

Whispering pines: Trees tell story of WWII battleship

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Churchill described the German battleship Tirpitz as "the beast"

Throughout most of World War II, Allied bombers tried repeatedly to sink the Tirpitz, Germany's biggest battleship and a bete noir of Britain's wartime leader Winston Churchill, who took to calling it 'the beast'.

On Wednesday, tree experts at the annual meeting of the European Geosciences Union showed why they failed to do so until late 1944

"The story was in the tree rings," said Claudia Hartl, a researcher at Johannes Gutenberg University in Mainz, Germany.

The unlikely evidence of WWII battles was uncovered during the summer of 2016, when Hartl led students on a routine survey of forests around Kafjord, one of dozens of fjords along the northern coast of Norway.

"We got back to the lab and measured the tree rings, and saw that they were very narrow—in some cases nearly absent—for 1945," she told AFP.

The forests, in other words, had been hit by an

environmental cataclysm.

"Of course we wondered, why is that?"

The first suspect was insect infestation, which can come suddenly and have severe impacts, especially in high-latitude boreal forests.

Driven north of their historic range by climate change, [mountain pine beetles](#), for example, have recently devastated large swathes of forests in Canada, sometimes in a single year.

But there were no known insect in northern Scandinavia that could have delivered that kind of environmental shock in the middle of the 20th century.

"It wasn't until we spoke to a local scientist based in Tromso that we made the connection to the Tirpitz," said Scott St. George, a geographer at The University of Minnesota's Institute on the Environment who took part in the research.

The Tirpitz and its crew of 2500, it turned out, had retreated into northern Norway's watery labyrinth to escape detection. In the pre-satellite era, even a 250-metre (820-foot) behemoth wasn't that easy to spot.

But Allied aerial scouts finally found it, and the attacks began.

The Germans, however, had a counter-plan: producing vast quantities of artificial fog, enough to hide the ship and surrounding area from aerial view.

And that's where the tree rings come in.



A 1944 picture shows smoke rising from the Tirpitz following an attack by allied bombers in a Norwegian fjord

Arboreal casualties

"The smoke drifted into the forests surrounding the fjord and damaged nearby pine and birch trees, leaving behind a distinctive and unusual 'fingerprint'," St. George told AFP.

The study of tree rings—called dendrochronology, literally, "timeline of trees"—is used by climate scientists to trace changes in temperature, rainfall or river flows reaching back hundreds, even thousands, of years.

The concentric circles found in temperate zone tree trunks can also date the age of buildings, shipwrecks, musical instruments, painting frames or anything else made from temperate-zone wood.

Because trees in the tropics grow continually, they generally do not produce rings, which show growth spurts during spring and summer.

To investigate further, Hartl returned last summer to the scene of the battle, to see how far the damage had spread.

She established five test sites ranging in distance from a few hundred meters from the fjord where the

Tirpitz was berthed, to about ten kilometres.

Near where the ship once lay, more than 60 percent of the trees showed virtually no growth in 1945. All of them were affected to some degree.

Gaps in the forest where young trees sprouted up in the 1950s suggest the chemical fog caused arboreal fatalities too.

As far as four kilometres away, more than half the tree were severely affected, taking eight years on average to fully recover.

Pine trees—which keep their needles for up to seven years—were hit hardest. "Being stripped bare would have been a more difficult challenge for that species," St. George explained.

The artificial fog that denuded the [trees](#) was likely made from chlorosulphuric acid which, when mixed with water, produces a thick, white vapour.

German ships has special teams equipped with gas masks to generate the smoky shroud.

Despite its firepower, the Tirpitz never saw much action.

In October 1944, the German naval command moved it to Tromso, where it served as a mobile artillery platform until a squadron of 32 British Lancaster bombers sent it to the bottom of the harbour the following month.

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