

Marine Conservation Project Cleanwreck

The Shipwreck Decontamination Project

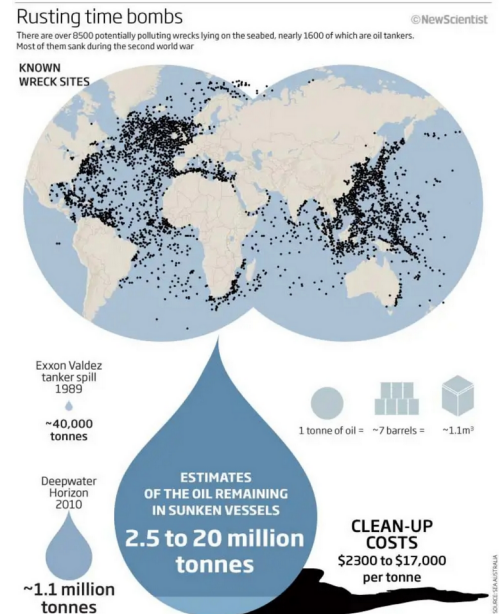
Co-Creator Programs



Wreck Search & Identification Fleet (S&I Fleet)

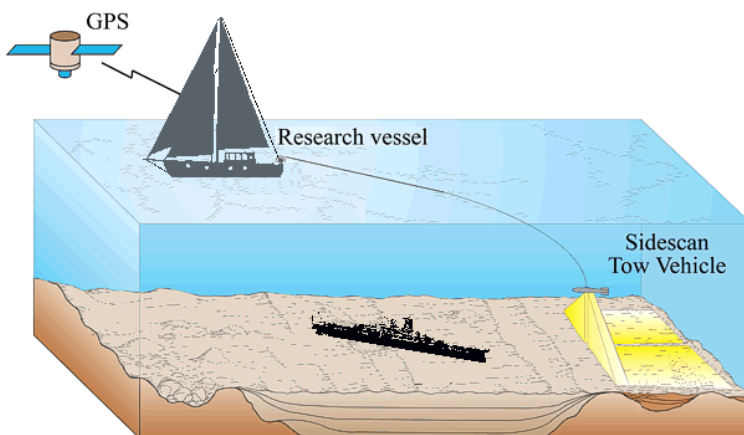
Present situation

Thousands of ships that sank during WWII are leaking oil. With the disintegration of their rusty tanks, it is **not a question of whether** a “peak leak”, a breakthrough with far-reaching consequences for the environment, will happen, **but when**. Current estimates assume **2.5 to 20 million tons of oil** stored worldwide in these dangerous wrecks – about twice to twenty times as much as the amount that went into the sea in 2010 during the [Deepwater Horizon catastrophe](#), the worst environmental disaster of its kind in history. The same applies to other toxic substances such as ammunition. We must **detect, investigate and treat** potentially dangerous wrecks **now**, before they harm fauna and flora.



Strategy

Our focus is on wrecks in the epipelagic zone (-200m). During a preliminary search we try to narrow down their positions as precisely as possible. The search area thus defined is analysed step by step with acoustic location. For this purpose, we tow [side-scan sonars](#) behind our ships, which - using linked GPS positioning - produce extremely high-resolution maps of the sea floor.



Side scan sonar operation

2.5 to 20 million tonnes of oil

Under good conditions we can search an area of one square kilometre per hour for wrecks. If we find something "suspicious" we send a diving robot also called [ROUV](#) (remotely operated underwater vehicle) down. If a find is confirmed, we try to identify the wreck. This is usually easiest if you dive it directly. Depending on the depth this can be done with air and open circuit or with mixed gas in a closed circuit rebreather (see: [Introduction Tec-Diving](#)). Once a wreck has been identified, the rights must be negotiated with the owners. Until then it is generally not allowed to enter the wreck - at least not officially.

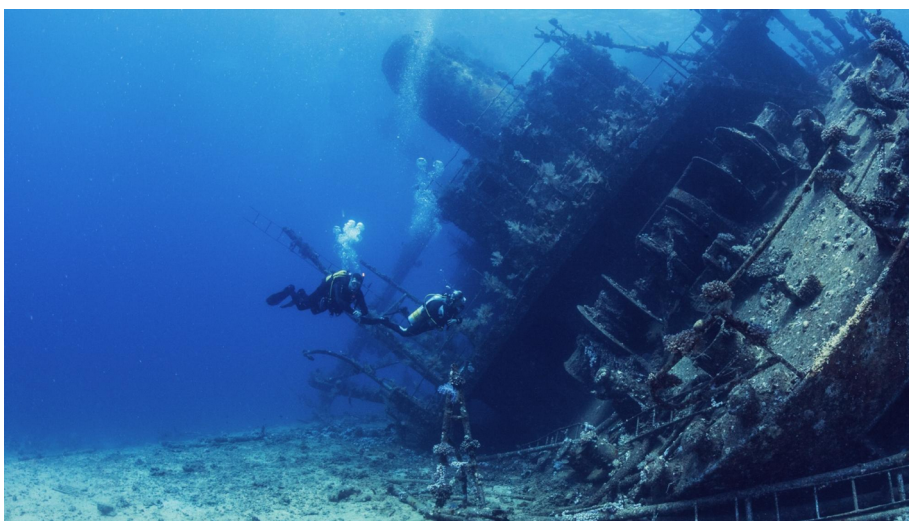
Of course it is also necessary to keep the position absolutely a secret in order not to endanger our negotiating position. However, the vast majority of wrecks from the world wars do not contain gold or other treasures, but mainly oil, ammunition and scrap metal. Therefore, in general, we do not expect an over-interest in the ownership rights of the flag states (because this would mean that they would recognise their responsibility for the toxins). However, there are materials on many wrecks



Tec-CCR-diver

which at first glance do not look precious, but which are nevertheless quite valuable and can thus also contribute to covering the decontamination costs, keyword: [low-background steel / lead](#). More about this topic under [Activities](#) on [Cleanwreck.org](#). However, before wrecks can be searched for at all, research vessels have to be built, exploration and diving equipment has to be purchased, and crew members have to undergo extensive training for their future special missions.

When a research vessel finally sets sail, running costs have to be covered such as maintenance and repairs, harbour fees, insurance, consumables, diving gases and, above all, the crew must be able to earn a living. To be able to finance all this, it is necessary to commercialise one aspect of shipwrecks, namely the diving and salvage rights. Shipwrecks are a real magnet for sport and Tec divers, the more unexplored the more interesting. And it is precisely this fact that enables us to decontaminate them. There are more than 20



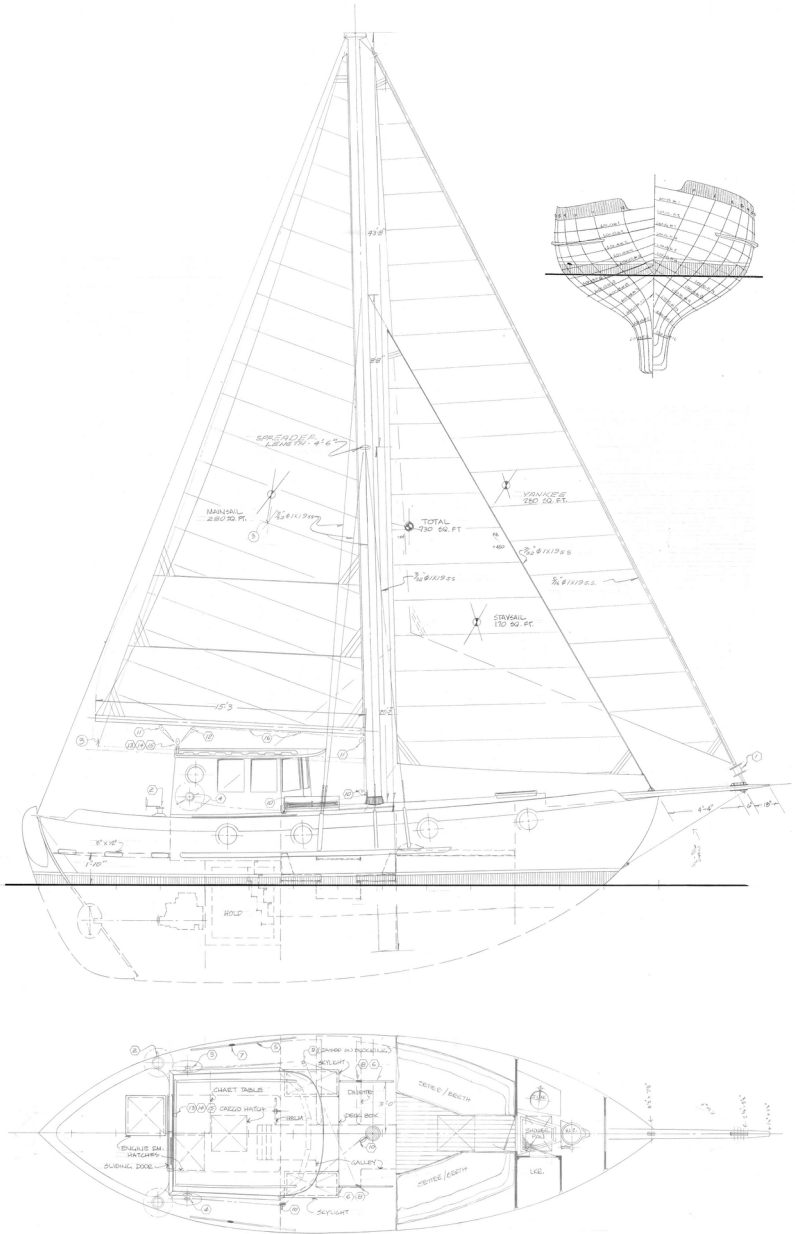
Recreational wreck diver

million recreational divers worldwide. They need to be reached, they need to be involved in the search, exploration and decontamination of the wrecks. The vast majority of them are **not yet** aware of the problem! To detect and identify 8,000 potentially dangerous shipwrecks - 1,500 of which are tankers - spread over an area of 360,570,000 km², many ambitious, professional crews and effective tools are needed.

Research Vessels

When selecting suitable designs for a small series of research vessels, the requirements for towing capability, seaworthiness and load capacity had to be considered to fulfil the tasks set. On the other hand, however, they must also be able to be sailed easily and effortlessly by their small crew and, of course, they must be comfortable for a long time. And all of this as environmentally friendly and sustainable as possible. At the moment the construction of the first series model, which will be handmade from wood/epoxy laminate, is being prepared. For the most part, local woods such as larch, spruce and fir and epoxy resin with a very high proportion of plant origin are used.

They offer two to three crew members sufficient space for their work and are very well suited to tow the side-scan sonar with 3kn (max. 5kn) behind them even in difficult weather and sea conditions. Due to their hull shape, especially their long keel, they can be easily and comfortably kept on course with a wind vane steering system. The wood laminate offers excellent sound and thermal insulation and thus a pleasant climate on board. In combination with bio-based epoxy resins, it is currently the most sustainable boat building material with a long service life. Photovoltaic modules are attached to the deckhouse which normally cover the current energy demand.



Key Facts

Design: *Boat Building Association* CW based on the legendary seaworthy rescue and pilot boats by [C. Archer](#) and K. A. Nielsen

Typ: double-ender, LoA: 11.70m (38ft), LWL: 10m (33ft), WoA: 3.50m (11.5ft), Draft: 1.70m (5.5ft),

Displacement: 11.5t, Hull speed: 7.5 kn, Engine: 37kW, Cruising speed (eng.): 5kn, Rigging: Cutter,

Sail area: 67 – 78m²

Manufacturing

To enable as many ambitious marine conservationists as possible, who want to help us in the race against the ravages of time gnawing at the rusty oil tanks of the shipwrecks, do research with their own ships, we have decided to build our own research vessels together and have therefore set up the Cleanwreck Boat Building Association. Apart from the fact that our boats are built to suit their specific needs, it is also more cost effective and all crews know their boat down to the last detail.



Frame (spirit yachts)



Strip Plank Laminated Veneer Construction

We build mostly according to the strip plank veneer method (see chapter 23, [The Gougeon Brothers on Boat Construction](#)) and use mainly [European spruce](#) (Picea abies), [European larch](#) (Larix decidua) and [Entropy Super SAP Bio-Based Epoxies](#). The models, templates, mall frames, etc. on which we laminate the hulls, bulkheads, deck beams, etc., can be reused as often as required in serial construction, which considerably shortens the construction time.

Wood/epoxy laminates guarantee the highest quality boats and are also used by [Spirit Yachts](#) for classic luxury yachts. If you like, you can build your own ship with the help of our experienced professionals. But you don't have to, we can also build it for you. In any case we have everything you need for your research ship. Impeccable winter-cut larches, firs and spruces from high altitudes from which we saw (not rotary-cut or sliced!) hand-selected strips and veneers. We laminate and glue with marine bio-epoxy resin made from more than 30% plant raw materials.



Our S45N and...

Our boat building workshop is equipped with professional woodworking machines such as band saw, surface/thickness planer, format saw/router combination from

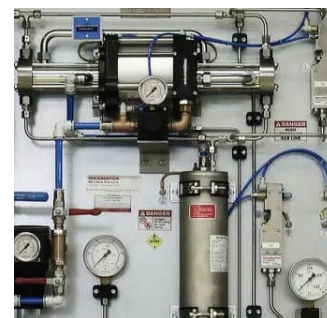


...our CU410e from our sponsor SCM Group

SCM Group - one of our sponsors - workbench, joiner's bench, hand tools, etc.. Attached to this is an industrial tent where our boats are built and where we store our reusable mold frames and templates for all components. In our metalworking container we even have a propane gas powered melting and casting mold for the lead keels of our boats.

Diving equipment

All vessels will be equipped with a breathing air compressor, O₂ booster, gas storage for helium, oxygen and argon to enable research dives to a standard depth of 120m. With regard to our diving gases, we also pay attention to the highest possible sustainability (helium!) and thus always use [high performance closed circuit rebreathers](#) (CCR).



Gas blending

Exploration equipment

Side-Scan Sonar (SSS)

The [Side-Scan Sonar](#) provides high resolution sonar images of the sea floor. It is towed to the desired depth and scans the sea floor up to a width of 300 m. The ideal device for wreck search.

Diving robot (ROUV)

The [ROUV](#) (Remotely Operated Underwater Vehicle) is used for detailed exploration of potential wreck hits. The system delivers HD quality pictures and videos, has a manipulator, a high payload and can do much more (e.g. attach a descent line to a wreck).



Tow fish (side scan sonar)

Liveaboards

We finance our research primarily with diving guests, who we involve in the exploration of the wrecks, and in the longer term also through the (diving) rights to our wrecks. Our research vessels are not designed to accommodate guests. Experience has shown that divers have very different ideas about accommodation besides their diving activities. Therefore we charter [liveaboards](#) according to their individual needs and of course their budgets. This ranges from the sporty and simple 32ft/10m Mono-Racer to the 62ft/19m luxury catamaran with all imaginable comfort for up to 12 persons. Either the guests take over the command of their boats themselves (if one of them has the necessary qualification), or they charter with skipper, or we take over if necessary. They have their diving equipment on their ships, and we have their diving gases and other consumables for them on our research ships.



Lagoon 450

Education/Training

Everything you need as a future crew member to detect, identify and explore potentially dangerous shipwrecks can be learned while building your ship. From nautical training according to the [training programme of the RYA](#) (usually a good user level is sufficient), to the handling of ROUV and SSS and the diver training. The latter includes on the one hand the training as a professional technical research diver to prepare you optimally for your tasks while exploring your wrecks and on the other hand as a Hypoxic Trimix Instructor with open and closed system according to [CMAS](#) und [PADI](#), so that you are ready for your diving guests.

Earning opportunities

Your boat is designed to provide you, your crew and your guests with everything you need for safe dives up to 120m - under optimal conditions even beyond. The dive destinations you offer your divers are either wrecks whose positions only we know (or in which only we are allowed to dive), or wrecks that are simply inaccessible for diving centers from land and therefore all of them are very exclusive. For this premium offer of course more money is paid than for normal diving safaris. On the other hand, you will also have "idle time" when you are looking for wrecks or setting up dive sites. In any case you will generate enough income to live on paying your crew and get your investment back within 5 to 7 years. By the way, you can be active all over the world, since you have your house and your company with you, and problem wrecks are (unfortunately) everywhere. Therefore a research boat of the S&I-Fleet is perhaps the foundation of a business with the greatest possible freedom of our days.

Equity requirements

A ready-to-use research boat without your participation in the construction starts at around € 250,000 plus courses and training from € 20,000 (without prior experience) and personal diving equipment from € 17,000 (including DPV and CCR). As a non-profit organisation, the growth of the fleet is a priority for us, which is why we do our utmost to offer alternative financing options to people who want to put themselves in the service of marine conservation. With sufficient time and motivation, it is possible to set up your own research boat with a minimum investment of € 50,000.

Further information

Questions? Contact me!

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