

pearls of the  
mediterranean

# Calella

*Diving the Wild Coast  
of Spain*



Text by Harald Apelt  
Photos by Wolfgang Pölzer and Peter Sutter

WOLFGANG PÖLZER

# pearls of the mediterranean

CALELLA DE PALAFRUGELL, COSTA BRAVA, SPAIN

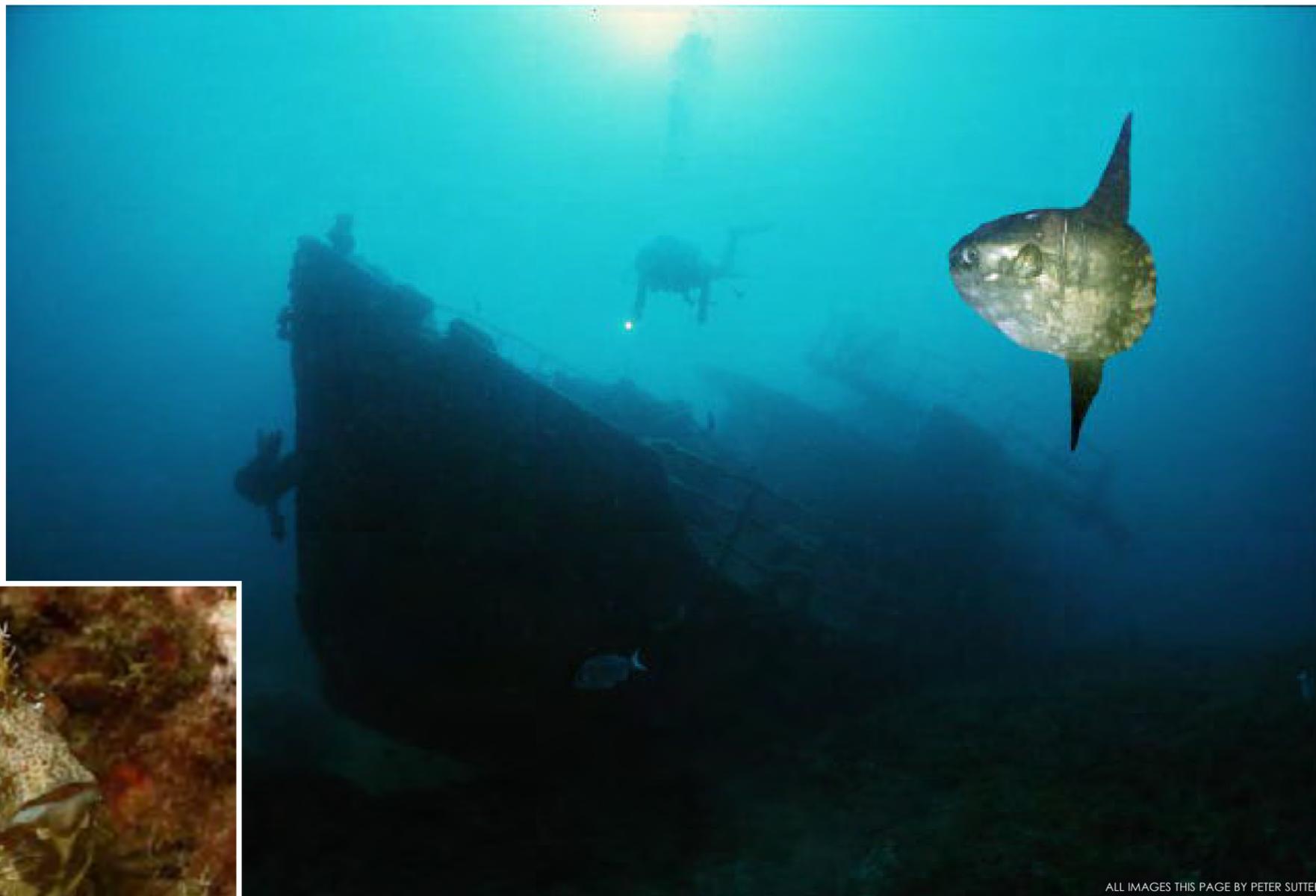
The Costa Brava is called “The wild coast”. And indeed the sea can turn out to be quite rude sometimes up here in the northern part of Spain close to the French frontier. This part of Spain called Catalonia is one of the most frequented European tourism destinations. And it is unusual that in this part of the Mediterranean some little hidden pearls have kept their picturesque qualities. One of these pearls is Calella de Palafrugell. Let’s take a look at this nice place and its fantastic dive sites.

In its former years, Calella de Palafrugell was a little fishing port, which led a hidden life far away from the big Spanish metropolis of Barcelona. It was the home of Spanish fishermen who sold their catch in the market halls of Palafrugell, a small city in

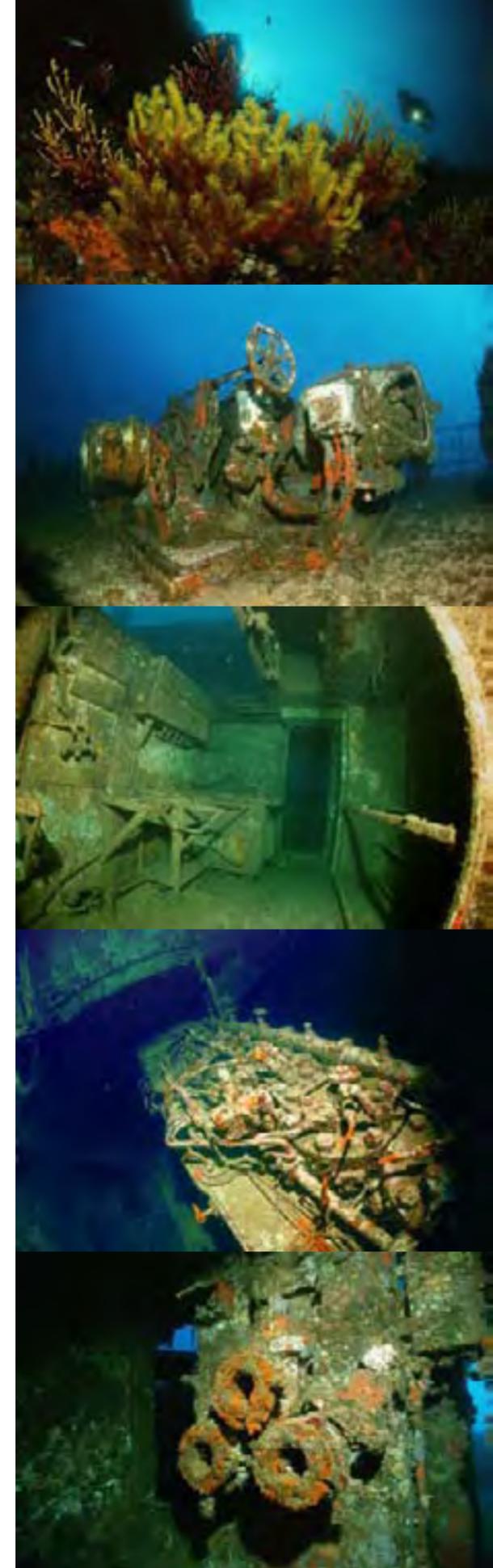
the back country of Calella de Palafrugell. The inhabitants of Calella are proud to be the Calella of Palafrugell, because 60 kilometres north of this little Costa Brava pearl, you will find another Calella—Calella de la Costa, a city that is like a tourism

bunker with big apartment houses and all the trappings of mass tourism.

Let’s take a closer look at the smaller one, which has developed more slowly as a tourist destination. Here, one will look in vain for big apartment



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PREVIOUS PAGE: Beach life at Calella de Palafrugell, Costa Brava, Spain. INSET: Soft corals of the reef  
LEFT: Blenny peaks out of its shelter

ABOVE: Big sunfish patrols a wreck at Calella  
COLUMN OF IMAGES: Scenes from the reef and the wrecks at Calella



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bays separated from each other by rocks make up its frontline to the sea, and they make a perfect frame for relaxing, swimming and diving at Costa Brava. In one of these bays, called Port Pellegri, the Poseidon Dive

houses, huge hotels with hundreds of beds and the typical tourism machinery that is often found in so many other destinations. Its close proximity to the sea and its historical connection creates the atmosphere of Calella de Palafrugell. Although this little location is right on the ocean, it has no port. Five little



have created an international team that is ready to show you the loveliest dive sites in the whole of the Mediterranean.



Center has stood here for nearly 40 years now. The German founder, Horst Lindner, and his Russian wife, Tina,

It's a rare mixture of good climate, nice back country with a lot of things to be discovered, and an awesome seaside with deep blue-green water and more than ten absolutely perfect dive spots. Poseidon Calella owns a dive boat, *Poseidon*, with has space for 20 divers, who can board the vessel right on



THIS PAGE: Samples of sealife in the colorful underwater realm of the waters around Calella—reef fish, soft corals, tunicates, anemones and spotted flatfish



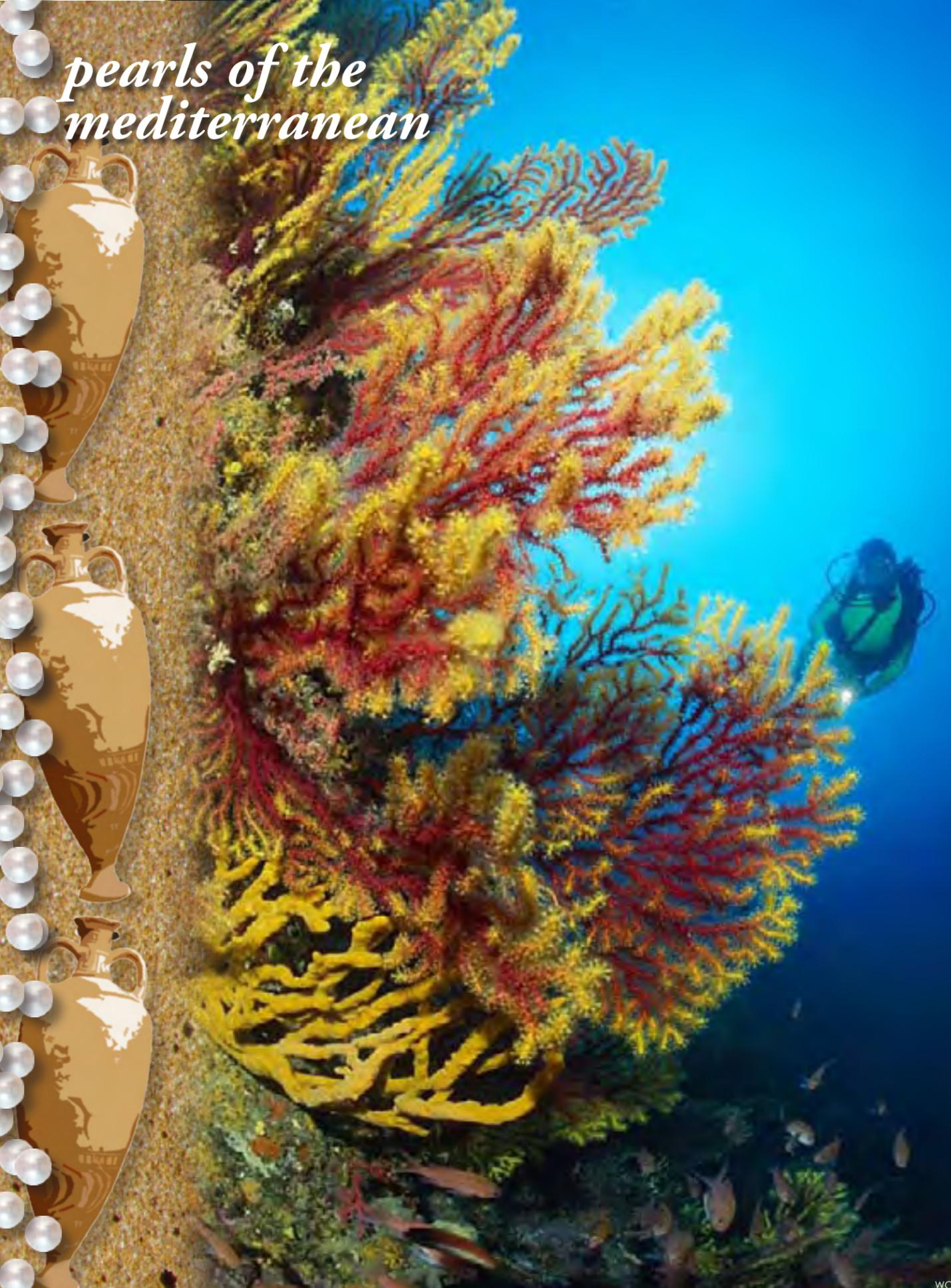
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the beach. The diving center is placed in one of the old stock rooms where, in former times, the Calella fishermen placed their equipment, nets and boats during the winter months. That's why it is not much more than 20 steps from the dive center to reach the *Poseidon* to start the dive trip. Normally, two dive trips are planned each day. The dive sites are near Port Pellegri

and can be reached within a few minutes. One of the most frequented and preferred dive spots at Costa Brava is not much more than 1000 meters away, directly in front of Port Pellegri Bay: the Outer Reef 1. It is formed like a cone, starting at 6 meters of depth and falling down to 44 meters. The northern side of this reef is an explosion of colours and displays the best the Mediterranean Sea is able to offer. Colour changing gorgonias, overhangs, and crevices, are the

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## Calella

home of nearly all kinds of marine life. This spot is a highlight for everyone, because at each depth, there are fantastic views, and even beginners won't have a chance to lose their direction. Wherever you hang out at the reef, swimming upwards leads you automatically back to the buoy and the dive boat.

Another spot you should visit while diving with Poseidon Calella is the wreck of the *Boreas*. It's nothing spectacular, but still a nice WWII tugboat to view. Built by the Germans, it had a colorful life. It is amazing that it did not find the same end as so many other German warships.

It was built in 1938 in Königsberg as *Pellworm* and worked in the second world war as a supply ship for the German battleship, *Tirpitz*. The *Tirpitz* was sunk on November, 12, 1944, in Norway by Allied air raids. The supply ship "*Pellworm*" survived the war and was later used as a mine seeker and training ship for the German



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Delicate floating jellyfish grace the seas around Calella. Be wary of their tendrils

Navy. In 1976, the *Pellworm* was retired from Navy duty and was sold.

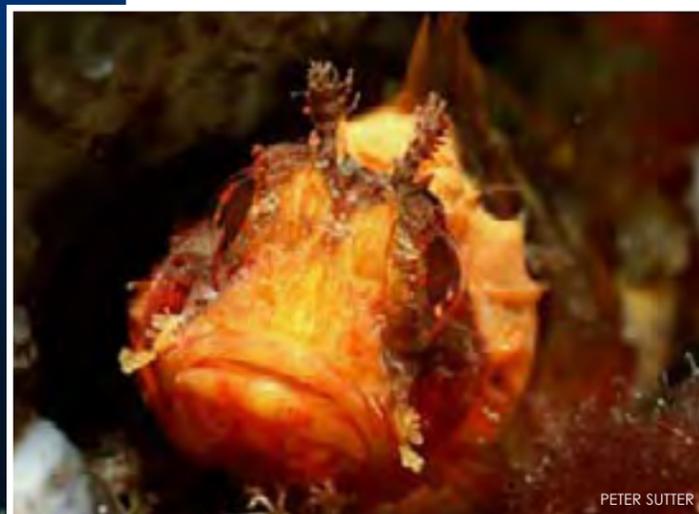
The ship had several owners in the following years. The last one being of questionable business. The ship—now called *Boreas* and sailing under the Panamanian flag—was boarded by Spanish Navy patrols in 1986 and discovered to be transporting illegal drugs. The vessel was confiscated at Costa Brava harbour Palamos and stayed there for three years. Nobody wanted to own this old veteran and take the costs of its nefarious affairs. Finally, the diving centers of Palamos came to an agreement with the authorities to prepare the *Boreas* as dive wreck or artificial reef. It was finally plunged to a depth of 600 meters, outside of the port entry of Palamos.

Although the wreck has been damaged more and more by the tough

Costa Brava winter storms, it still offers quite a spectacle when one dives the engine room and the hold of the *Boreas*. It is lying upside down on the sea bottom. The propeller can be found at a depth 32 metres.

Besides the good diving, Calella has some really nice alley ways to be explored as well as a good amount of bars and restaurants. As in most Mediterranean regions, Costa Brava has some months during the year in which you are better off avoiding the coastline. These are from July up to mid-September during the school holidays and the main travel season when Calella de Palafrugell is overcrowded. The crowds cause an uncomfortable atmosphere that nobody really wants.

Aside from this time period, you won't find many nicer places to spend the holidays—especially if a car is available. There are so many nice places to discover in the back country.



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LEFT: Diver explores wall of climbing corals. INSET: Brightly colored fish hide in the reef

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Divers have easy access to the dive boat a few paces from the dive center on the beach



in the masses during the main season. So much so that some Pals' people are asking themselves whether or not this change of character was really a big step forward.

an old Catalan village. The old women still meet to exchange news at the well while washing their laundry. Historical restaurants offer typical Catalan cuisine. There are so many things to see and do all around the historical city wall, that one really is surprised that something like Peratallada still exists.

If you are interested in the counterpart of Pals, you should visit Peratallada. It is just a 20 minute ride by car from Calella. Here, you will discover the unadorned, historical atmosphere of

Of course, you should take the opportunity to visit the museum of Salvador Dali in Figueres, and the



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Anyone who is interested in historical places should visit Pals. This little village is situated around a little hill. Half a century ago, Pals was nearly dead. It was a village with only a few old inhabitants and no attractions except its history and no future. Employment was only found on the coastline in the tourism business. That's why more and more people, especially the young ones, followed the money and decided to leave their sleepy home towns.

Pals was rediscovered in during

this period by some traditional artisans such as painters, ceramicists and wrought-iron craftsmen. They renovated the old houses, closed the village for any motorised traffic, and Pals was born a second time. Nowadays, Pals is the village that is frequented by thousands of tourists who seek the atmosphere of medieval times.

Numerous tourist busses shuffle



Large gaping groupers and delicate Christmas tree worms make their homes on the reef



THIS PAGE: Scenes of sealife on the reefs around Calella—soft corals, gargonians, anemones, decorator crabs, spiny urchins. BOTTOM RIGHT: The picturesque coastline of Calella



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Romantic evenings in Calella see soft light reflected off the waves along the seashore, which is dotted with a choice of restaurants and cafes

INSET MACRO IMAGES THIS PAGE: Brightly colored nudibranchs and spirals of nudibranch eggs decorate the reef



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capital of Catalonia, Barcelona, is just about 100 kilometers away from Calella and can be reached within one hour of driving time on a perfect highway.

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The amount of all these great activities that surround one's diving trips makes

Calella de Palafrugell a real pearl of the Mediterranean. But it is not the last and only one. Our next issue will take you to Croatia, to visit the island of Vis and its lovely hidden places. ■



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# fact file



SOURCE: HARALD APELT, CIA WORLD FACT BOOK

## Calella de Palafrugell, Spain



**History** The powerful world empire of Spain in the 16th and 17th centuries saw the nation take command of the seas to England. However, Spain failed to embrace the industrial and mercantile revolutions, which caused the it to fall behind Britain, Germany and France in political and economic power. During the two world wars, Spain remained neutral, but suffered devastating during its own civil war from 1936 to 1939. After the death of dictator Francisco Franco in 1975, there was a peaceful transition to democracy. In 1986, Spain joined the EU. Rapid economic modernization has given Spain one of the most dynamic economies in Europe. It has become a global champion of freedom. However, challenges including Basque Fatherland and Liberty (ETA) terrorism, illegal immigration, and slowing economic growth continue to hamper the government. Government: parliamentary monarchy. Capital: Madrid

**Geography** Spain is located in southwestern Europe. It borders the North Atlantic Ocean, the Mediterranean Sea, Bay of Biscay, and the Pyrenees Mountains in the southwest of France. Coastline: 4,964 km. Terrain: large, flat to divided plateau surrounded by rugged hills and the Pyrenees to the north. Lowest point: Atlantic Ocean 0 m. Highest

point: Pico de Teide (Tenerife) on Canary Islands 3,718 m. Spain holds a strategic location along approaches to the Strait of Gibraltar. Calella de Palafrugell is situated in the northeast of Spain, just 80 kilometres south of the French frontier and lies in the centre of Costa Brava. The capital of this region is Girona, an old city whose old medieval center is worth visiting. Costa Brava starts in the north end at the French border at Port Bou and ends down at Barcelona in the south, the capital of Catalonia.

### Environmental issues

Deforestation and desertification; air pollution; water quantity and quality nationwide; pollution of the Mediterranean Sea from effluents from the offshore production of oil and gas and raw sewage.

**Climate** Costa Brava is not an all year round destination. Although it has the mild Mediterranean climate, the cosy times start in the beginning of May. The season finishes at the end of October. Sometimes, the "Tramuntana" brings windy or even stormy days. That's why you should bring along a pullover and a windbreaker especially early in the season. April and May normally are good months for diving. During the main season in July and August, the diving centers are empty, but the beaches are

overcrowded. And another reason not to go there in these months: All the bays look like parking lots at a football stadium because they are occupied by hundreds of sport boats that bob up and down at their buoys in the water. There's no space for swimming.

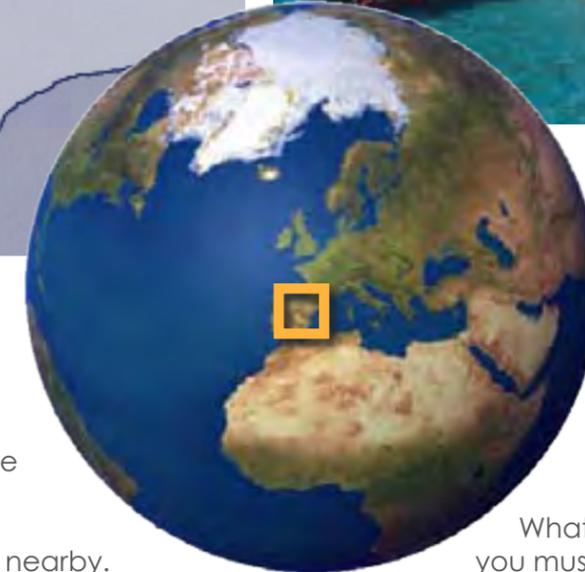
**Currency** Euro. Exchange rates: 1 EUR = 1.48 USD, .74 GBP, 158.13 JPY, 1.47 CAD, 1.66 AUD, 2.09 SGD

**Population** 40,448,191 (July 2007 est.) Ethnic groups: composed of Mediterranean and Nordic types. Religions: Roman Catholic 94%, other religions 6%. Internet users: 18.578 million (2006)

**Language** The official language is Castilian Spanish, 74%. Catalan 17%, Galician 7%, Basque 2%, are official on a regional basis.

**Visas & Permits** All members of Schengen countries of the European community need only a valid identity card. Visitors from all other countries need a passport and a classic visa.

**Travel** How to reach it by car: Get on the highway "Autopista del Mediterrani" leaving Girona-



Nord, follow the C66 to La Bisbal and Palafrugell, in Palafrugell turn left into Av de Palafrugell (GI654) to Av del Mar to Calella de Palafrugell.

By plane: Two airports are nearby. Girona airport is only served by some carriers (such as RyanAir). From Girona airport, a bus shuttle connects to the coast. Barcelona International Airport is about 100 kilometers away from Calella de Palafrugell. The bus ride from Barcelona (Estació del Nord) to Palafrugell takes 2 hours, price 15 €. More information and timetables are available at [www.sarfa.com](http://www.sarfa.com).

By car: The best way to reach destinations and have mobility during the visit is to rent a car, which you can get with really good deals at the airport in Barcelona (for example, one week in May starts from 119 €; A mid-class car or Peugeot 100 starts at 159.50 € incl. insurance and unlimited kilometers for seven days at [www.carbookers.com](http://www.carbookers.com)).

Of course you must see: the medieval cities of Pals and Peratallada (see article). If you are interested in the arts, you should do the trip up to Cadaqués. It's another lovely pearl close to the French border. The famous painter Salvador Dalí lived there. You can visit his house in the little bay of port Lligat, a set of fishing huts that Dalí reformed. Here, he built his summer home and workshop. It has a maze-like structure with different areas on different levels where Dalí's furniture and personal objects are preserved (tour must be booked before hand). If you stay for a night and are still interested in good diving in Cadaqués, you'll find right next to the Dalí house the diving centre of Ulla and Paul Bräutigam, which offers dive trips to the fantastic dive spots in the



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The dive shop is just a few steps away from the dive boat

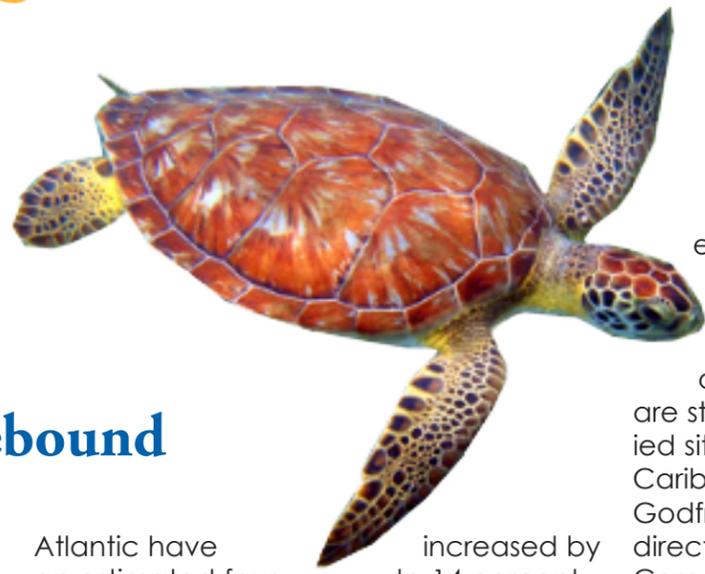
national parl of Cape de Creus. ([www.ullaundpaul.de](http://www.ullaundpaul.de)). On the way back to Calrella, you should visit the Dalí museum in Figueres, Dalí's home town. The museum is located in an old theatre, and it was here that the first works of the famous painter were shown to the public. In 1960, Dalí himself restored the building, which was bombed during the Spanish civil war, and opened its doors for the public in 1974. After his death on January 23, 1989, in Girona, he was buried in his home town of Figueres in the crypt of this museum.

La Bisbal is a city you will pass on your way to Calella, and you will at once be caught by its unique presentation of artworks, which are widely produced here. From the moment you reach the first house on the main road through the town, you will recognise that La Bisbal is one of the biggest pottery centers in Catalonia. Thousands of pottery products and ceramic artworks are displayed right on the main road. It is an invitation to stop and have a closer look at the ceramic shops in the town. ■

# turtle tales



Edited by Peter Symes



## Green turtles on the rebound

Encouraging news has emerged for one of the world's largest marine herbivores, the green turtle. A new study shows that long-term protection of the sea turtles' nesting beaches is successful in achieving increases in the green turtle populations.

The authors of an article recently published in *Global Ecology and Biogeography*, who research green turtles in Australia, Costa Rica, Japan, and the United States, have found that green turtle nesting on four beaches in the Pacific and two beaches in the

Atlantic have increased by an estimated four to 14 percent each year over the past two to three decades. The increases in nesting varied considerably among the rookeries, most likely because historical and current exploitation of green turtles is different at each site.

"These results should be celebrated," said Milani Chaloupka, lead author of the report and vice chair of IUCN's Marine Turtle Specialist Group. "They demonstrate that green turtle populations and presumably the green turtles'

ecosystem roles can be recovered in spite of drastic population declines in the past."

Despite this good news, hunting of turtles and poaching of eggs are still problems in some of the studied sites, including Tortuguero on the Caribbean coast of Costa Rica. David Godfrey, MTSG member and executive director of the Caribbean Conservation Corporation, commented, "In Tortuguero, the recovering green turtle population attracts millions of dollars in tourism revenue each year for the local community as tourists come to watch the turtles lay their eggs. Unfortunately, these same turtles are still hunted by the thousands when they swim to Nicaraguan waters in search of seagrass, so conservation efforts must continue." ■

## Leatherback crosses the Pacific, sets new record

**A leatherback sea turtle has been tracked by satellite swimming 20,558 kilometers (12,774 miles) across the Pacific Ocean.**

Using satellite technology and transmitters that were attached to nesting

females using a backpack-like harness, nine leatherback turtles from a previously unstudied population nesting on the beaches of Jamursba-Medi in the Indonesian province of Papua were tracked by satellite. The transponders sent signals to satellites every two days, allowing the scientists to record diving

behavior, sea temperatures, and high-resolution geographic positions. During 647 days of swimming, one turtle was tracked across the Pacific Ocean where it, after 647 days, reached the cool waters of the Pacific Northwest—where a feast of jellyfish awaited. This first record of a trans-Pacific migration by a leatherback is the longest recorded migration of any sea vertebrate. It was also recorded that some of the turtle's dives took it down as far as 1000 meters into the cold darkness below the ocean surface. ■



## Bali: Leatherback Turtle rescued by Heinz von Holzen Team

During our daily visits to the fish market in Jimbaran, we witnessed once again the brutal capture of an ancient leatherback turtle that was caught a few hours earlier around the cliffs of Uluwatu. Fortunately for the turtle, their flesh is regarded as not very tasty, and most likely, for this fact, we were able to purchase the turtle from the fisherman. We then had to wait for a few hours for the tide to rise before we were able to release the, by then, totally exhausted lonely wanderer of the deep, back to his very endangered and fragile home.

It took not less than ten of our stronger employees to carry this poor creature back to the ocean.

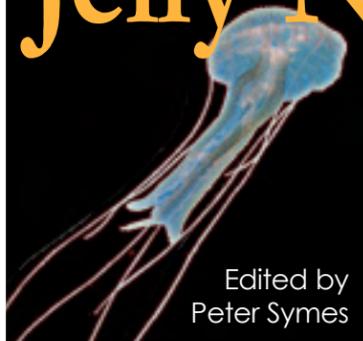
It was for me, personally, the first time to be face to face with a

leatherback turtle. Looking into the eyes that must have been a tenth of the size of a human eye, together with the sad look of the turtle with streams of tears running down the face, made me suddenly realize what we humans have done to planet Earth during our very short visit.

At the same time, I realized that over the passed ten years since we were actively involved in protecting sea turtles here in Bali, we actually have made a significant contribution in the dramatic slow down of the turtle trade. With this in mind, I would encourage everyone to assist nature to make certain that our children will have the same chance as we still have in living and experiencing our magnificent planet in its fullest beauty. ■

—Hein von Holzen





Edited by Peter Symes

## New guidelines on jellyfish sting treatment wanted

A recent study, published in *Emergency Medicine Australasia*, has found people are unsure whether to apply ice or hot water, while some use over-the-counter creams. Current guidelines from the Australian Resuscitation Council recommend ice for tropical and non-tropical stings and hot water for blue bottle stings.

Dr Mark Little says the guidelines need to be reviewed. "I think that first aid for jellyfish stings needs to be a lot more simple, and those of us that do research, we're going to need to do more research to clarify.

"At the moment, heat certainly has more evidence than ice, and I think heat would be more effective at relieving the pain of a jellyfish sting." ■



Pretty but painful

# Jellyfish infestations are on the increase

Last year, the mauve stinger, a lovely-looking jellyfish from the sub-tropical waters of the Mediterranean, suddenly turned up in the Irish Sea exploding into an infestation that covered 26 square kilometres to a depth of 10 metres wiping out Northern Ireland's fledgling salmon aquaculture industry in a matter of days. A week later, a similar mass, this time both mauve stingers and the indigenous compass jellyfish, threatened the Scottish coast. This might be dismissed as one of those anomalies that news agencies move on slow days under the heading "oddities" except that there was nothing odd about it. In the Mediterranean, increasing jellyfish swarms have been playing havoc with summer vacationers on the Mediterranean coasts, threatening billions in tourism revenue.

In 2006, they washed up on the beaches from Costa Brava to the Cote

d'Azur by the tens of millions causing 70,000 beachgoers to seek medical treatment for painful stings and allergic reactions, while clean-up crews struggled to dispose of tonnes of rotting creatures. Off the coast of Africa, a sudden jellyfish infestation near Namibia has ballooned to three times the biomass of the entire resident fish population. And the commercial fishing industry in Japan has been plagued by repeated outbreaks of monster jellyfish that grow to two metres in diameter.

### Why?

What's triggering the infestations isn't clear. While historic records show they are not a new phenomenon, it is clear that the frequency and magnitude appears to be increasing.

Population explosions may be triggered by pollutants, which provide higher concentrations of nutrients. Over-harvesting jellyfish predators, like tuna and sea turtles, may also upset the natural regulation. It has also been suggested that rising ocean temperatures and changed currents are to blame for both providing optimal breeding conditions and for moving populations to new territory.

Most likely it's the convergence of all these circumstances, as happened in the Black Sea, where an introduced jellyfish coincided with over-fishing at the top of the food chain and nutrient pollution. This one species came to represent 90 percent of the total marine biomass there. ■



Jelly-fish 45, designed by Giancarlo Zema is a floating dwelling unit for up to six persons. It's spacious dimensions are 10 metres high with a diameter of over 15 metres allows the sea dwelling owners to live either above or below sea level in perfect harmony with the ocean environment.

It consists of five levels connected by a spiral staircase. The top level

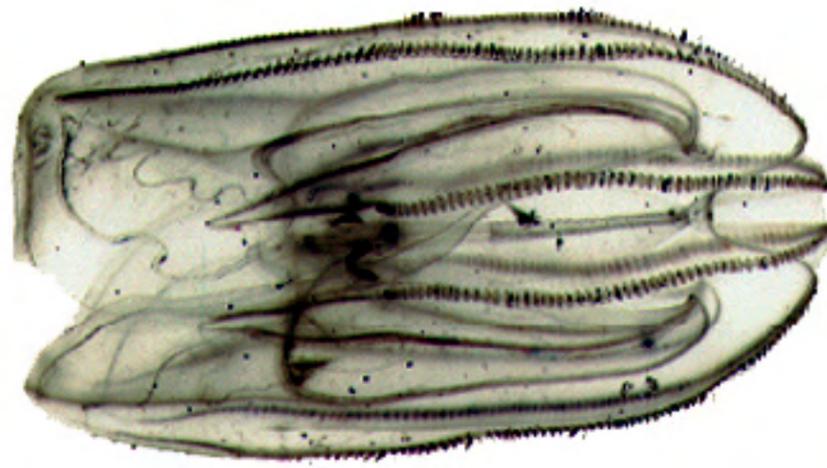
is 5.6 metres above the sea level and has been kept for study rooms.

The next lower level is situated at 3.5 metres above the sea level and contains the night time zone while the next lower level at 1.4 metres contains the daytime zone with a kitchen and bathrooms. The lowest living level at 0.8 metres above the sea level is

semi-submerged and has been kept for the guest room, bathroom and technical spaces. The acrylic viewport globe is situated at three metres below sea level.

The main carrying structural component of the Jelly-fish 45 is entirely constructed from plastic reinforced by incorporated fiberglass while the submarine globe is made from acrylic with a high compressive resistance. ■





Comb jellies are now breeding in Danish waters

It is tiny, only about an inch and transparent. Aside from the cold, it has no enemies in Danish waters, and the sheer numbers of them now threatens the fragile cod stocks

## Baltic sea invaded by comb jellies

**German and Danish researchers have found evidence that the warty comb jellyfish may be threatening the cod stocks in the Baltic Sea.**

The jellyfish, which is indigenous to the North American East coast, is likely to have been introduced into the Baltic Sea by shipping traffic, and feeds on zooplankton (as do the fish) as well as fish larvae and eggs.

*Mnemiopsis leidyi* has spread further and further since it was first discovered in the Black Sea in the 1980s. From there, it advanced into the Azov Sea, the Marama Sea, the Mediterranean and the Caspian Sea, always accompanied by a drastic decline in fish stocks.

The area where the jellyfish have now been found, the Bornholm Basin, is the most important breeding ground for cod in the Baltic Sea. "As soon as we saw the eggs inside the warty comb jelly, we knew which effects this organism could have on the entire planktonic ecosystem of the Baltic Sea," says Holger Haslob of the Leibniz Institute for Marine Sciences in Kiel, Germany.

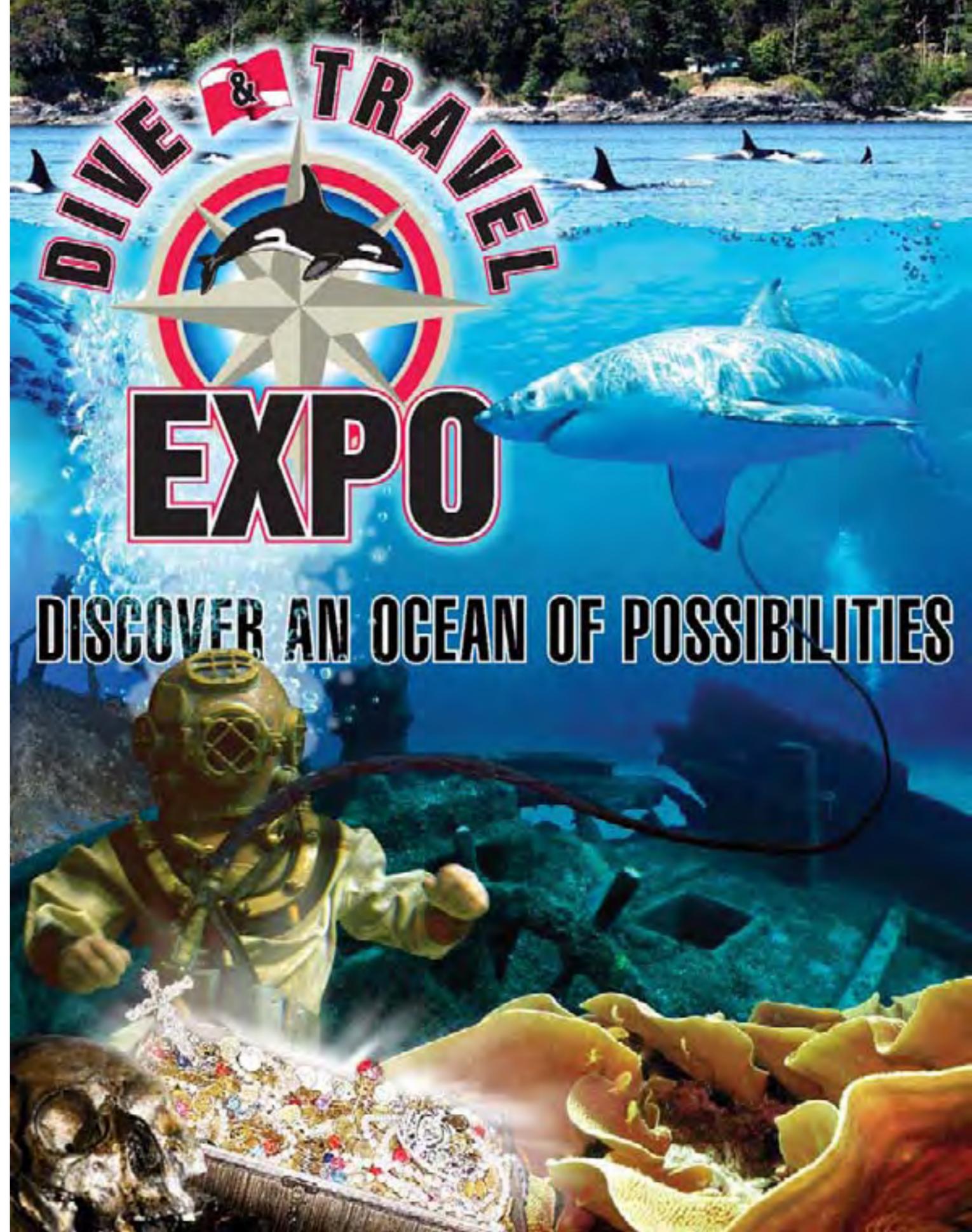
The find confirms the researchers' suspicion that the invasive species will threaten the survival of the cod in its early life stages, adding to the pressure from overfishing and environmental pollution from which the cod stock has been suffering for years. In addition, the jellyfishes' feeding behaviour might have a lasting effect on the entire ecosystem, as cod is one of the species at the top of the food chain in the Baltic Sea.

At the Øresund Aquarium in Helsingør, Denmark, marine biologist

Jens Peder Jeppesen is concerned about the abundance of these jellyfish particularly in the middle of the winter, where it is expected that the low temperatures would kill them. But they seem both resistant to cold and capable of reproducing. It comes at

very bad time, as this is the time where the cod spawns, and the ecosystem is already very badly affected following 50 years of overfishing. It is obvious that the many jellyfish will consume many of the fish eggs. ■

*Mnemiopsis* have a lobed body that is oval-shaped and transparent, with four rows of ciliated combs that run along the body vertically and glow blue-green when disturbed. They have several feeding tentacles. Unlike cnidarians, *Mnemiopsis* doesn't sting



# Claiming the North Pole

*Leaping into the unexplored*



North Pole, Thursday, 2 August 2007. During a dive of 12 hours 11 minutes, two Russian bathyscaphes descended to the bottom of the ocean—a world first

conducted under warm conditions. There are a lot different devices, chargers and batteries—they come with four big tool sheds, compressors to fill air, tanks with oil and pumps for hydraulics. And all their devices for wireless and navigation should be in a laboratory. It requires a special technical setup. We really needed to rebuild the ship quite a bit, but you just can't do that with a nuclear ice-breaker. So, we couldn't base our bathyscaphes there.

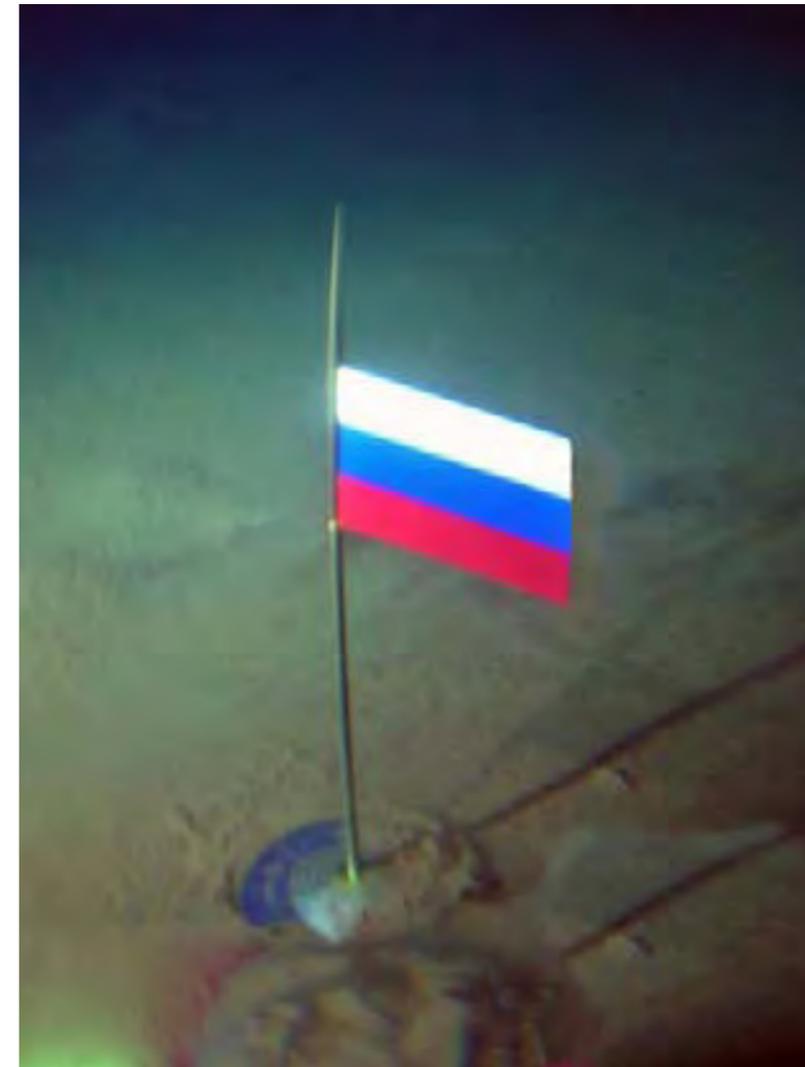
Our regular support vessel, the *Academic Keldysh*, was undergoing a renovation for other purposes, so we found the diesel-powered ice-breaker, *Ivan Papanin*, in Murmansk. It had a cargo hold like a football field and two 25 tons cranes. However, the *Ivan Papanin* wasn't powerful enough to break very thick ice, so we weren't sure that it could make it to the North Pole. But we went with it anyway.

Of course, we had no funds, so MacDowell went on looking for sponsors.

Even James Cameron became interested in this project, but he was too busy with new movies to become involved. Arthur Chilingarov then joined our project in 2003, and this was a turning point, as Arthur was very experienced with ice-breakers.

For us, the biggest problem was the funding. The price was incredibly expensive. But we decided to aim anyway for a dive expedition to the North Pole in 2007, as this was the International Polar year. We were preparing the bathyscaphes, and safety aspects took a lot of my attention. This project was a leap into the unknown, and we had little idea what lay ahead for us.

Russian flag placed at the North Pole by explorers



**On August 2, 2007, the weather was good at the North Pole. The sea was calm, the water temperature was just -1° C, with the air at a balmy 0° C. That morning two Russian mini submarines, Bathyscaphes *Mir-1* and *Mir-2*, were sent down and at noon, *Mir-1* touched down on the seabed at 4,261m, planting the Russian flag**

Translation by Andrey Bizyukin  
Photos courtesy Anatoly Sagalevich

*What follows is an exclusive interview of Anatoly Sagalevich by the journalist Gleb Cherniavsky.*

*Gleb Cherniavsky (GC): First of all, our congratulations to you on your achievement. Let me first ask you, when did you get the idea of diving at the North Pole? And how did you get the idea that this was possible?*

Anatoly Sagalevich (AS): The idea came to light in 1998. I met Don Walsh and Mike MacDowell who were traveling with a tourist ice-breaker at the time. And they threw the idea to the wind, why not dive on the North Pole? Mike thought it was an impossible idea. But Don told him: "I know one person who just might go along with such an idea," and brought up my name. Mike then came to our institute, and we discussed this crazy

idea. I was instantly captivated. I then had to come up with all the technical solutions. I made some connections with an ice-breaker service in Murmansk and flew up to take a look at their nuclear ice-breaker, *Soviet Union*. We wanted to put our bathyscaphes, *Mir*, on this ice-breaker. Its hoisting cranes could manage 25 tons each, and as our bathyscaphes weighs 18.5 tons, it was possible to deploy them from the ice-breaker board.

*GC: And which other equipment would you need to support these deep water bathyscaphes?*

AS: First of all, we needed to figure out how we could service the bathyscaphes. Doing it outside in the cold on the open deck at the North pole was not an option. The maintenance needed to be



# feature

We had only a little information from submariners who went under the ice. We only knew that no magnetic compasses would work. Wherever we went, we had to rely on hydro acoustic devices for navigation.

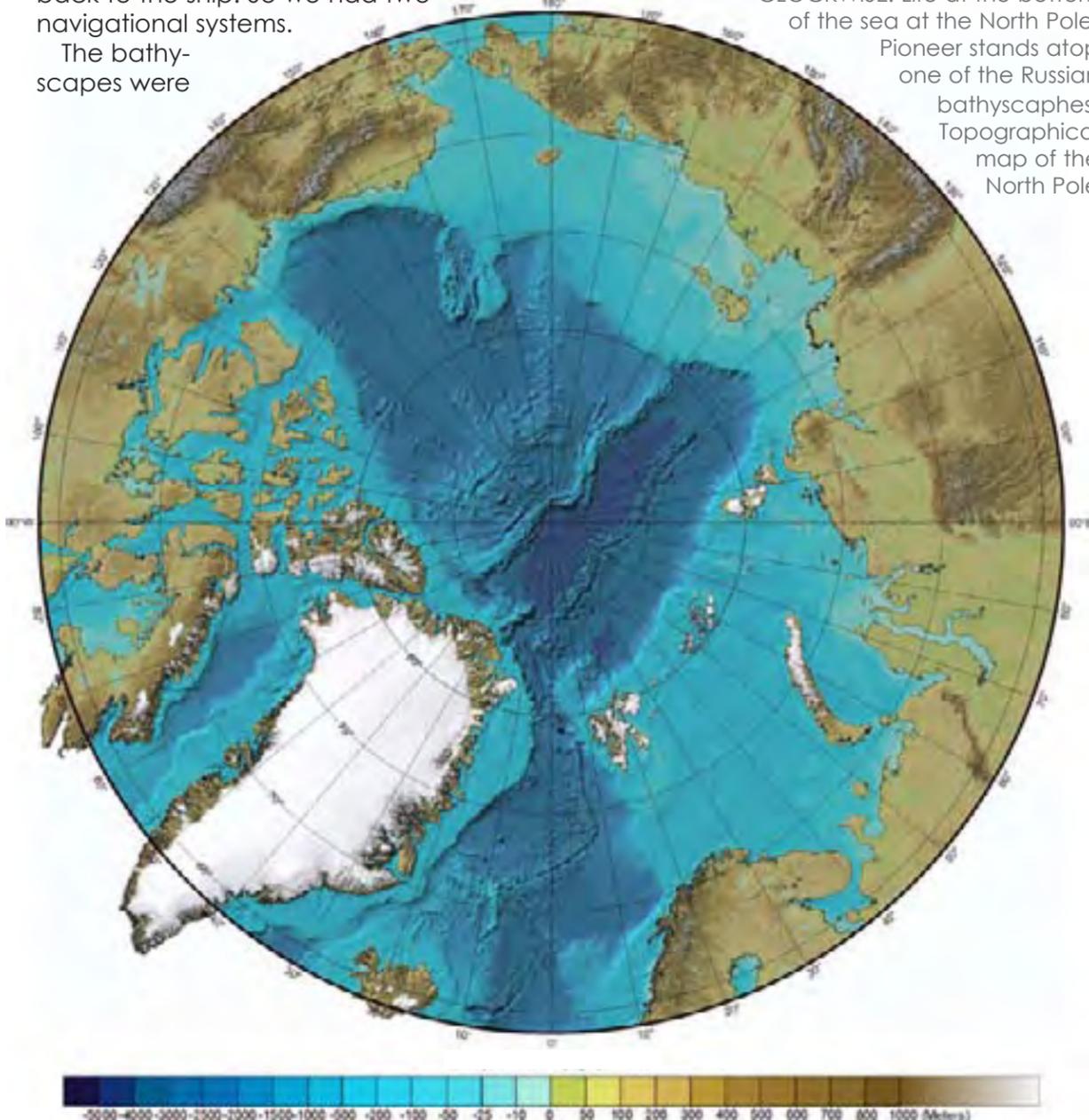
*GC: Are you saying that you went to the North Pole without any navigation systems?*

*AS: Not entirely. We used a navigation system that could relate to hydro-acoustic stations that we hung through the ice. Usually, we put them on the bottom. Also, we developed two hydro-acoustic direction finders that could lead us back to the ship. So we had two navigational systems.*

The bathyscapes were



CLOCKWISE: Life at the bottom of the sea at the North Pole. Pioneer stands atop one of the Russian bathyscaphes. Topographical map of the North Pole



powered by three hydraulic engines, but we added two extra electric engines to have auxiliary power in case of an emergency. Our bathyscaphes have to constantly keep moving horizontally. Vertical movement is provided by a ballast system by taking water in and out. Especially for the North Pole, we decide to use a mix 50 percent antifreeze liquid and 50 percent water instead of standard water in ballast system. This was to prevent the valves from freezing, and it turned out to be a very wise decision.

We also added solid ballast (which we had never done before) to save battery energy during ascent in such cold water. We wanted to play it safe and make sure we had enough power in case of a lengthy search for a hole in the ice on the way back.

*GC: What kind of battery power did you have?*

*AS: We had quite a lot of it—about 100 KW-hours. During a regular dive, we would spend most of the battery power on the bottom and leave 10-20 percent for surfacing. We carried a radio that could be used on the surface to call in the mother ship to pick us up. But on the North Pole, the bathyscaphes would be diving under the ice, which meant that nobody could locate us there. We had to find the openings in the ice ourselves.*

One of the main questions was how to come back through the same hole in the ice! Just imagine the ice 2-3 meters thick having a small hole about 50 times 30 meters into which you should navigate a 7.8 meter long bathyscaphe from a depth of about 4000 meters.

## The crew:

*Mir-1* – Captain Anatoly Sagalevich and as observers Arthur Chilingarov, the chief of “Arctic 2007” expedition and Vladimir Grudzev, member of Russian parliament

*Mir-2* – Captain Eugenie Cherniaev and as observers, the polar explorers Swedish Frederik Paulsen and Australian Mike MacDowell

## Dive profile (Moscow time zone):

- 09:28 Bathyscaphe *Mir-1* commences its dive.
- 10:07 Bathyscaphe *Mir-2* commences its dive.
- 12:11 Bathyscaphe *Mir-1* touch down on the seabed at the North Pole
- 13:46 Beginning of ascent
- 18:08 Bathyscaphe *Mir-1* reaches the surface after 8 hours 40 min.
- 19:15 Bathyscaphe *Mir-2* reaches the surface after 9 hours 08 min. Samples of sediment and water were collected, and video and photography of the continental shelf were taken. A Russian flag from titanium alloy was planted on ocean floor at the North Pole.



LEFT: The nuclear ice-breaker *Russia*. BELOW: Anatoly Sagalevich tells the story of the journey to the North Pole

## North Pole



when we came as close as 30-40 meters, it completely disappeared from our echosounder. But from this depth we were without connection with our navigation stations. Nonetheless, we decided to continue the mission. We have, however, retained some, although very poor, hydro-acoustic communication with our ship. We heard them very poorly, but they heard us clearly.

*GC: Did you have a soft landing on the North Pole sea bed?*

AC: Yes, there was very soft ground. Just one wrong movement and the water became silty and the visibility reduced to zero. We took samples of the bottom sediment. We also found some white sea anemones and brought one up as a sample. We left a cylinder of stainless steel with the letter "conversion to issues" on the North Pole sea floor. If someone comes there, they will see that we were here already. But I don't think that will happen any time soon.

*GC: Will this cylinder not be*

*covered by silt?*

AS:

Eventually, yes. But we also planted the flag of the Russian Federation made from titanium as well. The flag stands up one meter from the bottom. The speed of silt accumulation is just 0.5 cm in a millinium, so the flag could be seen for many thousands of years.

*GC: What was your decision when you realized that you couldn't modify the ice-breaker?*

AS: We decided to use two vessels: The nuclear ice-breaker and the ice classified ship *Academic Fedorov* on which the Bathyscaphes would be based.

On July 22, 2007, we set sail from the port of Murmansk. The nuclear ice-breaker *Russia* went in front and cleared a passage in which the *Academic Fedorov* followed. We were finally heading to the North Pole.

*GC: How was the dive and how did you manage to navigate under the ice?*

AS: We positioned sounding devices at a depth of one hundred meters and one kilometer apart, with another acoustic device hung below our main ship to act as a homing bea-

con. We always knew our position in relationship to these acoustic devices.

Of course, there was some drift. At 200 meters depth, we were already 500 meters away from the ice hole. And this distance kept increasing.

At that moment, I switched on an echo sounder, and we saw a distinct band at 3,000 meters. Arthur Chilingarov said, "That's the bottom." But I know it was deeper here. We encountered a strange natural phenomenon.

*GC: Do you mean that what appeared to the bottom on the echo depth-sounder, was not the real bottom?*

AS: Exactly. In fact, it was a halocline, a border layer between bodies of water with different salinity. When we passed through this layer, we lost the signal from the acoustic devices at the surface and

went on without navigation. We were cut off from the surface.

*GC: So, it was the border of two different water densities?*

AS: Yes, it was quite a strong border. We really need to make more scientific research on this phenomenon, because when we check other geophysics references on salinity and temperature, we can't find any evidence of such distinct borders. But it was real enough, and it did cut us off from our navigational references.

*GC: Do you have any scientific explanations for this phenomenon?*

AS: Not at this point. We suspected dense concentrations of plankton. But we looked carefully with our lights, and we didn't see any. The border layer appeared more smeared when we came closer. Then,





North Pole

CLOCKWISE:  
The nuclear ice-breaker *Russia* clears a passage in which the ice classified ship, *Academic Fedorov* follows

*Mir-1* and *Mir-2* are lowered into their storage bay on the *Academic Fedorov*

Researchers inspect the Mir apparatus in preparation for the exploratory dives at the North Pole



GC: Did you see any other animals, except for the sea anemones?

AS: Yes, we did. We saw (*Teuthoidea*) calamaries and small shrimps while we descended, and small holothurians and star fish on the bottom. These are usually about 10-15 cm, but these were only 3-4 cm. This could be due to the low oxygen concentrations under the ice.

The big surfaces of ice prevent the exchange of oxygen between the ocean and the atmosphere. So, the oxygen concentration is low here, and that reflects on the abundance of animals and plankton.

We were on the bottom for one hour and 40 minutes. The other

bathyscaphe arrived and made a soft landing 50 minutes later. We wanted to meet them, but decided against it, because we were concerned about the silt and bad visibility. We didn't want to make any unnecessary movements in relationship to the main ship's position either.

We finished our scientific and official duties, released the ballast weights, said goodbye to second bathyscaphe crew, and headed towards the surface, searching for the opening in the ice cover.

GC: And how was it encountering that border layer at 3000 meters going up?

AS: It was not there anymore

GC: This is an interesting phenomenon...

AC: Yes, it is. And we have to look more into this. During the ascent, we reconnected with our navigational beacons. But at around 1000 meters, there was so much noise, that we had problems finding the right direction. So, we tried to find the way home by systematic experimentation. For example, we should go at an angle of 120 degree. But our gyrocompass didn't work properly. We tried to follow a 120-degree course according the gyrocompass but noticed that the distance to the opening in the ice increased.

We then turned 90 degrees, and again, the distance to the opening increased. We did another



Lowering *Mir* apparatus into the water

## North Pole

Our bathyscaphes can find certain details, but we have restricted power resources and to get the full natural picture we need completely different sort of technology. We ran this project as a useful technological experiment but it is just a small one. Science without technology this is nothing. The aircraft are flying, submarines are diving and cars are running. All of these started with science and engineers created all of them. Science comes first, then technology follows. When we talking about our technological achievements, about our people and our striving for the unex-

plored. This is not about romantic notions, it is the reality. We have already heard from some scientists that this was just a crazy idea and reckless scheme. But we beg to differ.

*GC: Do you consider yourself a scientist or engineer?*

A: I am good at both. I think more like an engineer, but I can say with confidence, that I am also capable of conducting good scientific oceanographic research.

*GC: What are your plans for the future?*

AC: We are discussing the possibilities of a world tour for our bathyscaphes. But again, this is

also a question of money. We have everything—the ship, the bathyscaphes, a professional team—except, we have no financing apparatus. If the Russian government would show a bit of generosity, we could organize an entirely Russian expedition. In this context, I want to remind everyone one more time that our North Pole diving expedition was made completely with Russian technology and conducted by Russians. This was a Russian project. And I dream to see more such national projects!

*Gleb Cherniavsky is a contributor to the Russian dive magazine, DiveTek. ■*

er turn, which according our gyrocompass was a 300-degree heading. But in reality, it was quite the opposite direction. So, the gyrocompass had a 180-degree error. Finally, we deducted that the right heading was 280 degrees.

The ascent was very difficult. We had to find the opening in the ice. We had the video camera going pointing to the surface direction to give us an indication as to what was ice and what was water. The first time we thought we had found open water, it was just a small hole in the ice. Our ice hole was 30 meter wide.

Then, we came close to the propeller on the ice-breaker and had to back off. After that, we were caught by the ice anchor from our main ship and gently got away from it, too. Every time I tried to find the right hole in the

ice, the current moved us away from the hole, and we had to start all over.

We searched virtually blindfolded for 35-40 minutes. We were staring at the monitors when we spotted a light in front of us, and the main ship showed up on the locator. Grudzev cried out, "Get us out of the water!" I saw some splashing motion on the monitor. And up we came, very quickly.

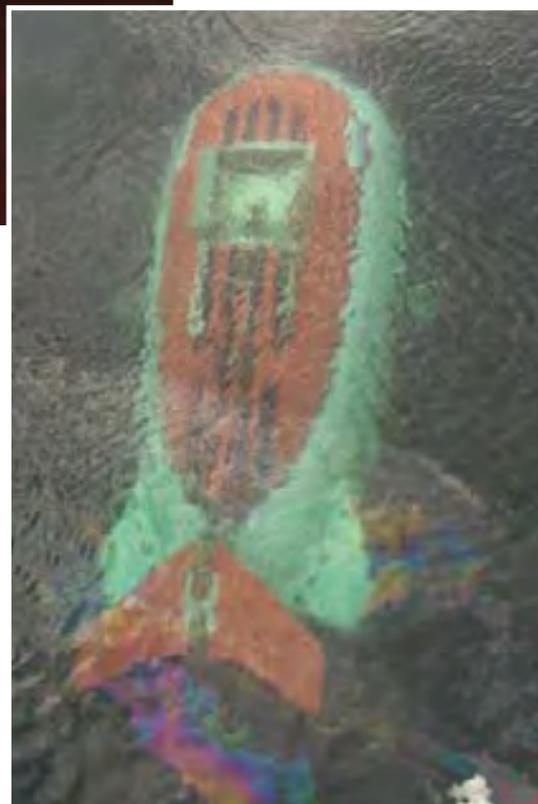
*GC: What are the main conclusions to be made from this expedition?*

AS: From my point of view, it is a great technical achievement—the triumph of technology and humankind. This is like the space flight of Jury Gagarin, like man's venture into outer space and the landing on the moon. This is a leap into the unexplored. We practically didn't know what to

expect. We were prepared use special technical innovations made for the North Pole, and it had worked quite well. I suppose that this is the main achievement. We just opened the unexplored, and now we know how to do this the right way many times over.

*GC: What scientific achievements was made?*

AS: If we are talking about the exploration of the underwater shelf, these dives brought little new. We need to conduct a completely different sort research here applying other technology.



ABOVE: *Mir* heading out on its historic mission

RIGHT: Eugenie Cherniavsky the captain of "Mir-2" does the final equipment checks before the North Pole dive





Putin congratulated Artur Chilingarov, Anatoly Sagalivich and Evgeniy Chernyaev with medals designating the men 'Heroes of Russia'

# *It's about politics*

## Canada Seeks To Claim Underwater Ridge

Submerged on the Arctic Ocean sea floor off the northwest coast of Ellesmere Island and possibly reaching all the way to Russia, the spectacular, 2,000 kilometer long chain of rugged peaks and plunging canyons known as Alpha Ridge is one of the Earth's last major unexplored geological features.

The sprawling ridge with its jutting crest rising nearly 3,000 metres above the surrounding plain is known only from the seismic and sonar probes of polar scientists since its discovery in the early 1960s.

Given the rapid melting of the Arctic ice cap, and the growing demand for undersea oil, gas and other natural resources, any nation who could successfully lay claim to these areas could one day exploit the Alpha Ridge's suspected storehouse of mineral and biological riches.



Beginning this month, a crucial sea floor mapping mission is aimed at extending Canadian sovereignty to the Alpha Ridge—and its potential resource riches—before a 2013 deadline set out by the UN Convention on the Law of the Sea, to propose undersea extensions to Canada's coastal boundaries runs out. "We are trying to prove scientifically that Alpha Ridge is a natural prolongation of the North American continent," says Jacob Verhoef, chief of the Atlantic division of the Geological Survey of Canada.

Using deep-sea explosives and seismic scanners, they'll gather data about the shape, composition and density of the ridge to compare with better-known stretches of Canada's polar continental shelf. Among the unresolved questions about the ridge is whether it ends mid-ocean or is essentially part of the same undersea mountain range extending north from Siberia and called the Mendeleev Ridge after legendary Russian scientist Dmitri Mendeleev.

Russia could well argue that the entire mountain complex is an extension of the Asian continent. The drowned mountains, first identified in 1963 by U.S. researchers aboard a drifting ice station named Alpha, were first substantially investigated by Canadian scientists a quarter-century ago. The 1983 Canadian Expedition to Study the Alpha Ridge produced groundbreaking maps of the region, but Verhoef's research team is seeking definitive evidence that the massive rock formation is geologically linked to Canada's established continental shelf. ■



## Medals from the Russian President

**Russian President Vladimir Putin awarded medals to three men who planted a Russian flag on the ocean floor under the North Pole, staking a symbolic claim to the resource-rich region.**

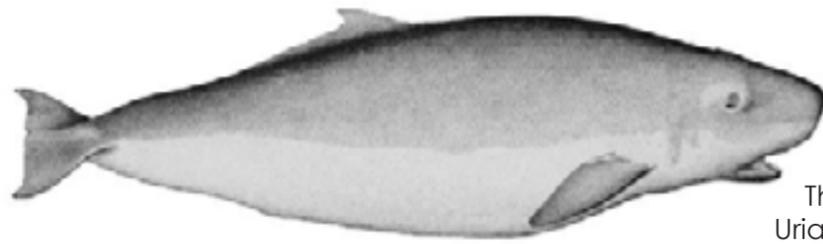
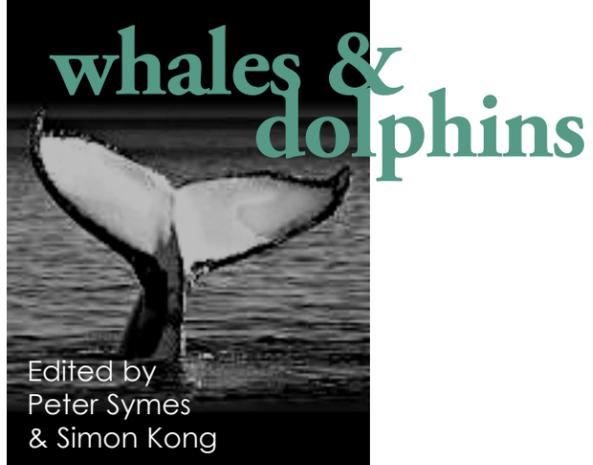
In a ceremony at the Kremlin, Putin congratulated Artur Chilingarov, Anatoly Sagalivich and Evgeniy Chernyaev awarding them medals designating them "Heroes of Russia".

"Today we won't back away from the Arctic, and we will be hard to stop," said Chilingarov, who in turn presented Putin with a copy of the flag the expedition members planted on the seabed.

Global warming is melting the Arctic ice cap and governments now believe that it is only a matter of

time before they will be able to start exploiting previously inaccessible energy supplies locked inside the seabed whose ownership is disputed. Russia is aiming to prove the Lomonosov Ridge, named after 18th century Russian writer and scientist Mikhail Lomonosov, runs for hundreds of kilometres along the seabed from Siberia, stretching beneath the North Pole. If Russia can prove the link, the Kremlin plans to claim the northern continental shelf and its resources as Russian. ■





## Chile announces permanent whale protection law

The Chilean Environment Minister Ana Lya Uriarte has announced a permanent whale protection law. "We are going to dictate a law to protect whales in Chile," said Uriarte after meeting with Greenpeace international environment group representatives. The law seeks to protect whales permanently, since the current law will only be in force until 2025 and does not protect the whales ecosystem. Uriarte praised Greenpeace for its stand on Japan's announcement of hunting whales and has backed its proposal for a worldwide whale hunting ban. Many protests have taken place in Chile since November after Japan resumed whale hunting. ■ SOURCE: CHINAVIEW.CN

## Found and (soon) lost

Only three years after being discovered off the coast of Australia, environmentalists fear the rare snubfin dolphin could be facing extinction. Discovered in 2005 near Townsville, the snubfin was found to be distinct from its Asian cousins following genetic testing, and subsequently declared Australia's only native dolphin. It has a slow reproductive rate and spends years raising its young. ■

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## US judge reinstates sonar curbs

Judge Florence-Marie Cooper ruled that there was no reason to exempt the US Navy from a court injunction barring the use of powerful submarine-detecting sonar in a 12-mile zone off southern California. The exemption was granted by President George W Bush who cited national security when he ordered the Navy's submarine detection exercises to go on. While conservationists hailed the judge's ruling, the judge also expressed "significant concerns" about the constitutionality of President Bush's exemption. Natural Resources Defense Council (NRCD) attorney Joel Reynolds says, "It reinstates the proper balance between national security and environmental protection." ■ SOURCE: BBC NEWS



## Japanese city resumes Dolphin hunt

The city of Nago in the Japanese prefecture of Okinawa, recently turned the clock back 20 years by commencing dolphin hunting again. Nago hunted dolphins 20 years ago but stopped after receiving

bad publicity over the practice—much as Taiji does today. However, a small percentage of fishermen still retain licenses to kill dolphins (six boats in total), and when around 100 dolphins appeared off Nago

Bay, the six boats set out to sea and drove the dolphins into the bay, where they were slaughtered. The fishermen's annual kill quota allowed by Okinawa prefecture are nine Bottlenose dolphins, 92 Short-finned

pilot whales and 20 False killer whales. This is a sad reflection on Japan's attitude towards the continued and rising international condemnation of drive hunts in the country. ■

SOURCE: MARINE CONNECTION

## Japanese Villagers Eat Mercury-Laden Dolphin Meat

Fishermen hunt dolphins about every day in Taiji, in southwestern Japan. Locals know they offend Western sensibilities by eating dolphins, but they say it's a tradition hundreds of years old. Findings suggest that eat-

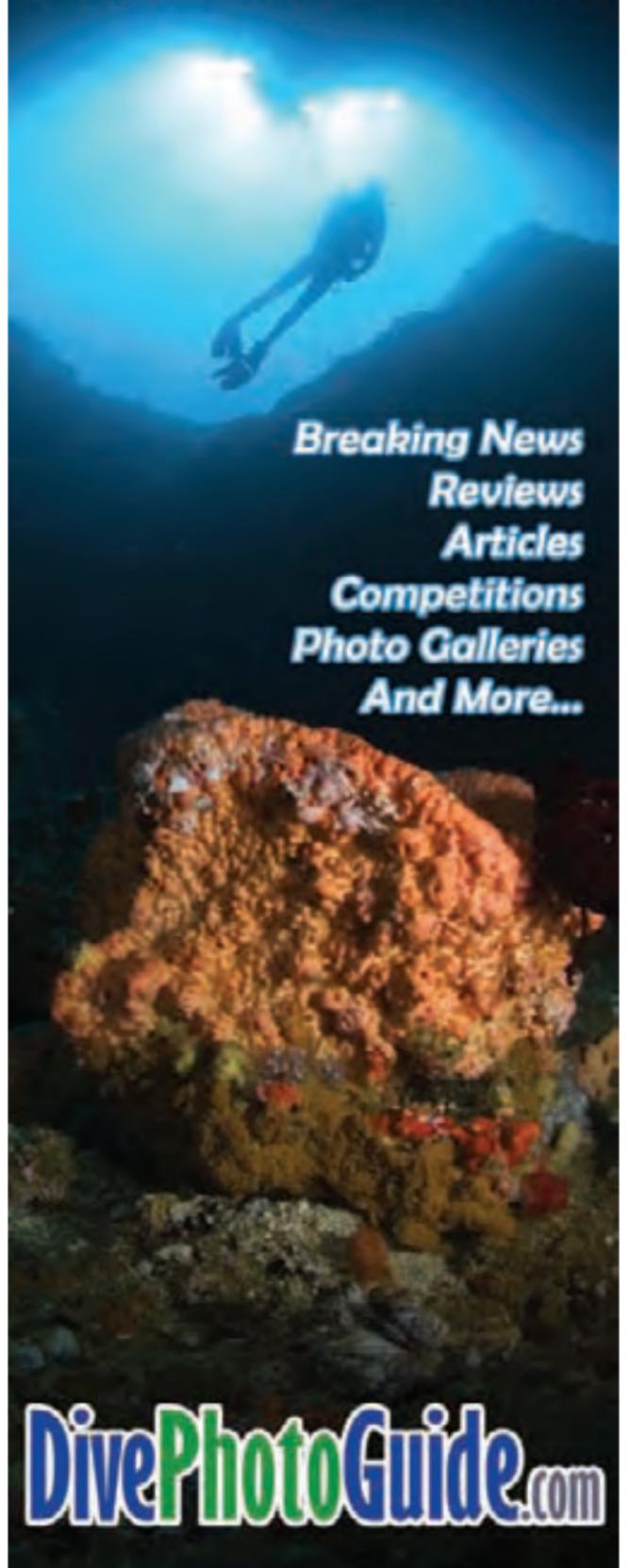
ing dolphins may not be good for one's health. The Japanese government said in 2005 that bottlenose dolphin meat contains 12 times more mercury than blue fin tuna—high levels of mercury in fish can cause health

problems in pregnant women and young children. A city councilman in Taiji, Junichiro Yamashita, grew so concerned about the mercury levels that he persuaded locals schools to stop serving dolphin meat at lunch. He even

plucked some of his hair, sent it off for testing, and discovered that it contained seven times as much mercury as the U.S. Environmental Protection Agency considers safe. ■

SOURCE: CNN.COM

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