almost clear enough to make the mystery a reality.

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00:03:11,000 --> 00:03:20,000

Now, a team of scientists led by Neil Gemmel think they might finally have what it takes to unmask the beast.

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00:03:20,000 --> 00:03:26,000

A groundbreaking technology known as environmental DNA.

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Environmental DNA is a revolutionary technology.

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This is a scientific approach to understanding what's in Loch Ness. It's extremely powerful.

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As an animal moves through its environment, it naturally sheds cells and excretes waste, leaving a trail of its own DNA.

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00:03:46,000 --> 00:03:55,000

Loch Ness is filled with cells and DNA. It's a giant cauldron of organic soup.

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00:03:56,000 --> 00:04:03,000

By sequencing the DNA, Gemmel should be able to figure out what it belongs to.

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00:04:03,000 --> 00:04:09,000

The results could astonish scientists and monster hunters alike.

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00:04:09,000 --> 00:04:15,000

We're looking for something unusual. We're looking for things that don't fit with our current expectations.

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00:04:15,000 --> 00:04:20,000

There are countless theories about what the creature might be.

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00:04:20,000 --> 00:04:24,000

There's this notion of a water horse which is part of Celtic legend and mythology.

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00:04:24,000 --> 00:04:29,000

And then there's another idea that perhaps Nessie is a time-travelling creature.

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00:04:29,000 --> 00:04:33,000

There's a wormhole in space and time somewhere in the Loch.

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These stories seem far-fetched, but Loch Ness is 750 feet deep.

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00:04:40,000 --> 00:04:46,000

Could DNA reveal that it's concealing a creature new to science?

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00:04:46,000 --> 00:04:52,000

There's a whole range of animals now that we thought were extinct that we're finding out actually are not extinct.

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00:04:52,000 --> 00:04:56,000

And that they do exist. Is it possible that something is out there?

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00:04:56,000 --> 00:05:00,000

You know, I would like to think that it's probable that something is out there.

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00:05:01,000 --> 00:05:15,000

The Loch Ness monster hits the headlines in 1933, when a couple witness a strange legless creature drag itself across a road adjacent to the Loch.

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00:05:15,000 --> 00:05:21,000

After that, sightings come thick and fast, adding to the monster mania.

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I have seen the monster.

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00:05:24,000 --> 00:05:30,000

The head draws right out to the water. The creature appeared to be 20 feet long.

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00:05:31,000 --> 00:05:37,000

An image of the beast is taking shape. But what is it?

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00:05:37,000 --> 00:05:42,000

Without DNA evidence, it's hard to pin down.

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00:05:43,000 --> 00:05:52,000

Most sightings describe a creature with a large body and long neck, which fits with what we know of dinosaurs, aquatic dinosaurs.

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Many people believe that the Loch Ness monster is a reptile called a plesiosaur.

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00:06:02,000 --> 00:06:08,000

Plesiosaur's obviously went extinct a long time ago, so we haven't got any contemporary plesiosaur DNA to compare it to,

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00:06:08,000 --> 00:06:12,000

but we can make a pretty good assumption about what that DNA might look like.

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00:06:12,000 --> 00:06:19,000

Plesiosaur's and many of the other dinosaurs were closely related to the modern birds and crocodiles,

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00:06:19,000 --> 00:06:23,000

so they sit somewhere between those and the Tree of Life.

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00:06:24,000 --> 00:06:30,000

This will be the first time ever that environmental DNA has been used in the search for the Loch Ness monster.

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00:06:31,000 --> 00:06:38,000

But there have been many attempts over the years to track it down using the cutting edge technology of the day.

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The Loch Ness monster really is one of the best investigated monster stories out there.

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00:06:45,000 --> 00:06:51,000

People have come to Loch Ness. They have brought the latest science and the latest technology to try to investigate.

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00:06:52,000 --> 00:07:01,000

In the 1970s underwater cameras are deployed throughout the lake, but it's like searching for a needle in a haystack.

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00:07:01,000 --> 00:07:05,000

It's a difficult environment to work in and to survey.

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00:07:05,000 --> 00:07:11,000

The Loch contains more water than all the lakes of England and Wales combined.

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00:07:12,000 --> 00:07:17,000

And what's more, below 30 feet there's no light at all.

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00:07:18,000 --> 00:07:24,000

There's what they call colloid particles in the water, and these effectively act like a pair of sunglasses.

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00:07:24,000 --> 00:07:28,000

Layers and layers of sunglasses, if you like, that are blocking the light.

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00:07:28,000 --> 00:07:35,000

Even if you have really high quality cameras, you're going to get backscatter, you're going to have issues with actually getting a good image.

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00:07:36,000 --> 00:07:46,000

But in the 1980s breakthroughs in sonar technology bring new hope, and the biggest, most audacious search ever begins.

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00:07:47,000 --> 00:07:56,000

In 1987, Project DeepScan took 24 boats and they spread out across the surface of Loch Ness and went from one end to the other.

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DeepScan investigators hope that sonar will produce answers where cameras have failed.

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They send out sound, the sound bounces on an object, and they can measure the time that it takes for that sound to bounce back to figure out what's there.

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00:08:15,000 --> 00:08:25,000

As they pass Urquhart Castle on the northwestern shore of the Loch, the sonar picks up three huge shapes, nearly 600 feet beneath the surface.

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They found three soundings that they didn't quite explain. Bigger than a shark, but smaller than a whale was roughly how they described it.

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00:08:36,000 --> 00:08:41,000

But when the team returns the next day to take a closer look, they're gone.

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00:08:42,000 --> 00:08:47,000

The images are tantalizing, but frustratingly inconclusive.

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00:08:48,000 --> 00:08:57,000

Sonar in that time period was very limited, and so the imagery that was produced is not nearly as sophisticated as the equipment we have today.

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00:08:59,000 --> 00:09:07,000

The monster remains at large, but with environmental DNA we can go where no science has ever gone before.

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00:09:08,000 --> 00:09:11,000

It doesn't need sonic or visual evidence.

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00:09:13,000 --> 00:09:19,000

And the recent spate of sightings is exactly what lead scientist Neil Gemmell has been waiting for.

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00:09:21,000 --> 00:09:23,000

But he doesn't have much time.

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00:09:24,000 --> 00:09:28,000

DNA degrades relatively quickly. There are two sightings just off of Urquhart Castle.

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00:09:28,000 --> 00:09:31,000

So we saw up over there within the first day of arriving.

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00:09:32,000 --> 00:09:39,000

Across 22 square miles of Loch Ness, Gemmell takes 250 water samples.

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00:09:43,000 --> 00:09:48,000

He sends them for double-blind testing to independent labs across Europe.

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00:09:49,000 --> 00:09:58,000

There are something like 3,000 unique DNA sequences that we have found in Loch Ness, ascribed to known biological life forms.

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00:09:58,000 --> 00:10:03,000

The results also reveal something completely unexpected.

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00:10:03,000 --> 00:10:09,000

When we've looked at our samples, there's this large signal of one species.

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00:10:09,000 --> 00:10:11,000

It was like, what the heck is that?

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00:10:12,000 --> 00:10:19,000

Have we found DNA that will finally identify the Loch Ness monster?

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00:10:29,000 --> 00:10:41,000

Over 1,500 years since it first surfaced, the Loch Ness monster remains an enigma of the deep.

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Now, a new scientific technique, the analysis of environmental DNA, could finally expose the real identity of the infamous monster.

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It's now the 21st century and we're still asking that same question, is there a Loch Ness monster?

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00:10:59,000 --> 00:11:07,000

According to popular belief, the beast is a fantastical creature, unlike anything ever seen before.

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00:11:07,000 --> 00:11:14,000

But is it possible that instead, Loch Ness could be harboring a real flesh and blood giant?

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In the right conditions, some fish have the capacity to grow exceptionally large.

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A giant catfish might be present in Loch Ness. We know that in Europe, there are giant catfish called Welles catfish.

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00:11:28,000 --> 00:11:34,000

There's some suggestion that they were released into Loch Ness by the Victorians in the 1800s.

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00:11:35,000 --> 00:11:45,000

The biggest Welles catfish I've ever caught was 7 feet long, but they wouldn't grow to this size in Scotland's icy waters.

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00:11:46,000 --> 00:11:51,000

So what other giant creatures could be patrolling the Loch?

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00:11:51,000 --> 00:12:00,000

So Loch Ness is connected to the North Sea via the Moray Firth, which creates the possibility that some of the sightings people have had

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00:12:00,000 --> 00:12:04,000

have actually been of marine creatures that have managed to make their way into the Loch.

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00:12:04,000 --> 00:12:15,000

Creatures like sturgeon. I've brought in a sturgeon 9 feet long and some species can grow to twice this length.

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00:12:16,000 --> 00:12:21,000

They're not resident in the Loch, they might be coming in and out of it as part of their migration.

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00:12:21,000 --> 00:12:30,000

But I'm not convinced that a sturgeon inspired the ancient legend. No species near the British Isles grows large enough.

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00:12:30,000 --> 00:12:39,000

So what else could it be? Can environmental DNA put an end to centuries of speculation?

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00:12:41,000 --> 00:12:49,000

It kind of blows your mind thinking that you can just leave a little bit of DNA somewhere and a scientist could figure out what was going on.

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00:12:49,000 --> 00:12:58,000

By extracting environmental DNA from water samples, researchers can find out exactly what is hiding beneath the surface.

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00:12:59,000 --> 00:13:04,000

We had five labs around the world that were analysing the DNA sequence data.

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00:13:05,000 --> 00:13:10,000

Early results start eliminating the usual suspects one by one.

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00:13:10,000 --> 00:13:22,000

So is a repleososaur in Loch Ness? Not that we can detect. Is there a giant catfish? Not that we can detect.

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00:13:22,000 --> 00:13:29,000

But as the data racks up, the sheer quantity of DNA from just one creature shocks researchers.

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00:13:30,000 --> 00:13:36,000

So what we find in our data is actually quite a large number of hits against eel DNA.

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00:13:37,000 --> 00:13:41,000

Could the Loch Ness monster be a giant eel?

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00:13:42,000 --> 00:13:47,000

It's a surprising result that researchers did not expect.

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00:13:48,000 --> 00:13:57,000

But there's no doubt that some intriguing Loch Ness monster sightings are distinctly eel shaped.

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00:13:58,000 --> 00:14:06,000

In 2008, lab technician Gordon Holmes detects an unexplained entity moving beneath the hull of his boat.

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00:14:09,000 --> 00:14:20,000

Just one year earlier he caused a sensation when he released this footage of a long thin creature around 45 feet in length, gliding across the water.

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00:14:21,000 --> 00:14:27,000

There are 800 species of eel found worldwide and some can grow huge.

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00:14:28,000 --> 00:14:32,000

But the European eel grows to little more than 4 feet long.

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00:14:33,000 --> 00:14:36,000

So how could they possibly account for sightings of a monster?

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00:14:38,000 --> 00:14:42,000

Scientists believe that the answer might lie in their biology.

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00:14:43,000 --> 00:14:48,000

The life cycle of the European eel has been shrouded in mystery for centuries.

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00:14:49,000 --> 00:15:02,000

But we now know that once they reach sexual maturity, they leave their freshwater homes and embark on a 3,000 mile migration to the Sargasso Sea.

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00:15:03,000 --> 00:15:07,000

Normally, eels would migrate to the sea, to spawn and then they die.

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00:15:08,000 --> 00:15:13,000

But it's possible that in rare instances some eels may not develop sexually.

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00:15:14,000 --> 00:15:22,000

Instead of migrating, they stay put, potentially living longer and growing into monsters.

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00:15:23,000 --> 00:15:29,000

Could DNA results have exposed mutant eels hiding in plain sight?

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00:15:30,000 --> 00:15:32,000

There are mutations that result in very large body size.

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00:15:33,000 --> 00:15:37,000

I think it's possible that there may be a very large eel in Loch Ness.

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00:15:38,000 --> 00:15:41,000

Super-sized eels are within the realms of possibility.

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00:15:43,000 --> 00:15:48,000

But for me, 45 feet long is too much of a stretch.

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00:15:49,000 --> 00:15:56,000

So for now, at least, the search for the true identity of the Loch Ness monster continues.

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00:16:02,000 --> 00:16:08,000

I've spent a lot of time underwater, but I'm totally reliant on my scuba gear to keep me alive.

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00:16:09,000 --> 00:16:12,000

Without it, I wouldn't last for more than a few minutes.

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00:16:13,000 --> 00:16:20,000

So how did one man survive on the ocean floor for three days without any diving equipment whatsoever?

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00:16:21,000 --> 00:16:28,000

New scientific analysis of his unbelievable underwater ordeal challenges everything I thought I knew.

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00:16:29,000 --> 00:16:32,000

May 26, 2013.

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00:16:34,000 --> 00:16:37,000

Twenty miles off the coast of Nigeria.

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00:16:39,000 --> 00:16:44,000

A tugboat called the Jascon 4 is caught in a fierce storm.

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00:16:45,000 --> 00:16:51,000

A big wave hit the side of the tug, which broke the tow wire and turned the tug upside down.

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00:16:51,000 --> 00:16:58,000

By the time the rescue team arrives at the scene, the vessel and all 12 crewmen have disappeared.

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00:17:01,000 --> 00:17:08,000

The tugboat sank in about 100 foot of water, so they needed a specialist dive crew to go down there and do the recovery.

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00:17:09,000 --> 00:17:14,000

It takes hours to assemble the divers and transport them to the site of the disaster.

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00:17:15,000 --> 00:17:20,000

By which time they believe there's little to no hope of finding any survivors.

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00:17:24,000 --> 00:17:28,000

They were working at depth in low visibility in this upturned vessel.

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00:17:29,000 --> 00:17:33,000

The divers recover the bodies of four crewmen who went down with the ship.

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00:17:34,000 --> 00:17:38,000

Their continuance of the ship is a long-awaited experience.

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00:17:38,000 --> 00:17:42,000

Divers recover the bodies of four crewmen who went down with the ship.

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00:17:43,000 --> 00:17:49,000

They're continuing the grisly task of locating the other eight when the impossible happens.

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00:17:51,000 --> 00:17:54,000

He's alive, he's alive. OK, keep him there, keep him there.

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00:17:55,000 --> 00:18:01,000

Imagine a hand grabbing you underwater when you expect that nobody is alive in this shipwreck.

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00:18:02,000 --> 00:18:10,000

Incredibly, the ship's cook, 29-year-old Harrison Ocané, has survived underwater for nearly three days.

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00:18:11,000 --> 00:18:14,000

I don't know what we're going to do now. All right, just keep him there, keep him calm, OK?

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00:18:15,000 --> 00:18:19,000

It's a once-in-a-lifetime miracle. It's beyond belief.

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00:18:20,000 --> 00:18:24,000

How did this guy survive for 60 hours underwater?

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00:18:24,000 --> 00:18:30,000

Can science unravel the mystery of this unparalleled underwater survival story?

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00:18:42,000 --> 00:18:47,000

60 hours after the sinking of a tugboat off the coast of Nigeria,

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00:18:47,000 --> 00:18:52,000

a team of divers are searching for bodies inside the stricken vessel on the sea floor

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00:18:53,000 --> 00:18:58,000

when they come face to face with a living, breathing survivor.

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00:19:02,000 --> 00:19:04,000

He's alive, he's alive.

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00:19:06,000 --> 00:19:10,000

It's the ship's cook, 29-year-old Harrison Ocané.

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00:19:11,000 --> 00:19:16,000

How Ocané is still alive is one of the most intriguing and most interesting stories

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00:19:17,000 --> 00:19:20,000

in mind-boggling ocean mysteries of modern times.

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00:19:22,000 --> 00:19:31,000

A man survived for multiple days while trapped in a sunken ship. How is this even possible?

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00:19:33,000 --> 00:19:37,000

In an effort to get to the bottom of this unbelievable survival story,

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00:19:39,000 --> 00:19:43,000

scientists examine Ocané's three-day ordeal piece by piece,

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00:19:43,000 --> 00:19:48,000

starting with the moment when his ship suddenly capsizes.

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00:19:50,000 --> 00:19:55,000

It's going to be the most terrifying thing in the world. All of a sudden, your world turns upside down

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00:19:56,000 --> 00:20:02,000

and water starts rushing in. You must think that you're dead.

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00:20:03,000 --> 00:20:08,000

Scrabbling around in the dark, upturned vessel, Ocané makes an incredible discovery,

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00:20:09,000 --> 00:20:11,000

a pocket of trapped air.

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00:20:13,000 --> 00:20:21,000

It is incredibly improbable that an air pocket could form on a wreck like this, as against all odds.

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00:20:22,000 --> 00:20:26,000

That tugboat must have gone down near enough straight.

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00:20:27,000 --> 00:20:30,000

If it starts to tip even way, the air can seep out.

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00:20:32,000 --> 00:20:40,000

But as the doomed ship descends to the seabed, the air bubble, O'Casey's only hope of survival, begins to shrink.

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00:20:41,000 --> 00:20:47,000

For every 33 feet you go down, your pressure doubles and air is condensed.

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00:20:48,000 --> 00:20:52,000

The pressure of the water is making that air bubble smaller and smaller.

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00:20:53,000 --> 00:20:57,000

The water is rising and you're essentially counting the minutes until you're dead.

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00:20:58,000 --> 00:21:03,000

Luckily, the tug hits the bottom before the bubble compresses too much.

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00:21:04,000 --> 00:21:10,000

If the ship had gone any deeper, then the water pressure would have condensed at airing more.

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00:21:11,000 --> 00:21:14,000

But the air bubble is now a mere four feet high.

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00:21:15,000 --> 00:21:18,000

Ocane's chances of survival are slim to none.

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00:21:19,000 --> 00:21:25,000

For him to survive 60 hours on the seafloor in pitch black breathing just a small air pocket,

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00:21:26,000 --> 00:21:29,000

it really is a mystery how he was able to survive.

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00:21:30,000 --> 00:21:37,000

After trying to escape via a passageway, he resigns himself to staying in his tiny dark bubble.

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00:21:38,000 --> 00:21:44,000

Ocane chose to stay in the bubble that he was in is beyond me.

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00:21:45,000 --> 00:21:51,000

Either he's accepting he's going to die or he has complete and utter faith that he's going to be rescued.

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00:21:52,000 --> 00:21:56,000

Perhaps he knows that attempting to get out now will spell certain death.

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00:21:57,000 --> 00:22:05,000

Even if he had managed to navigate the pitch black of the wreck, find an opening and escape up to the surface,

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00:22:06,000 --> 00:22:12,000

he still would not have survived because the nitrogen in his bloodstream will expand and air bubbles will pop.

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00:22:13,000 --> 00:22:17,000

But staying in the air bubble is also fraught with danger.

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00:22:18,000 --> 00:22:23,000

And the biggest threat to Ocané right now is his own breath.

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00:22:24,000 --> 00:22:32,000

Over the course of time, he's obviously breathing in oxygen and exhaling carbon dioxide and the levels of carbon dioxide in that bubble are rising.

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00:22:33,000 --> 00:22:40,000

Once carbon dioxide gets about 4 or 5%, it starts to become toxic. The longer he survived, the closer he was to death.

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00:22:41,000 --> 00:22:48,000

By the time rescuers arrive, Ocané should have succumbed to deep sea carbon dioxide toxicity.

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00:22:49,000 --> 00:22:55,000

It's a little weird that he wasn't suffering any symptoms of carbon dioxide toxicity after so much time underwater.

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00:22:56,000 --> 00:23:00,000

Experts believe the icy temperatures may have been his saviour.

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00:23:01,000 --> 00:23:08,000

Lower body temperature would slow your aspiration, which may, you know, increase your longevity.

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00:23:08,000 --> 00:23:18,000

As well as slowing down O'Connell's metabolism, the frigid water surrounding the air bubble might have played a second important role in his survival.

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00:23:19,000 --> 00:23:31,000

Gas is more soluble in cold water. If the concentration of CO₂ is increasing in the airspace and we have cold water, that CO₂ can go into the water.

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00:23:32,000 --> 00:23:36,000

Perhaps that made the air breathable for a longer amount of time.

203

00:23:36,000 --> 00:23:43,000

There are many theories, but science still can't fully explain how O'Connell pulled through.

204

00:23:44,000 --> 00:23:53,000

How did he survive the carbon dioxide, the hypothermia, the mental stress? I mean, there are multiple reasons that guy should be dead and he's alive.

205

00:23:54,000 --> 00:24:02,000

But Ocané is not home and dry yet. After three days underwater, his blood is super saturated with nitrogen.

206

00:24:02,000 --> 00:24:05,000

The slightest mistake now will kill him.

207

00:24:18,000 --> 00:24:26,000

29-year-old Harrison Ocané has endured an unbelievable 60 hours alone in a sunken ship.

208

00:24:26,000 --> 00:24:32,000

His survival on the sea floor seems to defy the rules of science.

209

00:24:33,000 --> 00:24:43,000

But as all divers know, the greatest challenge can be the very last stage, the journey out of the darkness and back up to the light.

210

00:24:46,000 --> 00:24:55,000

The nitrogen that's in the air actually also squeezes from the pressure and it gets smaller and those air bubbles can enter into your blood system.

211

00:24:56,000 --> 00:25:00,000

He has to undergo a complex process of depressurizing him.

212

00:25:01,000 --> 00:25:08,000

The rescuers need to get Ocané safely to their diving bell before they can gradually bring him to the surface.

213

00:25:09,000 --> 00:25:17,000

Hello my friend, can you hear me? Okay, listen to me. All right, now you mustn't panic, okay? We're gonna bring you home, okay?

214

00:25:27,000 --> 00:25:28,000

Here I go.

215

00:25:28,000 --> 00:25:30,000

There you go, okay? We're bringing you home.

216

00:25:34,000 --> 00:25:36,000

Take him nice and sturdy, okay?

217

00:25:42,000 --> 00:25:48,000

All right, he's in the belt. Good job my friend, well done. You're a survivor.

218

00:25:49,000 --> 00:25:56,000

This case right here shows us that there's a lot still to learn about human physiology under the ocean.

219

00:25:57,000 --> 00:26:01,000

Incredibly, Ocané's story has a happy ending.

220

00:26:02,000 --> 00:26:06,000

But what if he's not the only person who survived for days underwater?

221

00:26:08,000 --> 00:26:12,000

What if it's happened before and we just didn't know it?

222

00:26:13,000 --> 00:26:20,000

Looking back at all the shits which have sunk over the years, we've often thought that those people must have died pretty much near and instantaneously.

223

00:26:22,000 --> 00:26:32,000

This of course gives us a whole new concept and it makes it very haunting when you start to think, well, if this one person survived, how many others might have?

224

00:26:43,000 --> 00:26:54,000

In my travels around the globe, I've seen all sorts of discarded garments washed up on shorelines, from jackets and shirts to gloves and sandals.

225

00:26:54,000 --> 00:27:02,000

But what would it be like to be walking along a lonely beach and to come across an item of clothing with the body part still inside?

226

00:27:05,000 --> 00:27:07,000

September 2018.

227

00:27:08,000 --> 00:27:10,000

British Columbia, Canada.

228

00:27:13,000 --> 00:27:16,000

A sneaker is found washed up on a beach.

229

00:27:17,000 --> 00:27:20,000

Its owner's foot is still in it.

230

00:27:22,000 --> 00:27:29,000

I can't imagine walking along the beach, looking for seashells and other things and finding a human foot sitting there.

231

00:27:31,000 --> 00:27:33,000

This is not an isolated incident.

232

00:27:34,000 --> 00:27:40,000

The gruesome find is the 15th foot to be discovered on beaches in this region in 12 years.

233

00:27:42,000 --> 00:27:46,000

When you hear of human feet lining a beach, you think of a serial killer.

234

00:27:47,000 --> 00:27:57,000

The police and a lot of people in the public thought that somebody had been murdered, part of a mafia situation where they had dumped a body somewhere.

235

00:27:58,000 --> 00:28:03,000

Investigators face some difficult and perplexing unanswered questions.

236

00:28:04,000 --> 00:28:09,000

Nobody knew who these feet belonged to or where they had come from.

237

00:28:10,000 --> 00:28:18,000

Now, new advances in the specialist field of marine forensics are allowing us to shine some light on this dark mystery.

238

00:28:19,000 --> 00:28:27,000

Experts carefully examine each bone, looking for tool marks and other signs of violence that would indicate foul play.

239

00:28:28,000 --> 00:28:30,000

But there are none.

240

00:28:31,000 --> 00:28:37,000

It's not some strange serial killer who just likes to cut off feet, throw them in the ocean and create this mystery.

241

00:28:37,000 --> 00:28:41,000

Instead, the findings tell a very different tale.

242

00:28:44,000 --> 00:28:50,000

They reveal how the dead are dismantled by underwater forces.

243

00:28:53,000 --> 00:29:02,000

When a human body decomposes, two of the parts of the body that release first at the joints are the hands and the feet.

244

00:29:02,000 --> 00:29:05,000

It's known as disarticulation.

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00:29:06,000 --> 00:29:13,000

Over time, the foot separates from the leg at the ankle joint, releasing the foot to become a castaway in the ocean.

246

00:29:16,000 --> 00:29:20,000

But why are most of these feet wearing sneakers?

247

00:29:21,000 --> 00:29:28,000

Modern trainers are made of foam, plastics. Some souls of running shoes, for example, even have an air pocket in them.

248

00:29:28,000 --> 00:29:37,000

They're floating and keeping these feet on the surface, that allows them to then be moved by currents and by winds into the beach.

249

00:29:38,000 --> 00:29:44,000

Disarticulation, coupled with buoyant footwear, might explain the presence of floating feet.

250

00:29:45,000 --> 00:29:48,000

But the big question is, where are they coming from?

251

00:29:49,000 --> 00:29:53,000

Are there any areas of high suicide in British Columbia?

252

00:29:53,000 --> 00:29:59,000

Do they use that place? Is it somewhere along the currents that would wash body parts to the shore?

253

00:30:00,000 --> 00:30:09,000

Can revolutionary scientific techniques get us any closer to unraveling this macabre mystery of the deep?

254

00:30:09,000 --> 00:30:29,000

Human feet washing ashore along the coast of British Columbia have terrified locals and battled investigators for a dozen years.

255

00:30:30,000 --> 00:30:34,000

Where are they coming from and why are they ending up here?

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00:30:35,000 --> 00:30:40,000

Fifteen human feet have been found washed up on the British Columbia shore.

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00:30:41,000 --> 00:30:54,000

In search of clues about who these feet belong to, forensic experts attempt to extract DNA from the decomposing tissue, and the footwear itself can provide vital information.

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00:30:55,000 --> 00:31:01,000

In some cases, they were actually able to determine who the people were based on the trainers.

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00:31:02,000 --> 00:31:06,000

I believe there were a few of them that were distinct.

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00:31:07,000 --> 00:31:16,000

Of the 15 feet found, 13 have now been traced back to people who have gone missing from British

Columbia and Washington State.

261

00:31:16,000 --> 00:31:23,000

It turns out most of them were either accidental deaths or in some cases they were suspected suicides.

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00:31:24,000 --> 00:31:37,000

Police are still trying to match the final two with the body. It's a monumental task. Some of these shoes have been lost at sea for decades.

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00:31:38,000 --> 00:31:45,000

So these shoes are not all necessarily from victims from the same year, but spread over many years.

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00:31:46,000 --> 00:31:54,000

In one case, the DNA matches up with a man who has been missing for a quarter of a century.

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00:31:55,000 --> 00:32:05,000

In colder waters, there's greater preservation, but to have genetic material lasting 25 years in itself is pretty phenomenal.

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00:32:05,000 --> 00:32:15,000

But one part of this mystery remains impenetrable. Why do so many feet end up on this one particular part of British Columbia?

267

00:32:17,000 --> 00:32:27,000

You would think that if it were a world epidemic, you'd find them all over. So what is it specifically about this part of the world that attracts feet in running shoes?

268

00:32:28,000 --> 00:32:35,000

Nobody knows for sure, but experts agree that it must have something to do with the ocean currents.

269

00:32:37,000 --> 00:32:46,000

The thing that's interesting about Vancouver Island in relation to the mainland is you have a series of circulating currents, sort of one on top of the other.

270

00:32:48,000 --> 00:32:56,000

Trapped in these churning waters, floating feet could circle around for days on end before being spat out on the coast.

271

00:32:58,000 --> 00:33:04,000

But this doesn't fully explain why some beaches get more than their fair share of this grisly flotsam.

272

00:33:05,000 --> 00:33:12,000

Although we have ocean currents that we can predict, there's many things we can't predict in terms of ocean circulation.

273

00:33:13,000 --> 00:33:17,000

But what if ocean currents are just part of the answer?

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00:33:18,000 --> 00:33:22,000

British Columbia is home to around 5 million people.

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00:33:23,000 --> 00:33:31,000

It's a grim fact, but the more densely populated a place is, the more likely it is that bodies will end up in the water.

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00:33:32,000 --> 00:33:39,000

And as the population rises, I'm left in no doubt that the latest gruesome find will not be the last.

277

00:33:40,000 --> 00:33:55,000

I've reeled in some mighty monsters, some of them big enough and toothy enough to devour a person.

278

00:33:56,000 --> 00:34:04,000

Despite this, I've always found the biblical story of Jonah being eaten by a whale hard to swallow.

279

00:34:05,000 --> 00:34:17,000

But a recent bizarre real-life incident has made me wonder for the first time whether an extraordinary truth could lie behind that famous tale.

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00:34:19,000 --> 00:34:25,000

March 2019. 25 miles off Port Elizabeth, South Africa.

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00:34:26,000 --> 00:34:39,000

Photographer Rainer Schimpf is filming a school of sardines being attacked by a feeding frenzy of predators, when out of nowhere his world plunges into darkness.

282

00:34:40,000 --> 00:34:46,000

All of a sudden, this whale comes up behind and sort of scoops him up into his mouth.

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00:34:47,000 --> 00:34:53,000

Basically half in and half outside a whale's mouth being... looks like he's being eaten.

284

00:34:55,000 --> 00:35:09,000

Strange stories of man-eating whales have existed for centuries, including the famous biblical tale of Jonah, who's said to have spent three whole days in a whale's stomach before it let him go.

285

00:35:10,000 --> 00:35:18,000

But there have been no confirmed cases of anything like this actually happening in real life. Until now.

286

00:35:19,000 --> 00:35:24,000

Experts are eager to find out what could have triggered this unprecedented behaviour.

287

00:35:26,000 --> 00:35:36,000

How can this possibly happen? A very large sea creature seems to be taking a man from the sea. That's huge. I mean, that's fiction.

288

00:35:37,000 --> 00:35:44,000

Will Rainer Schimpf suffered the same unimaginable fate as Jonah.

289

00:35:49,000 --> 00:36:07,000

It's March 2019 off the coast of South Africa. Photographer Rainer Schimpf appears to be in danger of becoming a modern day Jonah.

290

00:36:08,000 --> 00:36:13,000

A case of divine retribution, or has the whale bitten off more than it can chew?

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00:36:14,000 --> 00:36:20,000

Humans typically aren't on the menu for whales, so why would this whale scoop up a snorkeler?

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00:36:21,000 --> 00:36:29,000

When scientists identify the species, the mystery deepens even further. It's a brooders whale.

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00:36:30,000 --> 00:36:35,000

The brooders whale is a very, very large marine mammal with a very large mouth.

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00:36:36,000 --> 00:36:45,000

But brooders are baleen whales, which means that instead of teeth, they use bristle-like filters to trap their food.

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00:36:46,000 --> 00:36:55,000

It's evolved to strain water and get these little fish out, or the krill, or, you know, macro, or herring, or sardines.

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00:36:56,000 --> 00:37:00,000

They're not constructed to, you know, eat large pieces of meat.

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00:37:01,000 --> 00:37:08,000

So purely biologically speaking, the whale's not able to physically swallow the man.

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00:37:09,000 --> 00:37:13,000

If the whale isn't trying to eat Schimpf, what is its motive?

299

00:37:14,000 --> 00:37:19,000

Was this a rogue whale behaving badly, or was this a complete accident?

300

00:37:20,000 --> 00:37:24,000

Perhaps there are clues to be found just beneath the surface.

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00:37:25,000 --> 00:37:33,000

At the time that Rainer was filming these sardines, they were all schooled up into this tight ball of fish.

302

00:37:34,000 --> 00:37:41,000

Footage taken by Rainer Schimpf just before the incident shows the sardines huddling together for safety.

303

00:37:43,000 --> 00:37:47,000

You probably would not be able to see a human being on another side of a ball of fish.

304

00:37:47,000 --> 00:37:56,000

And the position of the whale's eyes would make it difficult, if not impossible, for it to spot Schimpf floating amongst its food.

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00:37:57,000 --> 00:38:02,000

Whales have their eyes on the side of their heads. They usually have a little bit of a blind spot out front.

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00:38:03,000 --> 00:38:08,000

But recent research suggests that Schimpf's whale may not have been relying on its eyes at all.

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00:38:08,000 --> 00:38:15,000

Scientists believe they may have found evidence of baleen whales using echolocation to help them find food.

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00:38:17,000 --> 00:38:21,000

The echosignature may have just looked like one big ball of fish.

309

00:38:22,000 --> 00:38:27,000

I think it would be difficult for the whale to know the difference between two separate things.

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00:38:28,000 --> 00:38:31,000

It's feasible that the whale grabs Schimpf accidentally.

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00:38:32,000 --> 00:38:35,000

But there's one vital clue that has been overlooked.

312

00:38:36,000 --> 00:38:38,000

The presence of sharks.

313

00:38:39,000 --> 00:38:42,000

This opens up a whole new possible theory.

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00:38:43,000 --> 00:38:52,000

The possibility exists that this whale, seeing the human in the water, seeing the sharks around, went up and scooped him up to protect him.

315

00:38:53,000 --> 00:39:03,000

This might seem far-fetched, but scientists have recently documented hundreds of instances of whales intervening to protect other creatures from harm.

316

00:39:04,000 --> 00:39:13,000

There's been a lot of cases where people seem to see the empathy of whales where there'll be a shark nearby or something like that.

317

00:39:14,000 --> 00:39:20,000

The whale will sort of push a snorkeler to the other side of their body and almost defensively, almost to keep them in a safe area.

318

00:39:21,000 --> 00:39:29,000

The Sardine Run notoriously lures in all sorts of sharks, including the world's most feared.

319

00:39:30,000 --> 00:39:32,000

The Great White.

320

00:39:33,000 --> 00:39:39,000

But even they are no match for a fully grown, 30-tonne brooders whale.

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00:39:41,000 --> 00:39:48,000

If it was acting as his bodyguard, Rainer Schimpf owes his whale a huge debt of gratitude.

322

00:39:49,000 --> 00:39:53,000

But could there be something more menacing at play here?

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00:39:55,000 --> 00:39:59,000

Animals are not robots. Their behavior is not always predictable.

324

00:39:59,000 --> 00:40:07,000

And just like humans, they could potentially have a brain tumor or some other affliction that would cause them to act in an unusual way.

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00:40:08,000 --> 00:40:14,000

Diseases such as rabies can hijack the brain, making animals abnormally aggressive.

326

00:40:15,000 --> 00:40:19,000

Perhaps this was the act of a creature not in its right mind.

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00:40:20,000 --> 00:40:25,000

Whatever triggered the whale to grab Schimpf, one thing is for certain.

328

00:40:26,000 --> 00:40:31,000

Locked within its vice-like grip, the photographer is in grave danger.

329

00:40:32,000 --> 00:40:42,000

They have incredible mass and very strong jaws, so you have to be concerned about broken bones or being crushed to death when in the mouth of one of these beasts.

330

00:40:43,000 --> 00:40:45,000

And that's not all he has to worry about.

331

00:40:46,000 --> 00:40:49,000

Whales have been known to dive literally hundreds if not thousands of meters deep.

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00:40:50,000 --> 00:40:54,000

What's more, brooders whales can hold their breath for up to 20 minutes.

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00:40:55,000 --> 00:40:57,000

The average human, less than one minute.

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00:40:58,000 --> 00:41:02,000

You've got no reserve air except for what you've got in your lungs and he would not have lasted that long.

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00:41:03,000 --> 00:41:09,000

If the whale had decided to dive, for example, even to 30 meters, that in itself could have killed him.

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00:41:10,000 --> 00:41:17,000

But before it dives into the depths, the whale releases Schimpf, unharmed.

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00:41:18,000 --> 00:41:21,000

Schimpf had an incredibly lucky escape.

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00:41:21,000 --> 00:41:29,000

Whether the whale grabbed him by accident, to save him from a shark or in a fit of psychotic rage, we'll never know.

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00:41:30,000 --> 00:41:41,000

Like so many mysteries of the deep, the secret is now submerged beneath the surface and swimming away a thousand feet under the waves.

