

turtle tales



Edited by
Bonnie McKenna



Marine turtles gain protections

The Gulf of Mexico Fishery Management Council has taken its final step in an effort to protect marine turtles from the bottom longline sector of the Gulf of Mexico reef fish fishery.

The council voted to close all bottom longline fishing shoreward of 35 fathoms (approximately 210 feet/64 meters) from June to August and to restrict longline fishing from all vessels that have a history of catching at least

40,000 lbs/18,181 kilos of reef fish each year. They also established a limit of 1,000 hooks on board during any fishing trip and a limit of 750 hooks rigged for fishing at any time on any vessel.

David Allison, senior campaign director of Oceana said, "Today's vote is a signal from the Council that it's possible to craft fisheries management plans to protect threatened and endangered sea turtles while maintaining viable commercial fisheries."

The decision has been sent to the National Marine Fisheries Service (NMFS) for an assessment of whether

the fishery operating under the new system would jeopardize the continued existence of loggerhead turtles.

NMFS issued a new status review of loggerhead sea turtles worldwide. Both the Northwest Atlantic and North Pacific loggerheads were identified as "currently at risk of extinction". Oceana is calling on the NMFS to uplist the populations to "endangered" under the U.S. Endangered Species Act. This news comes after preliminary data from the state of Florida showing 2009 to be one of the worst sea turtle nesting years on record. ■

Leatherback turtle nests on North Carolina Beach

For only the second recorded time in all of North Carolina, on Wednesday, July 8, a leatherback turtle nested on Carolina Beach.

Carolina Beach Police Officer, Wray Lefler, was the first to notice the tracks in the sand.

"I knew it was something out of the ordinary," Lefler said.

Lefler reported the find to Nancy Busovne, Carolina Beach coordinator of the Pleasure Island Sea Turtle Project. "It looked like a small tractor had come up the beach," she said. Because of the decoy eggs left on top of the nest Busovne said it belonged to a leatherback.

The nest site has been blocked off



Loggerhead turtle at risk of extinction

Populations of loggerheads on both the Pacific and Atlantic coasts are at risk of extinction, according to the U.S. National Marine Fisheries Service (NMFS). Pacific loggerheads, which nest in Japan and migrate to Hawaii and the West coast of the United States, are being decimated by coastal fisheries off Japan, Mexico and longline fisheries in the deep seas.

The fisheries service report followed nine loggerhead populations across the world. Experts with the Loggerhead Biological Review Team studied each population to access its status. Of the nine populations, only two—one in the Southwest Indian Ocean and the other in the South Atlantic Ocean—were not at risk of imme-

diate extinction. The populations in the North and South Pacific are at risk of immediate extinction.

In May 2009, the Center for Biological Diversity and the Sea Turtle Restoration Project filed a federal complaint claiming the U.S. Fish and Wildlife Service and the NMFS have violated the Endangered Species Act by not increasing protection for threatened and endangered marine turtles.

Buying six species of fish has caused the death of hundreds of loggerhead sea turtles

Flounder, scup, black sea bass, Atlantic mackerel, squid and Atlantic butterfish are caught by methods that kill hundreds of loggerhead turtles, according to the conservation group Oceana. Fishermen targeting these fish in the Atlantic are using trawl nets. Trawl fisheries operate by towing funnel-shaped nets through the water and along the seafloor. The trawls are unselective; they capture anything that is too large to escape through the nets. Turtle excluder devices (TEDs) are only required when fishing for summer flounder at certain times of the year and in certain locations. Nothing is required for the protection of sea turtles when fishing for the other five fish species. ■

Loggerheads have returned to Andalusia, Spain

Thanks to a reinsertion program implemented by the Superior Council for Scientific Research of the Board of Andalusia (CSIC) a total of 240 Caretta-Caretas (loggerheads) that were born on the beaches of Cabo de Gata-Níjar National Park in Almería last year have now been allowed to go to sea. The turtles were born from 400 eggs that came from the island of Boavista, in Cape Verde, and placed on the beaches of Cabo de Gata, last September, by the CSIC.

"The research aims at verifying the possibility of reintroducing this species to the Spanish coast, and the results show that there is a lot to hope for," said Adolfo Marco, director of the program.

After hatching last year, the hatchlings were kept in a protected environment to allow

their shells to ossify giving them a higher level of protection before going to the sea. It is hoped that in 14 to 15 years they will return to deposit their eggs on the beaches of Almería where they were born.

This year 500 Caretta-Caretta eggs were transferred from Cape Verde, 350 will be deposited in five nests on the beaches of the park, the rest will be put into monitored incubation at the Biology Station of Donana Park in Andalusia and at the Munejar Aquarium, which reproduces a Mediterranean habitat.

The objective of the project is to widen the nesting area significantly, compared to its current size, given that the Caretta-Caretta turtles deposit eggs exclusively on a 50 km area of the Boavista coastline.

The primary threats for the young turtles are hunting and egg predation.

All of the turtles that have been released are equipped with a microchip and an ultrasound device that allows the hatchlings movements in the sea to be followed.

Anguilla establishes a sea turtle conservation project

The Anguilla National Trust (ANT), through its newly established Anguilla Sea Turtle Conservation Group will be holding a public meeting with individuals interested in sea turtle conservation. Interested individuals should contact Janeczka Richardson at the ANT office.

Anguilla is one of the Leeward Islands in the Lesser Antilles. ■

Take the plunge for International Cleanup Day



Help make clean water a reality



Photo courtesy of Tom Divers

19 September 2009

Register your cleanup event, collect data and support conservation.



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It takes a year for the turtle to travel the 7,000 miles from the nesting beaches in Indonesia to the nutrient-rich waters of Monterey Bay. This is the longest migration documented for any in-water vertebrate.

The leatherback migration pattern has only been discovered and documented within the past decade. DNA analysis of the turtles showed that local leatherbacks are part of the same genetic stock as those nesting in Indonesia, Papua New Guinea and the Solomon Islands. This led to the theory that the western Pacific turtles must be traveling the distance to forage in local productive waters.

Scott Benson, marine ecologist for NOAA at the Southwest Fisheries Science Center, began capturing leatherbacks in Monterey Bay and along the west Pacific nesting beaches and releasing them with transmitters.

"They start arriving in June," said Benson. The turtles will remain there until mid-to-late October when the jellyfish density decreases. They then move off toward Hawaii, then return to California the next season.

"They may do this two or three times before they bulk up enough to make the voyage back to nesting beaches," Benson added.

Not all jellyfish are equal

In the eyes of the leatherback, not all jellyfish are equal. The objects of their feast are the brown sea nettles. With

Seasonal Migration of the Leatherback

Many people do not realize that the Central Coast of the United States is one of the destinations for the seasonal migration of the critically endangered Pacific Leatherback turtle.

the help of Jim Harvey, advisor for the Vertebrate Ecology Lab at Moss Landing Marine

Laboratories, a time-depth video recorder was developed that could be suction-cupped to the turtle's back. With the lens positioned close to the turtle's head, researchers could view the turtle's prey field.

"The time-depth recorder changed our energetic model for these turtles," said Harvey. "We assumed they ate the whole jellyfish. But we found that as they come up, they use their heads to shove the tentacles and arms out of the way to get underneath the bell to the gonads and stomachs...that is what they are eating."

"In the bell there is a lot of water. And the arms, tentacles, gonads and stomachs are one-and-a-half to two times calorically more rich than the bell," Harvey added.

The question is: Does this high-energy feast provide enough nutritional pay-back to make the 7,000 mile migration worth it? It is theorized that the energetic expense must have some sort of evolutionary pay-off, and that reward must be with higher reproductive success in the end.

"They get very round and large after feeding here," said Benson. "They actually wobble on the deck of the

boat. The animals in Papua, Indonesia, are quite skinny. You can see that the migration has had an impact, plus egg-laying is very expensive."

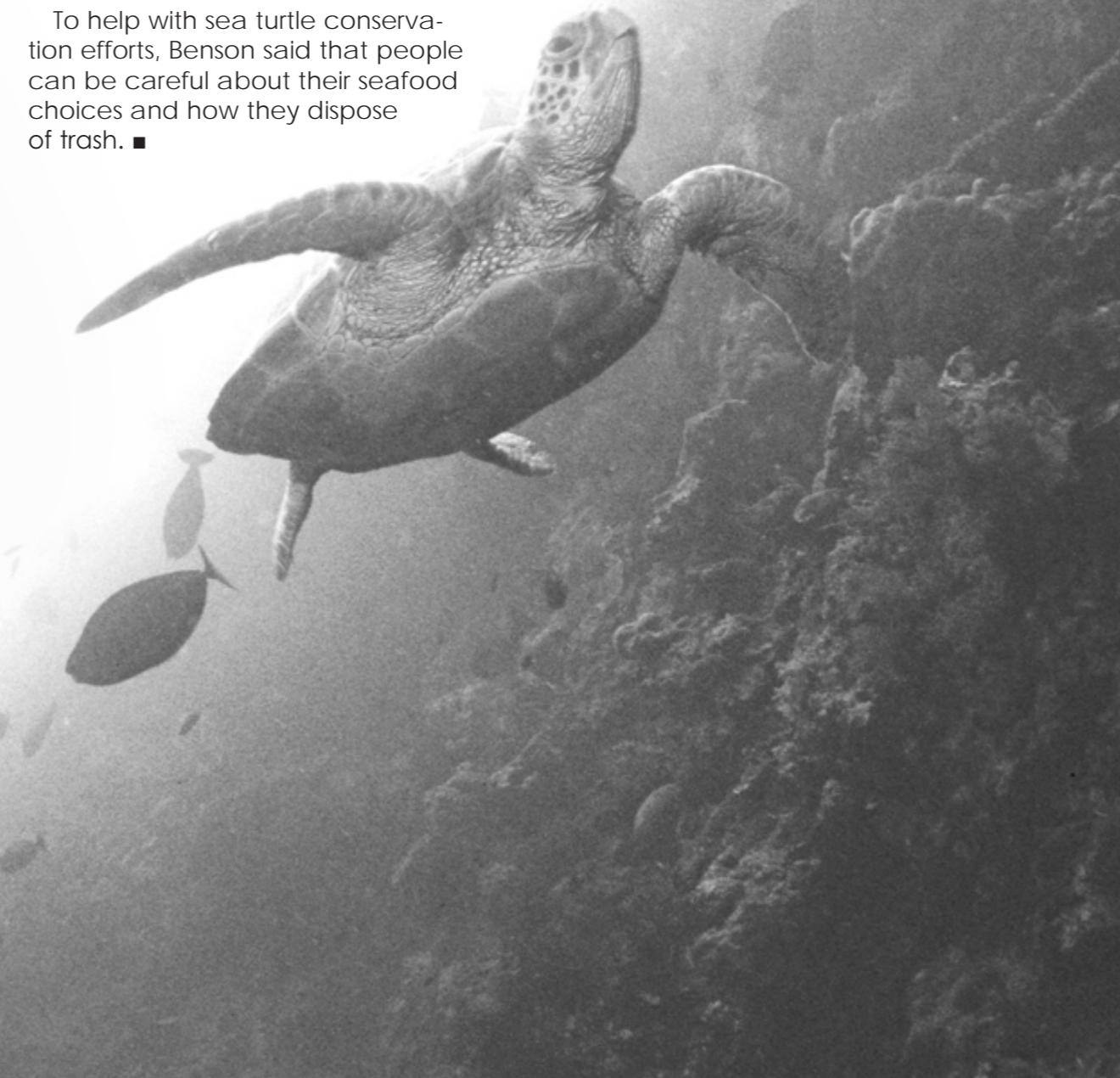
To make the story more complicated, not all the turtles make the journey. In fact, only 40 to 50 percent of the population on Papua nesting beaches use California or Oregon foraging grounds. The rest use beaches off South China.

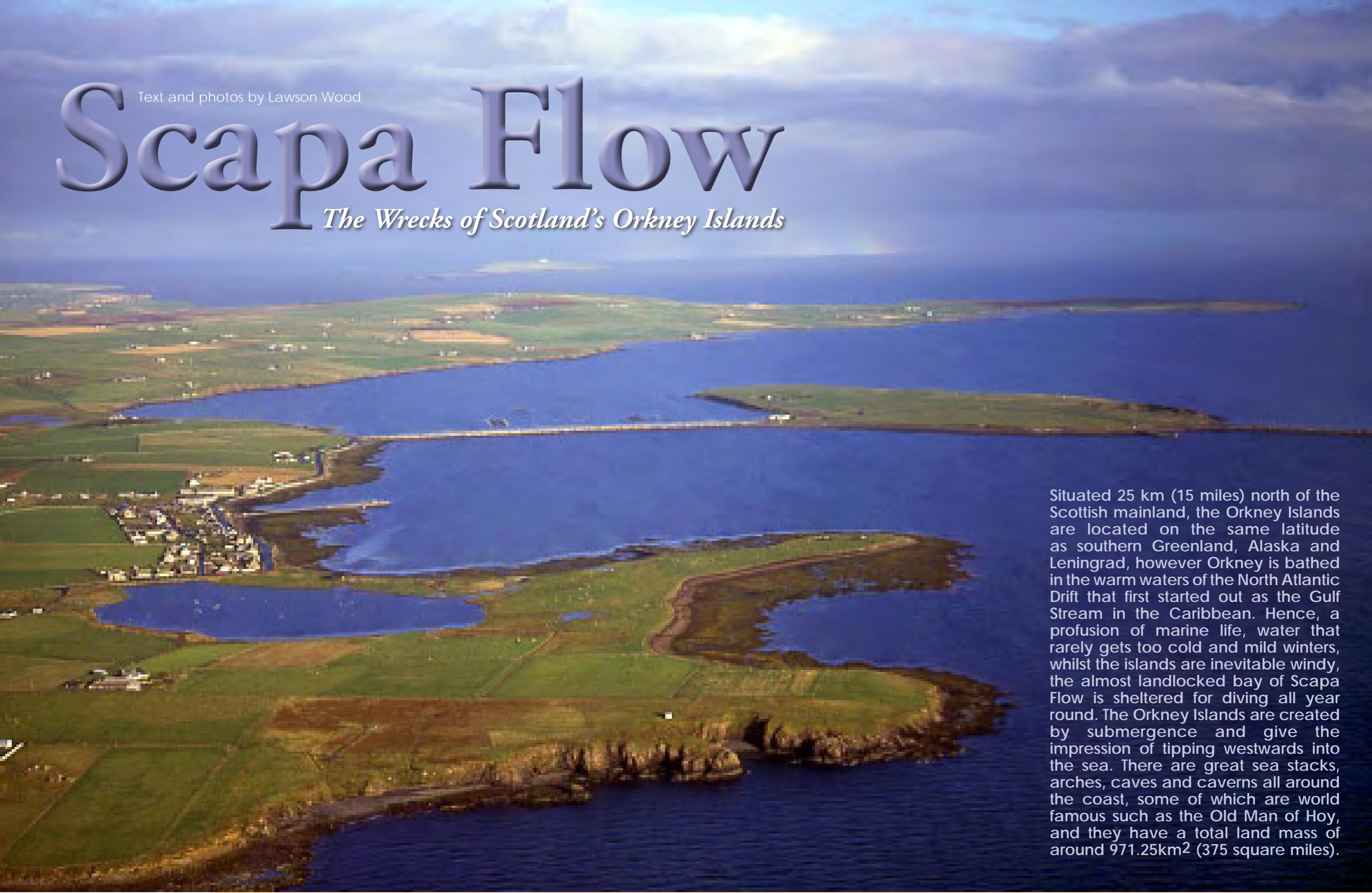
lining and drift gill netting both have negative impacts on turtles."

Leatherbacks eat plastic bags because they look like jellyfish. "We've found lots of plastic debris in the gastro-intestinal tracks of turtles"

To help with sea turtle conservation efforts, Benson said that people can be careful about their seafood choices and how they dispose of trash. ■

It takes a year for the turtle to travel the 7,000 miles from the nesting beaches in Indonesia to the nutrient-rich waters of Monterey Bay.



An aerial photograph of Scapa Flow, a large, sheltered bay in the Orkney Islands, Scotland. The bay is filled with deep blue water, with several smaller islands and islets scattered throughout. In the foreground, the coastline of Hoy island is visible, featuring rugged cliffs and green fields. In the background, the mainland of Scotland can be seen across the water.

Text and photos by Lawson Wood

Scapa Flow

The Wrecks of Scotland's Orkney Islands

Situated 25 km (15 miles) north of the Scottish mainland, the Orkney Islands are located on the same latitude as southern Greenland, Alaska and Leningrad, however Orkney is bathed in the warm waters of the North Atlantic Drift that first started out as the Gulf Stream in the Caribbean. Hence, a profusion of marine life, water that rarely gets too cold and mild winters, whilst the islands are inevitable windy, the almost landlocked bay of Scapa Flow is sheltered for diving all year round. The Orkney Islands are created by submergence and give the impression of tipping westwards into the sea. There are great sea stacks, arches, caves and caverns all around the coast, some of which are world famous such as the Old Man of Hoy, and they have a total land mass of around 971.25km² (375 square miles).

feature



When you travel around Orkney you cannot help but notice the standing stones and ancient stone rings which predate the Norsemen as far back as Stone Age, Bronze and Iron Ages and the Pictish civilisation.

Although very little is known of these early times, other than

the monuments themselves, detailed history of the Norse Occupation was not committed to paper until the 13th century in Iceland. The *Orkneyinga Saga* tells the tale of the Earl's of Orkney and the occupation of the islands.

More recently, the sheltered bay of Scapa Flow was the base of the British Naval Fleet over several generations and indeed has served the nation well during the Napoleonic War and the American War of Independence. Orkney had the almost perfect naval base with calm sheltered waters surrounded by protective islands, creating a deep natural harbour first named by the Vikings. Graeme Spence, Maritime Surveyor to the Admiralty said in 1812, "...the art of Man, aided by all the Dykes, Sea Walls or Break-Waters that could possibly be built could not have contained a better Roadstead



Dive boats in Stromness Harbour

than the peculiar situation and extent of the South Isles of Orkney have made Scapa Flow ... from whatever



which no other Roadstead I know of possesses, and without waiting for Tide on which account it may be called the Key to both Oceans."

To the Orkneys

There is always a sense of mounting excitement as you approach the Orkney Islands by ferry, either from Aberdeen direct to Kirkwall or from Scrabster with landfall at Stromness. The initial huge land mass that looms up out of the early morning mist is the Island of Hoy, and as one approaches the first of several entrances to Scapa Flow, visitors can appreciate why this natural harbour was used by the British Admiralty. In Stromness, we disembark next to the harbour where the majority of Scapa Flow's fleet of diving boats are based; most are converted fishing

point the Wind blows a Vessel in Scapa Flow may make a fair wind of it out to free sea ... a property

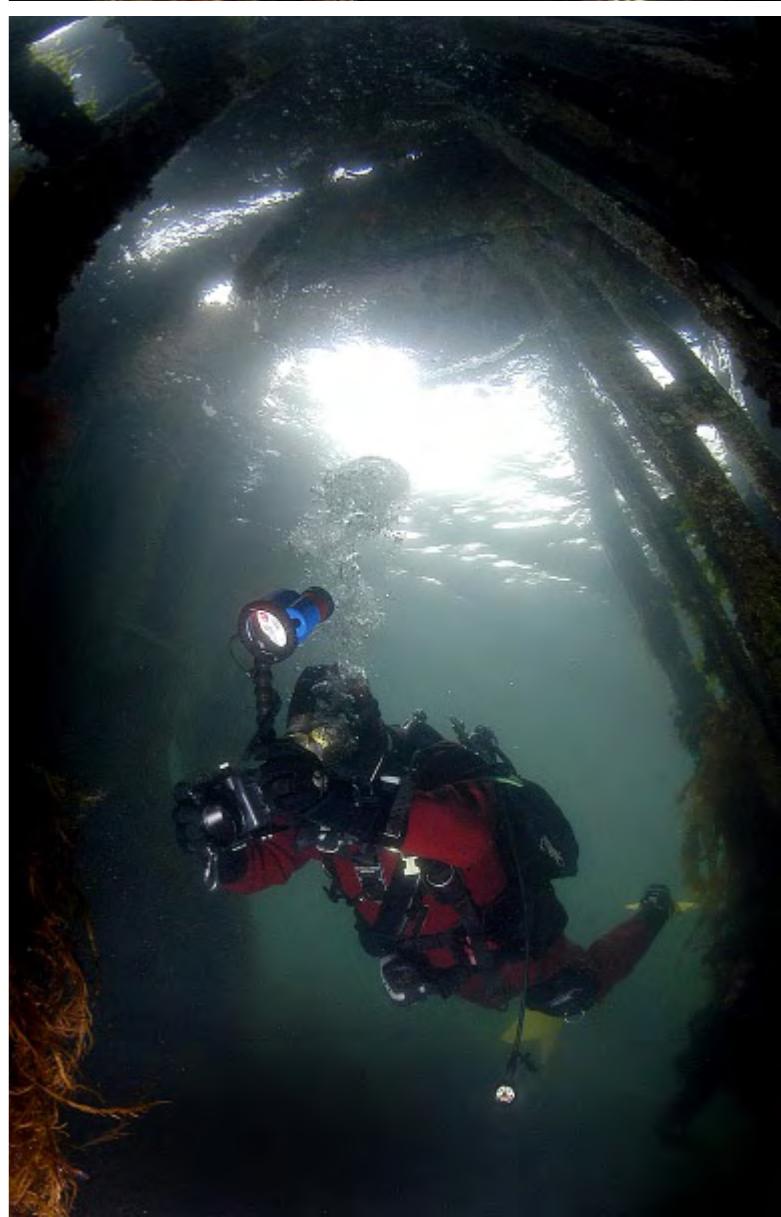
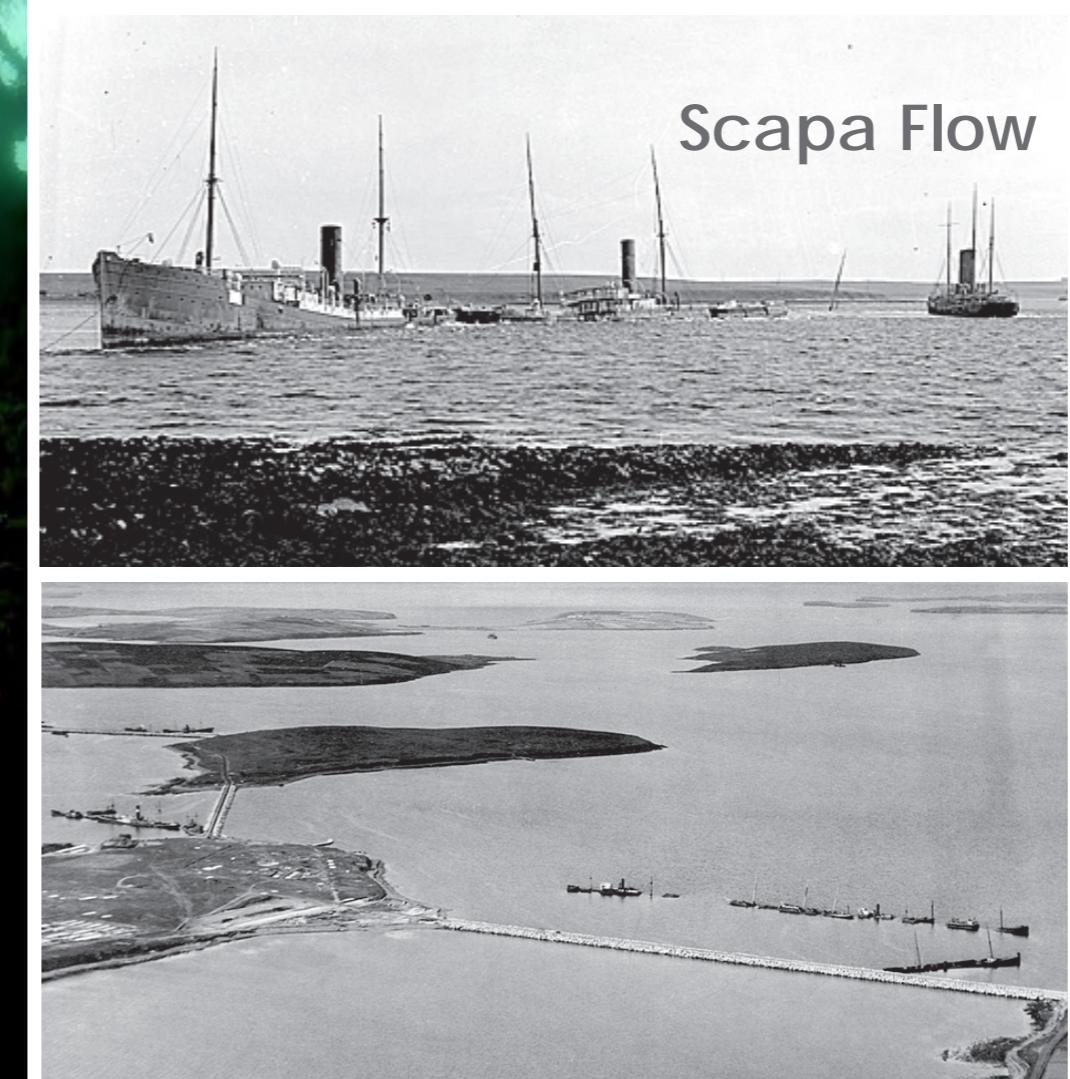
trawlers, their skippers and crew eagerly awaiting our arrival.

So what is it that brings the droves of divers from all over the world? Why visit an area, which is not exactly known for its sun-kissed beaches, crystal clear water and palm trees. In fact, I seem to remember the famed Scot's comedian Billy Connolly complaining that when visiting Orkney, he could not take his dog out to relieve itself because he couldn't find any trees! The interest is undoubtedly around the fleet of warships sunk deliberately or otherwise during the last two world wars and principally to dive on the German High Seas Battle Fleet, scuttled ninety years ago, in 1919.

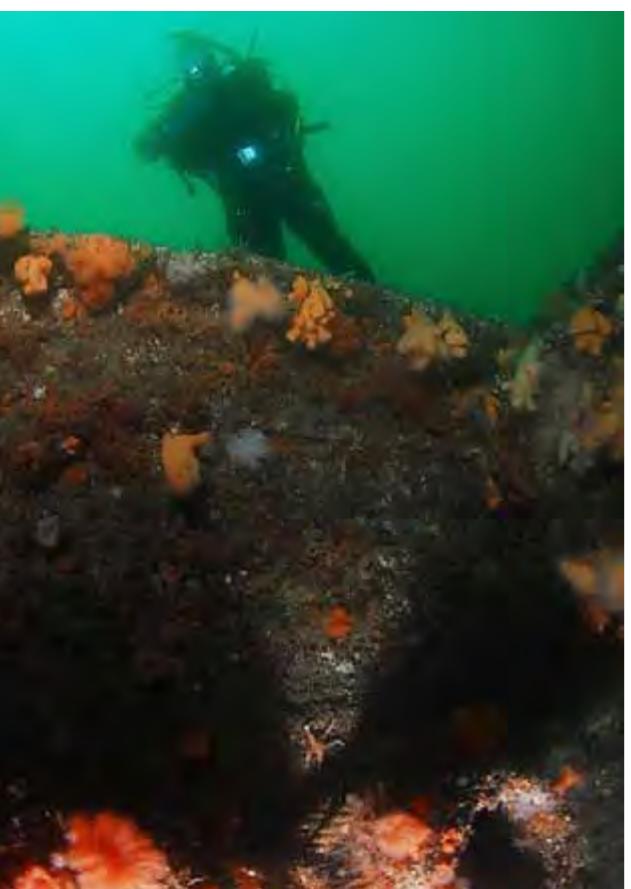
The Orkney Islands and specifically the bay of Scapa Flow are home to the largest amount of diveable

Scapa Flow

feature



Interior of the wreck of the blockship Doyle; Archive photos of the blockships and their placement in Scapa Flow Bay during WWI



shipwrecks and wreckage to be found on the planet, directly as a result of the deliberate scuttling of the German High Seas Battle Fleet in June 1919. Seventy-four ships sank within just a few hours of each other. Couple that statistic with a further 43 ships deliberately sunk to block the entrances into this bay during both World Wars; 11 airplanes, one submarine and a further 16 British shipwrecks including two British battleships, then we have some major wreck diving interest.

Considered by many to be impregnable to attack, the bay of Scapa Flow covers some 311sq.km (120 square miles) and is now almost totally landlocked with Mainland to the north, the islands of Hoy and Flotta to the south and west, and to the south and east, the Churchill Barriers link the islands of Lamb Holm, Glimps Holm, Burray and South Ronaldsay. This makes for some relatively calm waters

for most of the year. The wrecks are actually dotted all over Scapa Flow, with blockships found in the extreme east and west of the Flow and the German light cruisers and battleships found roughly in the centre of Scapa Flow, arranged in a horseshoe shape near the island of Cava and a rocky pinnacle called the Barrel of Butter.

But first, let's look at the reasons why the ships are here and what makes them so interesting.

When Germany capitulated at the end of the First World War, her High Seas Battle Fleet—comprised of battlecruisers, battleships, light cruisers, destroyers and motor torpedo boats—were interred until it was decided what was to be done with them. In November 1918, the entire German High Seas Battle Fleet, escorted by 200 British Naval ships sailed into the bay of Scapa Flow, much to the surprise and consternation of the local population.

There they languished for over seven months, with most of the ships' crews being returned to Germany. Admiral Ludwig von Reuter, convinced that war conditions were to be reinstated and that the interred fleet was to be used by the Allied force against Germany, took it upon himself to scuttle the entire fleet on 21 June 1919 whilst the British fleet had left for manoeuvres. At 11 a.m. the skeleton crews on board opened condensers, valves and pipes. Within four hours, most of the ships had sunk from view, others were beached and many flipped upside down on their way to the sea bed.

Whilst there are still so many wrecks to dive, the largest majority of the German fleet were actually raised and scrapped, and interestingly, much of the scrap metal was resold back to Germany for them to rebuild their navy! Cox & Danks were the first major

Diver on the wreck of the Markgraf

feature



salvors of the German fleet and were extremely innovative in sealing up all of the holes and pumping the sealed hulls full of compressed air, thereby floating them to the surface. From their early beginning in March 1924 and over the

next eight years, Cox & Danks raised two battleships, four battlecruisers, one light cruiser and 25 destroyers. His first ship took ten days to lift from the seabed but before long, as one observer recorded, "he fished up ships almost as easily as an angler winds in salmon".

The next salvor was Metal Industries and they continued the same practice set up by Cox & Danks and raised all

of the remaining battlecruisers and many more ships accidentally lost during the occupation of Scapa Flow by both major navies, including the *Derfflinger*, which was the largest ship ever raised from the deepest water at 45m (150ft).



CLOCKWISE
FROM BOTTOM
LEFT: Shrimp on
coral; Conger
eel; Anglerfish;
Queen Scallop;
Red Gurnard
fish; Seal at the
Barrel of Butter



divers on over 70 percent of the same shipwrecks.

The Top Ten Diveable Wrecks of Scapa Flow

The following list is purely arbitrary, as virtually all of the German Naval Fleet wrecks are in deep water, making each dive, potentially either a mixed gas dive or a decompression dive of some sort. Photographically and time wise, the blockships—*Tabarka*, *Gobernador Boreis* and the *Doyle*—are superb and definitely the best accessible

seabed is less than 30m (100ft) deep. All of the motor torpedo boats and blockships are in less than 18m (60ft), the blockships at Barrier

II are in under 6m (20ft) and are quite possibly some of the best shallow shipwrecks in Europe. Therefore, all the blockships and German light cruisers are achievable for novice divers (under supervision). A diving holiday in Scapa Flow is realistic for novice divers, as the diving on offer goes beyond mere opinion and expectation, novice diver are able to dive alongside those super-qualified, mixed gas





ABOVE: Stern of the Gobernador Boreis wreck
RIGHT: Inside the Gobernador Boreis wreck lurks a Ballan Wrasse

Panoramic view showing positions of German battleships in Scapa Flow Bay during WWI, c. 1919

wrecks in Scapa Flow. The four German Light cruisers come next as they sit far enough off the seabed, lying on their sides, and this allows for a little extra time for exploration. I have only included one battleship, as all of the others are well broken up and are considered quite dangerous now, and divers should not be tempted to enter the ships at any time. The last two are somewhat of a prize, as the *F2* was sunk in 1945, and the barge attached by rope to her was sunk in 1968. Both are great for photography in shallower water.

Everyone who visits Scapa Flow to dive the wrecks has his or her favourite dives. As a photographer, my interest is different to perhaps someone on trimix, who will explore the seabed piece by piece, and in many cases, do long penetration dives within the deeper battleships. However, I am quite content to stay on the shallow ships. Even better, I could spend all of my time on the blockships, as not only are they shallow enough for plenty of bottom time, they are also in much clearer water, and therefore, much more photographic. So, I have tried to compile a comprehensive list of the top dives to suit all tastes.

1. *Doyle* (blockship) sunk 1914
2. *Gobernador Boreis* (blockship) sunk 1914
3. *Tabarka* (blockship) sunk 1941 & 1944!
4. *Cöln II* (German light cruiser) sunk 1919
5. *Brummer* (German light cruiser) sunk 1919
6. *Dresden II* (German light cruiser) sunk 1919
7. *Karlsruhe II* (German light cruiser) sunk 1919
8. *Markgraf* (German battleship) sunk 1919
9. *James Barrie* (fishing boat) sunk 1969
10. *F2* (German torpedo boat) sunk 1945 and *YC21* (barge used to salvage *F2*) sunk 1968

Although the German fleet now makes up the bulk of the wrecks more accessible to divers, the blockships sunk at the entrance to Burra

Sound continue to be picked as the best dives by visiting underwater photographers.

The top five photographic wrecks:

1. *Doyle* (blockship) Burra Sound
2. *Gobernador Boreis* (blockship) Burra Sound
3. *Kronprinz Wilhelm* (battleship) Central Scapa Flow
4. *Brummer* (German light cruiser) Central Scapa Flow
5. *Cöln II* (German light cruiser) Central Scapa Flow

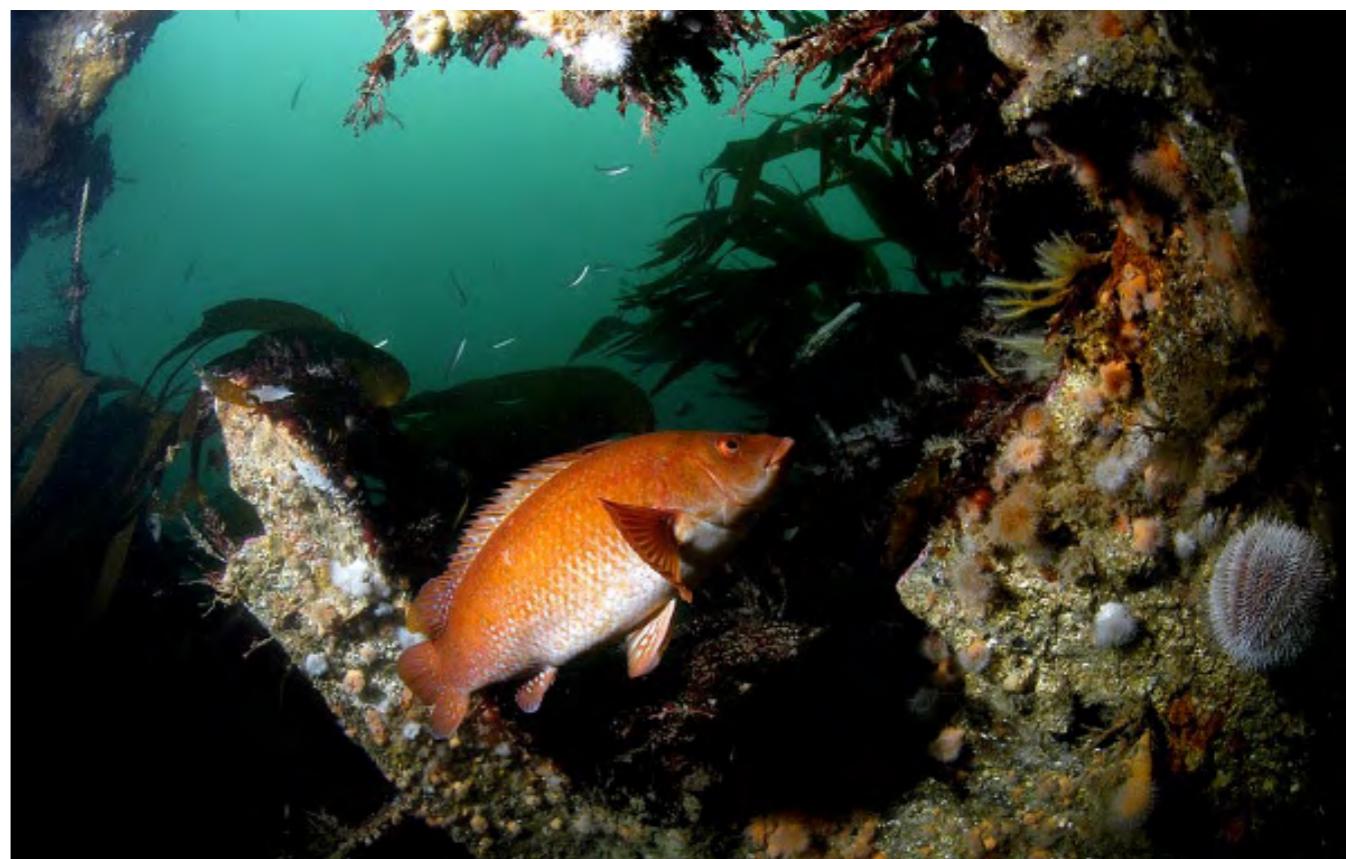
For those deco freaks who insist on wearing their computers in the bar—post diving—just to scroll off, or show off their excesses of the day.

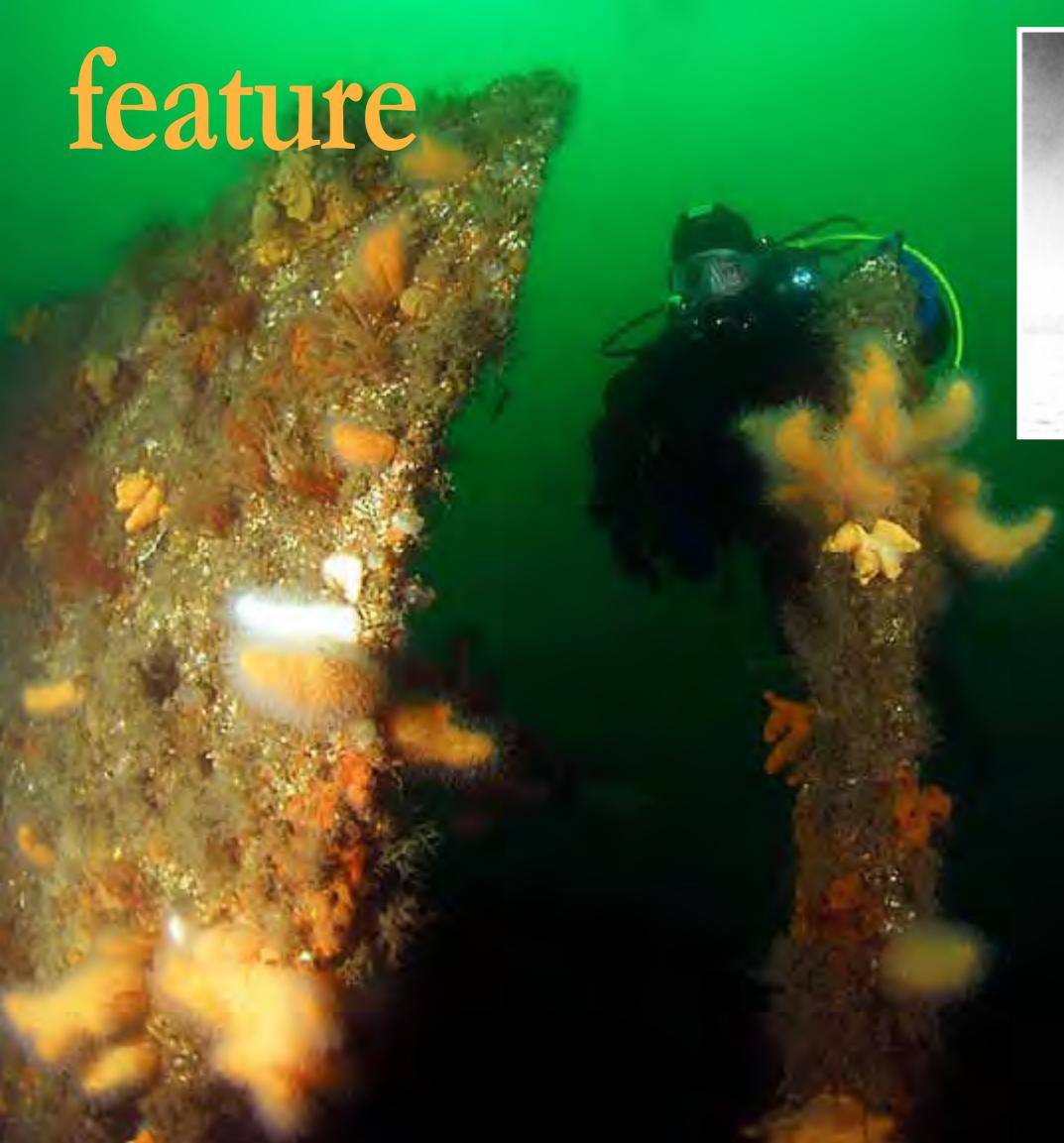
The top six deco deepo's:

1. *Strathgarry* (fishing boat), 57m



Wrecks located on map of Scapa Flow





2. *Markgraf* (battleship), 42m
3. *James Barrie* (fishing boat), 42m
4. *König* (battleship) 42m
5. *Bayern* debris site (battleship remains), 38m
6. *Kronprinz Wilhelm* (battleship), 34m

Just a few little dives in Scapa Flow

Sitting in the early morning calm, the cold air of daybreak was leaving a foggy residue around the dive boat, we could see no land, or in fact any other living thing, except a tiny orange marker buoy with a frayed bit of line attached. A couple of seagulls flew overhead just to check us out, then a seal popped its head up—I guess we weren't alone after all. Our skipper, Andy Cuthbertson on board the *MV Jean Elaine* had brought us to the site of one of the German light cruisers scuttled in June 1919—90 years ago!

The *Cöln II*

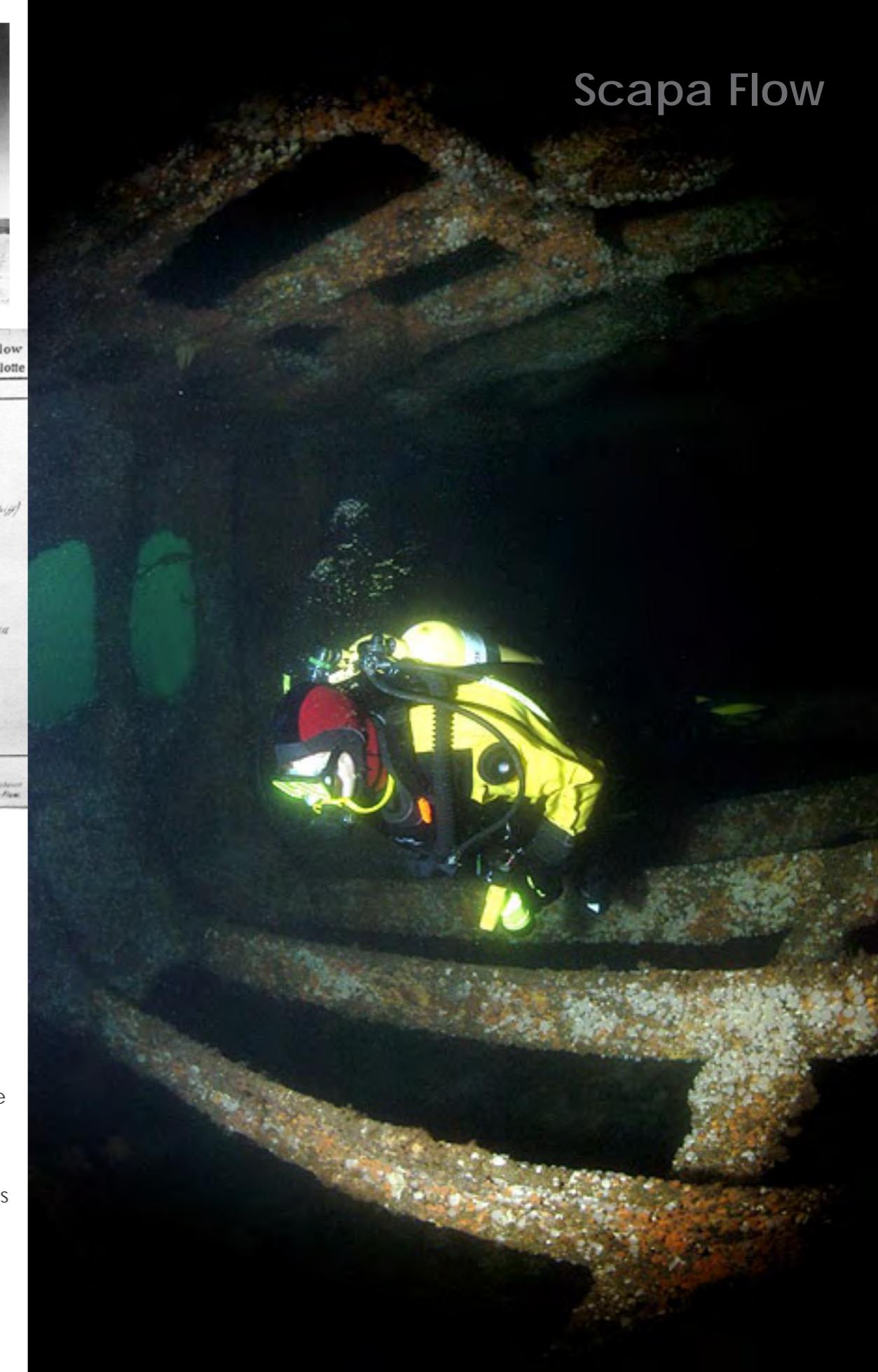
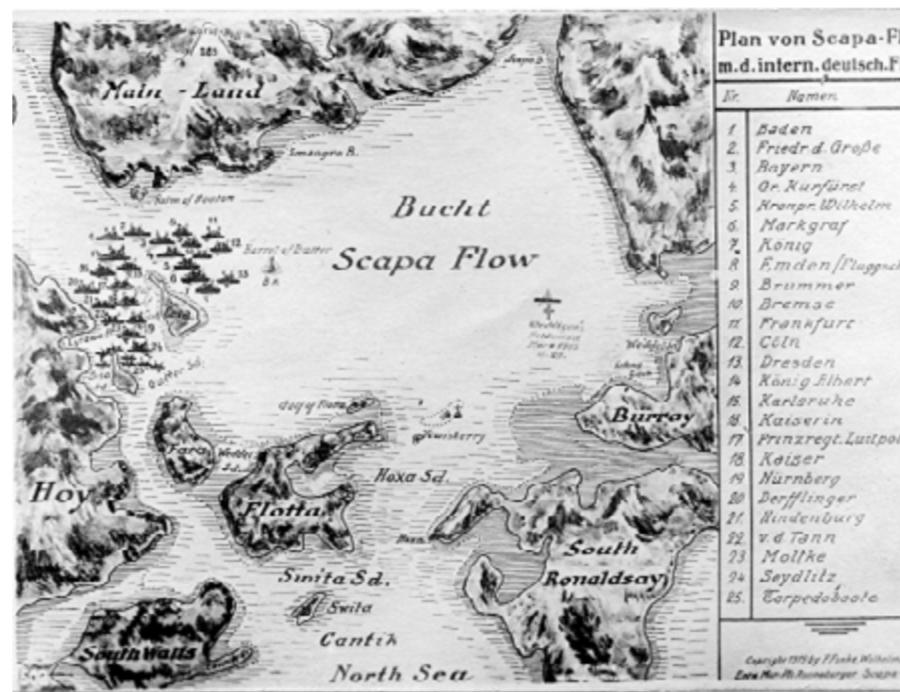
The *Cöln II* is just one of the four remaining German light cruisers and three battleships, which were scuttled under the orders of Admiral Ludwig von Reuter in 1919. Virtually all of the others sunk at the same time were thoroughly salvaged, but the huge debris sites are still superb dives on their own, subsequently there are tons of wreckage still scattered over the seabed, much of which is still unexplored.

Through the descending gloom, the

We were about to dive on one of those ancient warhorses, in both eerie and spectacular fashion, dropping through 30 metres of water (100ft) to arrive near the bows of the *Cöln II* in a bay set amidst some of the most dramatic scenery in Europe, considerably heightening the diving experience and raising our adrenalin in anticipation of what was to come.

graceful arch of the sharp bows approach us, and we drop to the stony seabed to gaze upwards in awe at this massive ship lying on her starboard side. The hull is completely festooned in plumose anemones (*Metridium senile*) and feather starfish (*Antedon bifida*). From here we swam along the now vertical decking, past the forward 5.9 inch gun and approached the superstructure, which is mostly collapsed. The central section of the ship is now completely destroyed, blasted apart by salvage divers, however the stern is mainly intact and the other 5.9 inch gun can be found. Maximum depth is 36 metres (120ft) and all too soon, it is time to make our way up the mooring buoy line.

Conditions vary tremendously during the season, and it can be poor visibility and dark on the seabed in the centre of Scapa Flow. Lights should always be used, and work up dives should be undertaken



LEFT TO RIGHT: Diver at the wreck of the *Cöln II*; Archive photo of the *Cöln II*; Historic map of the German Fleet in Scapa Flow Bay, c.1919; Diver inside the wreck of the *Tabarka*

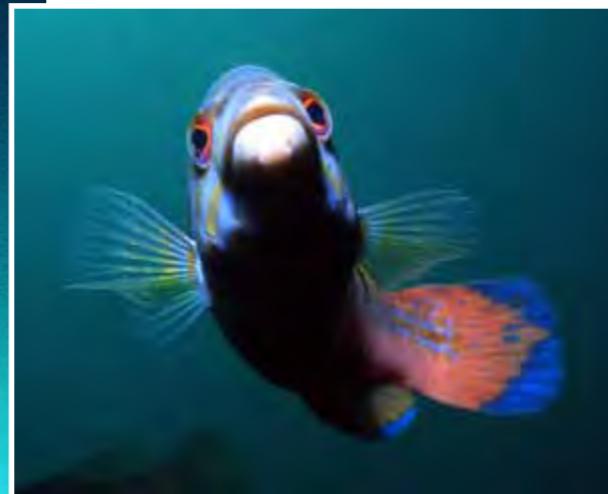
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before one dives the deeper battleships. Which is why so many of us photographers prefer the Blockships at the entrance to Burra Sound, where the average depth is half that of the German warships, subsequently with much more light, more interesting marine growth and in much clearer water as the tidal race at Burra Sound sweeps all sedimentation particles away. But this also means that one has only limited time on these wrecks and then only at slack tide.



Diver investigates the interior of the Doyle wreck



The Tabarka

Many divers prefer the *Tabarka* as their number one blockship, as it rests upside down in 18m (60ft) of water. You enter the water at slack tide and quickly explore the outside of the ship before penetrating its cavernous interior. Here, you can spend your maximum bottom time until your computer makes sufficient noise at you to return to the surface. By the time the dive is over, the tidal race will be in full flow, and you just launch yourself into the current. The dive boat skippers know exactly where you will surface and will pick you up safely and easily. In the immediate vicinity is my personal favourite dive on the blockship *Doyle*.

The Doyle

The *Doyle* was a single screw coastal steamer built in Troon, Ayrshire, and weighed 1,761 tons. At 79.3m (260ft) long, she was requisitioned by the Admiralty and sunk on 7 October 1914. The smallest of the blockships in Burra Sound, she is instantly recognizable by her intact

Scapa Flow

curved bows and stern. Lying on her port side, the more exposed starboard hull is covered in dwarf plumose anemones (*Metridium senile*), seaweeds and sponges. Her wooden decking has all rotted away, but virtually all of her ribs, posts and lower sections of masts are still in place allowing divers many safe access points into the interior of the ship at various levels.

The ship is still robust enough to allow for full safe and easy access, and the interior allows you to extend your dive into the time when the current starts to run once more. Hull plates have come away over the years, and the light now streams in through a huge number of square holes making for a rather superb cathedral-like quality.

Ballan wrasse, cuckoo wrasse and conger eels are found in the interior and huge schools of juvenile Saithe and Pollack swirl around the superstructure. The stern is also largely intact, topped with kelp, and the huge blades of her single propeller are covered in anemones and small pincushion sea urchins.

Once slack water passes, divers are recommended to just drift away from the wreck, as they will only pull down the dive boat's shotline. Divers should deploy a delayed surface marker buoy, and the dive boat will follow your easy progress into Burra Sound and be there to collect you.

F2 German torpedo boat

In between dives, the dive boats often anchor on the jetty at Lyness, the former Naval Base on the Island of Hoy. Incidentally, nearby is a former dive boat called the *Mara* and the wreck of the *F2*, a German Torpedo boat, as well as her salvage barge, sunk in 1968. The salvage company had just removed a set of guns from the *F2* and had tied tight onto the stricken vessel (at low tide). The crew



went off to celebrate their good fortune at being able to raise the guns and left their booty to a rising tide, which low and behold, sunk

LEFT TO RIGHT: Diver at the wreck of the *Doyle*; Cuckoo Wrasse; Massive propellor of the *Doyle* wreck

feature



TOP TO BOTTOM: The Royal Oak wreck at Admiral's Pinnacle; Stern of the V83



Scapa Flow

their barge (and their booty) now making two very nice diveable ships (and both with guns). The wrecks are attached by rope.

There is a museum nearby on Hoy with an excellent display of artefacts relating to the two World Wars.

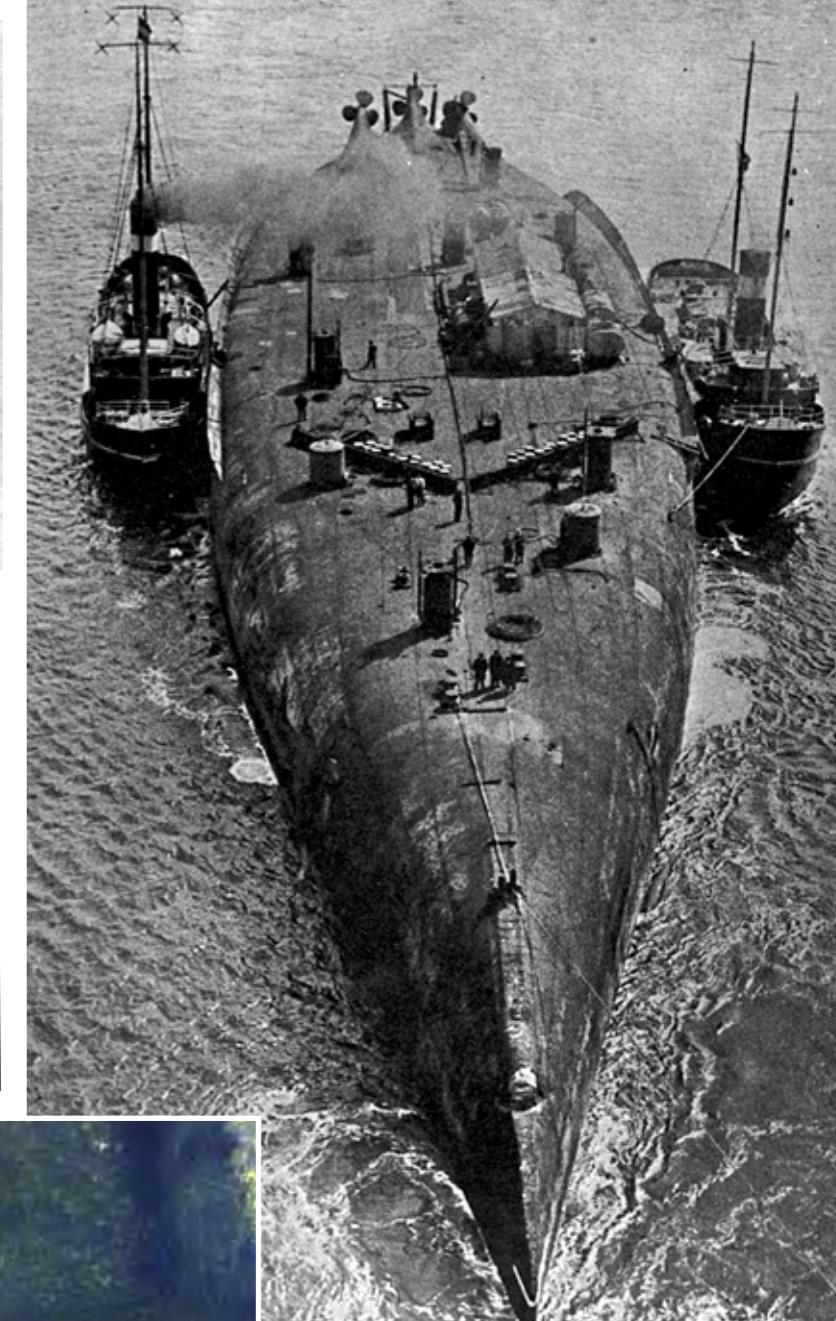
The Royal Oak

Twenty years after the German Fleet was scuttled, on the night of October 14th, 1939, the 188-metre (600ft) battleship *Royal Oak* was at anchor in the northern region of Scapa Flow. Her duties were to protect Kirkwall and the British fleet from aerial attack. Scapa Flow was considered impenetrable because of the narrow passages between the reefs and islands. Likely attack would be expected only from the skies.

However, nobody told this to the commander of the *U47*, Günther Prien, who stealthily approached Scapa Flow—in what is considered by many to be one of the bravest feats in naval history—and at the dead of night, sunk the *Royal Oak*, taking with her the lives of 833 men and boys. The *Royal Oak* is now a designated war grave and is



protected by Navy Law. Diving on her is strictly forbidden without express permission from the Ministry



ANDY CLUTHERSON

CLOCKWISE FROM TOP CENTER IMAGE:
Archive photo of *Royal Oak*; Archive photo of the salvaging of a battleship in the German Fleet; Anti-aircraft guns on the *Royal Oak*; Commander Günther Prien of the *U47*

of Defense.

As a direct result of the loss of the *Royal Oak*, Winston Churchill visited Orkney and ordered the complete closure of all of the eastern approaches into Scapa Flow, which had clearly been unable to stop the ingress of an enemy U-Boat, which passed through the blockships unhindered.

feature



Tourism

Although the contract for the work was awarded to a civilian company, over 1350 Italian Prisoners of War were transported to Orkney and billeted on the eastern islands to work alongside the locals.

Rather cheerless and lacking in home comforts, the Italians, whilst

working alongside civilians on the construction of the barriers, set about improving their huts by laying concrete paths, planting flowers and of course redecorating.

Italian artist Domenico Chiocchetti set about painting the interior of one of the camp huts and transformed it into a Chapel. Completely restored by the original artist, the Italian Chapel on Lamb Holm is well worth a visit when staying in Orkney.

Undoubtedly a visit to the Orkney Islands is not just about visiting the sunken fleet, Orkney is so much more. Sports diving is seriously big business in Orkney and has been for many years. Scapa Flow is one of the most popular dive sites in Europe.

Recreational diving alone contributes well over GB£1,000,000 a year to Orkney's economy, with up to 3,000 divers making almost 30,000 dives a year—about 60 percent of them on what's left of the German High Seas Fleet.



CLOCKWISE FROM TOP LEFT:
Diver inspects an anchor at
the Seyditz wreck; Diver at
the bow of *Brummer* wreck;
Exterior of Italian chapel;
Interior of Italian chapel

Scapa Flow

SCAPA FLOW CONTACTS

Orkney Dive Boat Operators Association - Halton Charters
www.mvhalton.co.uk

Orkney Islands Charters
www.orkneyislandscharters.co.uk

Roving Eye Enterprises
www.rovingeye.co.uk

Scapa Scuba
www.scapascuba.co.uk

Scapa Flow Charters
www.jeanelaine.co.uk

Scapa Flow Diving Centre
www.scapafloodingcentre.com

Scapa Flow Technical
www.scapaflow.com

Stormdrift
www.mv-stormdrift.co.uk

Stromness Diving Centre
www.orknet.co.uk/scapa/triton.htm

Sunrise Charters
www.sunrisecharters.co.uk

The Diving Cellar
www.divescapafow.co.uk

ORKNEY USEFUL CONTACTS

British Airways
(operated by Loganair)
www.ba.com

Nautical Archaeological Society
nas@portsmouth.msn.com

Orkney Archives
www.orkneylibrary.org.uk

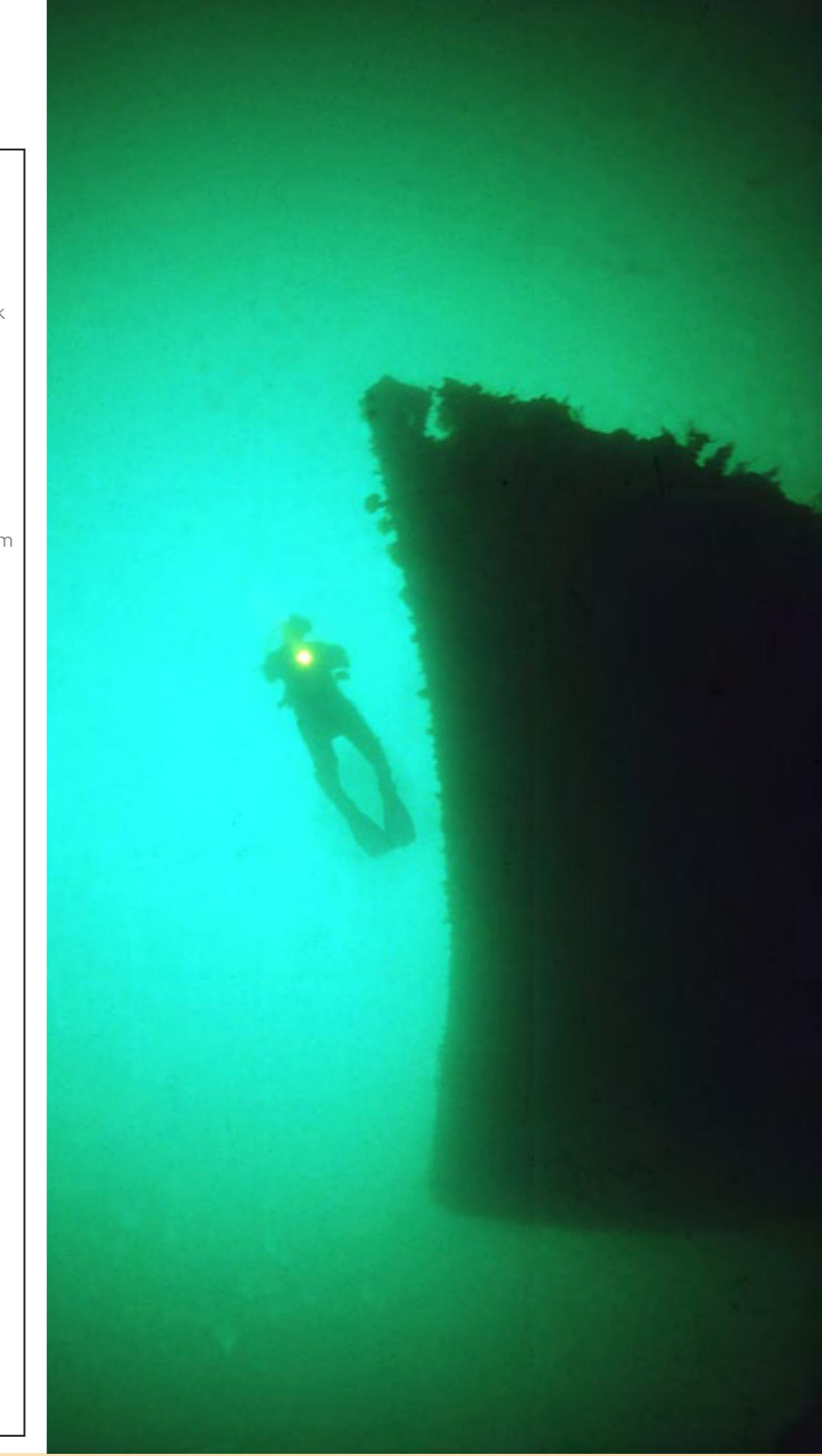
Orkney Dive Boat Operators Association
www.odboa.co.uk

Orkney Heritage
www.orkneyheritage.com

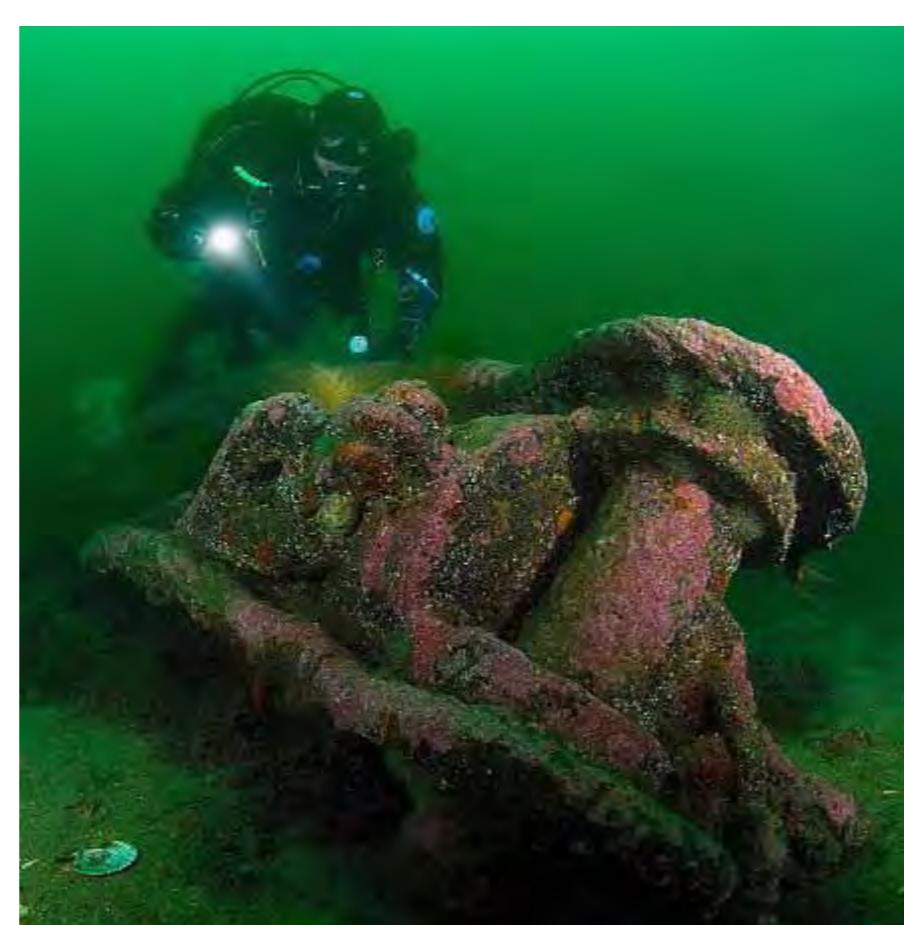
Orkney Islands Council Harbours Department
harbours@orkney.gov.uk

Orkney Tourist Board, Stromness
www.visitorkney.com

Northlink Ferries Ltd
www.northlinkferries.co.uk



feature



TOP LEFT TO RIGHT: Anemones decorate the wreck of *Kronprinz Wilhelm*; Diver investigates the *Kaiser* site; Diver inspects bridge railings of the *Brummer* wreck

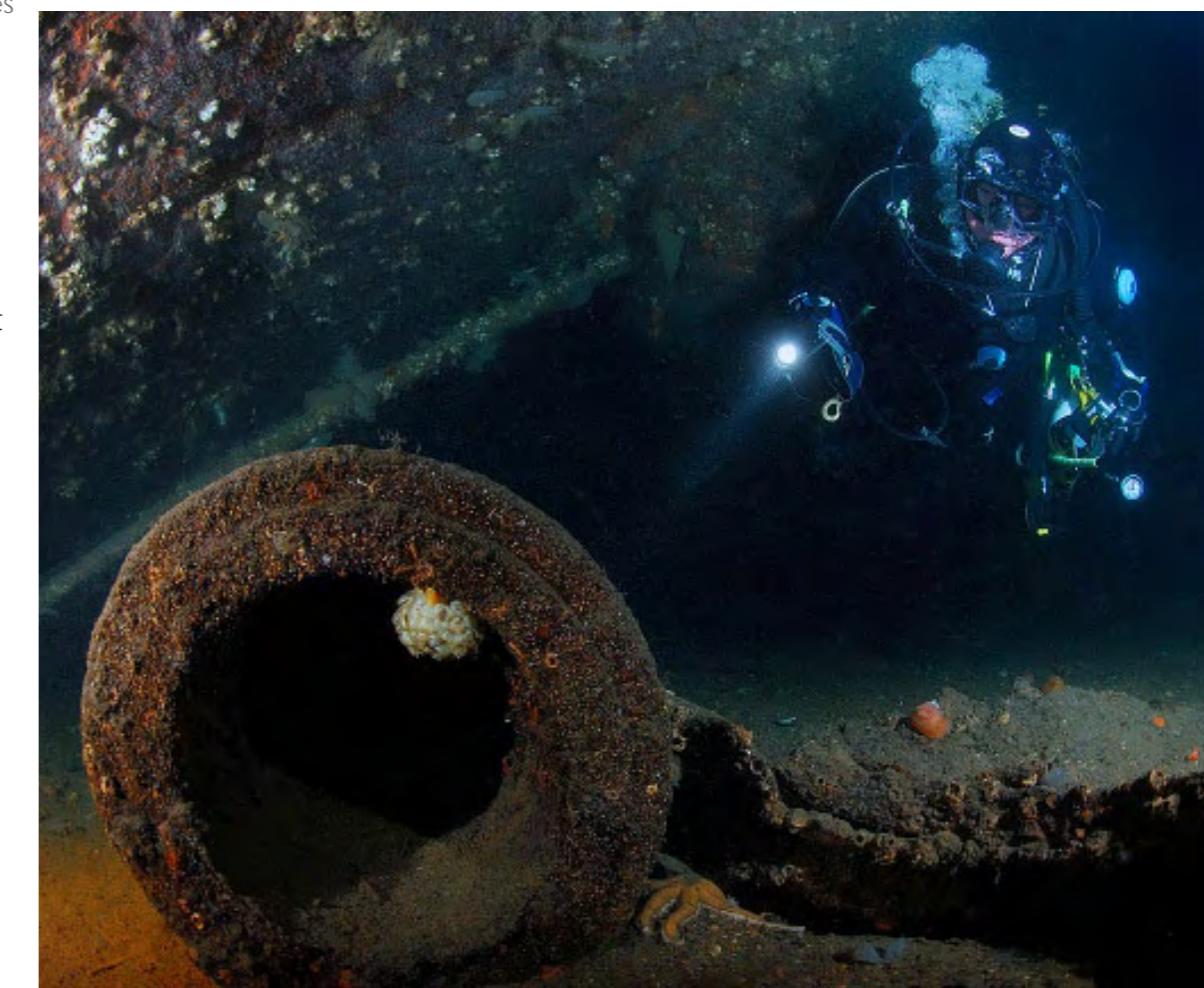
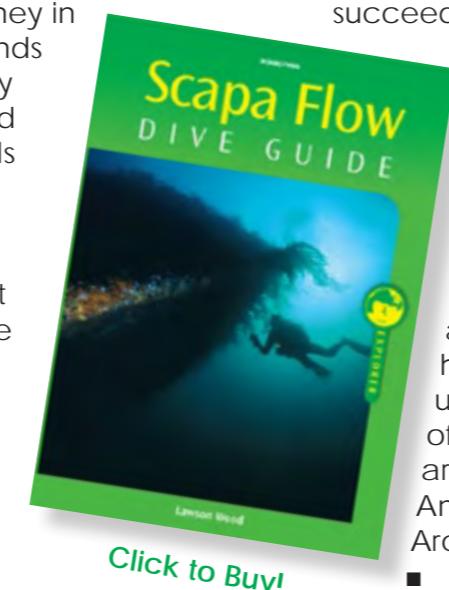
And that's a conservative estimate. It translates into thousands of divers needing accommodation, transport, shops and equipment; spending time and money in the islands; and thousands being carried by Orkney dive boat operators and others, whose livelihoods depend on the diving industry.

In the story of the German High Seas Fleet at Scapa Flow, we have a microcosm of the changing approach to historic wrecks and the way we as a society value them: First, they were seen as weapons of mass destruction (1918-21); then as a salvage resource (1923-39); then an unrestricted diving amenity (1960s onwards); and finally, as national historic and archaeological assets, worthy of protection by law.

As for the remaining seven wrecks,

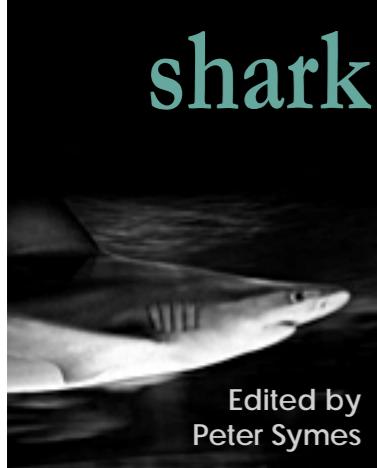
scheduling should help to ensure that they survive as intact as possible, for as long as possible, for the enjoyment and opportunities they offer to succeeding generations of Orcadians, dive boat operators, and the vast majority of responsible divers. Scapa Flow is there to be enjoyed by everyone, but please dive responsibly and please recognise that all of the shipwrecks have protected status under the Protection of Wrecks Act 1974 and are scheduled under the Ancient Monuments and Archaeological Areas. 1979.

Want to learn more about wrecks and diving in Scapa Flow? See Lawson Wood's book, *Scapa Flow Dive Guide*, published by Aquapress or visit his website at: www.lawsonwood.com



ABOVE: Aft gun on the *Kronprinz Wilhelm* wreck. BOTTOM LEFT: Stern gun breaches landscape at the *Karlsruhe* wreck. INSET: *Scapa Flow Dive Guide* by Lawson Wood

Scapa Flow



Edited by
Peter Symes

The Basking Shark is the second largest shark, and second largest fish in the world. It grows to ten metres but is harmless, feeding entirely on plankton. In recent years, it has become an increasing focus of marine wildlife tourism in the Isle of Man, the West of Scotland and Cornwall.

Text by The Save Our Seas Foundation

Basking Sharks Travel the World

Experts agree to tackle the mystery of missing migrations using photo-identification and satellite tags.

The exciting discovery that a basking shark tagged in the Isle of Man had crossed the Atlantic Ocean to reach Newfoundland, has been followed by the revelation that other basking sharks tagged off the coast of the North-eastern USA have travelled to the Bahamas and the Caribbean. One or two have even been tracked crossing the equator all the way to the northern and central coasts of Brazil. These studies were made using electronic tags, cutting edge technology in marine research. Once attached, the tags track the sharks' movements and locations, and the data are transmitted to the scientists via satellite on a pre-programmed date.

One Atlantic population

Until now scientists had thought that the numbers of basking sharks found on each side of the North Atlantic, South Atlantic, North Pacific and South Pacific were essentially separate populations. "These latest results are really quite amazing," said Dr Gore, who led the Save Our

Seas Foundation (SOSF) supported team that tagged the Isle of Man shark. "This raises the possibility that a shark we see in Britain could cross to North America one year, and turn up in Brazil the next!"

These discoveries, however, highlight the fact that little or nothing is known about any corresponding migrations of southern hemisphere or Pacific Ocean sharks. Knowledge of such migrations is proving increasingly vital in order to better protect the species. Populations of basking sharks in other parts of the world have been drastically depleted, and as Canadian scientist Scott Wallace described,

in the northern Pacific they may have been exterminated. Gore explained, "The basking sharks seen in the Isle of Man might travel to other parts of the world to repopulate them, but if there is inadequate protection in those countries, they may never return."

"... a shark we see in Britain could cross to North America one year, and turn up in Brazil the next!"

The scientists will collaborate in a scheme to both assess the numbers of the animals and to track their movements, using both satellite technology and photographs. Scientists from a dozen countries, including New Zealand, Canada, the USA, and the Seychelles, as well as the UK, Ireland, and France

attended the meeting. The new scheme will use close up photographs of the sharks' fins, which show above water when the sharks are feeding near the surface, to identify as many individuals as possible.

Photo-identification projects such as this have been used on a wide range of animals including elephants, penguins, whales and dolphins. Detailed photographs, which enable researchers to recognise individual animals after they have travelled hundreds or thousands of miles, are crucial for piecing together migratory routes and social behaviour. Especially important in the case of the

basking shark, an endangered species, is estimating the size of the population. One estimate from a few years ago, based on genetic analysis, suggested that the global population might be fewer than 20,000.

Numbers up in Europe

In the Pacific, basking sharks are relatively rare, but in northwest Europe, where the animal is now protected the population is recovering. Good numbers have already been seen this year in Cornwall and the Isle of Man. "We are not sure what is happening," explained Dr Rupert Ormond, chief scientist of the Save Our Seas Foundation, one of the co-sponsors of the conference. "We need the main research groups, and interested members of the public, to collaborate in determining what proportion of the sharks we have already photo-ID'd, and since we know the total number of sharks in our catalogue, we can estimate roughly how many sharks there are altogether."

The new scheme will develop

a European Basking Shark Photo-Identification Catalogue, to which researchers in Cornwall, the Isle of Man, Ireland, Scotland and France have already agreed to contribute.

Al Reeve of the Plymouth-based Shark Trust, who is taking the lead in developing the necessary database and web-site, commented: "Photo-identification really is a very powerful technique; and while photographs taken with powerful telescopic images may be needed to identify many of the sharks, even snap-shots taken by tourists can enable us to recognise some individuals, who because of encounters with boats and fishing gear, can have highly distinctive scars and tears on their fins." ■

THE SAVE OUR SEAS FOUNDATION IS A NON-PROFIT ORGANIZATION THAT ESTABLISHES AND SUPPORTS SCIENTIFIC RESEARCH AND EDUCATIONAL PROJECTS FOCUSED ON THE NEED TO PROTECT OUR WORLD'S OCEANS. ITS INITIATIVES PROVIDE KEY INFORMATION ABOUT THE IMPORTANCE OF MAINTAINING THE DELICATE ECOLOGICAL BALANCE IN MARINE ECOSYSTEMS. IN PARTICULAR, SOSF AIMS TO LEARN MORE ABOUT THE ROLE SHARKS AND RAYS PLAY AS TOP PREDATORS AND THE DEVASTATING CONSEQUENCES OF REMOVING THEM FROM OUR SEAS.

USING KNOWLEDGE BASED ON SOUND SCIENCE, SOSF AIMS TO INSPIRE PEOPLE TO APPRECIATE THE INTRICATE NATURE OF HOW WE ARE ALL BOUND TO THE HEALTH OF THE SEA. TEACHING THE CHILDREN OF TODAY TO BE CUSTODIANS OF OUR MARINE WORLD TOMORROW, IT IMPLORSES EVERY GENERATION TO ACT NOW AND MAKE A DIFFERENCE.



“Teenage” sharks prefer to hang around home

Young lemon sharks tend to stay near their coastal birthplace for many years. Tropical island nations that sacrifice their nursery habitats to coastal development are therefore likely to lose not only babies but also much older sharks from their local areas, with potentially dire effects on the surrounding ecosystem.

We were very surprised to see that many lemon sharks lingered for years around the island where they were born—often more than half of their development to adulthood.”

While shark research and conservation typically focuses on baby sharks confined to shallow habitats, or ocean-roaming adults, less is known about these intermediate-aged animals, which are the breeders of tomorrow and are roughly similar in development to human teenagers.

Studied for 14 years

During a 14-year study of lemon shark conducted by the Institute for Ocean Conservation Science at Stony Brook University, University of Miami, Field Museum of Chicago, and others at the Bimini Biological Field Station, over 1,700 imma-

ture lemon sharks were caught, tagged and released. The implant-

ed tags, plus subsequent recaptures and DNA analysis, showed that more than half of the 3- to 7-year-old sharks caught off Bimini were born locally and had lingered near their birthplace for years.

“It takes some sharks more than a decade to reach reproductive age, so we set out to better understand the phase of their development from when they are a couple of years old until they are on the verge of sexual maturity,” said lead author Dr Demian Chapman. “We were very surprised to see that many lemon sharks lingered for years around the island where they were born—often more than half of their development to adulthood.”

Afraid of the deep

Fear of deep water—and the bigger predators that live there—combined with abundant prey in the mangroves around Bimini probably keeps these island-born sharks in safer waters near home for several years after their birth. “This means that using marine reserves and other local conservation measures may help protect sharks born around tropical islands for much longer than we thought,” Chapman explained.

He suspects that future research could show that these stay-at-home behavior patterns are common among many shark species that live and breed around tropical islands. “If

island communities develop all of their shark nursery habitats, like mangroves, or overfish baby sharks in local waters, then they will subsequently lose a big chunk of the older sharks as well,” he said.

Detailed information on how sharks disperse from their birthplace could be very useful for conservation efforts throughout the tropics, given that many tropical shark species are threatened by overexploitation to supply the trade for shark fin soup, for which demand is especially high in Asia. Between 22 and 73 million sharks are killed each year to supply the fin trade.

“Our study suggests that many tropical island nations may not have to wait for complex international shark regulations to be established in order to act,” said Chapman.

“Their local management efforts could give immature sharks a chance to grow up in relative safety until they are big and ‘bad’ enough to roam deeper habitats far from home, where broader scale protection becomes more important.”

The study entitled, *Long-term natal site-fidelity by immature lemon sharks (Negaprion brevirostris) at a subtropical island*, is the cover feature of the August issue of *Molecular Ecology*. ■

SOURCE: SCHOOL OF MARINE AND ATMOSPHERIC SCIENCES
STONY BROOK UNIVERSITY

If island communities develop all of their shark nursery habitats, like mangroves, or overfish baby sharks in local waters, then they will subsequently lose a big chunk of the older sharks as well.



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