

Diving in **Sweden**

World-class diving in a challenging environment

From the rugged west coast, with its dramatic drop-off and unique ecosystems, to majestic wrecks—perfectly preserved over the centuries—and crystal clear lakes, Sweden has everything.

Compiled and edited by
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Text by Millis Keegan
Photos by Jonas Dahm

From a marine archeology and scientific standpoint, the Baltic Sea is a paradise. There could be as many as 100,000 shipwrecks dating back centuries in this dark and mysterious sea—Viking ships, trading ships and warships to name a few. No other place in the world is comparable to the Baltic Sea. The wrecks, and structures found in the sea are veritable time capsules lying in wait for us to explore and expand our understanding of the past. It is also a comparatively quite shallow sea. The average depth is only 55 meters deep, so with modern technology, it is not too complicated to find many of our lost histories. These histories belong to the countries surrounding the Baltic Sea.

Granted, diving in the far North is not for the weak-minded, nor for the inexperienced, but it's not as bad as it sounds. Scandinavian divers are known around the world for being able to cope with rather tough diving conditions because this is where we grew up and learned to dive. Anyone who goes through entry level training in murky waters with a visibility of 2-4 m (6-12 ft) at best, a water temperature averaging 8°C to 2°C in the winter to 20°C in the summer, and comes out with a smile, will be ready to face anything else. And yes, we do also dive during the fall and winter months, too, with great pleasure.

The bridge of the steamer *Brigge*

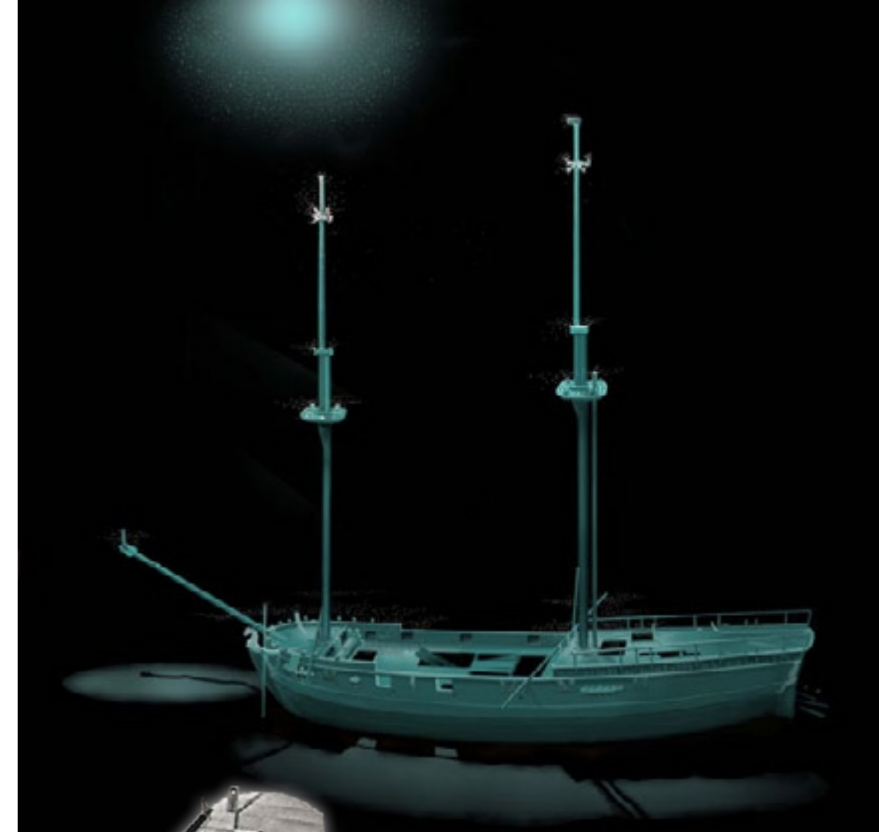


The Mystery Ship

A wooden ship found by the Swedish Navy that, despite a very unusual figure head of a horse, has never been identified or salvaged.

The DC-3

A lost plane presumed to spy on Russia and therefore was presumed to be shot down by the same. The discovery of the plane gave answers to a number of questions and peace of mind to surviving family members.



My most intense diving experience was a 500-year-old wreck in the Baltic in 1992. She was standing upright, mast still there, but the oak planks were as thin as could be, which left her fragile and exposed to careless diving and rough weather. What really got me though, was that she went down in 1492. The visibility was incredible, I saw the entire wreck, and as I swam over the deck, it hit me. When she went down, Columbus discovered America. Columbus discovered America! That was heavy, and even though the ship itself was a simple, small merchant ship, stripped by years of exposure, she was also a monument for the men and woman that explored the world.

— Millis Keegan



Sweden has the highest proportion of divers per capita in the world. We are spoilt for choice. Following are descriptions of just a few of the jewels.

Vasa

One of, if not the most, popular attractions in Sweden is the Vasa ship. Vasa was a Swedish warship that sank during her maiden voyage in 1628. All but forgotten for 300 years, she was salvaged practically intact on 24 April 1961, restored and turned into a museum. Once you

enter the museum, you will stay for hours—it is that good. www.vasamuseet.se

The Champagne Wreck

One of my favorites is the Swedish schooner *Jönköping*, which was sunk by a German submarine in 1916. She carried an order of French Champagne for the Russian Tsar. The bottles were salvaged near Finland in 1998, and they found that the French champagne had been perfectly preserved at a constant 4°C and was ready to drink. Many of the champagne bottles were auctioned off by Christie's in London.



Points of interest

Almost anywhere there is a puddle of water, there is a possible dive site for diving enthusiasts in Sweden. Rivers, lakes, deserted water-filled mines, the Baltic, the West Coast. Some true divers and explorers have been bred in these waters. We cannot list all dive sites here, but we have made a selection based on where you can find a dive center to take you diving.

West Coast of Sweden (1)

There is quite an interesting variety of marine life along the west coast of Sweden. Hence, it is a very popular destination for Swedish divers who get tired of the lack of life in the murky waters of the Baltic. If you have no interest in wrecks, this is the place to be.

Between the 8000 islands of the archipelago and the fiords, there is some interesting diving to be found in terms of marine ecology. Lysekil offers diving in the biologically unique fiord of Gullmarn. Learn more about what you can expect to find here by visiting Havets Hus, "The House of the Ocean" (havetshus.lysekil.se).

Day trips are arranged from a number of coastal cities: Marstrand, Smögen, Hamburgsund, Tanumstrand, Grebbestad and Strömstad. Every place has its own charm. The further north you go, the better the diving gets. That's because the Gulf Stream makes a little turn here and hits a little bit of Sweden. The mixing of cold and warm water provides excellent conditions for diverse marine life.

Väderöarna, meaning "The Weather Islands", are often referred to as the best diving the West Coast can offer. The islands are home to a large seal colony that spends time playing peek-a-boo with divers.

A coldwater coral reef was found not too long ago in the Koster fiord, which earned the fiord the status of becoming a Marine National Park. The reef of *Lophelia pertusa* is found deep, so don't expect to dive on it.

Kullen (2)

Kullen is one of the most distinct penin-

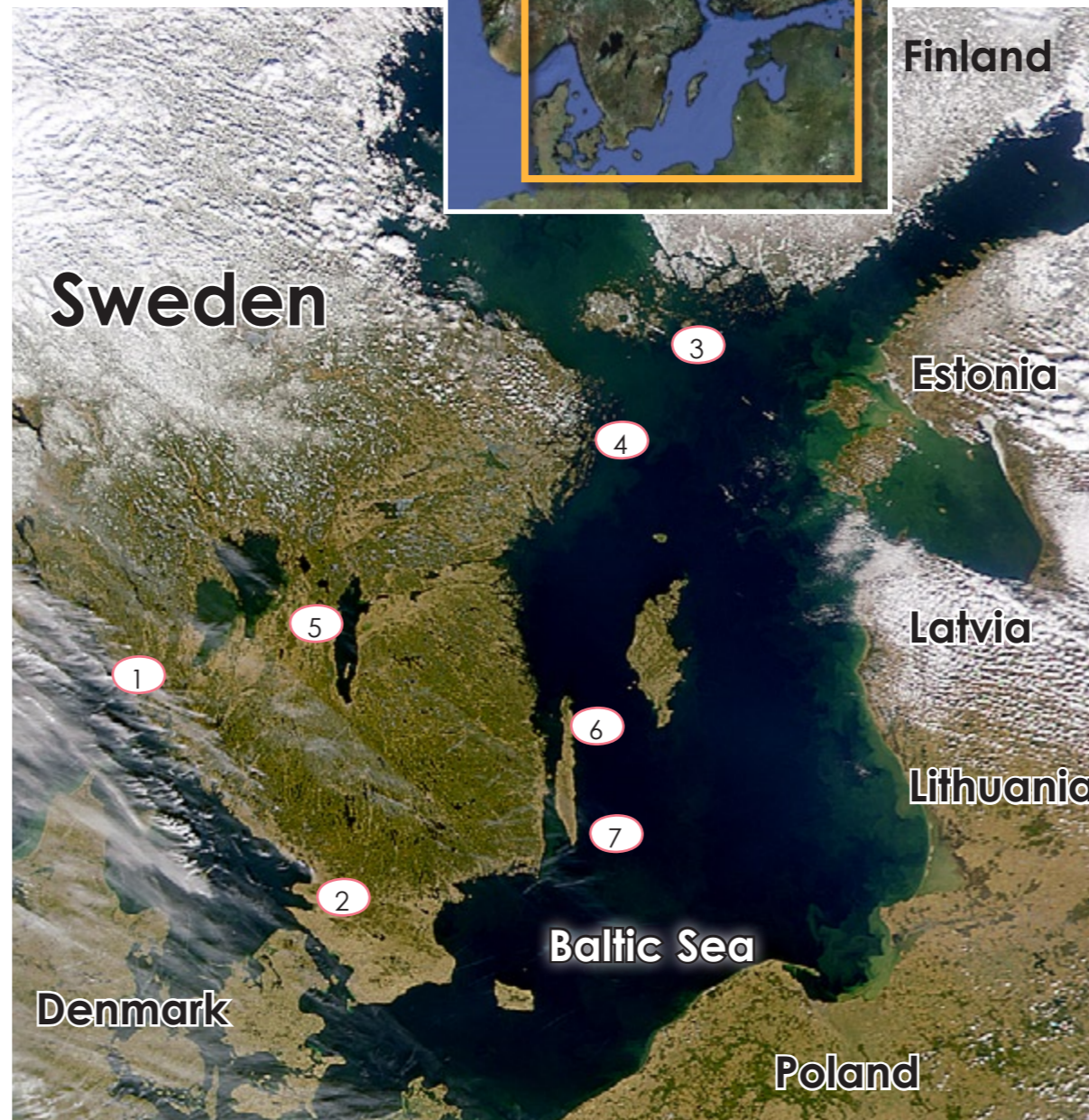
sulas of Sweden. Kullen stands out from the surrounding areas with its rocky, craggy shore, which continues under water. Due to currents that bring nutrients, the marine life is abundant, particularly during summer and autumn. Expect to find shore crabs, hermit crabs, jellyfish, dead mans hand, lot's of flounders, and on a good day, sea trout, cod, mullets and more.

Åland (3)

The Åland islands are situated at the entrance to the Gulf of Botnia and form an autonomous, demilitarized, Swedish-speaking region and historical province of Finland. Åland consists of some 6,500 islands and islets. Due to different regulations regarding diving and wrecks, the wrecks of Åland are pristine, almost always filled with details and in better condition than other dive-able wrecks in the Baltic.

Stockholm Archipelago (4)

The Stockholm Archipelago spreads its islands from Landsort in the south to Arholma in the north. It is the biggest archipelago of Sweden and consists of almost 24,000 islands and islets. It is also the graveyard for more than 20,000 located shipwrecks. Shallow inlets and rocky coasts have sunken more of their fair share of vessels. In the Baltic Sea, you find wrecks from the 10th century or older to wrecks from several wars, including the two world wars as well as tragedies from modern times. The Baltic is all about wrecks. Sure, there's some marine life, but seldom for us to see. An occasional flounder, or a school of small groupers resting on a wreck during a night dive can be seen, but not much more.



Maps of Scandinavia with locations of Baltic Sea diving points of interest

The Great Lakes (5)

Sweden has thousands of lakes, but only a couple of them are large enough for merchant ships, *Vänern* and *Vättern*. Wrecks have rested here for centuries without deteriorating in these fresh lakes. The Baltic Sea preserves ships for

thousands of years, but in freshwater lakes, preservation is even better. The visibility in these lakes is almost as clear as glass.

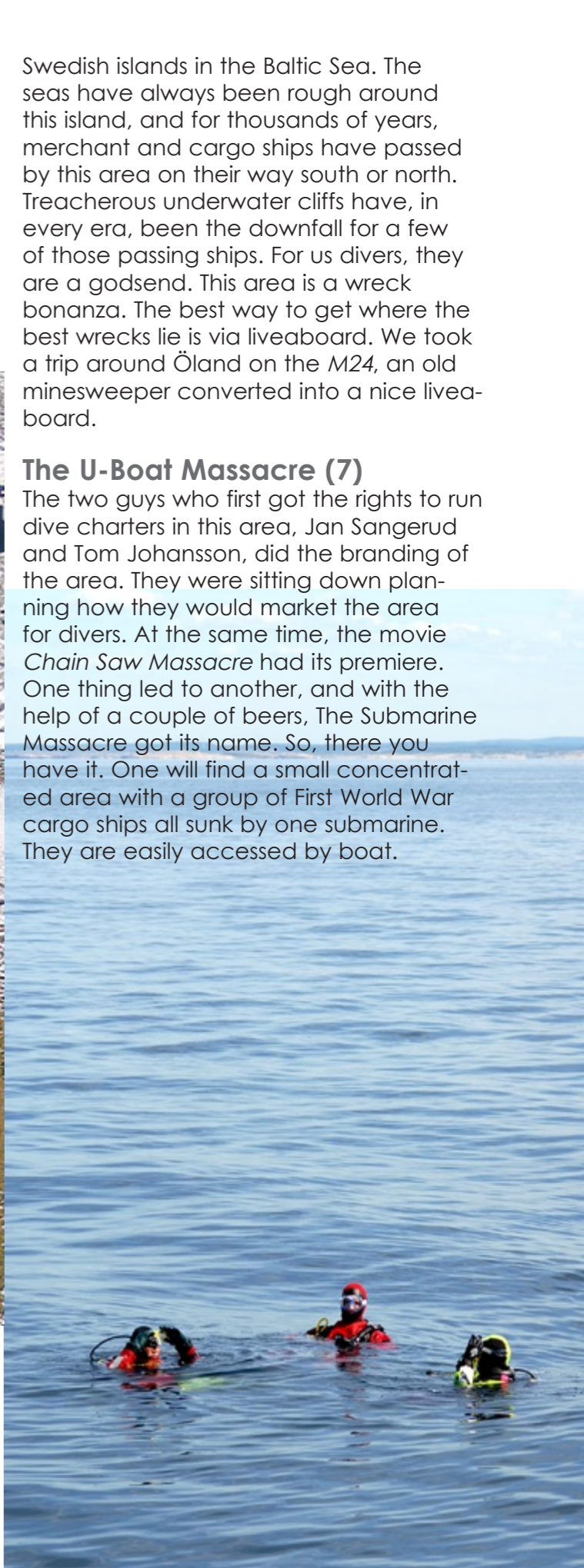
Öland (6)

Öland is made up of the two largest

Swedish islands in the Baltic Sea. The seas have always been rough around this island, and for thousands of years, merchant and cargo ships have passed by this area on their way south or north. Treacherous underwater cliffs have, in every era, been the downfall for a few of those passing ships. For us divers, they are a godsend. This area is a wreck bonanza. The best way to get where the best wrecks lie is via liveaboard. We took a trip around Öland on the M24, an old minesweeper converted into a nice liveaboard.

The U-Boat Massacre (7)

The two guys who first got the rights to run dive charters in this area, Jan Sangerud and Tom Johansson, did the branding of the area. They were sitting down planning how they would market the area for divers. At the same time, the movie *Chain Saw Massacre* had its premiere. One thing led to another, and with the help of a couple of beers, *The Submarine Massacre* got its name. So, there you have it. One will find a small concentrated area with a group of First World War cargo ships all sunk by one submarine. They are easily accessed by boat.



Stockholm's Archipelago

The inner-city wrecks of Stockholm are easy to get to, but despite the novelty of diving in and around downtown Stockholm, which in itself can be alluring, the wrecks themselves do not have much to offer. Find your way to the outer Stockholm archipelago, and it's an all-together different story. The wrecks there range from interesting to amazing. In pre-GPS times, the more than 20,000 islands in the archipelago were extremely hard to navigate, and quite a few wrecks have gone under during the last millenium. The very same islands that helped cause ships to wreck also protected them from winds and waves. There is no possible way to tell you about them all, but enjoy the following selection of favorite dive sites.



Text by Fredrik Isakson
Photos by Jakob Selbing and Stefan Hogeborn

Sweden

The best way to get wet in Stockholm is to get on a dive charter booked through one of Stockholm's dive centers. A dive charter costs around 500 SEK per dive, and it is usually worth every penny. Do not expect two tank dives per half day. You get one dive in the morning and one in the afternoon. The weather conditions don't always allow a dive on the wreck you wanted to dive, but rest assured that the boat captain knows what he/she is doing and will take you to where diving conditions are best that day. Don't expect to see a lot of fish—in fact, consider yourself lucky if you see a fish. In certain areas, you may see the occasional seal.

Dalarö

Many dive charters take off from Dalarö, a small picturesque little village with a rich history south of Stockholm. This was the final port before the open seas. It took a sailing ship one to two weeks to sail through the archipelago to Dalarö, but it took only half a day by horse and carriage to get there, making Dalarö the place where noble men and owners of the merchant ships joined their cargo for the voyage to other worlds.

Najade and Melanie

The dive boats depart from Dalarö, and it takes a few hours to get to either of the dive sites. Most boats are smaller, so the trip can be a bit tedious, but if you find yourself a little corner of the dive boat and take a little nap, the trip might seem shorter. But first, the best advice as always is, to don your equip-

ment immediately upon coming on board. When dive time comes around, pull on the rig, suit up and jump in.

Donald Duck Wrecks

Both wrecks are located in open water, at a depth that allows Nitrox 32, or possibly 30, as an alternative to air. Swells and waves are a concern. This is advanced diving, and a drysuit is recommended for the major part of the year. Is it worth it? Yes, this is always a great dive, despite the fact that the weather is rarely on your side. The wreck sites fall under a category Swedes like to call "Donald Duck-wrecks", which means that the hull is relatively intact, it sits right side up and displays great details.



Diver inspects the wreck of the *Eldaren*



Stockholm and its archipelago. The square marks the city center on this false colour satellite image



Company may show up

Seals can be seen playing and hunting for fish in the area and on the wrecks, which sometimes can be an eerie wild life encounter when you turn a corner! Even though the seals can add to the dive experience, the wrecks are located within a Seal Protection Area, which means no diving during most of the summer. Sometimes while diving, I keep very still and just wait. On the surface, one sees the seals all the time, and if you're lucky and take it easy, they might visit you on the wreck to take a closer look at the intruders. You need to keep your eyes on them if this happens; they are like black torpedoes in the gray-green water.

Najade

A German ship, built in 1910, which were transporting a cargo of oranges and tobacco when she ran aground on

Almagrundet 12 April 1933. She managed to back off the ground, but the collision caused severe damage. She was anchored, but it did not take long until she gave up and sank. Fortunately for divers, she settled on hard bottom at

34 meters (112 ft) where the visibility is great. There are a lot of fun details to explore, and she is simply one of the best wrecks in Stockholm.

The only disadvantage would be the distance to the wreck and the exposure to the weather. At the same time, that is the reason she is such a great lady to dive.

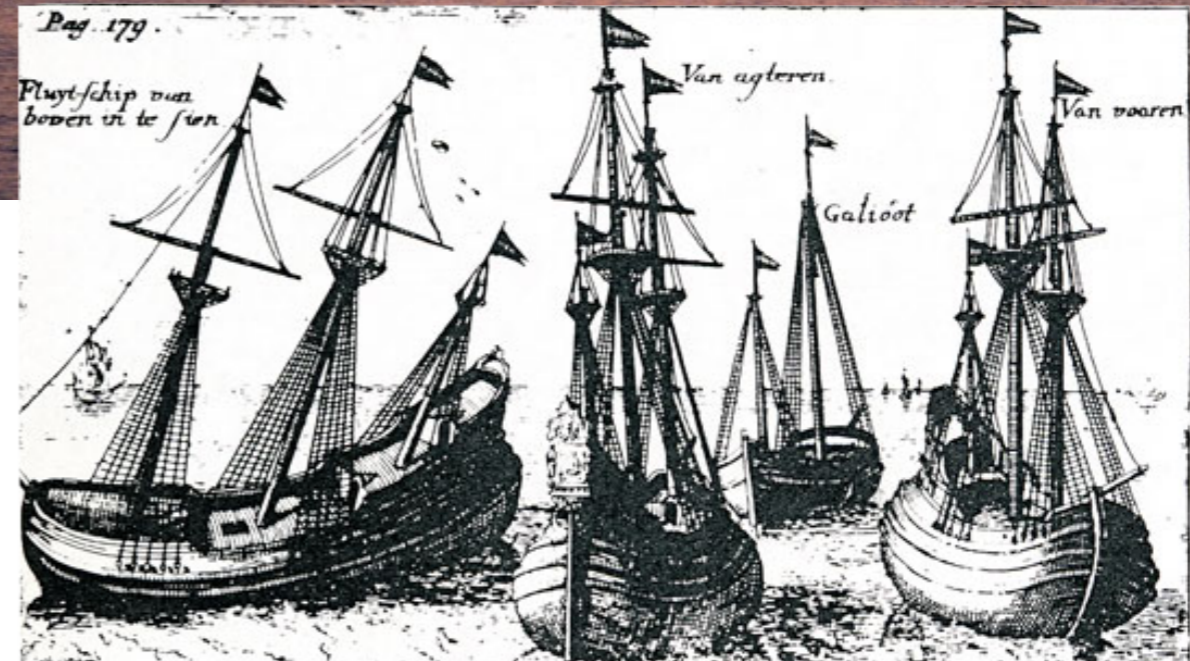
Melanie

The *Melanie* is an old steamer laying on her side. The hull is designed differently from modern motor ships. Her design caused her to land on her side after going down. She was also designed to be sailed and had masts. She is longer and wider than the *Najade* at 77m (250 ft) long and 10m (32 ft) wide.

There is a safety concern—since *Melanie* rests in such an angle, it confuses the mind. When you reach the deck,

it gets rapidly deeper, so keep an eye on your dive computer. Take a peek into the galley, and if you have the proper training, there is much to penetrate here from stem to stern. The visibility is fair, but the water is eerily milky around the *Melanie*. Still, she is a great ship, a good repre-

sentative of the steamers that used to sail around the turn of last century. She carried 3,000 tons of coal in the hold, loaded from France when she went under. Her destination was Scotland via Stockholm. It was winter, late in January 1907. Ice laid in drifts on the surface and made it difficult to see any shoal or reef in these hard to navigate waters, so she ran aground and sank, resting at 35m (115ft)



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The wreck of the *Melanie*

The Swedish archipelago is a picturesque place to live, and one can have good diving virtually at one's doorstep



south of Innerbådan, Biskopsön.

This is probably one of Stockholm's most popular dive sites. It doesn't get much better than this, weather permitting. On a good day, you can get two great dives in—*Melanie*, with her old charm, and the slightly newer *Najade*.

How to get there: By boat

Best time: Late summer and autumn

Depth: Approximately 35 m/115 ft

Conditions: Visibility here is often very good. There can be a current, but it is not very common. But there is a constant swell here, so manage your seasickness. You have to be able to handle yourself on a moving boat. If you are inexperienced, ask the staff about the best way to get up that ladder, that's where most accidents happens.

Sappemeer

She went aground and sank 7 November 1969, and is thus a relatively young wreck in

Après plongée—Scandinavian berries ripen late in the season at high latitudes but end up saturated with flavor



Sappemeere is such a fun wreck, and you might find yourself eye to eye with a seal inside the wreck

they have fun doing it. For visiting divers not so used to the cold water environment, this is a great wreck to start with. Diving still has to be done cautiously and with knowledge. For example, visibility gets really bad, really quickly in the engine room. Divers have died in this wreck, and even seals make their way in without finding their way out again, and believe me, that can be a scary unexpected sight. Ghostlike. Last fall, you could still see at least one carcass if you peeked through any of the portholes on port side.

The wheelhouse and a part of the superstructure up front have collapsed and are a jumble of scrap. Smack in the middle of this heap lies the radio, and wires criss-cross in all directions. But you still have the feeling of the wheelhouse where parts of a wall and some rafters remain. The limestone the vessel

was loaded with is spilling out of the hold.

Sappemeer is simple fun, and it makes her a good wreck. Because of her size, 51m/167 ft long and 8.5m/27 ft wide, she is easy to grasp, and one gets a good feel for the wreck really quickly.

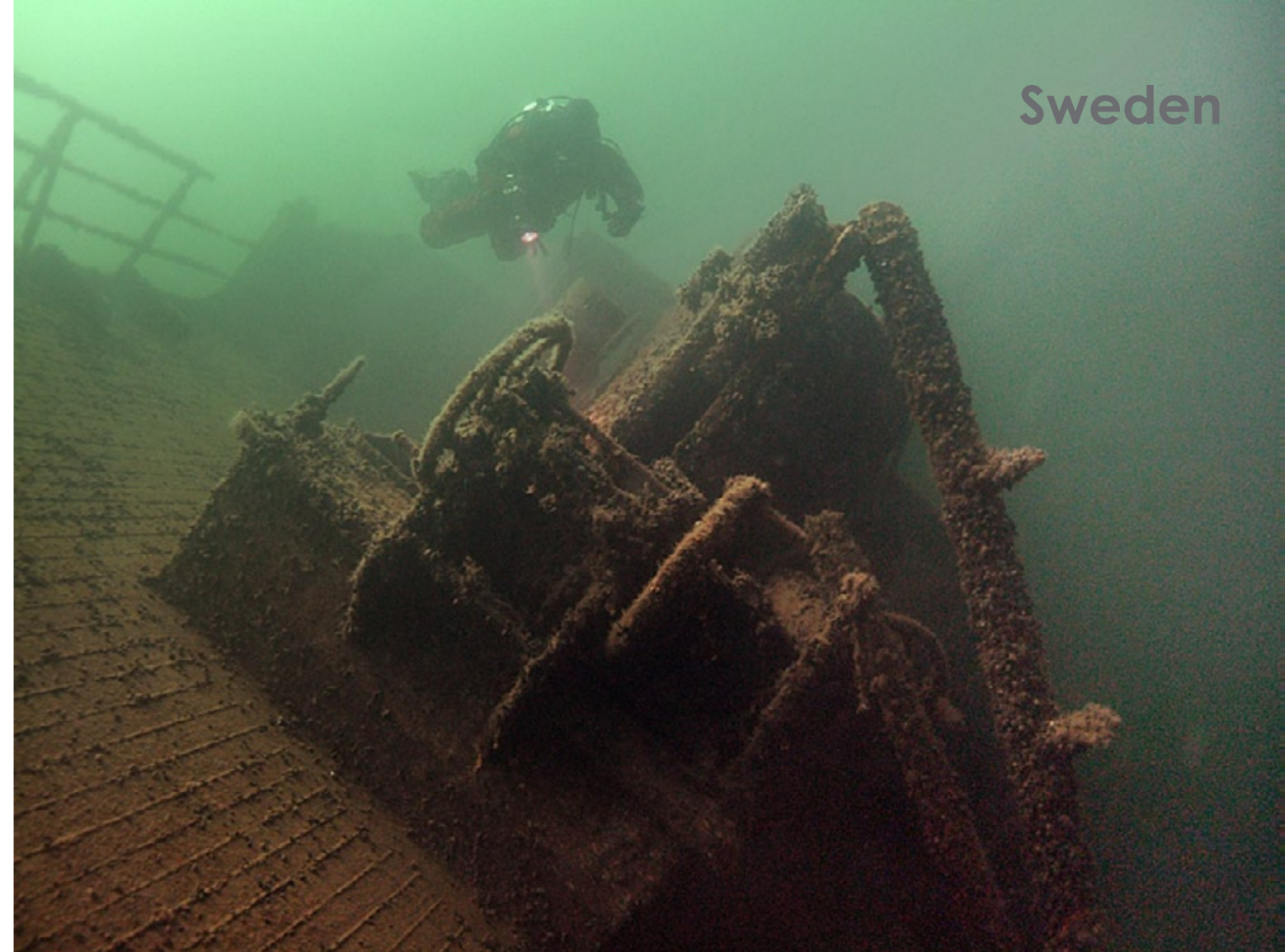
How to get there: By boat

Best time: The entire season, even off season if weather permits.

Depth: 16 m/52 ft - 25 m/82 ft,

Conditions: Visibility here range from 5-20 m/16-60 ft. Rare to encounter current, surface current can appear some times.

Photography: Quite suitable for wreck photography, due to her laying relatively shallow, light reaches down to the wreck and the limestone cargo reflects the light from the surface, which helps.



Ingrid Horn

The *Ingrid Horn* is a very temperamental old lady, and she decides whether you have a good dive or not. The number of swear words used here... Well, when she lets you enjoy your dive, she is absolutely wonderful. The *Ingrid Horn* lays pretty much smack in the middle of a high traffic channel, so this is one dive you really need to know what you are doing. You do not want to come up under a 20-tonnare on its way to Stockholm; you make your way back to your entry point and that's that. The way to get to the wreck is via a marker that leads to an underwater rock. From that rock, you follow a line leading into nothingness that will land you on the aft. The first thing you see is the spare steering wheel. At that point, you are at 24m/79 ft depth.

It is not far, but for many divers, this is the turnaround point. Sure they see the

wheel, if they are less than four feet away, but that's it. The visibility can be miserable due to the heavy traffic. Another reason for aborting the dive is that divers run low on air at this point. No shame in that... well, ah, —whom are we kidding—there is shame in that, but it happens.

A sliver of light is still with you at this point, and you can explore the area with some day light. The aft creates an overhang and that causes some confusion if you haven't familiarized yourself with the layout of the wreck, since you all of a sudden can find yourself with a roof above your head, not knowing how that happened.

Here, you find the spare propeller, a powerful piece that



Sweden

The *Ingrid Horn* is a very temperamental Grand Old Lady, some days you will be lucky to even reach the aft without having to turn back for various reasons. Illustration of the *Ingrid Horn* (below) by Jakob Selbing

gives you an idea of the size of the *Ingrid Horn*. If you follow the profile of the stern to the bottom, you will also find the base of the under water rock. Look up and you'll see leaning over is the stern covered with rust. A mighty sight.

The wreck is cracked in several places, which is the reason I choose to follow the port rail downward. The starboard railing is more difficult to follow. A compass cannot be trusted in these

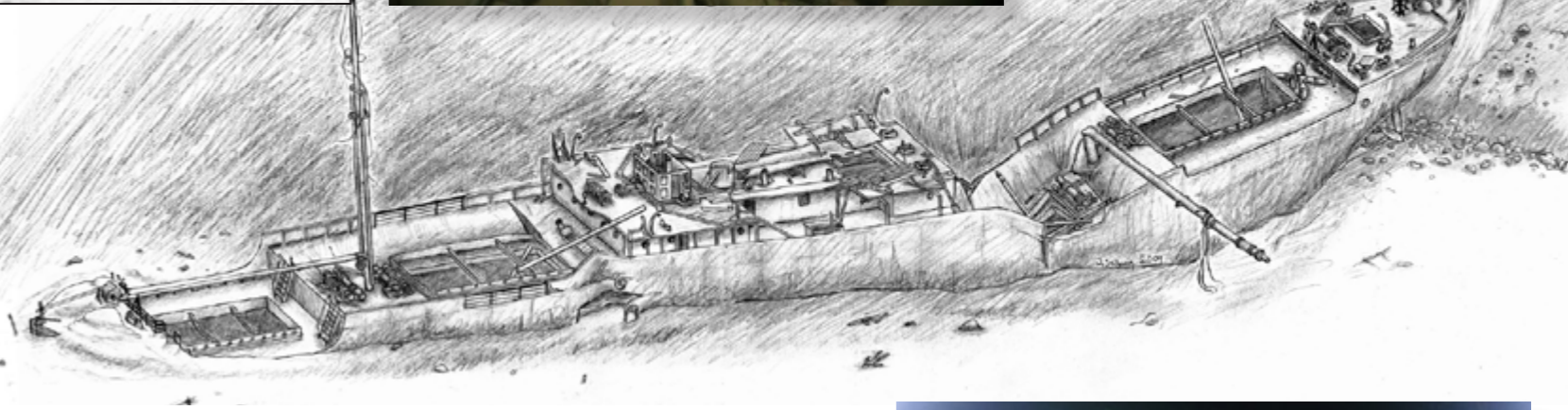
waters and on huge iron ore filled wrecks, so having full control over your bearings is a must.

The visibility quickly deteriorates, but once in a while, the wreck shows a nicer side, and thus begins a fantastic little wreck trip. After you have passed the fallen mast, there is a jerk in the gunwale, but it is still relatively easy to maintain orientation on this side.

Shortly thereafter, you will begin to discern the superstructure, which holds lots of room and spaces to check out. It gets deeper after you pass the superstructure at 35m/115 ft.

Soon, the front of the wreck partly disappears into the hard muddy bottom. After a number of dives, I still have a lot to explore, and I don't have a full picture of her. On the best of dives, you realize you want more and more, and I guess that is part of the charm with this wreck, that one has to explore her piece by piece, and one never knows whether dive conditions will allow a dive at all.

The superstructure needs more attention, and at some point I hope to reach the bow! The *Ingrid Horn* is a large ship. Unless you are on mixed gas and just happen to have the right mix in



your tanks, you will not circle the whole ship, and that's just the way it is.

The *Ingrid Horn* is 89m/292 ft long and nearly 13 m/ 43 ft wide and was loaded with iron ore when she sank after a collision 31 July 1917. The entire crew except for one person went down with the ship, please respect the fact that this is also a grave site.

How to get there: By boat

Best time: Spring and autumn weather permitting, but you never really know with Ingrid...

Depth: 24 m/79 ft to 38 m/125 ft.

Conditions: Visibility varies from bad to worse, with very few exceptions. This is one of few dive sites where you might have to deal with bad current – or not at all depending on Ingrid's mood.

Gas mixes: For air in the tank we recommend the aft part, and a pony bottle. A standard mix for many is probably 32% Nitrox and if that's your choice, do not go passed the superstructure. In the

whole, though, Ingrid is not that deep, so using a thinner Nitrox, perhaps a 28%, or maybe a 25/25, the so-called "Stockholm mix", will allow you to see the part of the wreck that is bored down into the mud.

Harburg

Harburg, a German steam freighter from 1919—54m/177ft long and 9.5m/30ft wide—sank after a collision with the tanker ship *Tinny* in 1957. She carried iron ore and had a crew of 14 men. The boiler exploded in the crash, and the machinist was shot through one of the ventilation shafts by the pressure from the explosion. He was later picked up out of the water by rescuers and survived the ordeal. Ten men died, eight where never found. This is one of those places where you are very aware that you are diving on



a gravesite. Harburg is located near Stockholm City, just outside Lidingö.

The wreck rests in a steep angle with the aft ship being the first point you reach and the bow deep in the mud. As you descend, the stern suddenly appears, just hanging there in the water. It's really a strange feeling. This wreck is a resting place for deceased sailors. There are a lot of details to explore and in an old, I think it's a cabinet for storing hoses, there are some bones, and

Ana Maria—The Perfect Wreck

A brutal winter storm forced *Ana Maria* to seek shelter in Dalarö around the end of the 17th century, and a skeleton crew was left behind to care for the ship. Apparently bored by waiting out the long winter, the crew fancied visiting with *Ahmans Widow*, who lived around a muscet shot away. Rumour had it that she knew how to serve a good beer, and then some.

The lowest rank, the Galley Boy, was left behind to tend the ship and the stove. Of course, a fire broke out, and the ship sank, creating a perfect dive site to visit hundreds of years later. Alas, diving her is presently prohibited, thanks to careless divers damaging the wreck. ■

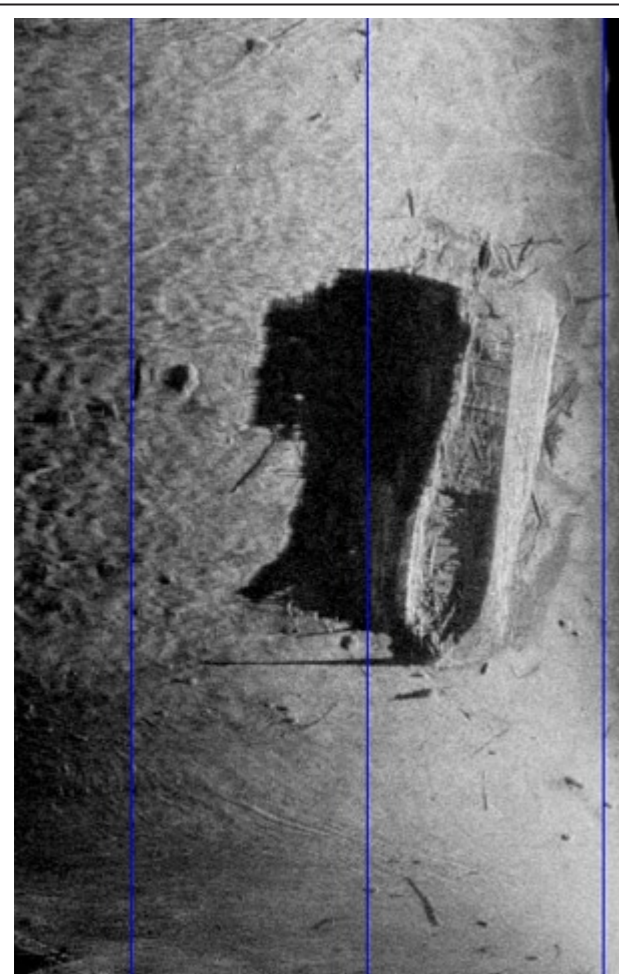
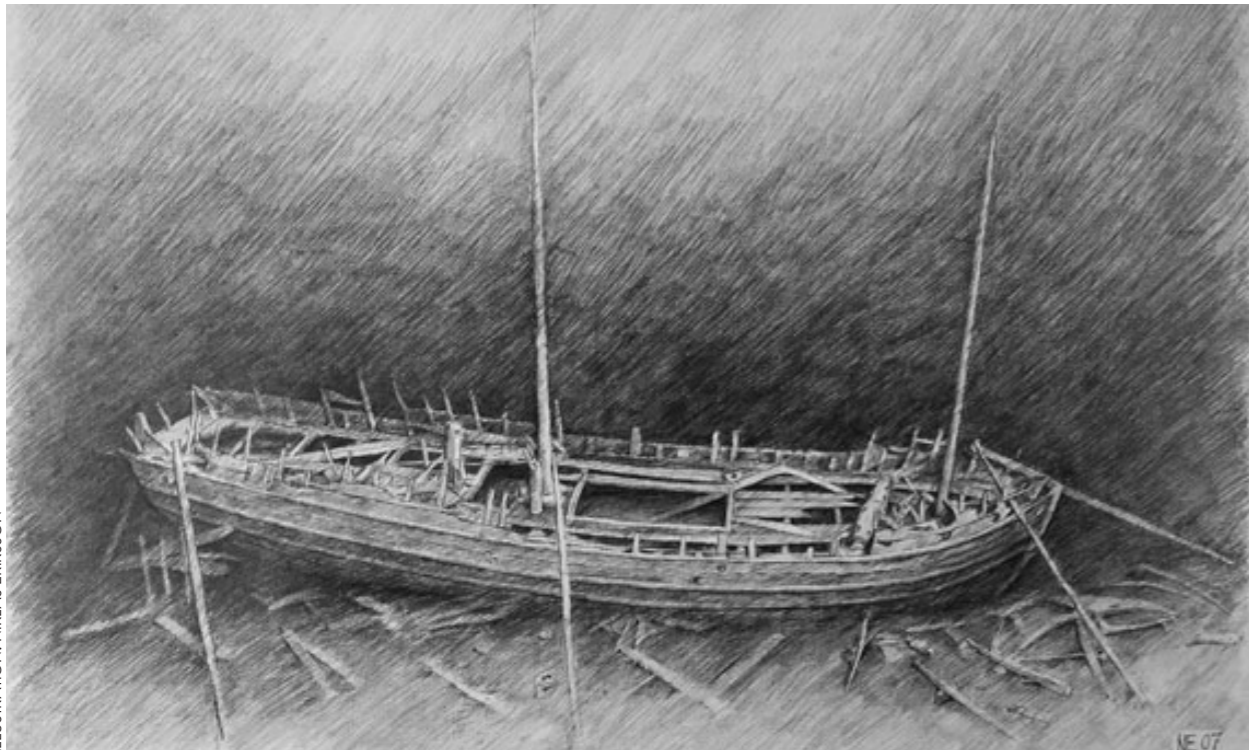


ILLUSTRATION: NIKLAS ERIKSSON



The Dalarö wreck

About 30m below the surface at Edesön outside Dalarö in the Stockholm archipelago is a very well-preserved wreck from the 1600s. The site is scattered with objects: ceramics, bottles, tools of various kinds as well as baskets and boxes. A cannon is still sitting in its mount on the half deck

my imagination tells me that it may one of the crew members. When and if you penetrate the narrow corridors of the ship, be aware that the steep angle makes it harder and more advanced, so be sure that you have the proper training.

How to get there: By boat

Best time: Spring and autumn

Depth: Around 30m/99ft

Conditions: The visibility can be really good for being almost in the city, but don't expect more than a few meters. There are no currents at this dive site that I'm aware of.

Eldaren

Eldaren was used as a training target for the Swedish Navy. They torpedoed and sunk it in

1979. You will find the torpedo hole on the starboard side. This wreck, being kind of new, is really suited for penetration, but as always, be sure to have proper training. She is hard to get to. The travel time for most of the dive boats are a bit on the long side, and the wreck lies in a spot that makes wind and weather conditions one of its weak points. But if Lady Luck is on your side, you might get excellent visibility in the 20-30m range. That's because of the bottom conditions. *Eldaren* rests in a shallower spot. All around it, the bottom falls off to a much greater depth.

Take your time to explore its length of 51.5 meters. It has a beam of 7.9 meters and was in its prime, a tank coaster.

Other interesting points of interests are the superstructure in the aft part, the rudder, the torpedo hole on star board side at 28m/92ft.

How to get there:

This is a boat dive, many of Stockholm's dive boats do trips go there, but its really weather sensitive.

Best time: This is a good dive site all year round.

Depth: 35 meters

Conditions: Visibility is often very good, sometimes 20-30 meters. There can be a strong current, so be prepared.

Gas choice: I recommend a Nitrox 32 as a good choice of gas for diving *Eldaren*. ■

Nordic Blue Parks—sustainable accessibility

Text by Pernilla Flyg, Curator, Archaeology Unit, Swedish National Maritime Museums

The Baltic Sea was formed by the Ice Age. Submerged Stone Age settlements remind us of a time when the coastlines of the region looked very different from today.

these factors interact to create unique conditions for the preservation of wooden shipwrecks. They loom in the dark on the seabed through centuries, masts reaching up towards the surface.

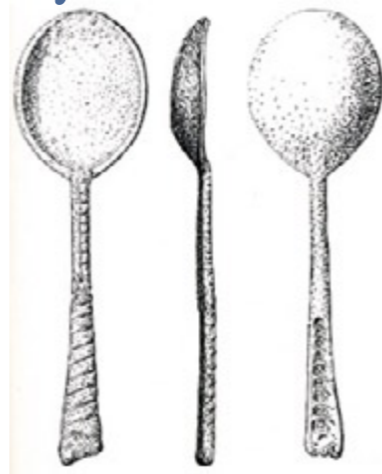
These factors also interact to make the Baltic Sea a habitat for special flora and fauna. But, the natural and cultural resources of the sea are under constant threat from pollution, looting, deterioration and insufficient legal protection.

We want to diminish this threat by developing sustainable marine tourism combining outreach with protection. The Nordic Blue Parks projects

aims to open underwater parks combining culture and nature experiences. Once on the bottom, a shipwreck can turn into an artifi-

cial reef, a habitat for plants and animals. Through the Blue Parks, visitors will also be able to visit the most fragile shipwrecks. With guided dives, ROV-tours, or computer animation, the Blue Parks will welcome all visitors, not only divers.

Museums and cultural and natural heritage authorities in Sweden, Finland, Denmark and Norway are partners in the Nordic Blue Parks project. In Sweden, Blue Parks are being developed in Dalarö near the capital city of Stockholm, and in Axmar historical iron works along the coast of northern Sweden. ■

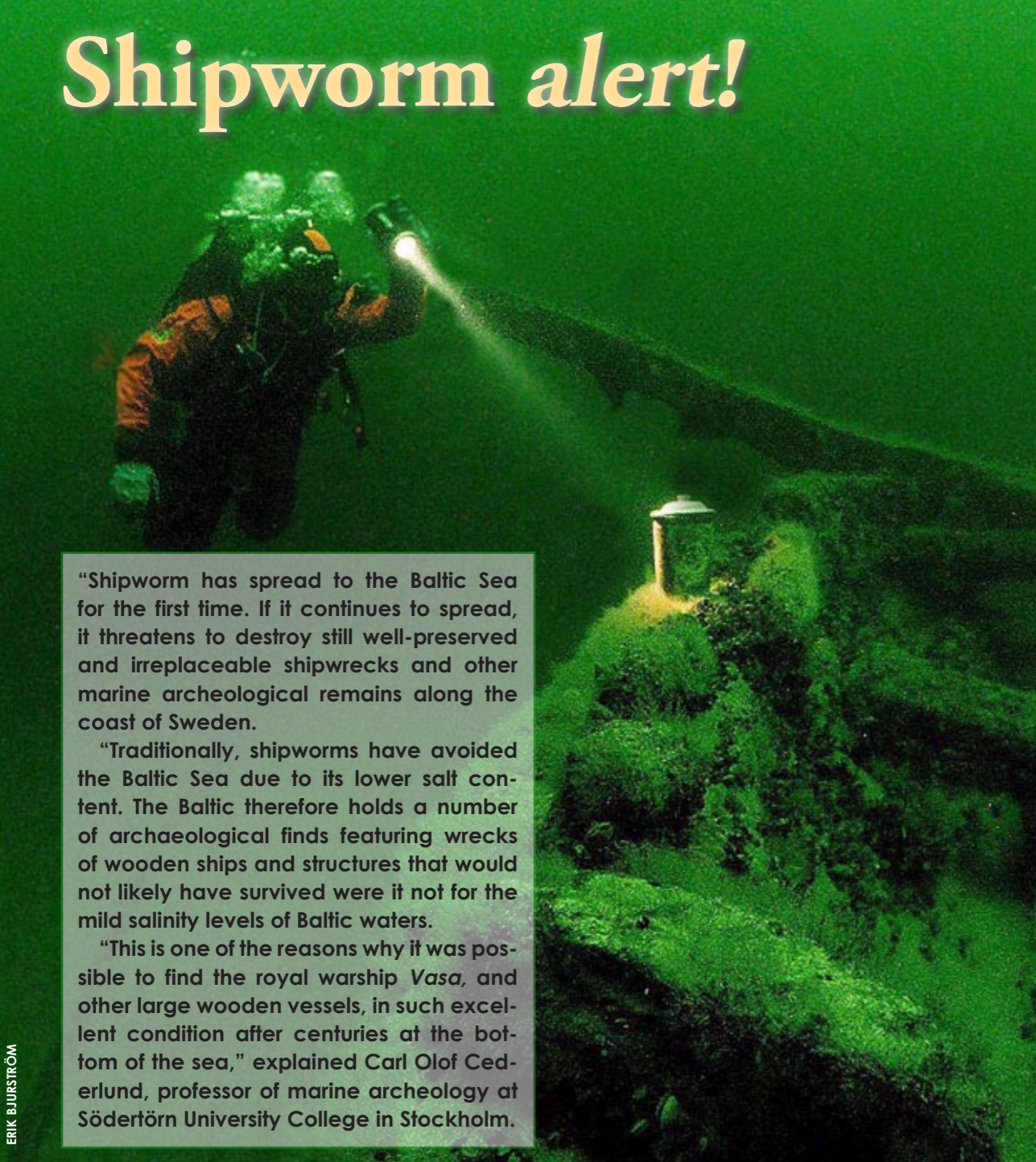


This sea is dark, cold and relatively shallow. The water exchange is slow, salinity levels are low, and shipworms are mostly absent. All



Picnic on the Swedish archipelago

Shipworm alert!



“Shipworm has spread to the Baltic Sea for the first time. If it continues to spread, it threatens to destroy still well-preserved and irreplaceable shipwrecks and other marine archeological remains along the coast of Sweden.”

“Traditionally, shipworms have avoided the Baltic Sea due to its lower salt content. The Baltic therefore holds a number of archaeological finds featuring wrecks of wooden ships and structures that would not likely have survived were it not for the mild salinity levels of Baltic waters.”

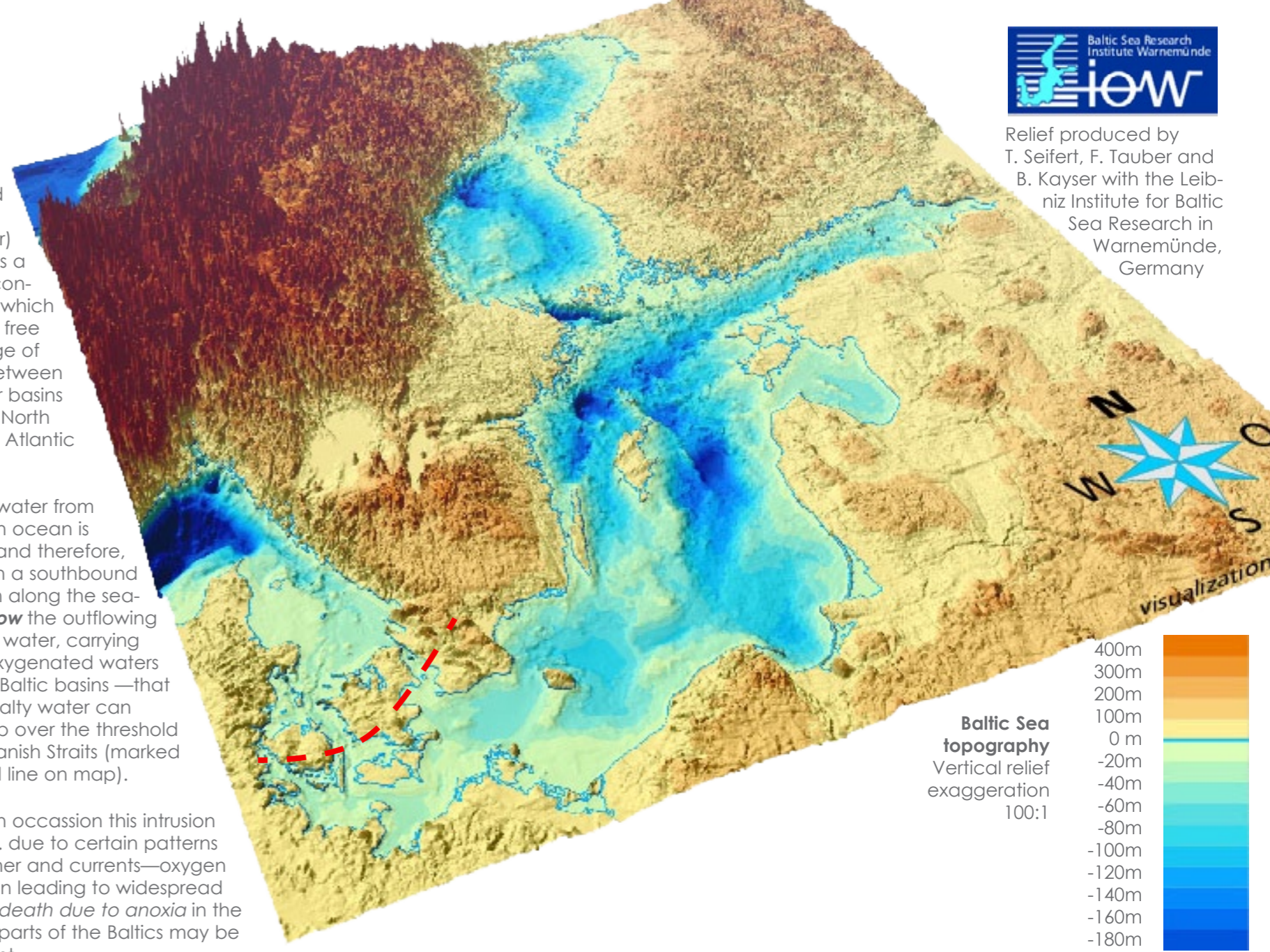
“This is one of the reasons why it was possible to find the royal warship *Vasa*, and other large wooden vessels, in such excellent condition after centuries at the bottom of the sea,” explained Carl Olof Cederrund, professor of marine archeology at Södertörn University College in Stockholm.

ERIK BJURSTRÖM

The Danish straits constitute a vertical threshold (it gets shallower) as well as a narrow constriction, which limits the free exchange of water between the inner basins and the North Sea and Atlantic ocean.

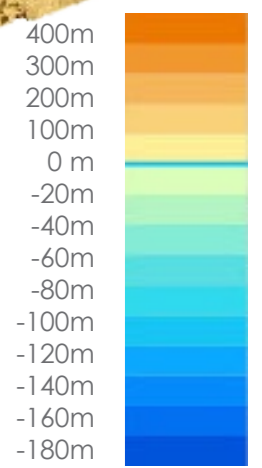
The salt water from the open ocean is denser, and therefore, creeps in a southbound direction along the seabed **below** the outflowing brackish water, carrying with it oxygenated waters into the Baltic basins—that is if the salty water can creep up over the threshold in the Danish Straits (marked by a red line on map).

When on occasion this intrusion fails—i.e. due to certain patterns in weather and currents—oxygen depletion leading to widespread *bottom death due to anoxia* in the deeper parts of the Baltics may be imminent.



Relief produced by T. Seifert, F. Tauber and B. Kayser with the Leibniz Institute for Baltic Sea Research in Warnemünde, Germany

Baltic Sea topography
Vertical relief exaggeration 100:1



The topography of the Baltic Sea is key to understanding the unique features of this shallow body of water, which was, as recently as the stone age, a fresh water lake.

Text by Peter Symes

The Baltic Sea, which occupies a basin formed by glacial erosion during the last few ice ages, is the largest body of brackish water in the world. The low

salinity which is maintained as a result of abundant freshwater runoff from the surrounding land, is a result of glacial meltwater from the last ice age that ended about 10,000 years ago combining with an intrusion of saltwater from the North Sea when the straits between Sweden and Denmark opened.

Before the end of what is known as the Weichsel glaciation, the Baltic was a fresh water lake name the Ancylus lake, which had no connection to the open sea. Some egress continued from the lake through the Göta and Steinselva

A matter of Topography & Salinity

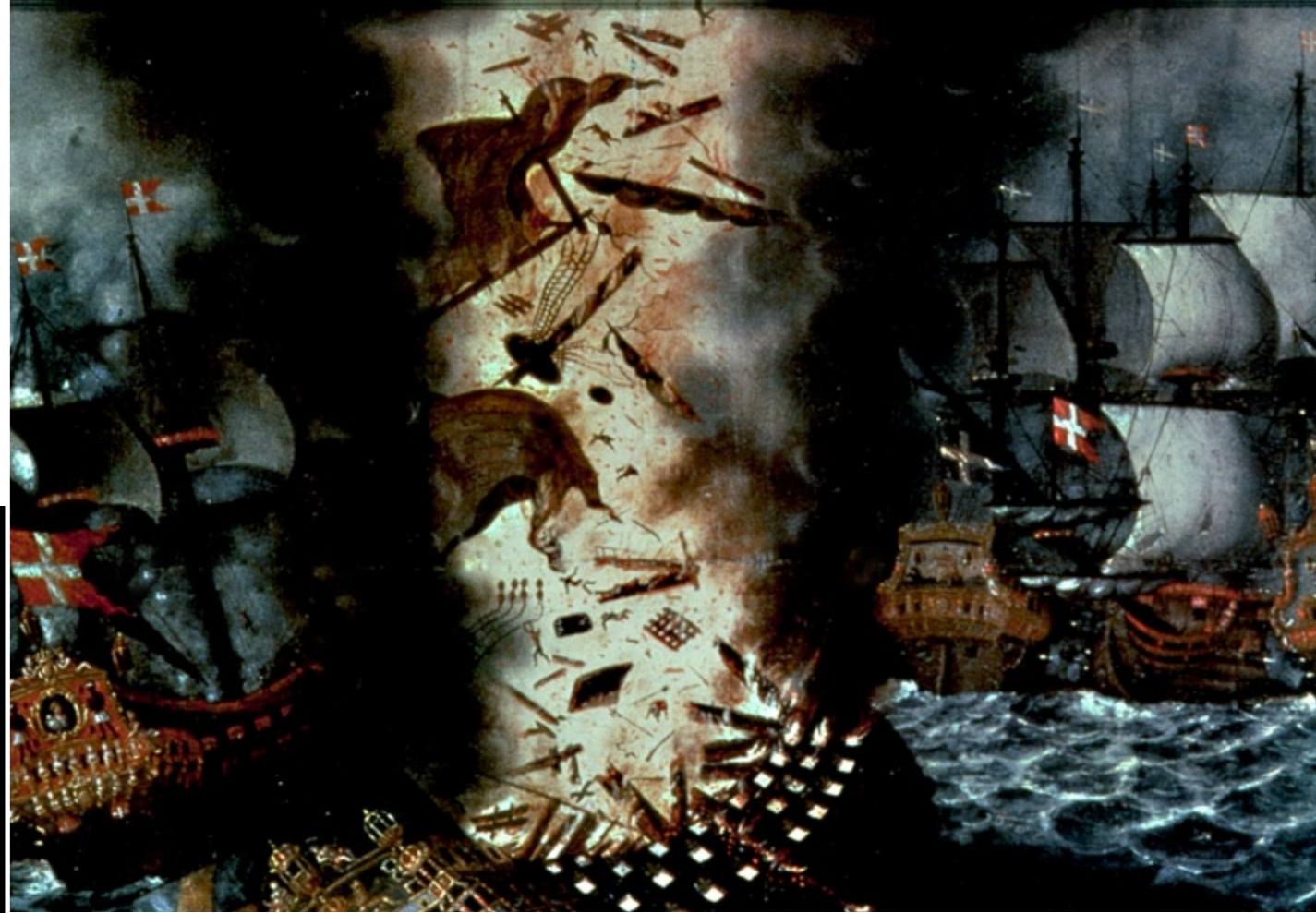
Rivers, which exit Lake Vänern to the Kattegat. Salt water did not enter the lake, however, which became entirely fresh as the lake rose above sea level. The date at which the flow was certainly blocked is about 8000 BP, when nearby Lake Vättern (part of the waterway system) became dissevered from Ancylus

Lake. The lake was filled by glacial runoff, but as worldwide sea level continued rising, saltwater again breached the sill about 10,000 years ago, forming a marine Littorina Sea, which was followed by another freshwater phase before the present brackish marine system was established. ■

Ancylus Lake around 8700 years BP. Note that the Danish straits do not yet exist



WIKIPEDIA / CREATIVE COMMONS



Painting portraying the sinking of the *Kronan*

***Kronan* (The Crown) became the flagship of the Swedish fleet in 1675. At noon of 1 June 1676, the warship—which was one of the largest ships at the time and Sweden’s first three-decker warship—capsized, exploded and sank during a battle between the Swedish and a Danish-Dutch joint fleet in what became known as the Battle of Öland. All but 42 of her 850 crew perished.**

Text and dive photos by Erik Bjurström



The hull is broken apart, but a large section of the port shipside is intact and laying with the outside facing the bottom clay.

The better-preserved parts of the wreck have yielded large quantities of artifacts. After two-thirds of the site had been excavated, 20,000 objects had been catalogued.

In 2005, a chest was salvaged from *Kronan* that contained 6,246 silver four-öre coins and 168 mark and thaler coins, all minted

in 1675. This is the largest homogeneous Swedish treasure found to date.

During 2007’s excavations, lots of skeletal remains were excavated from the site.

Check out the exhibit regalskeppetkronan.se ■

LEFT TO RIGHT: Diver inspects grave site; human skull on *Kronan*; Wooden sculpture on wreck; Detail of canon



Kronan

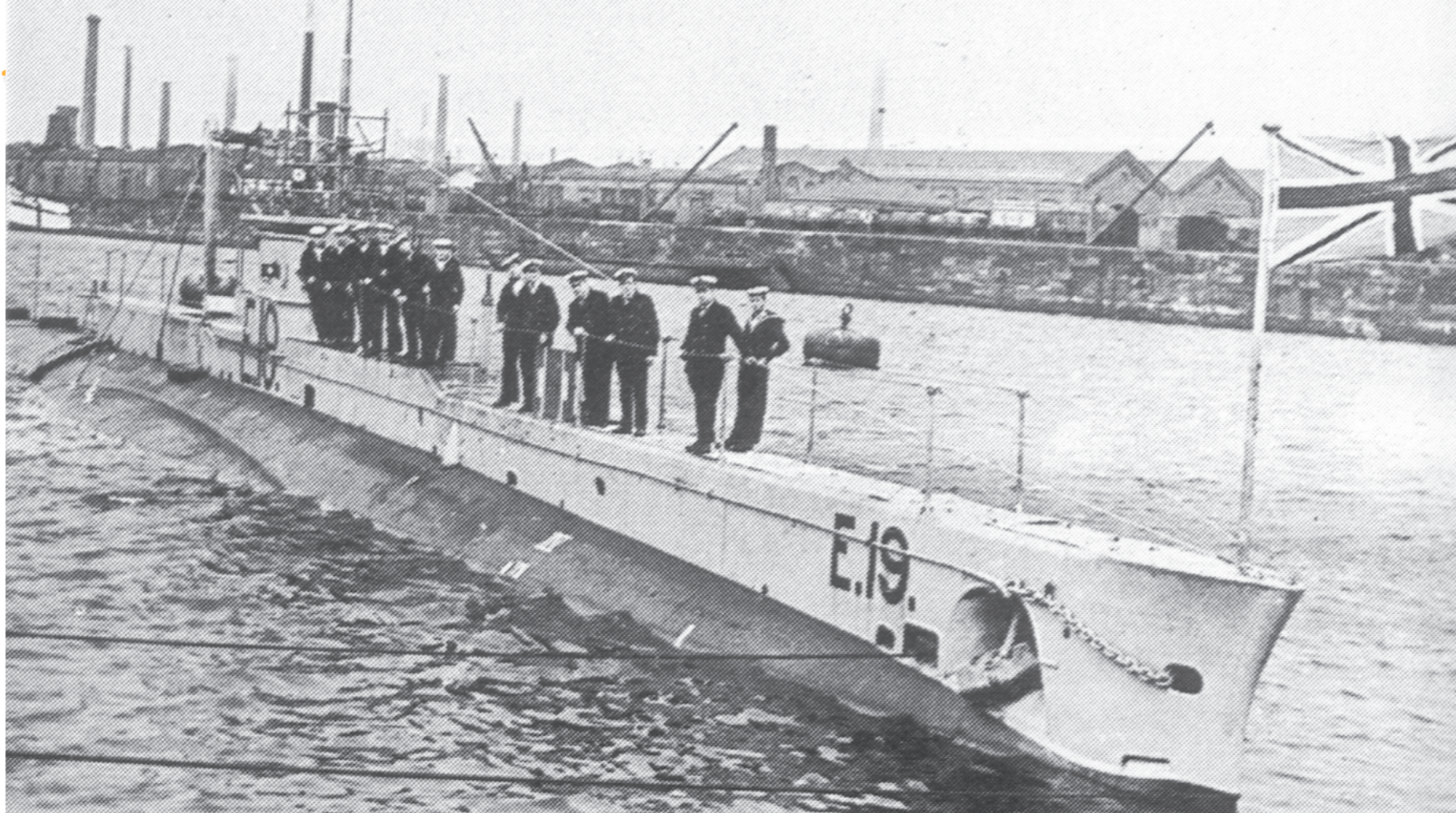
During the manoeuvres, *Kronan* turned sharply against the enemy without closing her gunports or reefing her sails, and as she heeled over in the strong southwest wind, water started pouring into the gunports, capsizing her. As she was sinking, a lamp in the gunpowder store allegedly fell off its hook and ignited the gunpowder, causing a violent explosion. The ship sank quickly, taking all but 42 of her 850 crew to a watery grave. The doom of the *Kronan* is considered

one of the greatest maritime disasters in Swedish history. She rests at a depth of 26m about six kilometers off the coast of Öland.

Excavation

The wreck of the *Kronan* was located in 1980 by marine archeologist, Anders Franzén, who had found the wreck of the *Vasa* in 1956. The ongoing excavation of the *Kronan* has become the largest underwater archeological project in Sweden.





Led by the charismatic Captain Francis Cromie, the British submarine flotilla became a vital element in the struggle taking place in Russia in 1917. In contrast to the headlines made by British submarines in the Gallipoli campaign, few people are aware that during the First World War, British submarines operated in the Baltic for three years under the most extreme conditions

Under the command of Lieutenant Commander Francis Cromie, the British Submarine E-19 was able to sink several German ships, most notably on the 11 October 1915, when she sank four German transport ships just south of Öland within a few hours and, remarkably, without any casualties.

Text and dive photos by Erik Bjurström

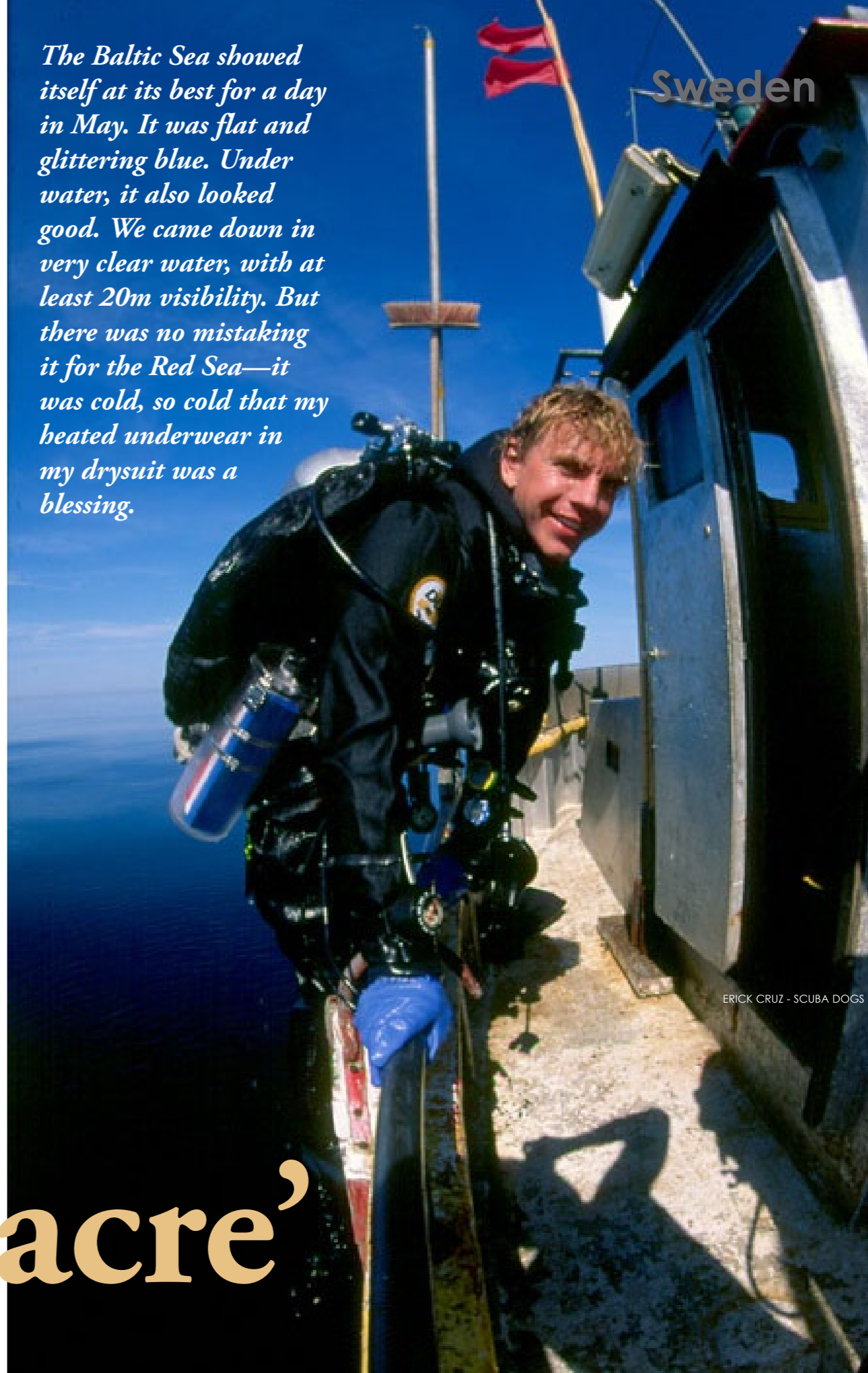
The shotline missed our target and we ended up on the flat bottom at 40m (130ft). My compass and intuition took me in a certain direction, and then I saw the bow of a big ship. The sun penetrated all the way down, and we could see the whole vessel. It was a magnificent

scene. Approaching along the bottom, the bow looked enormous, as it rose above us. The two big anchors were still in place, draped in trawl-nets. We swam over the rail onto the foredeck. It was very clean and in amazingly good condition. The teak deck was intact. For some

reason, algae was growing only on the caulking in between the teak ribs, creating a beautiful pattern. Two huge anchor winches were standing on the deck.

A scene like this could probably only be witnessed in the Baltic. The proximity to the main trading route between east-

The Baltic Sea showed itself at its best for a day in May. It was flat and glittering blue. Under water, it also looked good. We came down in very clear water, with at least 20m visibility. But there was no mistaking it for the Red Sea—it was cold, so cold that my heated underwear in my drysuit was a blessing.



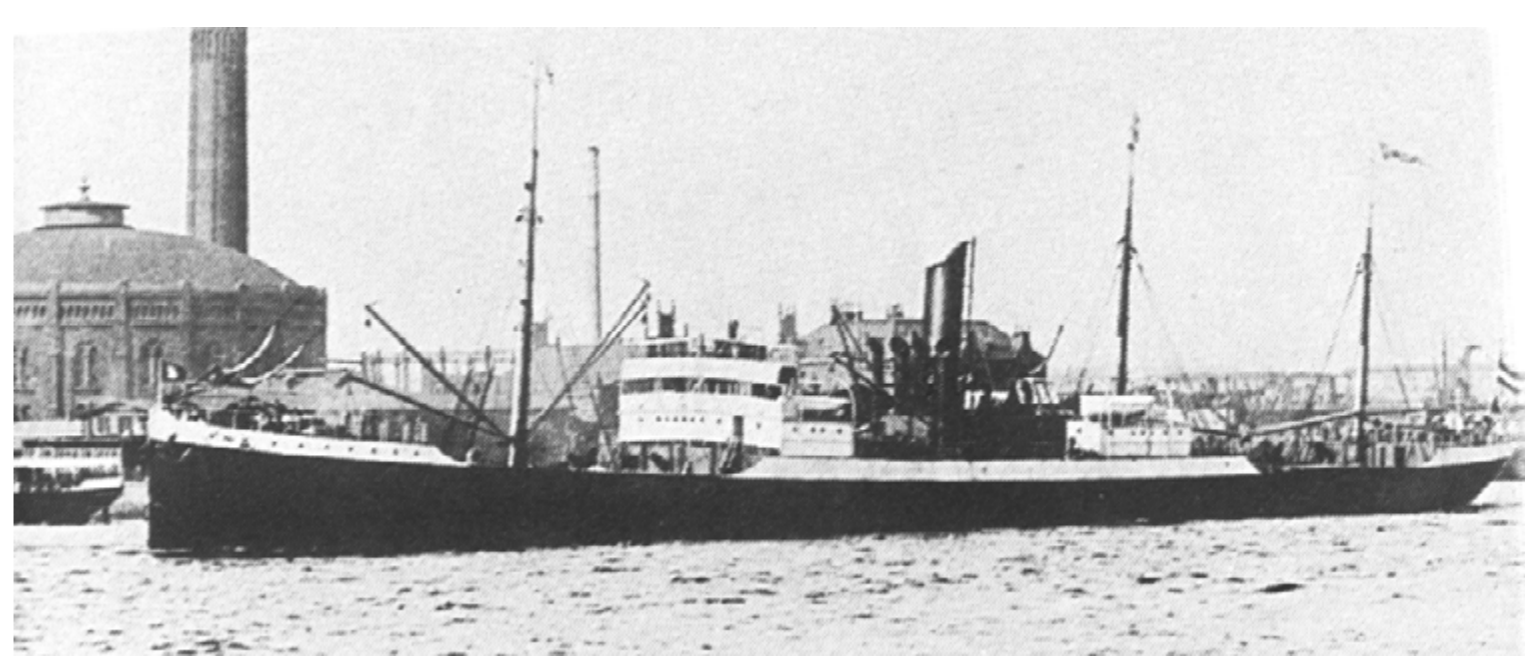
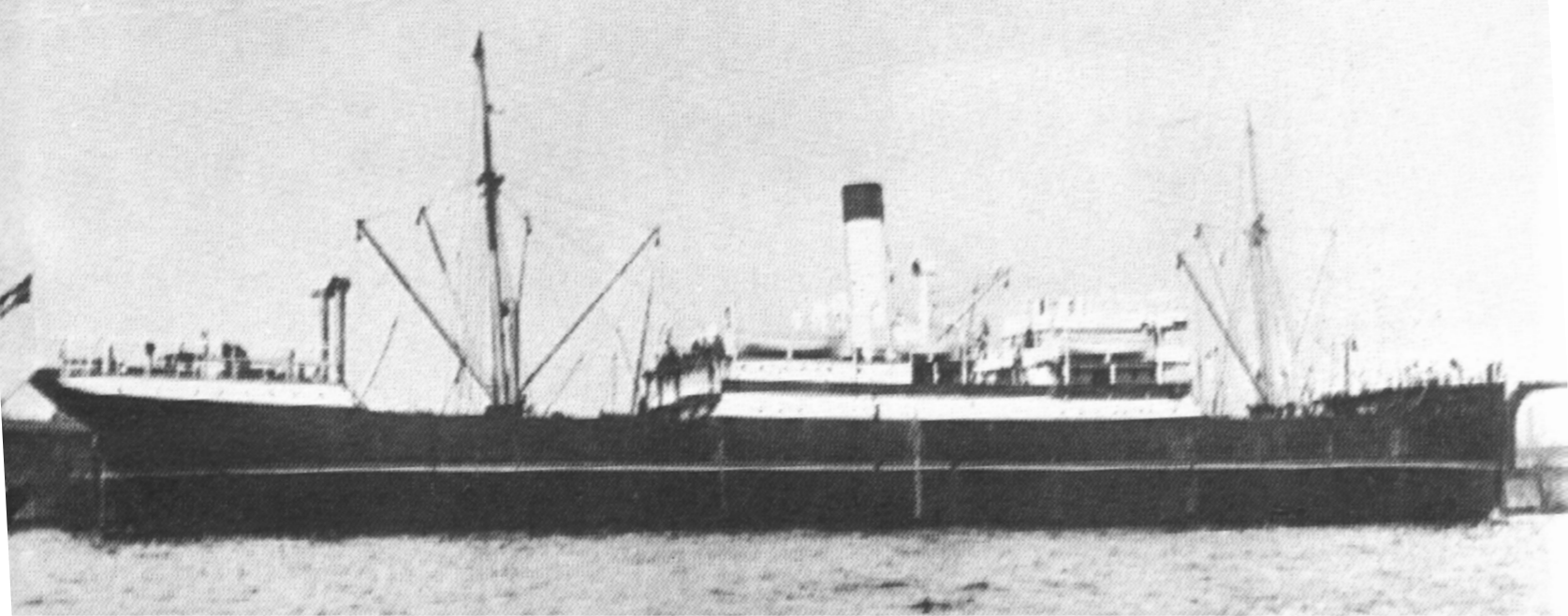
Sweden

ERICK CRUZ - SCUBA DOGS

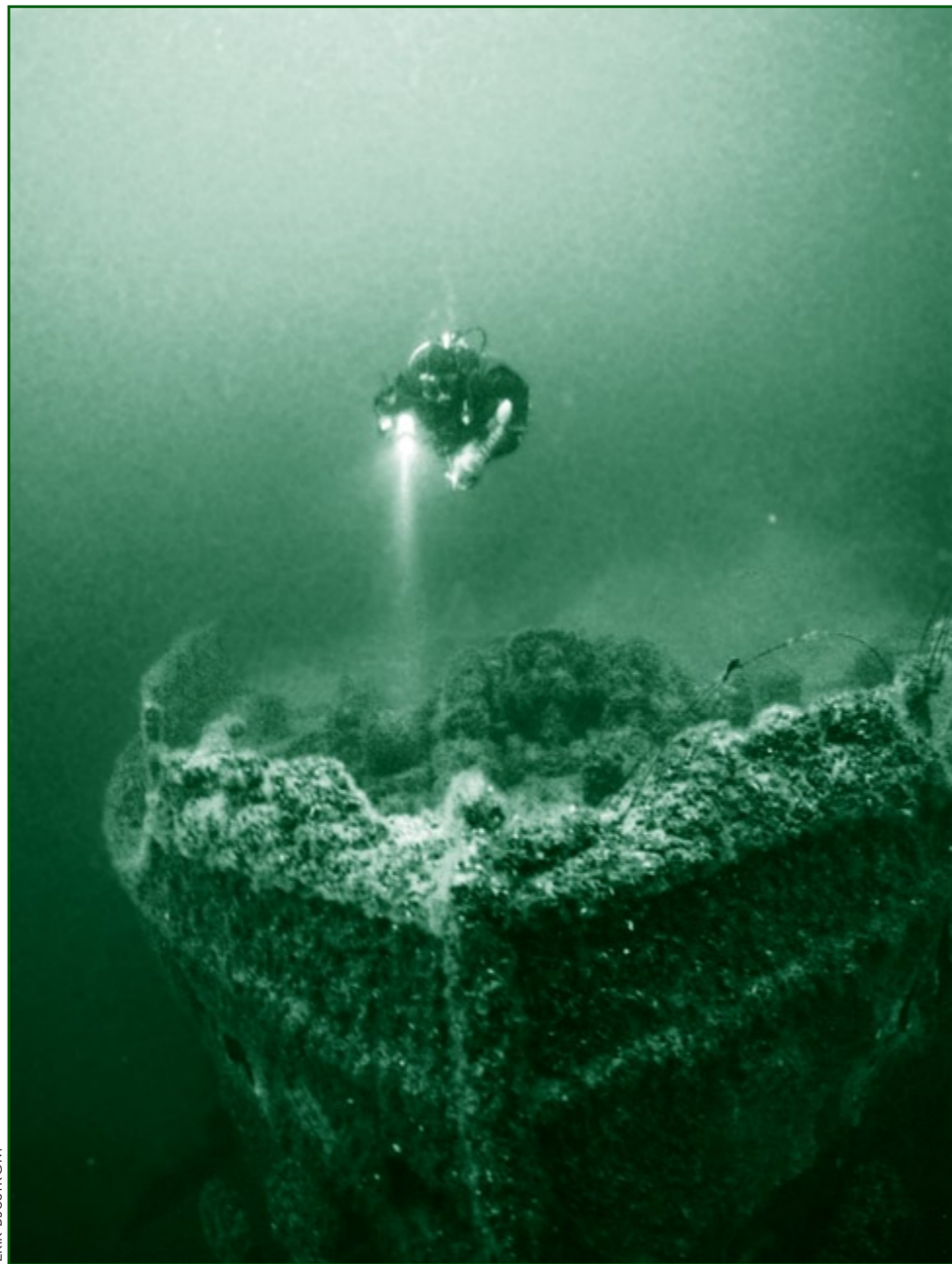
‘The U-boat Massacre’

— an almost unbelievable tale from the First World War





SS Nicomedia



ERIK BJÖRSTRÖM

ern and western Europe; the relatively shallow depth in open sea; the fact that because of darkness, cold, low oxygen levels and lack of woodworm, wrecks are extremely well preserved—all this makes the island of Öland at the south-east corner of Sweden one of the most interesting marine archaeological sites in the world.

With the excavation of the *Kronan*, a 17th century man-of-war, came the realisation that the conditions for diving in deep water in the open sea outside Öland were excellent. Visibility deeper down is often like that of tropical waters, though the light can be poor because of plankton at the surface.

In shallow, coastal waters, the wrecks get eroded by currents and storms. Soon, only a heap of timber, or a clean steel hull, remains. But deeper down, the wrecks are intact. And I mean *intact*, up to the funnel. In many, you can swim into the captain's cabin and sit down at his desk.

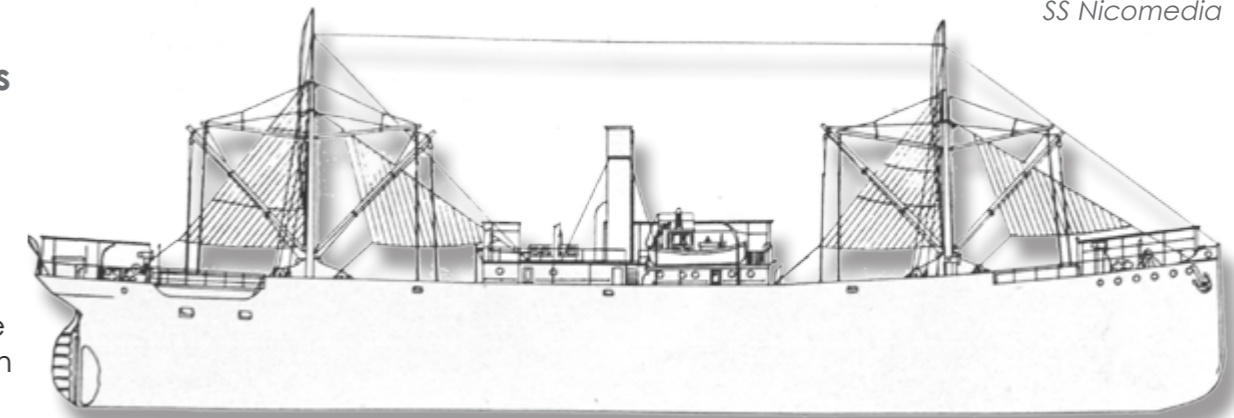
The first spectacular find was made in 1982. These were vessels that were the victims in the *E-19* or *U-boat massacre*.

A group of divers got a tip from a fisherman about a big object on the sea-floor ten nautical miles south of Öland. It was the wreck of the German steamer, *SS Nicomedia*. Research into its history revealed a fascinating forgotten story from the First World War.

A Gentleman's Touch

The English submarine *HMS E-19*, under the command of Lt-Cdr Francis Cromie, was the last of five subs to slip through the small strait of Oresund and enter the Baltic Sea in September 1915.

Its task was to disturb the iron ore traffic through the Baltic that was vital to the German war effort. The command did something rather unheard of in a war. He managed to destroy and sink five vessels without using any torpedos, and without anyone getting hurt in the process! A myth was born, which the divers named, *The U-Boat Massacre*.

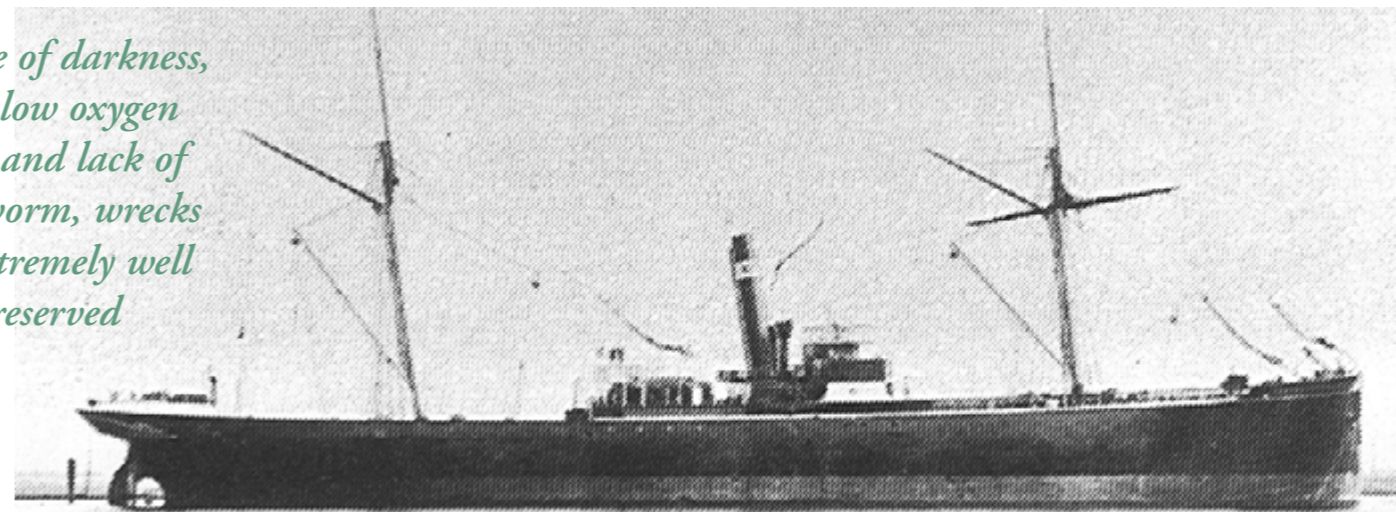


SS Valter Leonard

October 1915

Cromie had a bad time in the south Baltic on 10 October 1915. He attacked the German steamer *Luleå*, but not one of his four torpedoes had worked, and one had changed course and made a turn aiming for his own vessel. The torpedo missed *E-19* by only 15m. He had had to write off the action. But the next day, he would make up for it.

Because of darkness, cold, low oxygen levels and lack of woodworm, wrecks are extremely well preserved



The most beautiful and romantic of the wrecks is the *Gutrune*, 97m long

SS Walter Leonard

Lying south of Öland at 8:30 am on 11 October 1915, Cromie sighted the SS *Walter Leonard*, a 1261-ton freighter carrying iron ore and pulp to Germany. After identifying her as German, Cromie politely asked the crew to man the lifeboats, requested a passing Swedish ship to pick them up, and at 11:15 am, sank the *Walter Leonard* with explosives.

Another ship, the SS *Germania*, spotted the *Walter Leonard* going down and tried to flee, but ran aground on the coast. The crew abandoned her and *E-19* went up

After identifying her as German, Cromie politely asked the crew to man the lifeboats, requested a passing Swedish ship to pick them up and at 11.15 sank Walter Leonard with explosives.

cedure of evacuating the crew before opening the valves was repeated. Time: 3:00 pm.

SS Nicomedia

Just before dark, Cromie sighted his final victim, the SS *Nicomedia*, a steamer of 4391 tons.

The same procedure was repeated, but only after the boarding crew had been invited to share a glass of beer, and a barrel of beer had been sent to the rest of *E-19*'s crew! All to no avail. *Nicomedia* suffered the same fate as the other four vessels. The crew managed to reach shore in their lifeboats.

alongside.

For an hour they looted *Germania* and, after placing their explosives, went out to sea again. Time: 1:00 pm.

SS Gutrune

Immediately Cromie sighted a new target, the SS *Gutrune*, an impressive combined cargo and passenger steamer of 3039 tons, heading for Germany with iron ore. *E-19* intercepted her, and once again, the crew were asked to leave their vessel, to be picked up by a passing Swedish ship. *Gutrune* was sunk by opening the bottom valves. Only an hour had passed.

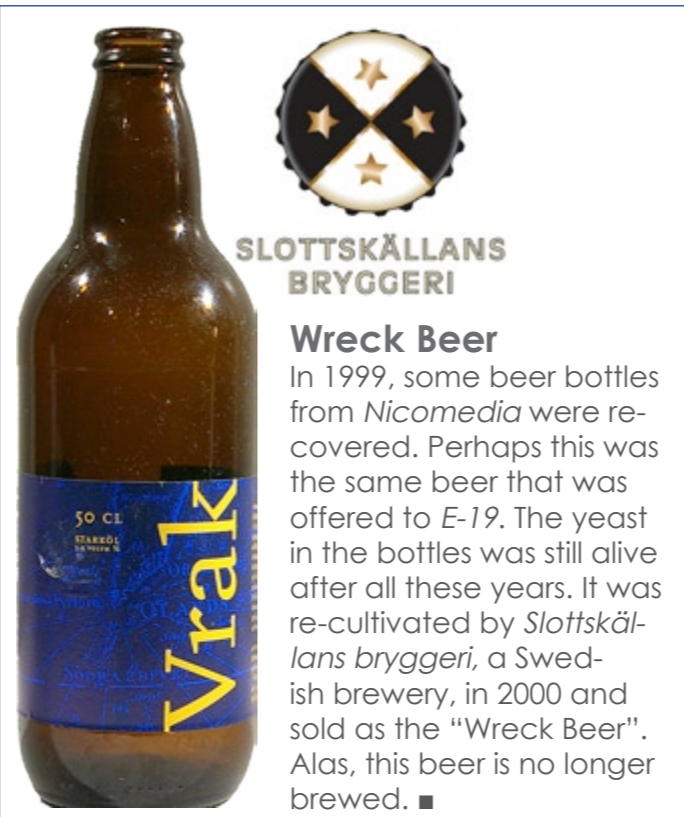
SS Director Reppenhagen

While checking the nationality of another ship that turned out to be Swedish, *E-19* sighted a fourth German ship, the 1683-ton SS *Director Reppenhagen*, laden with iron ore. The by-now familiar pro-

Still drinkable

The beer story doesn't end there. When diver Stefan Fransson found cases of the beer on *Nicomedia*, he found that it

E-19 had managed to destroy five German ships in one day, without using torpedoes and without anyone getting hurt!



SLOTTSKÄLLANS BRYGGERI

Wreck Beer

In 1999, some beer bottles from *Nicomedia* were recovered. Perhaps this was the same beer that was offered to *E-19*. The yeast in the bottles was still alive after all these years. It was re-cultivated by *Slottskällans bryggeri*, a Swedish brewery, in 2000 and sold as the "Wreck Beer". Alas, this beer is no longer brewed. ■

was still drinkable! The idea arose to extract the yeast organisms and brew the same beer again. It was a success, and the special "wreck beer" went on sale in Sweden.

Made the Front Pages

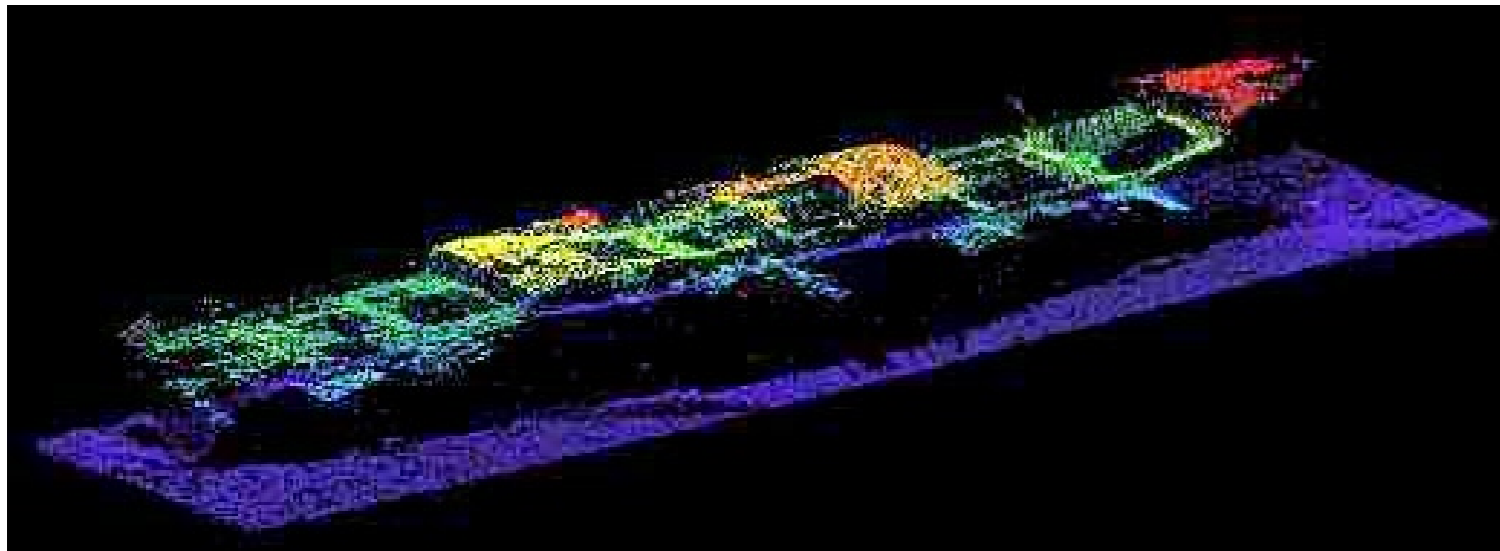
The English submarine *E-19* had managed to destroy five German ships in one day, without using torpedoes and without anyone getting hurt. The sinkings made the front pages in the local papers. But because they were all foreign vessels in international waters, they were never put in any registers in Sweden and not noticed by wreck-searchers.

Forgotten until 1982

The wrecks were forgotten until 1982, when divers, Torleif Nilsson and Sten Lindgren, were tipped off by a fisherman about a big object on the sea-floor south of



Getting ready to dive the *E-19* (above and bottom right)



Scan of SS *Nicomedia*. Leaving Oland, you can reach *Nicomedia* in an hour

Oland. They found a wreck and a bell with the name *Nicomedia*. That name gave up the story.

Their research also gave the approximate positions of the other wrecks. With more help from fishermen, they were able to locate all four, with *Director Reppenhagen* and *Walter Leonard* found on the same day.

First class wreck dives

The wrecks are first-class dive sites and attract divers from all over Sweden. Leaving Oland, you can reach *Nicomedia* in an

hour. Built in 1901, 4391 tons and 117m long, its deck is at 25m, making it the shallowest of the wrecks. The hull is completely intact, and a visit to the engine room is a must. It has a complete workshop with lots of tools and a nice engine telegraph on the wall. May it continue to rest in peace.

The most beautiful and romantic of the wrecks is the *Gutrune*, 97m long. When visibility is 20m, as it often is in May and June and sometimes even in July, when the pictures here were

taken, it is heaven for the wreck photographer. It all depends on the time and the extent of the plankton bloom, which in turn depends on light and water temperature. The midships building is only a shell, though standing upright. The sunrays passing through it create a beautiful light show.

On the *Director Reppenhagen*, 80m long and lying in 35m, the most remarkable sight is Captain Spiegel's cabin. All the wood is in good shape, with intact panels and furniture. Until last year, there

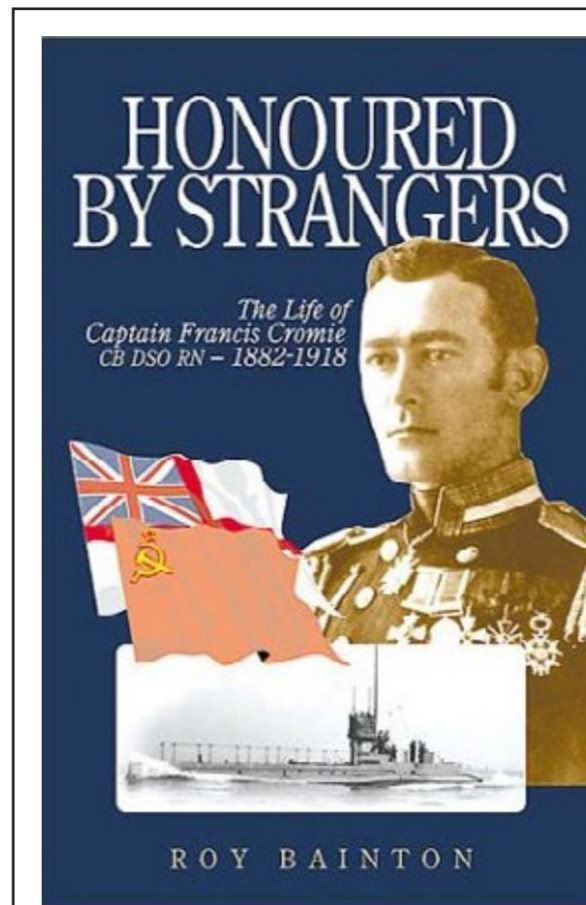
was even a nice intact porcelain stove, though this has, sadly, now collapsed.

The *Walter Leonard* is more eroded than the other wrecks, but the stern is beautifully intact, with the big spare steering wheel nicely draped in algae. It is the only wheel remaining on the four wrecks.

End of E-19 and Cromie

The bloodless massacre off Oland marked the end of Cromie's luck in the Baltic. *E-19* and the other British submarines continued to operate from Russian bases in the Baltic, but without any more big victories. The *E-19* was scuttled outside Helsinki in April 1918 to avoid it falling into German hands.

Francis Cromie ended his days as a marine attaché in Petrograd. He was shot on 31 August 1918 when Bolsheviks attacked the English embassy. ■



The Life of Captain Francis Cromie CB DSO RN, 1882-1918 is available from Amazon

Captain Francis Cromie, a submarine commander at the age of 24, forged a successful career attacking German shipping in the Baltic Sea in 1915, despite the hazardous nature of the climate and the ferocity of the German navy. During his three years in the Baltic, he became fluent in Russian and was decorated three times by the czar of Russia. He also received the Distinguished Service Order. His murder in the British embassy in 1918 came as a shock and has retained a tragic mystery until now. The author's extensive research has revealed the circumstances surrounding Cromie's murder and exposed facts about his complex character and his relationships with the Russians and the British Establishment. ■



Gotland & Öland

Gotland and Öland, the two large islands outside Sweden's east coast, are both exclusive destinations of unique scenic beauty and rare atmosphere, popular among Swedish holiday-makers but less known by international tourists. Both islands are among Sweden's oldest settlements, with some of the country's oldest and most fascinating historical sights.

One of many beaches of Öland

Located south of Gotland, Öland is a long, narrow island with endless flat plains and long white beaches. It is reached by the town of Kalmar via the long Öland bridge. In the summer time, Öland is busy with holiday-makers, so a

visitor who wants to experience the rare atmosphere and beautiful light and landscapes typical of the island is recommended to visit in spring or autumn, when nature is at its most beautiful, and peace, quiet and poetry rules.

World Heritage Site

In the south of the island is the peerless Alvaret, or limestone plateau, included on Unesco's World Heritage List for its unique nature values, with a large number of rare orchids, plants and species. The Långe Erik lighthouse and the Ottenby bird station on the southern cape is a favourite destination for ornithologists from all around Sweden and Europe. In the cozy and picturesque town of Borgholm, and also in other places around the island, there are several attractive hotels and restaurants that are also open in the off-season. ■

SOURCE: WWW.VISITSWEDEN.COM



C. MICHAEL HOGAN - WIKIPEDIA COMMONS

ULF HUETT-NILSSON/
JOHNER - VISIT SWEDEN





Slow days on M24—you dive, you rest

Liveaboard

Dive a selection of the best wrecks in Sweden, in style and comfort aboard the former minesweeper, *M24*.

Text by Fredrik Isakson
Photos by Stefan Hogeborn

I am about to embark the “Big M”, which is moored in the small port of Sandhamn—a small settlement in the peripheral part of the Stockholm Archipelago. I find only a few boats left in the small port but once bustling harbour. Fishing is a dying industry, and there is little the small local dive tourism industry can do to remedy that despite the fantastic diving in this region, which is exactly what I am here for. Ahead of us lies some of the best wreck diving Sweden can offer.

No crowds

The Big M allows no more than nine guests, so there is never a crowd. As always on a liveaboard you get close to your fellow traveler-divers within no time. You quickly fall into a routine. Two dives a day. A proper lunch with recipes taken directly from the military's own cook book, which basically means a good old-fashioned Swedish home-cooked meal that'll fill you right up.

Lilly

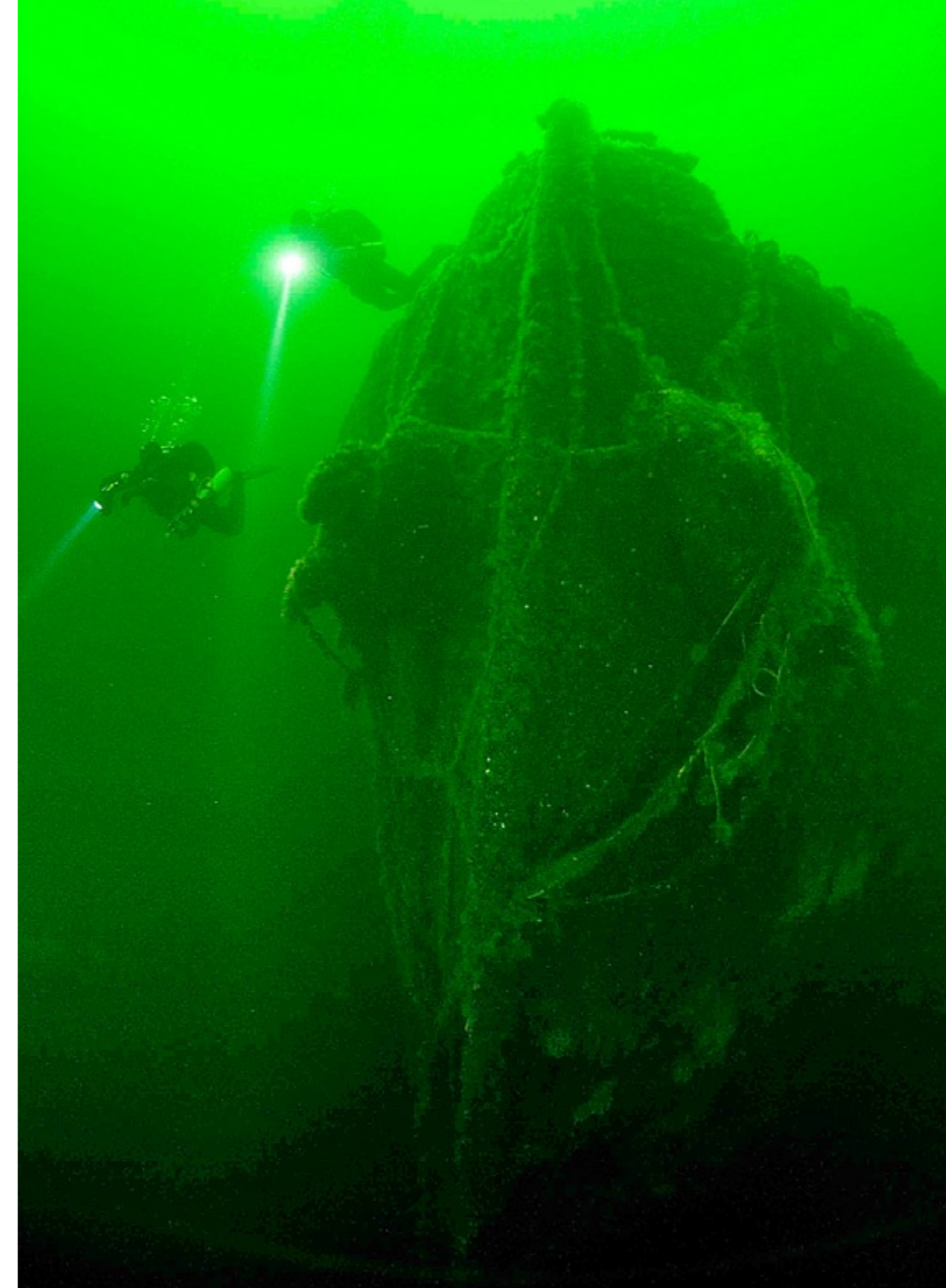
First, we dive the *Lilly*, a wreck sitting upright at 30m, which went down in 1925. She is 48 meters long, and the most prominent sight as you reach her is the large open cargo hold. Close to it are the remains of a bilge pump that worked so hard to prevent the sinking. Visibility is good, and there is practically no current, so it's just about having fun. *Lilly* is a pleasant acquaintance. She has a beautiful skylight, many exciting holes and openings well-suited for simple penetration, if you have the proper training.

On a windy day

Half way through the trip, the wind increases to a point where we have to seek shelter. We leave Öland and head for Oskarshamn on the mainland and end up in the middle of a Harbour Festival. Loud music, dancing on the streets and happy, drunk people all around. During the night, the wind increases further, so we decide to stay in port and join the party, as the sea is too rough for safe diving.

Malmöhus

Since we are on the inside of Öland, we intend to make an attempt to dive a paddle steamer, the *Malmöhus*. The visibility can be pretty mediocre between the mainland and Öland, but the wreck is supposedly worth the attempt. She went down on her maiden trip, on 12 January 1882, for a pretty dumb reason, which was easily prevent-

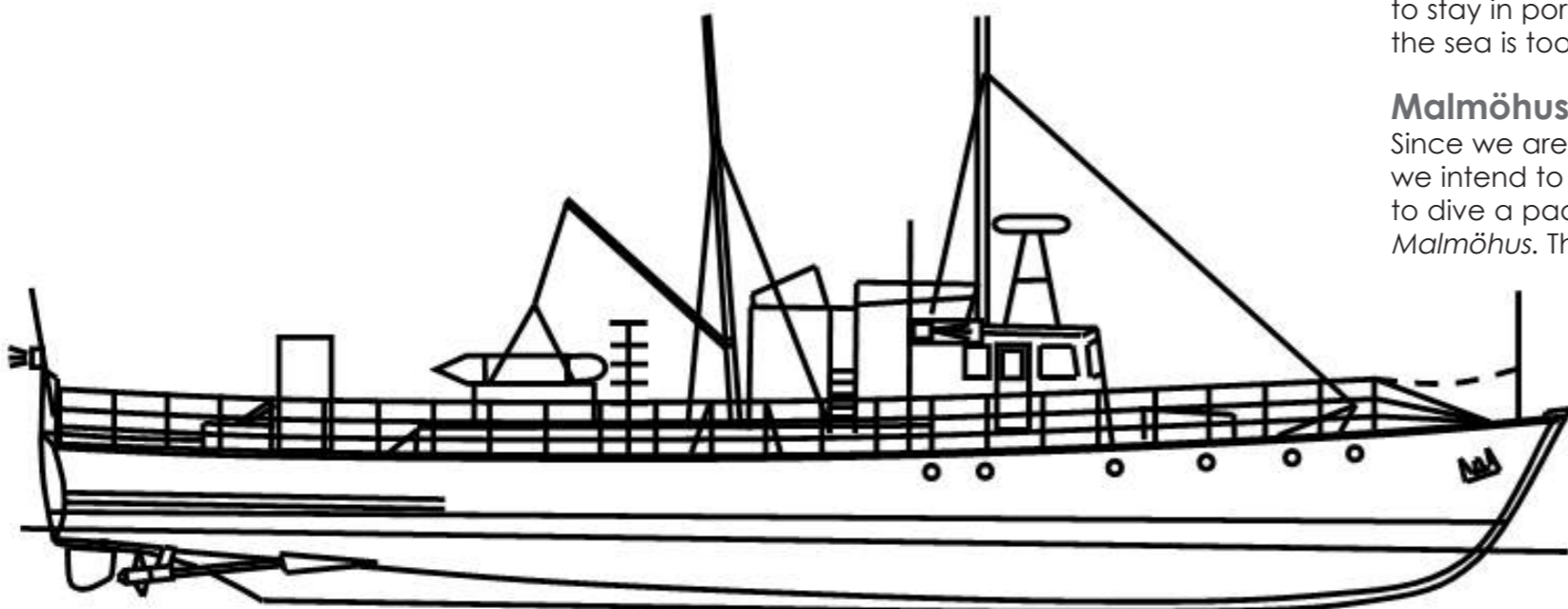


The majestic bow of the *Nicomedia*

able. The front salon was still in the process of being decorated, and to let the paint dry, the painters left two transverse bulkheads open. They locked the door to the salon to prevent guests from wandering in by mistake. It was windy, and water made it into the salon, which kept on taking on water. And the rest is history...

Down to 20 meters the visibility is

okay, but from there on it deteriorates with the water turning milky. As we land amidships, the viz is down to half a meter at best. The light from our lamps disappears into the fog, and we have to resort to finding our way around by touch. Needless to say, we still get lost, so we decide to abort the dive. We shoot off our safety sausage and commence our ascent.





Diver Christopher Zell having a beautiful day on the M24; The stern of the *Nicomedia*

Skriner

We had better luck on the following wrecks. On the *Skriner*, my main lamp failed, and I continued diving with my back-up light as the main source. But light reaches down from the surface and into the darkness of the deep, so I actually get a really cool overview of the wreck even though we are 28 meters below.

The bowsprit sticks out from the wooden wreck, it has some gorgeous wooden details carved on the stem. On deck, I spot a prism, used to spread light in the ship. A unique sight, that's usually one of the first things taken from an old wooden ship.

Humber

Another wreck, *Humber*, is one of the most beautiful wrecks I have visited. The visibility is crystal clear, and I could see the entire ship before me when I reached 25m. I found the compass, it was covered with silt, and when I brushed it off, I could still see the details. The cargo is still intact, the hold contains scrap metal.

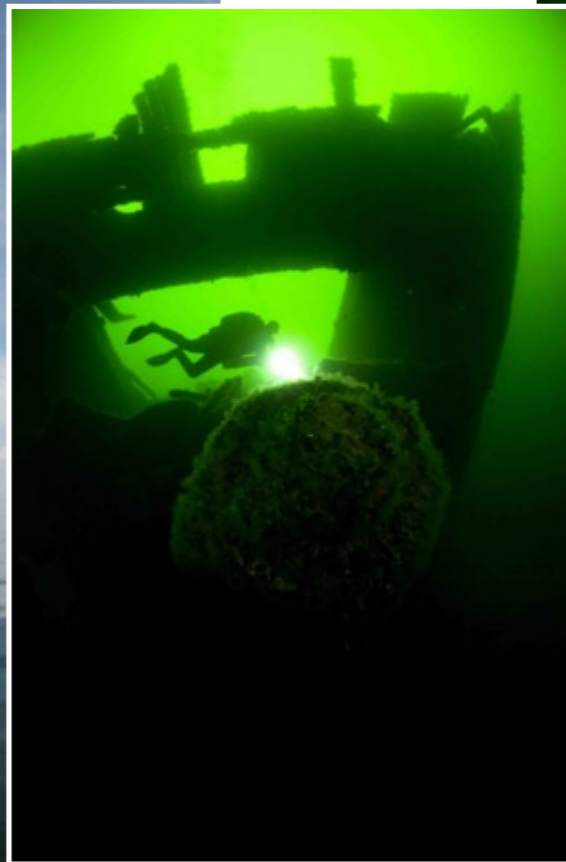
As I looked up, I saw the chimneys majestic profile stretch toward the surface. I didn't want to leave. On the ascend line, I catch myself smiling. That evening, as I lay in bed, I think about the dive. This is how diving should be, always—just perfect conditions, and an incredibly beautiful wreck.

Klockvraket

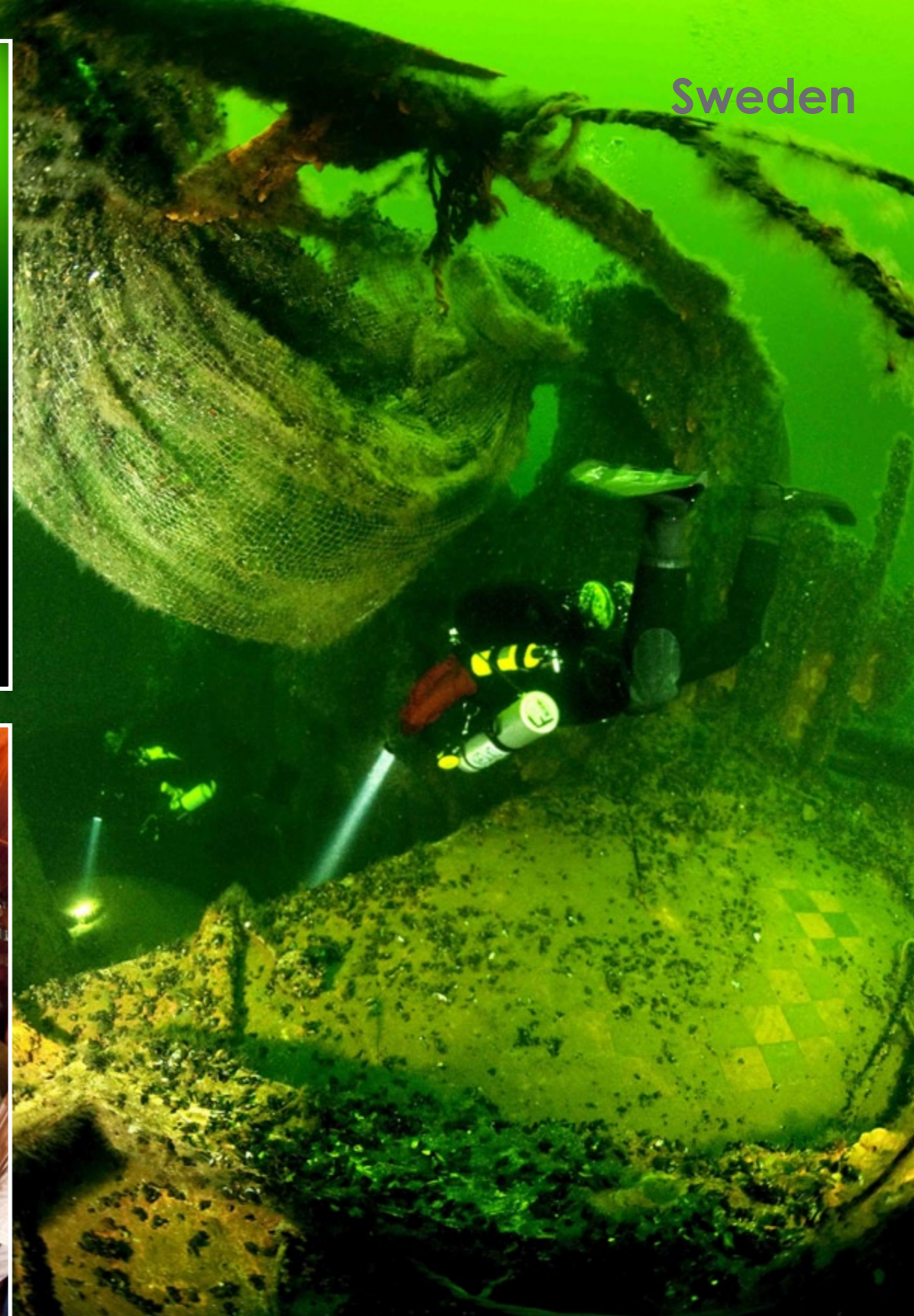
Another memorable dive is *Klockvraket*, a wreck full of bottles and porcelain. Some of the bottles are still sealed. This is an old ship and in a bit of a mess. What's so interesting about this wreck is how one can see the entire dive site due to the incredible visibility.

Accept the weather

Diving around Öland is fantastic but also somewhat temperamental with weather conditions that may put a halt to diving for a day or three. But for what you might see, it is worth the trip. For more information, visit: www.m24.nu ■



On board, dive stories about previous adventures are told, you're logging your dives and chilling between dives. There is lots of laughter. Stress is relieved, and your day-to-day problems melt away. You are among your peers and all is good



Divers heading down towards the machine room, into the bowels of the *Nicomedia*

As I looked up, I saw the chimneys majestic profile stretch toward the surface. I didn't want to leave. On the ascend line, I catch myself smiling. That evening, as I lay in bed, I think about the dive. This is how diving should be, always—just perfect conditions, and an incredibly beautiful wreck.

Wrecks of Åland

Sail Ship Mecca



Text by Fredrik Isakson
Underwater photos by Stefan Hogeborn

The Åland archipelago as seen from a ferry (below); At a depth of 50 meters, one will find the steering wheel of the *Hindenburg* (left)



When other nations began replacing their sailing ships and investing in steamships, the islanders of Åland went in the opposite direction. They bought old sailing ships cheap and kept them sailing, transporting cargo from port to port. In many ways, they were inferior to the steamships, but the windjammers carried lots of sails and were still fast in windy conditions and had no expenses for fuel. Some of them didn't even have engines. Needless to say, they were fighting a battle they were ultimately deemed to lose, but for a little while longer, the majestic sailing ships kept sailing.

The islanders are proud of their heritage, so there are still many beautiful tall ships sailing the waters around Åland. On any given day, you will find unique sailing ships above and below the surface. A good starting point for a journey back in maritime history is the Åland Maritime Museum and the museum's sail ship, *Pommern*.

Diving

Going with the locals does not only make for an obvious choice in a good guide, in Åland, it is also a requirement, according to the strict regulations for diving.

Åland consists of some 300 habitable islands and some 12,000 smaller islands, cliffs and rocks. The landscape is pristine, practically untouched and has a raw beauty to it. This is a small self-governed community with only 27,000 Swedish speaking citizen in a region of Finland. Due to its strategic location, many of the Baltic trade routes pass the islands both in the past and today. Navigation in these waters has always been difficult. In the near vicinity of Åland, there are at least 500 known wrecks.



Aerial photo of Åland by Hannu Vallas

Diver Jonas Pavletic looks at the ship's bell of the *Hindenburg*



Another fantastic detail on the *Belliver*, which was found during the discovery of S2 by project leader Björn Rosenlöf

Lundqvist recommends two specific wreck dives: "Start with *Plus*, a really large sailing ship, a magnificent three-masted windjammer that went down in 1933. It is 75 meters long and standing at a slope with the stern at 17 meters and the stem at 32 meters with a 30-degree angle. The masts reach for the surface and all but a few details are intact. A few items from the wreck can be found at the museum, but everything else is still there. The steamer *Belliver* is also a great wreck."

The No-Touch Law

The fine condition of the wrecks is down to Åland's unique law regarding shipwrecks which dictates that nothing is to be touched. Thanks to the strict enforcement of this no-touch law, most wrecks around Åland are



You may look but not touch

One of many details on the pristine *Belliver*



Ville Lundqvist is the owner of dive center, Oceanic Tech Åland, which is licensed to take divers to the wrecks. When asked why divers should come to Åland to dive, Lundqvist said:

"It is one of the very few places on Earth where you can find wrecks with all wooden details intact and where all its artifacts remain onboard. It's a time capsule of a past that you will have the opportunity to visit. Around Åland, there are more than 600 known shipwrecks, not all of which have been located yet.

"We organize dive trips, and we visit about 30 different wrecks today. Most of the wrecks are from between the 19th and 20th centuries. We've got sailing ships, steamers and modern ships, but you won't find many warships. Several Russian submarines have sunk in the area, but unfortunately, it's prohibited to visit them, because they are declared war graves."



Many beautiful tall ships are still sailing the waters around Åland



far more interesting than wrecks elsewhere.

The legislation, which dates back to 1974, states it is unlawful to collect any artefacts or tamper with the wrecks. To ensure that the divers abide by the law, divers can't dive on their own but must go with dive operators who are required to obtain a license to dive in waters that belong to Åland. No penetrations of wrecks are allowed either. There are only a few certified dive centers allowed to arrange diving on the wrecks.

Some wrecks are limited in terms of how many visits a year the centers can do. For example, only 12 visits per year are allowed at the icebreaker, *Hindenburg*. All these rules might seem annoying, but it gives Åland some unique wreck diving features. In addition, the absence of trawling in the area means no fishing nets have destroyed the wrecks.

Radar enforced

"The license is given to local dive centers, like mine, so they may bring divers out to the dive sites", Lundqvist explained. "The coast

guard controls all the waters by radar, and they check the diving boats. This law has been respected during the last 35 years. It means that, more or less, everything is still down on the wrecks."

Plus

Plus, a three-masted windjammer, was on its way from London to its home harbor on Åland, Mariehamn, when it ran into bad weather and poor visibility. The captain signaled for a pilot but received no assistance and decided to continue to Mariehamn nonetheless. He could hardly see ahead through the dense fog, and just 100 meters from shore, the vessel rammed a shoal, which ripped out the bottom. She went down in a matter of seconds taking 12 men with her. Only four survived.

There are so many interesting details on the *Plus*, but do check out the stem with its violin-like figurehead. The masts still have all the rigging details, and the skylights gives you a chance to peek inside.

Dive depth is 17-32 meters.

The *Pommern Mariehamn*. Photo by Annica Jensson



Beliver

Lundqvist described the wreck of the *Belliver* as "a fairly new steamer found in 2009". Lundqvist added, "She is 60m long, and she is unbelievable! She stands on the bottom 30 meters down, and she looks

like she is still sailing. All the details such as ship bells, compasses, telegraphs are still there, on deck."

Hindenburg

The *Hindenburg* served as an icebreaker for the German Navy, and



Skinny-dipping off the coast of Åland, a favorite local past-time. Photo by Daniel Eriksson

Sweden



Diver Tor Jörgensborg documents the findings on one of the first dives on the *Belliver*

Even sailors have to take a dump





some cruisers used her to shield them from mines. The arrangement worked out good for the cruisers but *Hindenburg* hit a mine, which blew a big hole in the bow, and she went under, taking three of the crew with her.

Now she is a beautiful wreck, 51m long with a beam of 13m. The wreck is full of details, brass all over, porcelain, engine telegraphs and a huge prop. The bottom is at 47m and average diving depth is around 40m. It is a bit on the deep side for sport divers but is a commendable dive. If you are a tech diver, use helium, so you remember what you see. It is also cold and dark, and while Åland generally has excellent visibility, it is not always the case. So be prepared, plan accordingly, and dive within your limits. The Baltic is not like the tropics.

Helge

Another beautiful wreck is the *Helge*, an old wooden sailing steamer from the 1869. She had three masts; the early steamers were constructed so they could also make use of the wind. Just a month before she sank, her name

was changed to *Frock*, and as any naval history buff knows, changing a ship's name means bad luck, indeed. In this case, it came in the shape of a close encounter with a German submarine.

Since Åland was a part of the Russian Grand Duchy at that time, and the German captain found the *Helge/Frock* carrying cargo for the Russian military, he decided to sink it with explosives and without further ado, she was sent to the seabed 51 meters below. The wreck is 61 meters long and has a beam of 8.5 meter.

"This is a really good wreck, and an excellent technical dive. She is in very good shape." Lundqvist explained. "You can really feel how time has stood still. On the wreck, you'll artifacts still in place, as if the ship sank yesterday, such as ship bells, wheels, telegraphs and many more items," he said.



A ship's watch on the *Helge*

In only two hours, we picked up three new wrecks on our sidescan sonar!

Sweden

Other wrecks

The wrecks lie in the depth range of 10 -120m. All the wrecks have all their wooden details intact and are in very good condition, so it is like diving in a maritime museum.

Lundqvist said, "We have a team of enthusiasts who search for wrecks. In August 2009, we made our last search before the winter, following a tip from a local fisher. In only two hours, we picked up three new wrecks on our sidescan sonar! This was amazing and out of the ordinary, as we sometimes spend whole days without finding anything.

"The wrecks are lying on depths between 85-120 meter. We have identified one of the wrecks as the lost steamer, *Centric*. She was built in Glasgow in 1903 and struck a mine in 1915. Now, she is standing with the bow on the bottom at 106 meters and the stern at 85 meters. She is in very good condition. We are planning to do some more

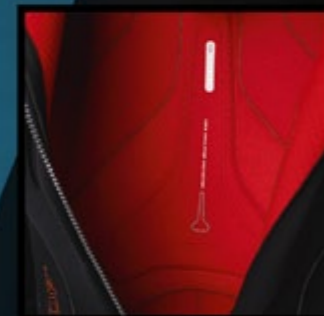
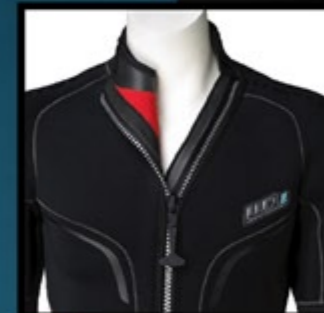
documentation this season, as well as try to identify the other two wrecks," said Lundqvist.

There are so many reasons to dive in the waters around Åland, and the rest of the Baltic, not one of them having anything to do with fish. But expect one thing: after a trip here, any other wreck you visit might just feel like a pile of junk.

The editors wish to thank Ville Lundqvist, Oceanic Tech Åland and Divealand.com ■

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The Lakes

Sweden



Freshwater crayfish, which is regarded as a local delicacy, may be fished during five weekends in August and September

A 90-year-old sewing machine from Husqvarna — goods from the wreck of the steamer, *Per Brahe*

the lack of shipworm and the low levels of oxygen at depth, which makes for a near perfect environment for those old wooden wrecks. The wreck sites include the steamer, *Per Brahe*, which sank in 1918 taking with it the famous Swedish painter and illustrator John Bauer and his family who all perished. The boat was salvaged, but to this day wreckage is still lying scattered on the seabed at 35m.

Some dive sites are a given to visit, such as the wrecks of *Ulrika*, *Måsen* (The Seagull), *Hajen* (The Shark) and *Kung Ring* (The Ring King). They are located at reasonable depths and in areas which make them suitable for most divers.



Vättern is Sweden's second largest lake. With merchant and passenger ships crossing it, there's bound to be a wreck or more throughout the years. The fresh water has kept them well preserved. The underwater landscape is dramatic, with steep walls, and divers ranging from beginner level to advanced can find something interesting here. Visibility is always good, but the very cold water preserving the wrecks in the lake also makes great demands on the divers and their equipment.

Text by Fredrik Isakson
and Peter Andersson
Photos by Peter Andersson

The diving is mostly done on the East side and at the municipalities of Ödeshög and Motala. At Ödeshög, we find wall diving with big boulders lying on a number of ledges. These ledges are like a gigantic stairway down to 70m.

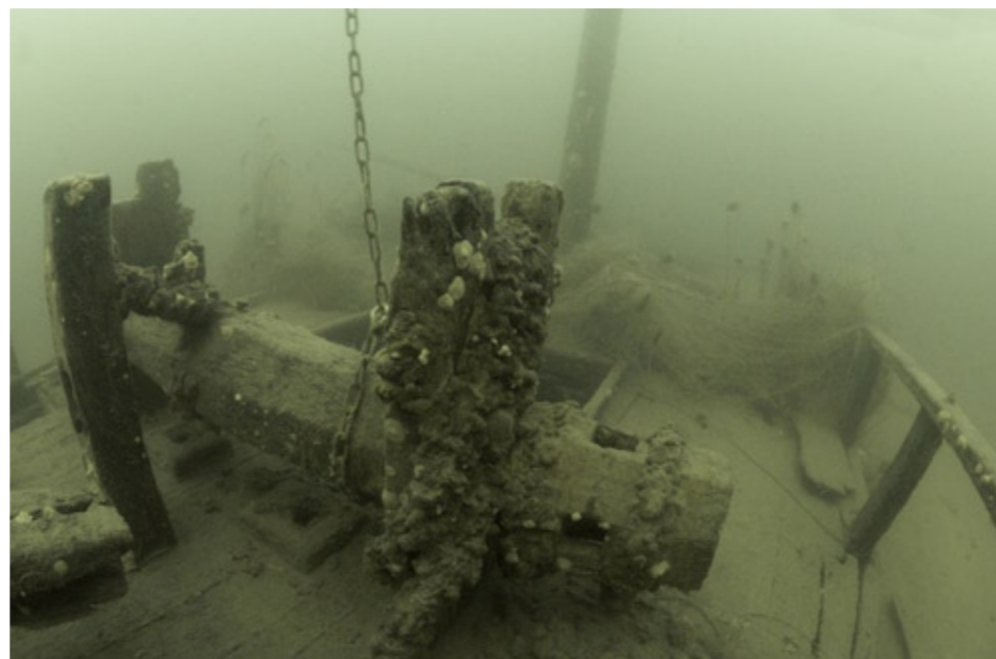
Most of the many well-preserved wooden wrecks that have been found in the lake are located in the vicinity of Motala—a little town on the eastern shore of Lake Vättern, which is regarded as the main centre of both the Göta Canal and the surrounding lake region.

The fine state of preservation is due to

Life

The lake provides a pristine and stunning underwater environment. There is not an awful lot of fish life, but there are a lot of crayfish in the fall as well as pike, perch, salmon, char and trout.

Ready to rock and roll



Ebatus et; C. Mae
occhica edicient per



Circumstances

Visibility in the lake is around 10m. Temperature is on the cool side, and at depth, is usually outright frigid. The lake is deep, and after two months of persistent icecover during the winter, it takes many weeks before the lake warms up again.

A deep freshwater lake is a little bit more demanding on regulators than the open sea, as the salt in seawater counteracts freezing to some extent. And with no salt present in the lakes, equipment failure might come sooner than later, which should be taken into consideration. Using a twin set of regulators is recommended.

Going diving

Accompanying me on my upcoming dive was my buddy, Alex Dawson, and our hosts, Peter Peltonen and Eva Lindahl, from the local dive store, Oxygene, located in the city of Hjo. They urged us to use an extra second stage. Alex declined the offer. He has done numerous ice dives with

his regulator rig without a problem. It was a decision that would come back to haunt him later.

We decided to start with *Hajen* (The Shark), a wreck not too far outside the port of Hjo. In the harbor, there was this hole-in-the-wall joint that sold smoked and fresh fish. Peter picked up some treats for us, and off we went.

Outside the protection of the harbor, the waves were high. The lake is known for its rapid changes in weather. One moment the surface may completely still and smooth, and an hour later, the lake is brimming with large, powerful waves. The lake is a long one. The waves build up along the length of it, with nothing to stop them from growing. Good seamanship is surely a requirement in these parts.

We reached our destination and made our way down the line to the wreck. The water was clear, blueish-green and icy cold.

Hajen was carrying a cargo of bricks and sunk deep into the silty bottom; only about one meter



Burbot (*Lota lota*) from the old french, *barbot*, is the only freshwater gadiform (cod-like) fish. It is most common in streams and lakes of North America and Europe above 40°N latitude. They are edible

of the hull reached up above the mud. The masts stuck up like toothpicks stretching for the surface. It was actually really pretty. Then Alex's regulator started free-flowing. Time to abort the dive and admit that the locals were right. Always heed the advice given by the locals.

Then Alex's regulator started free-flowing. Time to abort the dive and admit that the locals were right.

The *Greve Rosén* is a type of vessel that was typical for Lake Vättern in the late 1800's - early 1900's. Standing at 42m, it is relatively undived

Bronze Age site

That evening, we opted for a more protected site an archaeological site from the Bronze Age, starting at four meters below and located outside the city of Huskvarna. Part of it was still not excavated. Over the millenia, Vättern sort of "tipped", due to asymmetric land rise with water now covering what was once areas of dry land areas.

We dived on a stone structure surrounded by a bog. It was assumed that this was a gravesite, since human bones were discovered here. A number of weapons and other valuables were also found in the bog—several of them by divers.

There should be more finds from the Viking Age, as well as the Bronze Age, on this site. Just remember: anything found belongs to Sweden and is protected by law.

I saw submerged stumps of trees that grew on land 2,500 years ago, and I tried to picture life back then and how they made offerings to the gods right here. Crayfishes in abundance kept us company during the dives. Spring was on its way.

The weather had cleared up, and the late evening sun brightened my mood, and I remembered why I loved diving. Vättern has so much to offer. Tomorrow was another day, and we had many dives ahead of us. I had hardly seen anything yet. Maybe there was a wreck out there with my name on it, somewhere, some place. ■



Stump of a tree that grew on land 2,500 years ago

The author wishes to thank Ulf Långström, Ulf Kajhammar, Peter Peltonen, Eva Lindahl, Johanna Johansson, Håkan Petterson and all other helpful people he met.

Oxygene, Jönköping, where contributing photographer Peter Andersson is based, organizes trips several times a week and offers training from entry level to instructor as well as the full DSAT program from Tec 40 to Tec Trimix.



A talk with Carl Douglas

Deep Sea Productions

Text by Millis Keegan. Photos by Jonas Dahm.

The Baltic Sea may not boast great visibility, but it is famous for its many pristine wrecks, some of which are centuries old. Only a few will ever have the opportunity to experience these astounding time capsules, but through the book, *Shipwrecks of the Baltic*, you get a glimpse of one of the most well-kept secrets in the diving world: that in the Baltic Sea, you'll find the most spectacular wreck dive sites in the world.

The book, *Shipwrecks of the Baltic*, is the result of a project that has been in the works for five years. The main goals of the project were to find, dive and document ships lost in the Baltic Sea and to tell their stories.

It was quite an undertaking performed by Björn Hagberg, Jonas Dahm and Carl Douglas. Jonas and Carl worked to find wrecks—with the help of marine survey company MMT AB. Marine archaeologist

Björn researched and wrote the text. Carl and Jonas led a group of experienced divers who explored the wrecks, and Jonas took all of the underwater images.

The book was produced by Deep Sea Productions, a Swedish company that produces documentary films and now also books. As it happens, Carl is also a friend of mine, so naturally it falls upon me to talk to him about this book.



The artifacts found bear such strong evidence of long lost stories from the past. It is impossible not to be affected but what you see

MK: Now Carl, I think that this book is a true testament to the fact that sunken ships are time capsules with great stories to tell. That is, if you have the patience and the skills to find both the wrecks and the stories, of course. With that said, if you don't mind

me saying it, I also think the book is a true testament to you guys, and to your dedication. And speaking of dedication, is it true that you managed to find over a hundred wrecks over the course of five years?

CD: Yes. Of course, all of those wrecks are not as interesting as the ones you will see in the book, but we have found a lot of wrecks—and keep on finding them. The Baltic is such a treasure-trove of shipwrecks—many tens of thousands of them,



according to the more careful estimates, and most of them are incredibly well-preserved. The thing that strikes most visitors is the preserved wood. In the Baltic, we do not have shipworm, so basically all wood is preserved.

But once one starts to look into the stories behind the wrecks,

another aspect emerges—that is, to tell the stories so that those lost will not be forgotten. This has become very important to us—that these forgotten stories be told.

MK: Forgotten stories—there's your title for the next book! Be sure to

credit me for that. There are a lot of interesting post- and pre-war facts in the book tied in with the most amazing underwater images taken by Jonas Dahm. The pictures speak volumes about the tragic cost of that era, and I can honestly say that his images are spectacular! Who is this guy?

CD: I really think that his images are some of the best wreck photography ever. However, Jonas is a very private guy who prefers his images to speak for themselves.

MK: Right. Okay, we will leave it at that then. But I agree with you. Those are some world-class



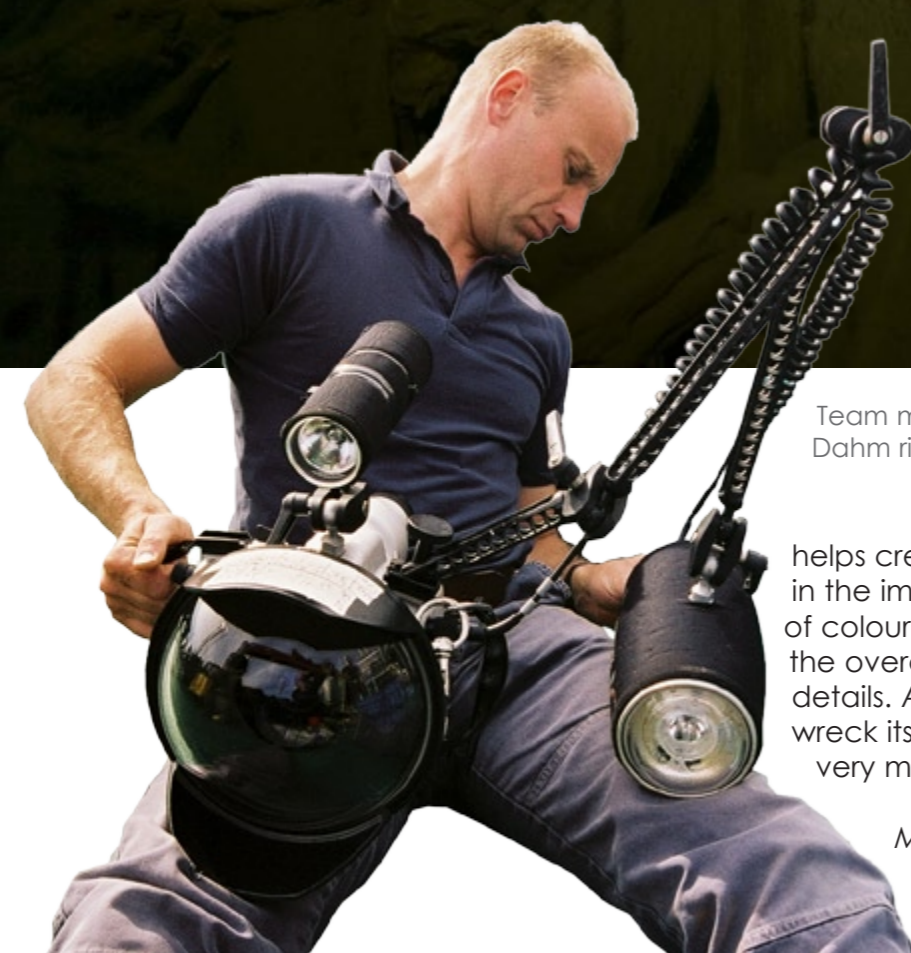
images. The clarity is astonishing. How do you manage that in such a sensitive environment? I mean, one wrong move inside one of those wrecks, and the visibility will be gone for a decade, right? What is the most difficult part of photography under these conditions? Seriously, what is the secret?

CD: Obviously, the quality is the result of many factors. First, we need to find wrecks that are "photogenic" in an area of the sea where there is good visibility. Then, I have to say that Jonas' sheer ability as a diver is also very important. He goes everywhere inside wrecks. There is a reason you don't see very many good images of engine-rooms! But Jonas does it. On many of the images, another factor is also important, and that is teamwork—both for modelling and setting light. Since we have dived together now for about a decade, we know what we want to do. We talk a lot about what kind of images we like and how to create them. It's a very creative environment in the group.

I also think the environment we

Carl Douglas found his calling as an historian and cold water-diver, but he also has a soft side for warm water-diving

The team acknowledge that not all wrecks are as photogenic as the ones in the book, but that doesn't mean that they don't bring something significant to history and should be explored further



Team member Jonas Dahm rigging up

dive in helps. The darkness in the surroundings helps create the mysterious feeling in the images. Furthermore, the lack of colour helps to focus attention to the overall shapes rather than the details. All this brings forward the wreck itself. This is an effect that we very much appreciate.

MK: And so you should. Enough buttering... I have a favourite wreck, Aachen,

and I have chosen the chapter based on that for our readers. Which chapter and what pictures are you most proud of and why?

CD: Difficult question. For me, there are so many feelings associated with the text and with every image. All the joy and all the hard work over the years. The images, in particular, bring it all back. The images from the *Aachen* are some of my favourites as well. It is a fantastic wreck to dive as well—and that's really my focus: the diving. Every dive on these wrecks is like crossing into another time.

Some wrecks have meaning because



Sweden

The book is available in five languages

we have researched them for many years and really know the stories, such as the

Route of Death wrecks (the *Steuben*, *Goya* and *Wilhelm Gustloff*), the WWI cruiser, *Prinz Adalbert*, and the Soviet WWII submarines. Others are more anonymous in the greater scheme of things, but are nonetheless fascinating to explore and to try to figure out their story. Some are



It is like time stood still. You almost expect someone to walk into the room any minute



beautiful ships, some have wooden carvings, some have nice interiors, some have interesting engine-rooms, some have details that somehow capture our interest and others are just attractive for reasons we don't fully understand ourselves.

Still, some of these wrecks manage to surprise us. One of my favourite dives was our first dive on the *Steuben*, the summer after we found her. We were really charged up about diving this wreck, and to tell the story of the plight of her

passengers. However, nothing could have prepared us for the sight that we encountered on the seabed 75m/260 ft below. We had maybe 40m/130 ft visibility, so when we came down in front of the bridge, we saw the whole bow-area of this beautiful old liner resting on her port side. Very Titanic-like. There is a particular stillness about shipwrecks that often belies the violence behind their loss. Very true in this case. For me this was a magic moment.

MK: To do something of this magnitude requires a lot of resources and commitment. I am assuming everyone works on their own time, juggling a day job and maybe a family? The logistics alone must be a nightmare! What prompted you guys to do this project?

CD: Yes, this is a project that is all about passion. Certainly not logic. We had been diving together for a few years. I

guess we just wanted to take our diving to another level—to see whether we could. But it was also a gradual thing: we started diving, then we started looking for wrecks together, dove some more. Then, we brought in the guys from MMT and really started looking, dove some more, then we said, “Hmmm, this could be a book.”

This creative process, while doing something difficult and working together in a group, is really the key. We're not just

visiting the wrecks; we try to figure them out and try to get “inside” their stories. *MK: Thank you so much for your time, and I hope our readers will enjoy this glimpse into the depth and the history of the Baltic Sea as much as we do. The book is available in Russian, Finnish, Swedish, German and English. For the other language versions, contact DeepSea.se.* ■

TOP: No matter how prepared the divers are before the dive, the sights still amaze them





The sinking of the *Prinz Adalbert* made the headlines, telling the story of how only three of 675 crewmembers survived

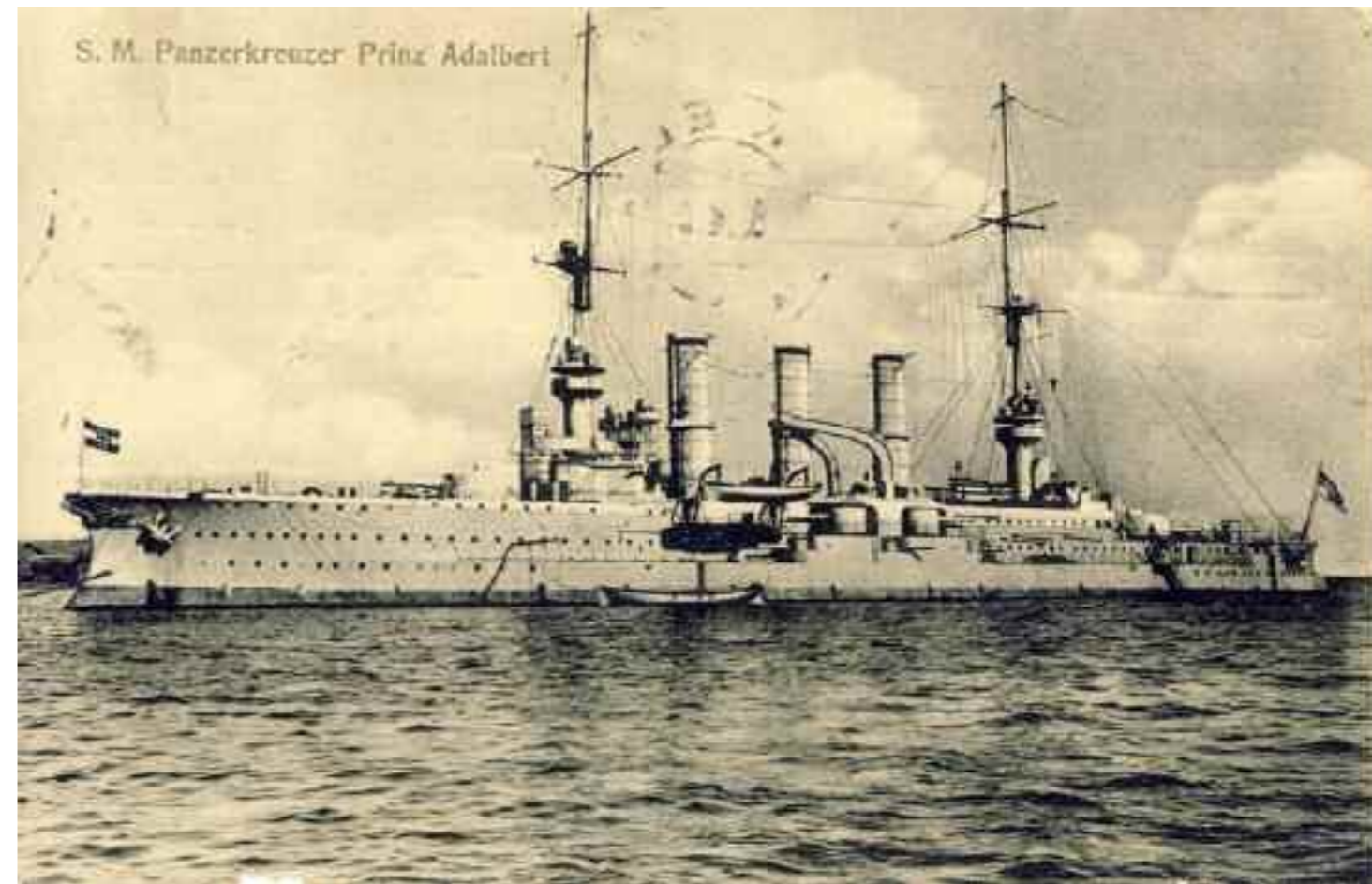
Lithuania. When the torpedo struck, the reverberations of the resulting explosion made it sound as though the entire sea had split apart. The torpedo had struck the ship's magazine, and the vessel was torn in two. Parts large and small rained down from the sky, and an enormous pillar of smoke hundreds of metres high was the last of the vessel to be seen. Of 675 crewmembers, only three survived. The sinking of the *Prinz Adalbert* was the largest loss ever suffered by the German Baltic fleet at that point.

The freedom of movement of the neutral countries at sea had been respected at the beginning of the

chant marine suffered losses. To begin with, it was ships in the North Sea that were blown up in the dense minefields, but soon her ships in the Baltic would suffer losses as well. News reached Sweden in December 1914 that three Swedish ships, the *Everilda*, the *Luna* and the *Norra Sverige*, had been blown up by mines north of Åbo. The ships had tripped German mines, and 42 Swedish sailors were killed.

The continued laying of minefields was putting shipping increasingly at risk. Six months later the Swedish steamship *Hermodia* disappeared in the Sea of Åland, followed in rapid succession by the Dutch ship *Ceres* and the Danish vessel *Ely*. The conflict in the Baltic was

the alarm of the submarine commander, no attempt was made to ram her. The crews of the German ships were convinced that their colleague had sunk as a result of an



exploding mine and never detected the presence of the *E1*. These events were reported a few days later in the Swedish newspaper *Gotlands Allehanda*. Some of the wreckage had drifted ashore: doors and parts of the telegraph cabin, bed-clothes, a mattress and a lifebuoy bearing the legend "Aachen-Bremen" – which made it possible to identify the ship.

A much greater catastrophe in human terms would occur when the British submarine *E8* sank the German armoured cruiser *Prinz Adalbert* off the coast of

war, but – as the war escalated – the rules were tightened and the threat-level increased. Only a few months after the outbreak of the war, the Swedish mer-

largely over the trade in Sweden's iron ore. Just as would be the case in the Second World War, Germany was dependent on deliveries of iron from

EXCERPT FROM CHAPTER 3 OF:
THE FIRST WORLD WAR
—NEW WEAPONS FOR A NEW AGE

Text by Björn Hagberg
Photos by Jonas Dahm

GERMAN SETBACKS
Both the German navy and its merchant marine lost many vessels early on. Some went down as a result of mines, while others were subject to submarine attacks.

On 30 July 1915, the captain of the British submarine *E1* sighted a convoy near the Latvian port of Libau. It consisted of three vessels that had been specially equipped by the Germans to

transport cargo while also serving as minesweepers. The submarine attacked the leading vessel and hit it with a torpedo. The cargo hold immediately filled with water, while the engine-room and the boiler also started to flood. Fifteen minutes later the ship had sunk.

Immediately after the attack, the submarine turned up toward the second vessel but was forced to dive too deep at the decisive moment for launching an attack, as the third boat was heading straight at the submarine in what seemed to be an obvious attempt to ram her. Regardless of the heavy seas, the two vessels remaining in the convoy managed to save all but five of the crew of the torpedoed vessel. Despite



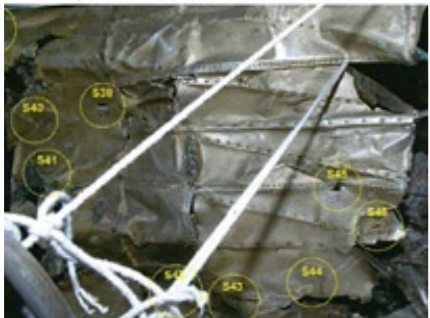
DC3 on a spy mission shot down during the cold war



On June 13, 1952, a Swedish military DC-3 carrying out signals intelligence gathering operations over the Baltic Sea for the Swedish National Defense Radio Establishment, disappeared over international waters east of the island of Gotland.

The USSR denied shooting down the DC-3, but a few days later, a life raft with Soviet shell shrapnel was found in the area. In 1956, while meeting with the Swedish Prime Minister Tage Erlander, Soviet leader Nikita Khrushchev admitted that the Soviet Union had shot down the the plane although that information was not released to the public at the time.

In 1991, the Soviet Air Force publicly acknowledged it had shot down the DC-3. The remains of the downed DC-3 were found by a Swedish company



in the summer of 2003. Inspection revealed bullet holes that proved the plane was shot down by a MiG-15 fighter. The exact time was also determined, as one of the clocks in the cockpit had stopped at 11:28:40 CET.

[Link to official Swedish report](#)

Submarine warfare in the Baltic was very successful and made a significant dent in the shipping of materials to the war-faring countries

Sweden. Protecting these vital imports became the main task of the German Baltic fleet.

War in the Baltic escalated with an expansion of submarine warfare and the ongoing laying of minefields. The Allies attempted to block all marine transports to and from Germany, which responded by increasing submarine attacks. The escalation of hostilities between the opposing blocs would pose an ever-greater threat to the shipping of the neutral countries.

THE ALBATROSS AFFAIR

The neutrality Gustav V, the Swedish king, had so solemnly guaranteed proved difficult to sustain. Violations became both more frequent and more difficult to overlook. The war would even be carried out on Swedish territory in the summer of 1915. This event has come to be known as the Albatross affair. A squadron of



German warships that had been laying mines in the Gulf of Finland had relayed its planned return route to its home base in Danzig. The telegram was intercepted by units of the Russian navy and the hunt was soon in full cry.

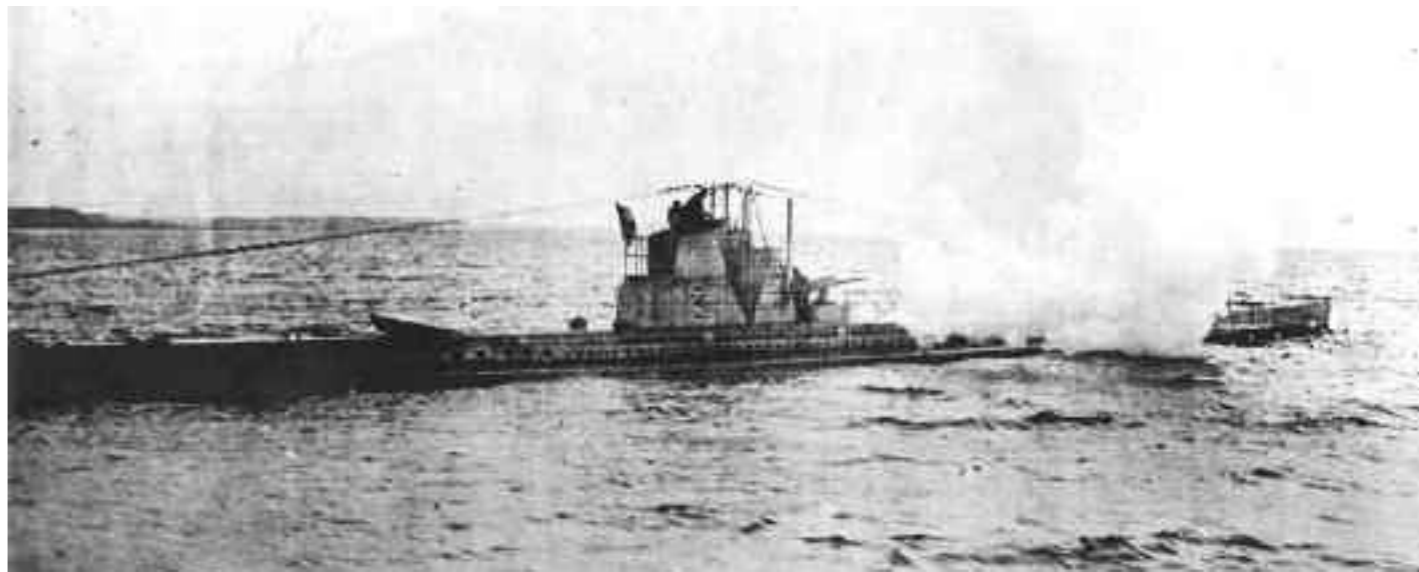
On the morning of 2 July, thick banks of fog were drifting across the Baltic. Onboard the German mine-cruiser *Albatross* all was peace and quiet. On the bridge Karl Bühler, the ship's second officer, had the watch and kept in constant touch with the other vessels in the German squadron. All of a sudden, he spotted a foreign vessel among the swirling

mists and the next moment all hell broke loose. A couple of hundred metres from the *Albatross*, two shells struck the water, and Bühler rapidly realised that they were surrounded by four hostile craft.

The *Albatross* made for the island of Gotland at top speed in an attempt to seek the safety of Swedish waters. The other German ships chose a different tack in the hope of luring the

attackers into following them, away from their poorly armed and slower comrade. But their Russian attackers decided to follow the *Albatross* instead. Four fast and heavy Russian armoured cruisers against one mine-laying cruiser – the outcome could not be in doubt. The Russians bom-

barded the *Albatross*, one shot after the other lacerating the German vessel. Some three thousand shells were fired, and no one believed that the boat could remain afloat. Water poured in through two huge holes, one in the stern and one on the port side. Listing ever more





violently, the *Albatross* could overturn at any moment.

Early that morning the ship managed nevertheless to reach the Eastern coast of Gotland and sought shelter behind the little island of Östergarnsholm. Her Russian persecutors, however, refused to give up and continued to bombard her. The lighthouse staff on the little outcrop was forced to flee in haste as the shells flew over their building. The *Albatross* could no longer manoeuvre, and she was taking in a great deal of water. The commander finally gave the order to use the last dregs of power in the steam engine to drive the boat up on to the beach. The shooting stopped for good then, and the Russian vessels quickly left the area.

With a German mine-boat now strand-

ed on the beaches of Gotland, the local population flocked to see it. They were confronted by dreadful scenes. Dead and wounded men lay everywhere, although the worst sight was of shocked and bloodstained sailors wandering around the ship that had been shot to pieces. That same evening, 26 crewmen were buried in the cemetery on Östergarn. The Swedish government made a forceful protest to its Russian counterpart. An apology came by return of post and an explanation that has become legend in Swedish-Russian relations – errors in navigation were the cause of the violation of



Stuck in time

The symbolism found in Jonas Dahm's compositions is stunning

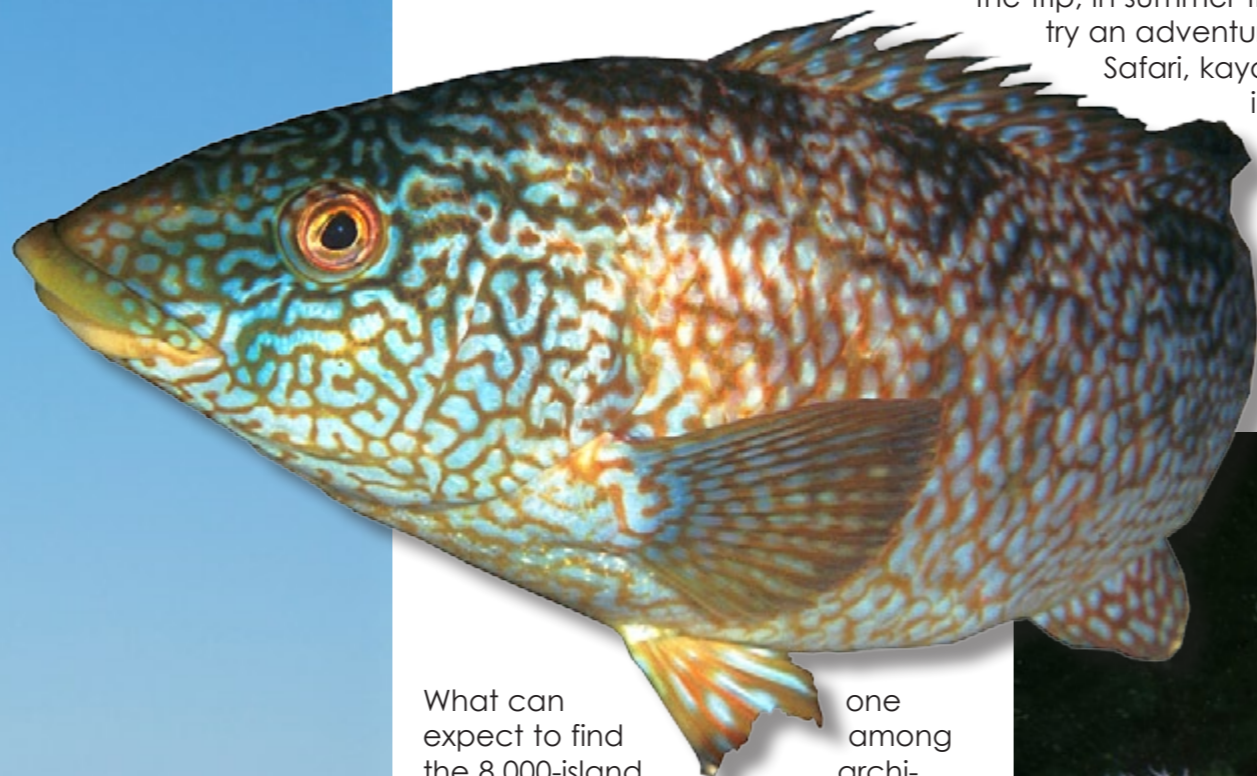
Swedish waters.

The war would not in fact come any closer than this, but vessels continued to be lost and the difficulties faced by the ships of the neutral countries would only get worse. The war at sea became more brutal, with the hostile countries only occasionally respecting ships designated as neutral while the minefields continued to expand.

Sweden managed to remain outside the war and her neutrality was preserved, despite further violations. But this was neutrality understood in the most generous sense of the term. Sweden continued to deliver iron ore to the Germans and timber to the British during the entire war,

both of which were vital to the continuation of hostilities. At the same time, this trade was a source

of income for Sweden where many people earned huge sums from the war. Despite the vessels that had been sunk, the iron ore transports had to be preserved at all costs, since they were far too profitable to stop. Those who had to pay the price would end up at the bottom of the Baltic Sea." ■



The West Coast is a very popular destination among those divers who have no regard for the wrecks and sparse marine life of the Baltic Sea. And the contrast stands out—the West Coast is teeming with life.

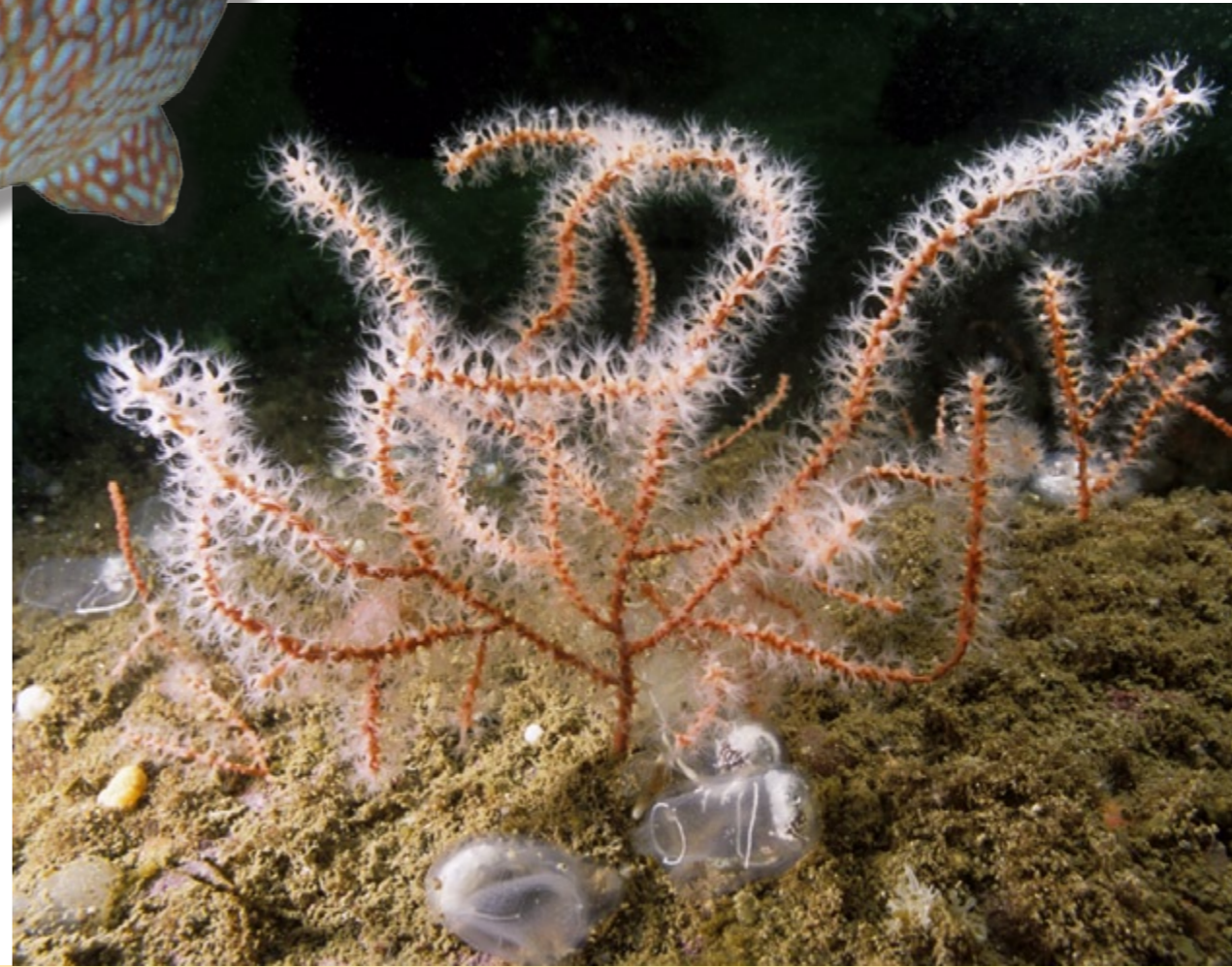
Text by Millis Keegan
Photos by Stein Johnsen

the trip, in summer time in particular, or try an adventure or two, like a Seal Safari, kayaking or island hopping in the archipelago, or maybe some lobster fishing. Summer time means hanging out and partying with the Swedes in eclectic hole-in-the-wall restaurants

along the bridges down by the docks, eating tasty crab, shrimp and lobsters, drinking lots of beer, eating more great sea food and singing silly songs. Swedes love to sing silly songs when they've had a few. The further north you go, the more diverse diving you get. There are lots of small picturesque coastal villages

What can one expect to find among the 8,000-island archipelago and the fiords is a rocky underwater landscape with seaweed swaying in crevices, lobster, variety of crabs, variety of sea anemones, starfishes, cod, coalfish, mackerel, flatfish and eel. One can also find jellyfish, Dead Man's Hand, some sharks—if you are lucky and in the right place at the right time. The same goes for octopus. The variety is there. There is more to the West Coast than diving. The landscape alone is worth

CLOCKWISE FROM TOP LEFT: Mouth of anemone; Arms of anemone; Detail of soft corals; Wolf eel; Delicate fronds of soft coral with tunicates; Grouper (inset); Serene scene on the West Coast of Sweden



The West Coast Västskusten



Traditional little red huts dot the coastline of the West Coast of Sweden

ecologically unique fiord of Gullmarn. Diving tourism as well as a High School teaching special programs in marine biology has developed in this area of very beautiful red granite cliffs. Learn more about what you can expect to find in the fiord by visiting Havets Hus, "the House of the Ocean". www.havetshus.lysekil.se

Kungshamn/Smögen

For after-dive activity in Smögen, the one and only place to hang out in is on the Smögen Bridge. One end starts at the fish hall and runs a kilometer long on the south side of the old fishing dock, but don't expect any early fish auctions any more. That is done by Internet these

days. Walk along the bridge, shop, eat, drink and chill. That's what you do here.

Väderöarna

Direct translation of its name is "The Weather Islands", which is an appropriate name. The islands are located in the outer band of the archipelago and quite exposed to the weather. They are a very popular must-dive site. The islands are home to a large seal colony. The seals sometimes spend time playing pecka-boo with divers.

The Koster Fjord/Kosterhavet Marine National Park

A coldwater coral reef was found not too long ago in the Koster Fjord. The



Diver inspects large anemone on rocky landscape under the waves (above); Sea pens sway in the current (left)

and towns where you can dive and enjoy life. Marstrand, Lysekil, Kungshamn/Smögen, Tanumstrand, Grebbestad and Strömstad are all great places to find a dive center. Pick your location or three. Every place has it's own charm. The reason is because the Gulf Stream makes a little turn here and hit a little bit of Sweden. The mixing of cold and warm water creates excellent conditions for any marine life. Don't miss Väderöarna; It is often said to as having the best diving the West Coast can offer.

Lysekil

Is a very small, but interesting, community that has grown around the

MATHIAS CORVALLO





Electric blue flashes from the patterned scales of a cuckoo wrasse (*Labrus bimaculatus*); Close-ups of anemones (right and below center)

We found this fantastic video of Kosterhavet Marine National Park by Knut Bergsten, including Väderöarna. Scroll down to "Missing Summer" at: www.explorewestsweden.com

Kullen, South Sweden

The best dive site for marine life in the south is Kullen. Kullen is a very distinct peninsula with a rocky, craggy shore that continues under water. Currents bring nutrients to the marine life that thrives here, particularly during summer and autumn. Expect to find shore

Sweden



deepwater coral *Lophelia per-tusa* was a remarkable find, which earned the fjord the status of becoming Sweden's first Marine National Park. Well, that, plus there are 200 unique species

found only in this area, such as the firework anemone *Pachycerianthus multiplicatus*, the pink shrimp *Pandalus borealis*, the sea cucumber *Parastichopus*



tremulus, the northern stone crab *Lithodes maja*, and a couple of rare sharks (Velvet Belly Shark and Greenland Shark). More information on Kosterhavet.se.

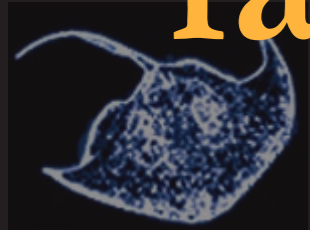
crabs, hermit crabs, jellyfish, dead mans hand, lots of flounders, and on a good day, sea trout, cod, mullets and more. ■

Close-up of a scallop with its many eyes

Kayaking can be enjoyed on the West Coast after a good day of diving



fact file



Sweden



SOURCE: CIA.GOV WORLD FACTBOOK
SCUBA-DOC.COM

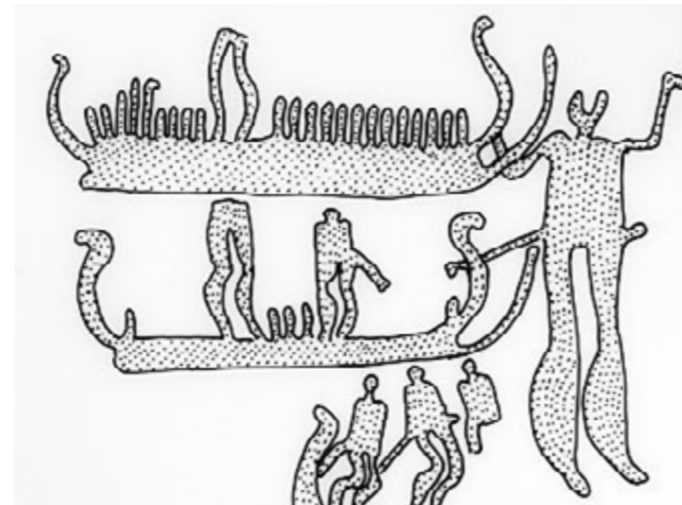
History During the 17th century, Sweden was a military power. However, for two centuries, the nation has not been involved in any wars. Sweden managed to preserve armed neutrality during both World Wars. In the 1990s, Sweden's long-successful economic formula of a capitalist system interlarded with substantial welfare elements was challenged by high unemployment and economic downturns in 2000-02 and 2009. Over the past several years, fiscal discipline has allowed the country to get through economic fluctuations. In 1995, Sweden joined the EU, but its people rejected the introduction of the euro in a 2003 referendum. Government: constitutional monarchy. Capital: Stockholm.

Geography Sweden is located in Northern Europe and borders the Baltic Sea, the Gulf of Bothnia, Kattegat and Skagerrak, and lays between Finland and Norway. Terrain is composed mostly of flat or gently rolling lowlands with

mountains in the west. Lowest point: reclaimed bay of Lake Hammarsjön, near Kristianstad -2.4m. Highest point: Kebnekaise 2,111m. Coastline: 3,218 km. Note: Sweden has a strategic location along Danish Straits linking Baltic and North Seas.

Climate is temperate in the south with cold, cloudy winters and cool, partly cloudy summers. Sweden has subarctic climate in the north. Natural hazards: ice floes in the surrounding waters, particularly in the Gulf of Bothnia, which can interfere with maritime traffic.

Environmental issues Acid rain damages soils and lakes and pollution is a problem in the North Sea and the Baltic Sea. Sweden is party to agreements including: Air Pollution-Nitrogen Oxides, Air Pollution-Persistent Organic Pollutants, Air Pollution-Sulfur 85, Air Pollution-Sulfur 94, Air Pollution-Volatile Organic Compounds, Antarctic-



LEFT: Hallistningar symbols are pre-runic symbols found in rock carvings in Sweden.

RIGHT: Location of Sweden on global map
FAR RIGHT: Map of Sweden



from agriculture. Sweden sustained economic

Environmental Protocol, Antarctic-Marine Living Resources, Antarctic Treaty, Biodiversity, Climate Change, Climate Change-Kyoto Protocol, Desertification, Endangered Species, Environmental Modification, Hazardous Wastes, Law of the Sea, Marine Dumping, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94, Wetlands, Whaling.

Population 9,059,651 (July 2009 est.) Ethnic groups: indigenous population: Swedes; Finnish and Sami minorities; foreign-born or first-generation immigrants including Finns, Yugoslavs, Danes, Norwegians, Greeks, Turks. Religions: Lutheran 87%, other religions including Roman Catholic, Orthodox, Baptist, Muslim, Jewish, and Buddhist 13%. Internet users: 8.1 million (2008)

Language Swedish, small numbers speak Sami- and Finnish

Currency Swedish kronor (SEK)

Exchange rates:
1EUR=9.62SEK;
1USD=7.21SEK;
1GBP=11.05SEK;
1AUD=6.65SEK;
1SGD=5.26SEK

Economy Under a mixed system of high-tech capitalism and comprehensive welfare benefits, Sweden has achieved an enviable standard of living, aided by peace and neutrality for all of the 20th century. The nation benefits from a modern distribution system and excellent external and internal communications as well as a skilled labor force. In September 2003, Swedish citizens rejected entry into the euro system due to concern about the impact of the move on sovereignty and the economy, which leans heavily on foreign trade in primarily timber, hydropower, and iron ore. Ninety percent of industrial output is produced by privately owned firms half of which are from the engineering sector. Only one percent of GDP and employment comes

growth, encouraged by strong exports and increased domestic demand, until 2008. A reform program aimed at increasing employment, reducing welfare dependence, and streamlining the state's role in the economy was implemented by the government. Even with robust finances and underlying fundamentals, the Swedish economy fell into recession in late 2008 with growth continuing to slow with the global economic downturn. Industry: iron, steel, precision equipment, wood pulp, paper products, processed foods, motor vehicles. Agriculture: barley, wheat, sugar beets, meat, milk. Natural resources: iron ore, copper, lead, zinc, gold, silver, tungsten, uranium, arsenic, feldspar, timber, hydro-power.



Hyperbaric Chamber

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Websites

Sweden Tourism
www.visitsweden.com/sweden ■

Panaramic view from the peak of the highest mountain in Sweden, Kebnekaise

