

Wreck research in the Atlantic Ocean

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On March 1, 2020, new documentary was released in the United States about the sinking of the ocean liner *Justicia* (ex-*Statendam*) in 1918 and her wreckage in the Atlantic off the northern coast of Ireland.

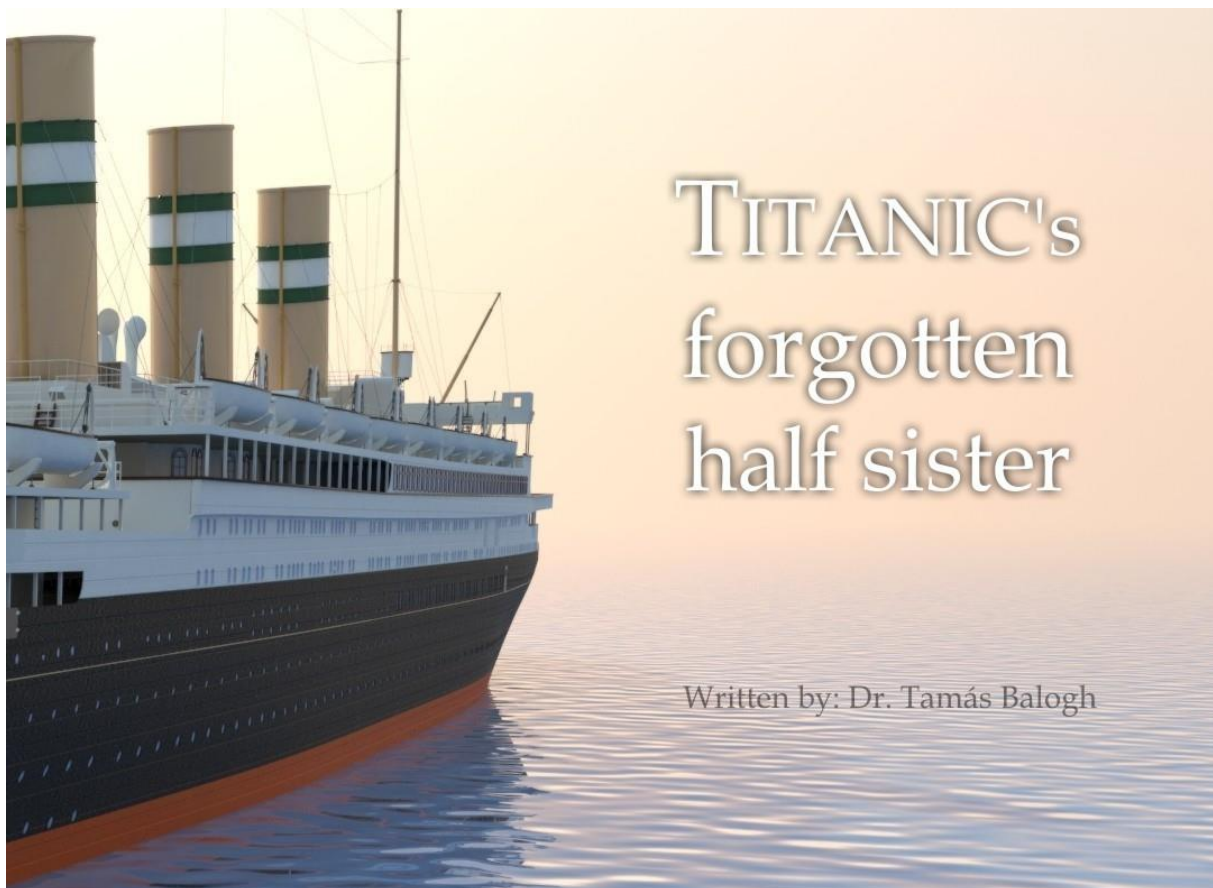


Figure 1: 3D graphic by Benett Gyurik

Dutch transatlantic passenger transport is synonymous with the Rotterdam-based shipping company Holland-America Line. The quality of the company's services is truly characterized by the fact that its ships have earned the name "spotless fleet". The most outstanding ship in this fleet was the *Statendam*, entered service in 1917, which is still the largest Dutch passenger ship, the "Dutch Titanic". And not just because of her size: Her story linked with the fate of the unfortunate British liner, and had the same tragic end.

Her plans were inspired by the plans of the *Titanic*'s older sistership, *Olympic*, and were built exactly on the same slipway - at Harland & Wolff Shipyard in Belfast - where the *Titanic* was built a year earlier (her draught was optimized for the shallower Dutch waters, so it was slightly smaller than the *Titanic*, but was still the eighth largest ship in the world).

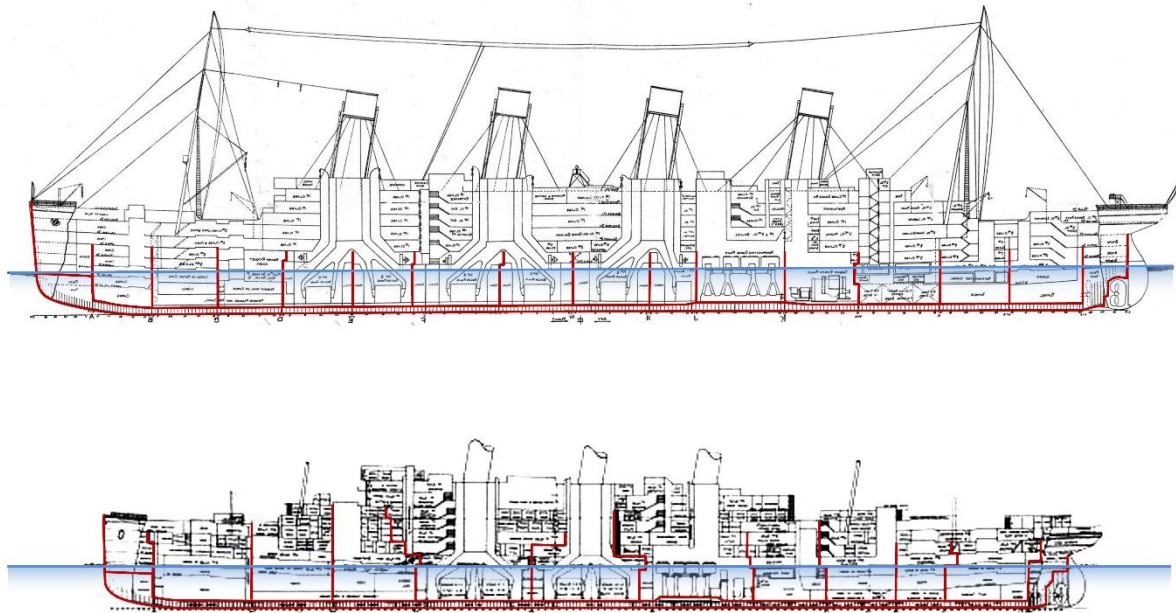


Figure 3: Watertight bulkheads of TITANIC (above) and STATENDAM (below) (with red line). On the TITANIC, the bulkheads rose only two decks above the waterline (so if the ship sank deeper due to the weight of the water, top of the bulkheads sank below the water level and water could pass from the flooded compartment to the even dry compartments, as on TITANIC, only the bulkheads were watertight, not the decks. It is clear that in the case of STATENDAM not only were the bulkheads built higher, but some bulkheads were required to be extended to the level of a watertight deck, so the weight of the water has not yet sunk the ship (drawing by Tamás Balogh).

Yet the disturbing circumstances intensified after World War I broke out just nine days after the ship was launched. Fitting out slowed, then stopped as the shipyard shifted to meet naval orders, and it was only after the sinking of Lusitania that the semi-finished ship was completed to fill the gap and substitute of the lost shipping capacity. The British government then chartered the Dutch giant on the condition that it be returned to its original owner at the end of the war, or, if that were not possible due to the destruction of the ship, another similar ship would be built for Holland-America Line.

Statendam - now renamed as Justicia - has become one of the protagonists of military shipments from America to Europe. It transported a total of about 20,000 troops, 12,000 civilian personnel and thousands of tons of military equipment via four transatlantic routes. In December 1917, it also broke the record for naval shipments by transporting 30,000 tons of ammunition at a time on a single voyage. Just four months before the end of the war, it came to an end when she was hit by a torpedo from the U 64 submarine, on July 19, 1918. However, thanks to redesign of her safety features following the Titanic tragedy, the ocean liner refused to sink and try to reach the shores of Ireland with the help of a naval tugboat Sonia. An epic battle of twenty-four hours with flooding water and the enemy began, in which the ship's artillery fired or hijacked several torpedoes with their well-targeted shots.

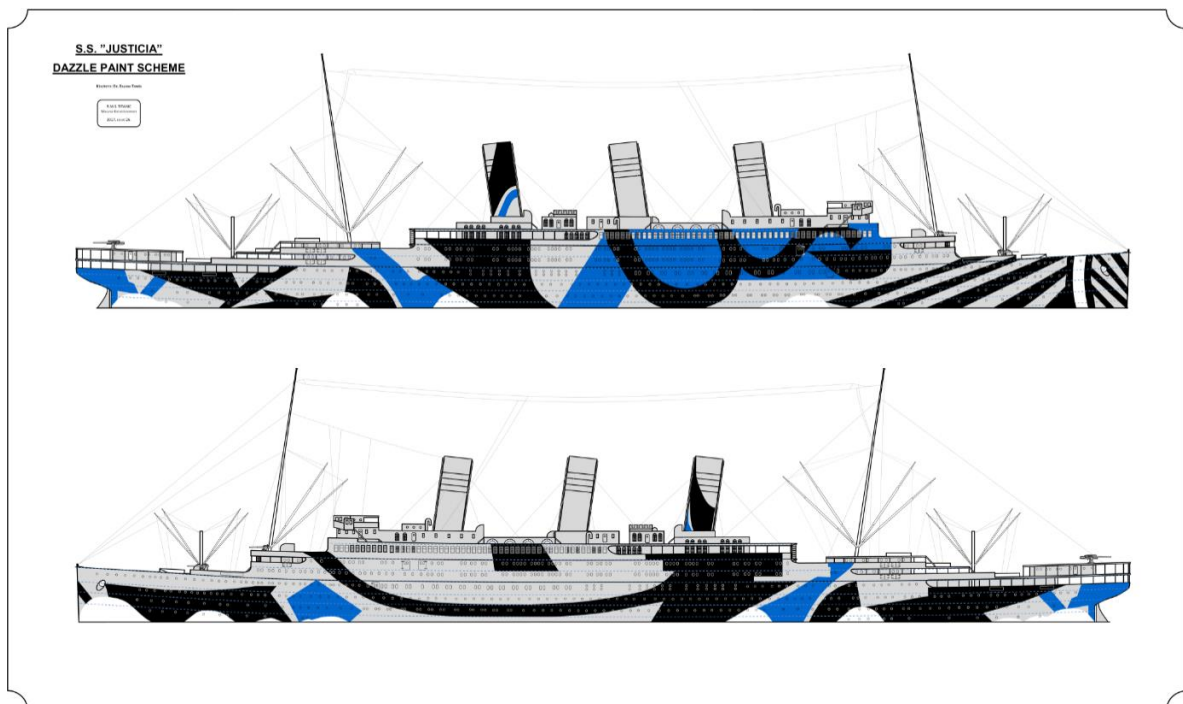


Figure 4: STATENDAM - already as JUSTICIA - in a dazzle painting for the purpose of war camouflage. The variety of geometric shapes and colors made it difficult to estimate the size, distance, speed, and direction of the ship, thus reducing the chances of an attack succeeding. This naval camouflage painting based on natural images (tiger and zebra stripes, tall grass, wavy sea surface) can be attributed to the British naval painter Norman Wilkinson, who tried to contribute to the protection of ships with this dazzling optical illusion (drawing by Tamás Balogh).

However, the U 54 and U 124 submarines alerted by U 64 completed the work next day. The co-ordinated maneuver of the three German U-boats was the first known occurrence of the later dreaded "wolf pack" tactic (the tactic was believed to have been born in World War II, but the Justicia-case proves that submarines had their first coordinated attack like the later wolf packs took place in World War I). It was the longest duel between an ocean liner and submarines in World War I, and the Justicia was the second largest merchant ship sunk in war, after Britannic ran into a German mine in 1916.

The relentless attack by German submarines (and essentially the birth of a whole wolf pack tactic) can be traced back to a mistake: Justicia was eerily similar to the German ocean liner Vaterland seized in New York when the U.S. entered into the war in 1917, and transported thousands of American soldiers against Germany. The German sailors therefore promised the general command that they would destroy the ship rather than she help the enemy's march. However, Otto von Schröder, the commander of the U-64, misidentified Justicia as Vaterland, so he did not want to give up and let the damaged ship go...

Today, only the wreckage that laying on the bottom swept by strong Atlantic currents reminds us of this story, and of my book on the ship, which was published on the centenary of the ship's sinking. Thanks to this, I was asked to participate in the making of the documentary. The base for the four-day research was the Rosguill motorboat, which ran daily from the port of Rosapenna, in Drongawn Bay, near the northernmost point of Ireland, the Malin Head. The wind-blown surface which planed by ice and is such bare as a man's face after shaving, has an unmistakable charm, and at the same time it has impressive power which says there's not giving life for free. But this energy is here everywhere in the countryside: in the familiar atmosphere of pubs organized around attentive conversations at tables in comfortable chairs in front of open fireplaces, in the persistent grazing of sheeps which growing thick wool, in the defiant growth of emerald green grass, and in plastic waste which dropped out irresponsibly by someone in a remote corner of the world and stranded by currents on the sandy shore of the bay... And – of course – in the memory of the sailors who ever sailed in these waters.

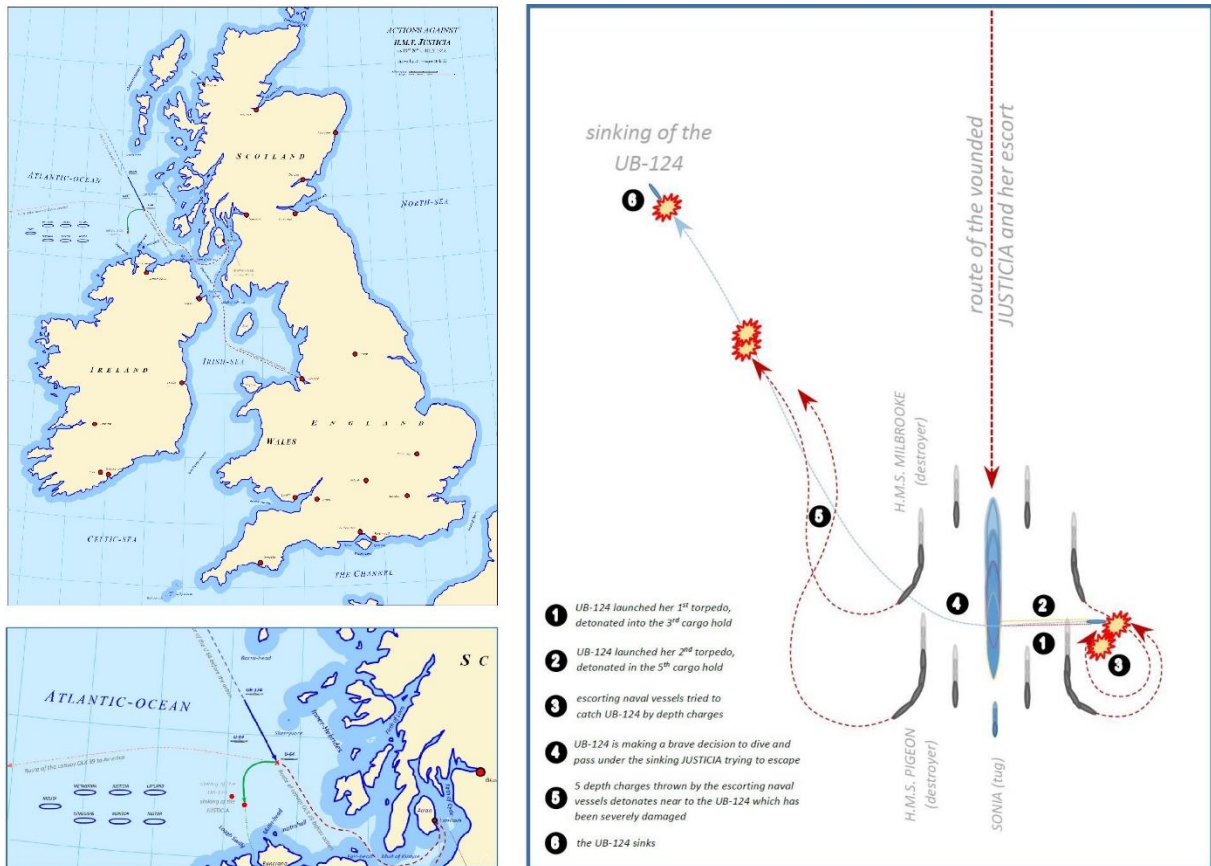


Figure 5. The JUSTICIA's convoy and the route of the German submarines attacking it and the outline of the attack resulting in the fatal torpedo hits (drawings by Tamás Balogh).

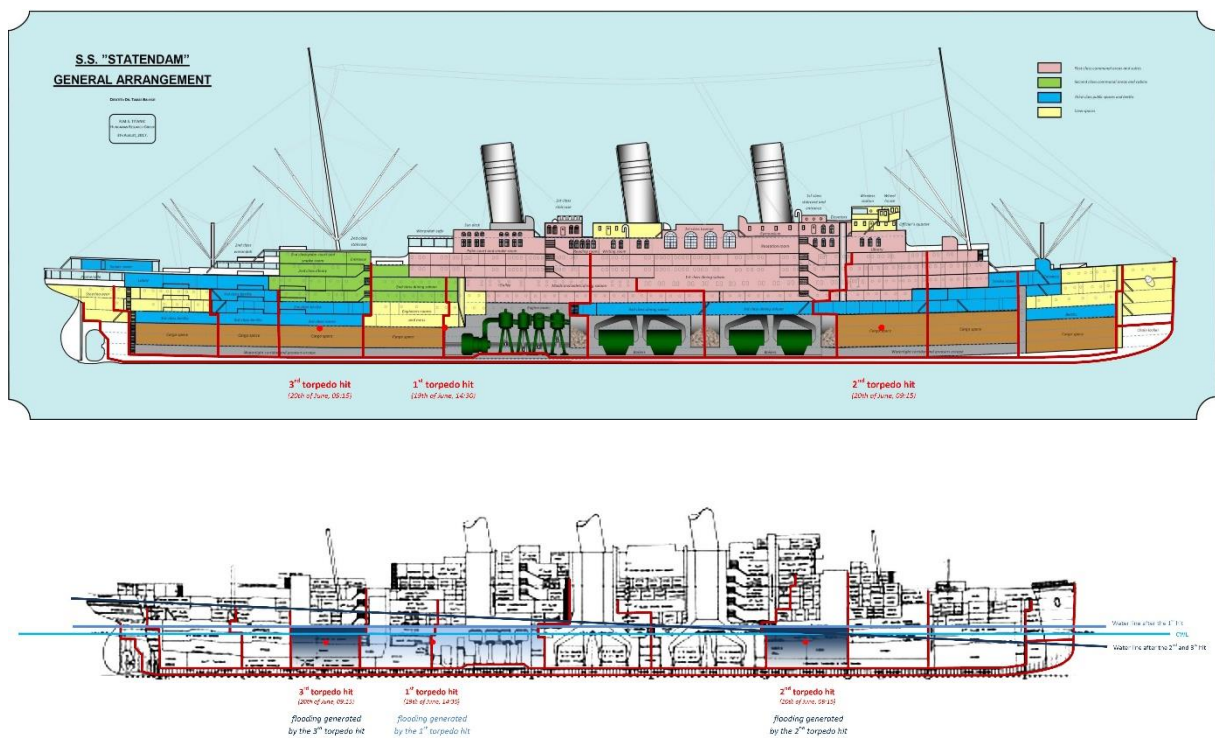


Figure 6. The impact of the torpedo hits on JUSTICIA and the flooding through them (drawings by Tamás Balogh).



Figure 7. Snapshots of the 2019 expedition researching the wrecks of JUSTICIA (recordings by Tamás Balogh).

The wreck of Justicia is quite far from the coast, 28 nautical miles (52 km). Rosguill made this trip in just over two hours. Aboard the expedition's divers, Barry McGill, Gareth O'Neil, Kevin McShane, Pat Coughlan and Stewart Andrews. They are all experienced divers who regularly dive off the coast of Donegal, where 90 World War I and World War II shipwreck rests. They were joined by members of the film crew, producer Loubna Turjuman Genovese and Matt Bone, cinematographer Jonathan Young, assistant Liam Scott and Quincy Andrews, operator of the underwater remotely operated vehicle (ROV). The sea was calm, but - as we were on shelf sea (with an average depth of only 60 m) - reflected from the nearby bottom, even the slightest ripple seemed stronger. Thus, although it was a breathtakingly beautiful time, the Rosguill waved heavily.

When we finally reached above the wreck's position, Quincy's time came, who had prepared his Deep Trekker-type vehicle, called Baxter, for the task ahead. Considering the 250 m length of the cable for remote control and image transmission, Michael maneuvered with ROSGUILL to make Baxter reach the seabed about the JUSTICIA's mid-section so that Quincy had enough long cable to run towards the bow or the stern either.

Quincy and Baxter succeeded in finding the boilers for the first attempt, from where they headed toward the ship's stern on the original portside. However, on the debris field - that covered with huge rust steel plates torn from the hull's sides and with intermittently collapsed side walls and deck remains - the operator could not find the right way, so I stood by him and followed the events on the remote control display and predict what have to been done, essentially helped on a GPS-like way to Quincy in Baxter's control. In a triple, we finally successfully reached the starboardside of the ship, starting our tour from the rear boiler room, going backwards along the ship's portside and bypassing the wreckage area behind the engine room. Here a section of the bulwark of the third-class open promenade revealed in Baxter's horizon, then the ROV returned to the boilers to attempt to approach the bow in accordance with Matt's instructions and take a long single shot along the starboardside of the hull.



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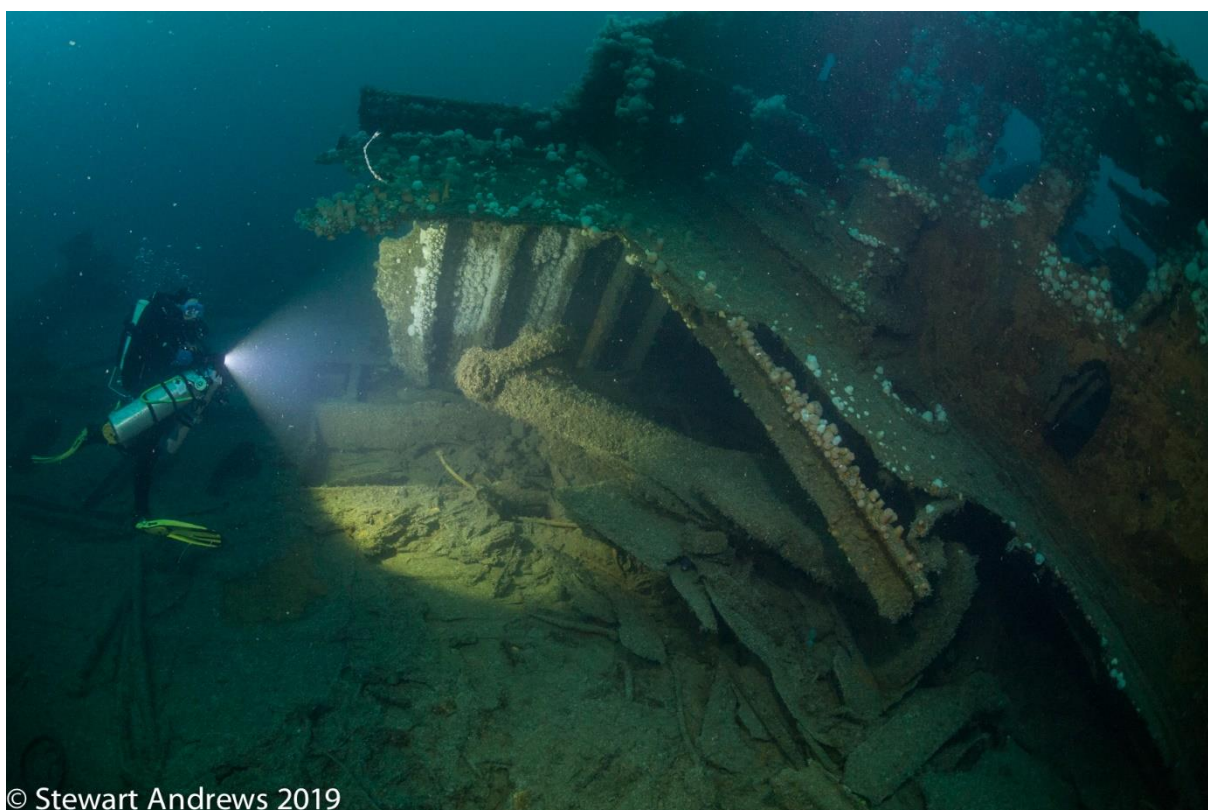


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Figure 8., 9. Wrecks of *JUSTICIA*. Above are the half-buried remains of the portside propeller, below are the fallen stern post and the rudder (photo by Stewart Andrews).



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Figure 10., 11. Wrecks of JUSTICIA. Above are the remains of the steering gear attached to the upper end of the rudder, below is the front end of the superstructure drifting off the hull, with the auxiliary anchor below the remains of the deck (photo by Stewart Andrews).

But at this point, the currents intervened, twisting the camera beyond the desired point, whose own machine power proved to be insufficient to return. Quincy therefore brought Baxter to the surface, and Rosguill took a new position so that the current would drift pushed the ROV directly onto the wreck's bow after it's repeated launch. While we waited for the result and watched the plastic-coated data cable moves away from the cable drum, the shores of Ireland were suspected in the pale blue distance. Above the horizon only the outlines of the highest mountains rose, and they, too, were just a shade darker than the mist of the sea, so we knew that those who now look north from the shore would certainly not see us. However, we soon saw the wreckage of Justicia on the screen again, and this time Baxter landed exactly where it needed to be.

The most important result of the work is that 100 years after the ship sank, the first complete and comprehensive survey of the wrecksite was completed. The exact resting place of the wreck has been identified by the divers Norman and Simon Bamford, and Leight Bishop, a well-known underwater photographer, has regularly captured great underwater photographs from the mid-1990s, which have made the ship widely known since 1998. Some details, such as the bow, were captured on iconic images and inspired dozens of divers, but little was known about the ship as a whole.

At least a comprehensive picture of the wrecksite as a whole was obtained when the first SONAR image of the wrecksite was taken in 2005 as part of the Irish National Seabed Survey. This image showed mainly the spatial location of the wreckage and the depth data, showing the lowest and highest elevations of the wreck with a color scale. Although all details are missing from this picture, some basic facts (as compared to previous close-ups made by the scuba divers) have become clear. It turned out, for example, that the ship, which is in the way of strong sea currents, had collapsed and that the once 237 m long, 26 m wide hull was scattered over a wrecksite of about 300 m long and a good 50 m wide. The currents, for example, swept the superstructure to the left side of the ship, and today only parts of the hull below the former waterline remained more or less intact. Everything else was broken into small pieces, turning the magnificent ocean liner into a jigsaw puzzle.

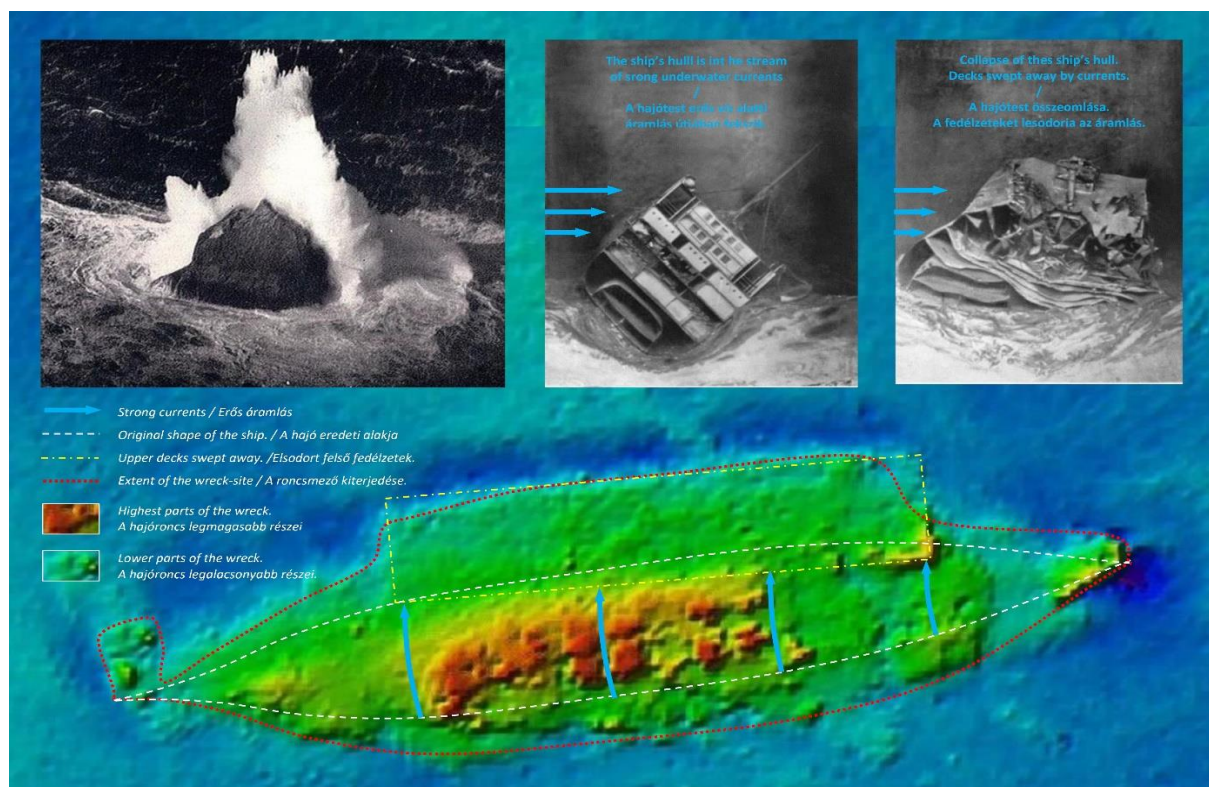


Figure 12. The SONAR image of the wreck and the main features it identifies, showing the environmental conditions leading to the collapse and the process of it (source: Dr. Tamás Balogh, using the Sonar image of INFOMAR).



Figure 13. 1918-2018 - HMHT JUSTICIA and its Wreckage (created by Dr. Tamás Balogh, © 2020).

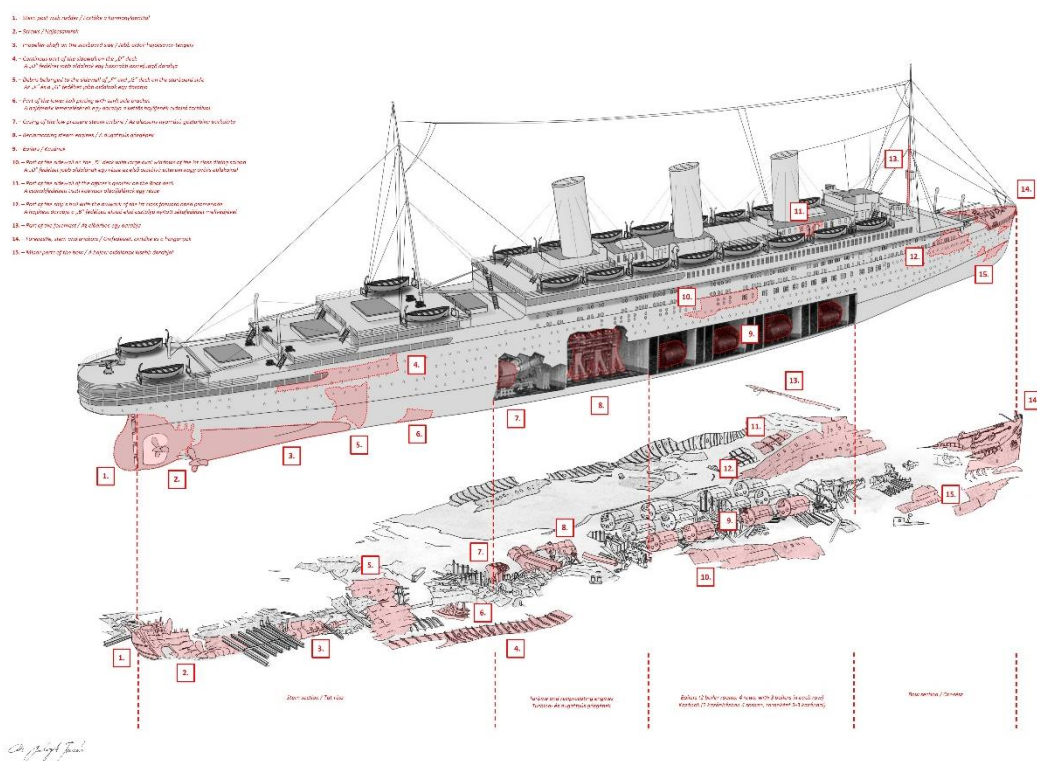


Figure 14. Outline drawing of the wreckage field, identifying the exact origin of the components there (by Dr. Tamás Balogh, © 2020).

Norman Woods attempted to assemble the parts of this jigsaw puzzle for the first time in 2014, capturing the underwater footage of larger areas of the wreckage by attaching his GoPro camera to his scooter, so he was able to swim along the full length of the ship from bow to stern and back again only in 13 minutes. However, he was not able to go to the sides, far away from the ship's former centerline, leaving many uncharted areas in the wreckage and waiting to be identified.

This information helped to determine the starting points of current research and to design and conduct a new survey. As a result, Dr. Tamás Balogh prepared the first complete representation of HMT JUSTICIA's resting place, which can be seen here for the first time.

By the end of the research, we were able to identify that which was the former (original) position on the ship of some larger structural units laying on the wrecksite, which also helps to better understand and reconstruct the deformation and disintegration process of the shipwreck. It was a great surprise that the walls of the watertight compartments in the lower part of the hull, can still be seen around the engines and the boiler rooms, everywhere on the ship. These walls specially strengthened after the TITANIC disaster regarding that the JUSTICIA was the first ocean liner built after the sinking of the TITANIC, where the new safety regulations could be applied. Also new was the identification of the ship's fallen foremast. Unfortunately, however, it has also been confirmed that the natural deterioration of the wreck has accelerated and that even the small details that are still recognizable will soon disappear.

Many argue that the shipwrecks preserve a time-frozen pictorial imprint of an episode of history, saying that everything is intact on the spot just as it was there at the time of what happened. This is a very romantic picture, but unfortunately not true. Shipwrecks also have an evolution, a bit like the decay of the human body after a coffin burial. Just as the human body is left with nothing but the skeleton, when the flesh and skin decomposes, the falling of the plates from the hull of the JUSTICIA is now more and more spectacular, and bare frames are peeking out in more and more places even in parts that have so far remained more or less recognizable and recalled the former shape of the hull. And the force of the current that sweeps regularly through the wrecksite is such that it swept the entire superstructure off the hull, and even upset the three-story high-reciprocation steam engine pair made of huge cast iron. We witnessed the passing and could see an ocean liner disappearing.

In terms of the phases of degradation, the four contemporary behemoths — the TITANIC that sank in 1912, the LUSITANIA that sank in 1915, the BRITANNIC that sank in 1916, and the JUSTICIA that sank in 1917 — are in four different stages of decay. This is not at all related to the age of the ships (since all ocean liners were built in the same decade) or the circumstances of their sinking (collisions and explosions underwater and outside). Rather, with the site of the sinking. BRITANNIC is in the best condition. At first glance, it really is as if you have just sunk to the seabed. The appearance, however, is deceptive: what we see is a vase of the colonies of certain living forms rich in Mediterranean climates settled on the hull, which encloses the ship in a solid crust, taking its shape and still preserving while the steel and iron completely corroded. In the state that can recall the original, TITANIC is still there, and the reason for this is the extreme depth in which she lies: at a depth of almost 5 km, there are hardly any microorganisms that could break it down. Hardly... The only exception is a bacterium called *Halomonas titanicae*, which feeds on iron and literally devours the ship over decades. The third phase of decay is LUSITANIA, which lies in shallow sea off the south coast of Ireland. Her condition is near to the final collapse. If we still want to research something among her wrecks, we have to do it now. And the last in line is JUSTICIA, with her completely disintegrated hull, which is literally a wrecksite now. It no longer represents herself, it is not enough to go there and see her to bring her story back to the life: it certainly requires a lot of expertise and vivid imagination. Seeing the sad footage, we all felt it: this is exactly our job now, which is why we are here.

According to the ancient Greeks, there are three kinds of people: the living, the dead, and the one who goes to sea, and only the one who is truly forgotten dies. I felt the message of beautiful weather and calm water: as if we had the opportunity to recall a story of more than a hundred years. It was an inspiring feeling to think that we had an opportunity to give thanks for the chance by a good job.

The expedition may have recorded the condition of the shipwrecks before her final disappearance, so the image of her known in 2019 - thanks to the work done - is now preserved.

Credits:

Filmmakers:

- Loubna Turjuman Genovese, Producer;
- Matt Bone, Producer;
- Quincy Andrews, Drone operator;
- Jonathan Young, Cameraman;
- Liam Scott, Technical support.

Divers:

- Barry McGill, Leading Diver;
- Gareth O'Neil, diver;
- Stewart Andrews diver;
- Kevin McShane, Support Diver;
- Pat Coughlan Support Diver;
- Michael McVeigh, Skipper.