An animated life: The living fossil fish

[CRICKETS CHIRPING] [MUSIC PLAYING]

[Latimeria chalumnae]

[Per Ahlberg, Department of Organismal Biology, University of Uppsala]

PER AHLBERG: You have this fish that's—it's like a sort of living time machine.

[Samantha Weinberg, author, A Fish Caught in Time]

SAMANTHA WEINBERG: It was like looking at a dinosaur, this creature that has been around for 400 million years.

[MUSIC PLAYING]

[December 22, 1938, East London, South Africa]

[Keith Thomson, author, Living Fossil: The Story of the Coelacanth; Executive Officer, American Philosophical Society]

KEITH THOMSON: It was December the 22nd, 1938. On this hot December day in East London, South Africa, a trawler came into town and deposited its load of fish. And the trawler captain had a habit of keeping any odd-looking interesting specimens and giving them to the curator of the local museum, Marjorie Courtney Latimer.

SAMANTHA WEINBERG: She loved nature so much, and she wanted to make the museum's collections the best they possibly could be. And so she went down to the harbor side. She described picking through this big pile of slimy fish and eels, and then suddenly, she saw, poking up, this sort of strange blue fin.

PER AHLBERG: It's a very distinctive kind of fish with strange, fleshy, limb-like fins. This thing was like nothing she had ever seen.

SAMANTHA WEINBERG: She said to the chairman of the museum, I think this is something really special. He went, oh, no, little Latimer, it's just a rock cod. But she knew in her gut that it was something different. And she thought, well, I've got to find a way to preserve it. So she set off on Christmas Eve in East London.

KEITH THOMSON: She tried to get the local cold storage company to take care of it.

SAMANTHA WEINBERG: They said, oh, no way. Go away.

KEITH THOMSON: She tried to get a local mortuary to embalm it.

SAMANTHA WEINBERG: They said, oh, we can't have any stinking fish here. She said, why? All the other people in here are dead anyway.

KEITH THOMSON: So eventually, it was given to a taxidermist.

SAMANTHA WEINBERG: And she thought, well, I've got to find someone to identify this fish. And she immediately thought of Professor JLB Smith.

KEITH THOMSON: Who was the only ichthyologist in South Africa.
SAMANTHA WEINBERG: So she drew a rough little drawing and sent a letter.

[MUSIC PLAYING]

SAMANTHA WEINBERG: As soon as he saw the fish, he walked round and round it slowly.

KEITH THOMSON: He practically fainted.

SAMANTHA WEINBERG: He said, "it was like bombs going off in my head, and I was seeing the shape of a fish known only from fossils."

PER AHLBERG: It's such a characteristic shape. It's like the outline of a Viking ship.

SAMANTHA WEINBERG: This was the coelacanth, a fish that was thought to have become extinct 65 million years ago. It was like a dinosaur had just come into your living room.

[MUSIC PLAYING]

PER AHLBERG: You know, 400 million years ago, these were just a bunch of fishes, very much like other kinds of fish that were around at the time. But now, they are these absolute anomalies. There's nothing else like it on the planet.

KEITH THOMSON: They had, in fact, made the discovery of the century.

[MUSIC PLAYING]

PER AHLBERG: It was given the name Latimeria chalumnae in honor of Marjorie Courtenay-Latimer.

[Latimeria chalumnae]

KEITH THOMSON: Without her, the specimen wouldn't have been preserved.

PER AHLBERG: The key excitement was the fact that this was such an obvious living fossil.

KEITH THOMSON: Charles Darwin came up with a term that's sort of dumb in a way, because if it's alive, it can't be a fossil, but what it means is there's an early fossil record, then a total gap, and then there happens to be a living one.

[Coelacanths through time]

KEITH THOMSON: It doesn't mean that hundreds and hundreds of its relatives haven't become extinct.

[MUSIC PLAYING]

SAMANTHA WEINBERG: One of the things I love about the coelacanth is that it's seen history past.

[Devonian, 419-359 million years ago]

PER AHLBERG: When the coelacanths first appeared as one lineage of lobe-finned fish, among other similar looking forms, well, what can you say about the world?

[Comb jellyfish]

PER AHLBERG: They shared the waters with strange, armored, jawless fish with sucker-like mouths.

[Ostracoderm]
[MUSIC PLAYING]

[Dunkleosteus]

PER AHLBERG: One lineage of their close relatives started nosing around in the shallows, and then I suppose from the coelacanth's perspective, just sort of disappeared out of view as they emerged onto the land.

[Tiktaalik]

SAMANTHA WEINBERG: I like to sort of think of the coelacanth as saying, bye, and good luck.

[Carboniferous, 359-299 million years ago]

PER AHLBERG: We get into the period of the cold swamps producing so much oxygen that it becomes possible for dragonflies the size of falcons and millipedes longer than a man.

[Permian, 299-252 million years ago]

[MUSIC PLAYING]

[Mesosaurus]

PER AHLBERG: The world is suddenly struck by a gigantic mass extinction, something like 90% of all species disappear. Coelacanths sort of keep going. They've perhaps taken a bit of a knock, but there are quite a lot of them. They swim around, do their coelacanth thing.

[Cretaceous, 145-66 million years ago]

[MUSIC PLAYING]

[Tyrannosaurus rex]

PER AHLBERG: Another huge mass extinction. Then mammals diversify on the land.

[Mammuthus primigenius]

[Smilodon fatalis]

[Giraffa camelopardalis]

PER AHLBERG: Primates emerge, one primate lineage starts standing up on its hind limbs, starts speaking, and here we are. And meanwhile, coelacanths, well, they haven’t really changed. That is a truly astonishing thing.

[MUSIC PLAYING]

PER AHLBERG: For me, personally, it is just that the world should have such things in it that it should be possible to see this kind of improbable ghostly messenger from the very deep past.

SAMANTHA WEINBERG: And I just hope that the coelacanth manages to outlive us all and keep going and witnessing what is to come.

[MUSIC PLAYING]

[There are two known species of coelacanths. They live on steep underwater slopes off the coasts of East Africa and Indonesia.]

[The population size isn’t known, but they are considered threatened.]