monaco ocean week

8 to 14 April 2018

monaco ocean week

"Sharing experience, debating and calling for commitment and action were the main objectives of the second Monaco Ocean Week"

H.S.H. Prince Albert II of Monaco


2e ÉDITION
- MONACOOCEANWEEK.ORG -
LES OCÉANS SONT PRÉCIEUX,

PREFACE

Monaco and the Ocean have shared a common history for many years. This has especially been the case since the end of the 19th century, when my great-great-grandfather, Prince Albert I - a passionate explorer and keen scientist - led various marine explorations, establishing himself as one of the founders of modern oceanography.

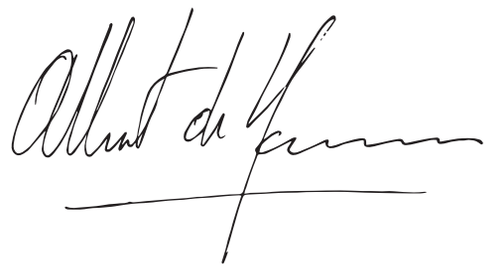
The Principality's commitment to the oceans continued throughout the 20th century, including the signing of the RAMOGE Agreement in 1976 by France, Monaco and Italy in order to protect Mediterranean coastal waters, then in 1982, with the United Nations Convention on the Law of the Sea.

Since the creation of my Foundation in 2006, Monaco has made significant commitments. This has included a ban on Mediterranean bluefin tuna, a species which was at risk of extinction in 2008, and the ocean acidification declaration, supported by 150 scientists in 26 countries. In 2010, the Foundation also created the Monaco Blue Initiative (MBI), a forum for discussion and reflection on ocean conservation. We have also created an environmental fund dedicated to Mediterranean Marine Protected Areas, and supported the BeMed initiative to combat plastic pollution. During COP21 in Paris, we supported the "Because the Ocean" declaration, underlining the essential role of the Ocean in climate regulation. This declaration has now been signed by 33 countries.

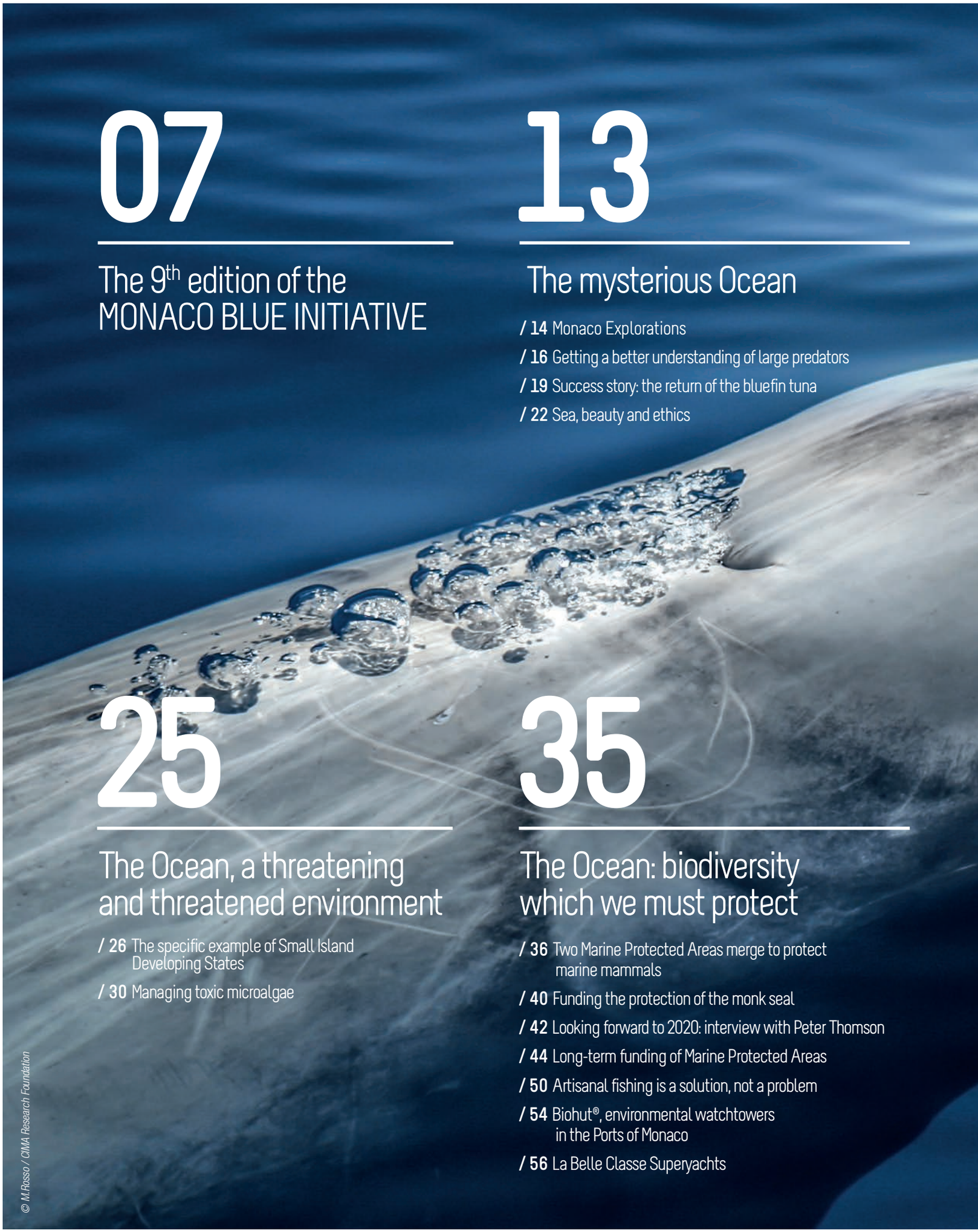
The idea of a week of workshops, debates and actions dedicated to the Ocean was a response to a clear requirement: key actors from the ocean sector must share their analysis on major ocean conservation issues and work together to protect the Ocean.

From 8 to 14 April 2018, local and international experts, the scientific community, NGOs and public authorities met during the second edition of the Monaco Ocean Week. During this week of work, Monaco announced its co-chairing of the ICRI (International Coral Reef Initiative) with Australia and Indonesia from July 2018.

There are many threats to our ecosystems. These threats create salutary awareness. Sharing experience, debating and calling for commitment and action were the main objectives of the Monaco Ocean Week, this year more than ever.



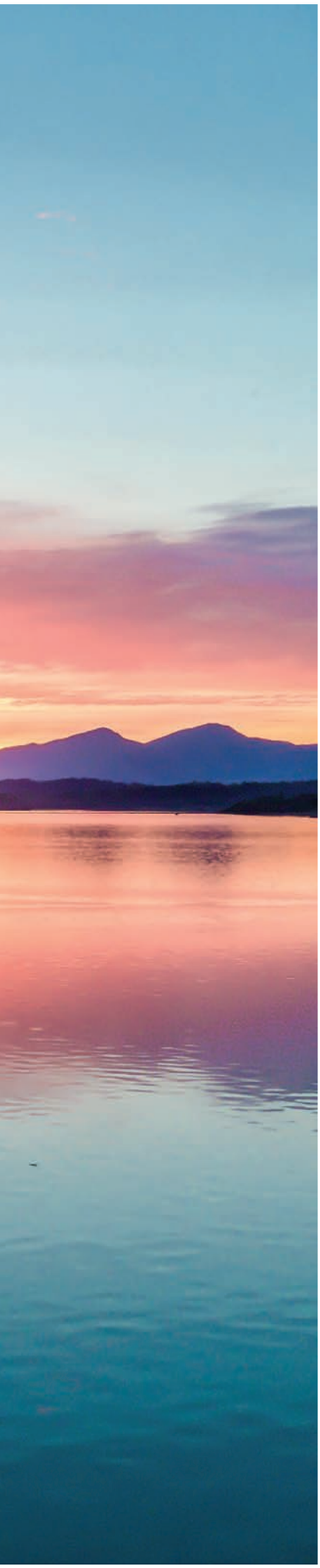
H.S.H. Prince Albert II of Monaco



Summary

59

The future is blue



07

THE 9th EDITION OF THE MONACO BLUE INITIATIVE

The participants of the Monaco Blue Initiative 2018
© Douglas Robertson

DEVELOPING SYNERGIES

Linking human activity and Ocean preservation

The 9th edition of the Monaco Blue Initiative was held on 8 and 9 April 2018 in Edinburgh (Scotland), in partnership with the University of Edinburgh and under the patronage of H.S.H. Prince Albert II of Monaco and H.R.H. Princess Anne, who is also the Chancellor of the University.

Over 100 participants from the world of politics, international organisations and NGOs, alongside representatives of the scientific and private sectors, exchanged views and experience on three themes: Blue growth, marine protected areas (MPA) and climate change, and, finally, MPA and aquaculture. Choosing Scotland as host country meant that the North Sea and Arctic Ocean regions could be studied in more detail, with the specific challenges they pose when it comes to dealing with climate change. H.S.H. Prince Albert II of Monaco and H.R.H. Princess Anne, respectively, gave the day's opening and closing speeches. Other leading speakers included Mr. Peter Thomson, UN Special Envoy for the Oceans, and the Honourable Dominic LeBlanc, Canadian Minister of Fisheries, Oceans and the Canadian Coast Guard.

Launched in 2010 by H.S.H. Prince Albert II of Monaco, the MBI is a discussion forum jointly organised by the Oceanographic Institute, Prince Albert I of Monaco Foundation and the Prince Albert II of Monaco Foundation.
This annual event offers a dynamic environment to encourage exchanges between companies, scientists and decision-makers, and to analyse and promote possible synergies between marine protection and socio-economic development.

BLUE GROWTH

The theme of the first session was blue growth in the Northern seas, in reference to the development of emerging maritime activities such as aquaculture, fishing, biotechnologies, seabed mining, oil and gas, renewable marine energies and tourism, and the growing economies they represent. The ocean sector is experiencing faster growth than the general economy, making oceans the seventh largest world economy. Looking at the difficulties inherent in responsible management of blue growth in the North Sea and Arctic Ocean, as well as means to achieve it, the speakers largely agreed that conservation could go hand in hand with economic development, whilst sometimes disagreeing on where and how.

Some spoke against the rush towards new forms of ocean exploitation whilst the sea is undergoing a major ecological crisis. The Arctic requires specific precautions, as its ecosystem is critically important to the planet's chemical, physical and biological processes. Climate change is already affecting these processes. Opening the region to mining industries would accelerate the production of greenhouse gases and exacerbate climate change. The native populations in the region require special consideration, as their culture, way of life and means of survival rely on the health and biodiversity of the Arctic ecosystem.

The importance of restoring habitats during or before developing new activities was underlined, as it helps restore these means of survival and biodiversity, whilst increasing carbon storage capacity.

Speakers acknowledged that increased transparency, international cooperation, research, investment and greater accountability were critical for blue growth. The main yardsticks identified to do this are planning the marine space and ecosystem management, supported by comprehensive scientific knowledge and an in-depth assessment of environmental repercussions.

Conservation objectives can also develop thanks to a more entrepreneurial approach, guaranteeing a more rigorous implementation of measures and an improved return.

One example of activities involved in blue growth is the production of marine microalgae using a thermal power plant's CO_2. Buggypower plant, Porto Santo, Madeira, Portugal. © Pierre Gilles

MARINE PROTECTED AREAS AND CLIMATE CHANGE

By reducing human factors on ecosystems, MPAs could improve their chances of survival with regards to the consequences of climate change.

Well managed Marine Protected Areas (MPAs) can play a key role as watchdogs to isolate, track and understand the specific effects of climate change. Their potential role as carbon sinks should lead us to identify and create future MPAs specifically for this role, and not just biodiversity. We therefore need to design MPAs as shelters but also as examples of biodiversity facing the effects of climate change. Islands require special attention as they combine vulnerability, opportunity and precious traditional knowledge. Small, locally managed marine areas must be better integrated, and if possible interconnected within larger geographic networks to allow MPAs to be both ecologically resilient and socially relevant.

Moreover, the ambition to create larger sites and encourage improved collaboration between them is vital to cover the required surface areas with different species, particularly migratory species. Anticipation is also important, using new technologies to model different scenarios in the near future and protecting regions which have not yet been listed.

In light of current threats, including threats in zones which have already been specifically designated, improved and quicker action is still required, particularly at high sea to allow marine protected areas to deliver their potential and make oceans and local residents more resilient to climate change.

Salmon farming in Northern Scotland. © Loch Duart

MARINE PROTECTED AREAS AND AQUACULTURE

Aquaculture is one of the fastest growing marine activities, so an integrated approach is needed to define sustainable aquaculture and how it could work effectively with MPAs.

Fish farming and specifically salmon farming is currently problematic. Whether in Scotland, Norway or Chile, it seems to have affected wild salmon stocks by encouraging the proliferation of sea lice, genetic contamination and the introduction of antibiotics. In Chile in particular, it has destroyed precious fjords to the point where aquaculture is no longer possible.

There has been a certain consensus regarding the potential to further integrate algae cultivation and invertebrate farming within MPAs, in relation to marine fish farming, although they require a much larger marine area to produce the same level of food. Marine protected areas managed locally in tropical coastal regions have demonstrated positive examples of synergies between invertebrate aquaculture and MPAs in a local co-management context. Non-fed species such as sea cucumbers, algae and sponges, cultivated in protected waters, provide alternative methods of subsistence, thus advancing conservation objectives. A responsible business approach and investment is needed to develop these models on a larger scale.

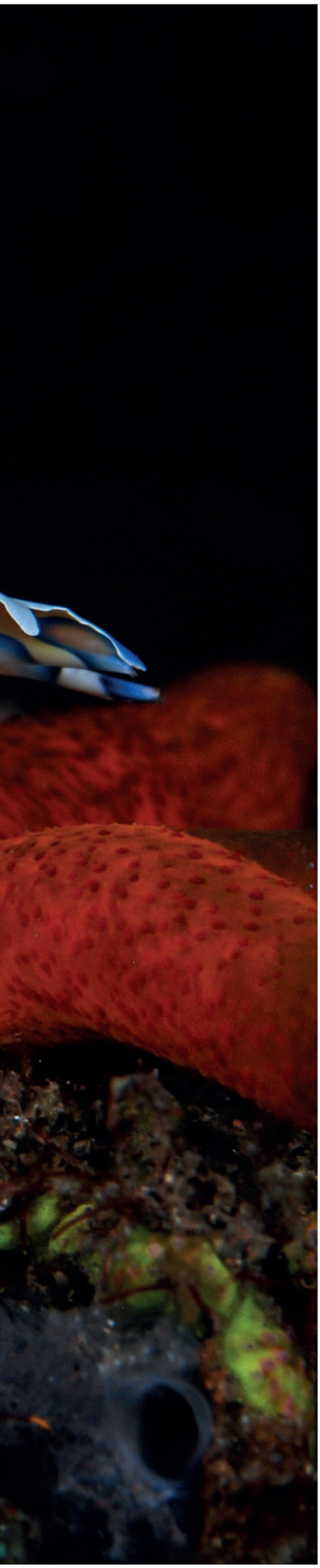
Before cultivating oceans intensively, it would be irresponsible not to learn from unsustainable land farming. Circular economy models such as Integrated Multi-Trophic Aquaculture (IMTA), where the “waste” from one cultivated species is used to feed another, are some of the most effective and sustainable feeding systems and amongst the most promising for MPA development. ■

The MBI would like to wholeheartedly thank H.R.H. Princess Anne, chancellor of the University of Edinburgh, and the entire University team: Prof. Peter Mathieson, Prof. Sandy Tudhope, Dr. Meriwether Wilson, Ms. Sanne Diskstra-Downie, Ms. Cassie Mesouani, Ms. Adele Willoughby, and Mr. Corin Campbell.

Save the date

The 10th MBI will take place in Monaco on 24 and 25 March 2019.

www.monacoblueinitiative.org



13

THE MYSTERIOUS OCEAN

MONACO EXPLORATIONS

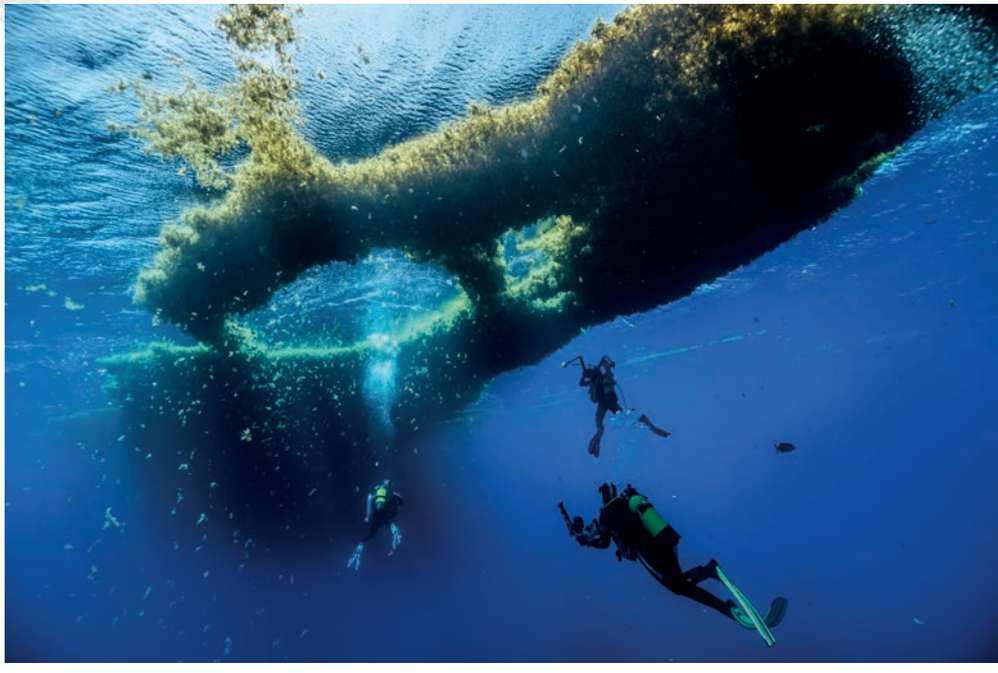
A promising first year

In 2017, H.S.H. Prince Albert II of Monaco announced the launch of the Monaco Explorations (EDM). Monaco Ocean Week 2018 was a chance to set out the initial framework of this programme through to 2020.

On 4 April 2017, H.S.H. Prince Albert II of Monaco unveiled plans for a new worldwide ocean exploration campaign to follow in the footsteps of his great-great-grandfather Albert I, the father of modern oceanography, whose work in the late 19th century was continued by Commander Cousteau.

This new research programme allows scientists across the world to set sail on versatile vessels to carry out observation work and collect samples from isolated sites - sites which are very difficult to access but contain highly significant and fragile biodiversity. Staggered over three years, the Monaco Explorations have, between late August and late October 2017, completed 74 mission days hosting or supporting nearly fifty scientists.

The islands of Madeira, Cabo Verde (which Albert I of Monaco visited over one hundred years ago) and Martinique were the first destinations.



From 4 to 24 October 2017 the Sargassum Transatlantic mission aimed to study the ecological role and functions of the "rafts" of Sargassum, these brown algae which proliferate since 2011 in the tropical Atlantic, causing mass strandings.
© Explorations de Monaco/Olivier Borde.

"To preserve the environment, we must reconcile humanity with the sea" H.S.H. Prince Albert II of Monaco

Whilst saving the monk seal was the focal point in Madeira (identifying its habitat for protection), in Cabo Verde the EDM activity was focused on supporting the sea turtle protection programme. The African archipelago is home to five species, which are all under threat. The key activities included protecting spawning sites and marking and tagging adults to monitor and protect them. This was also the case for large predators. Sharks are particularly common here, therefore various specimens were tagged to better understand their movements and ensure that their living space is used sustainably. Finally, a team from the University of Porto and the Paris Natural History Museum spent several days on the uninhabited volcanic island of Branco, where Albert I reported seeing the giant skink, a large lizard which is now believed to be extinct. Researchers followed in his footsteps. They took various samples and installed cameras at potential habitat sites as it is generally carried out for other, often native species, to create appropriate conditions for their protection. The results are still being analysed. The scientific projects carried out during this trip to Cabo Verde *"encouraged us to strengthen our culture and management of our environment to protect our rich biodiversity"* stated Mr Jorge Carlos de Almeida Fonseca, President of the Republic of Cabo Verde when he attended MOW. Several months before, the Sovereign Prince had given him a skink specimen collected over one hundred years ago.

When crossing the Atlantic ocean between Cabo Verde and Martinique in October, the EDM used satellite images to look for Sargassum, in a world first. These algae rafts which grow on the surface of the sea are incredible ocean biotopes but can cause health-related disasters (toxic releases of sulphurated hydrogen, pollution etc.) and economic disasters when they wash onto shores, as was the case in 2011 in Martinique and Guadeloupe.

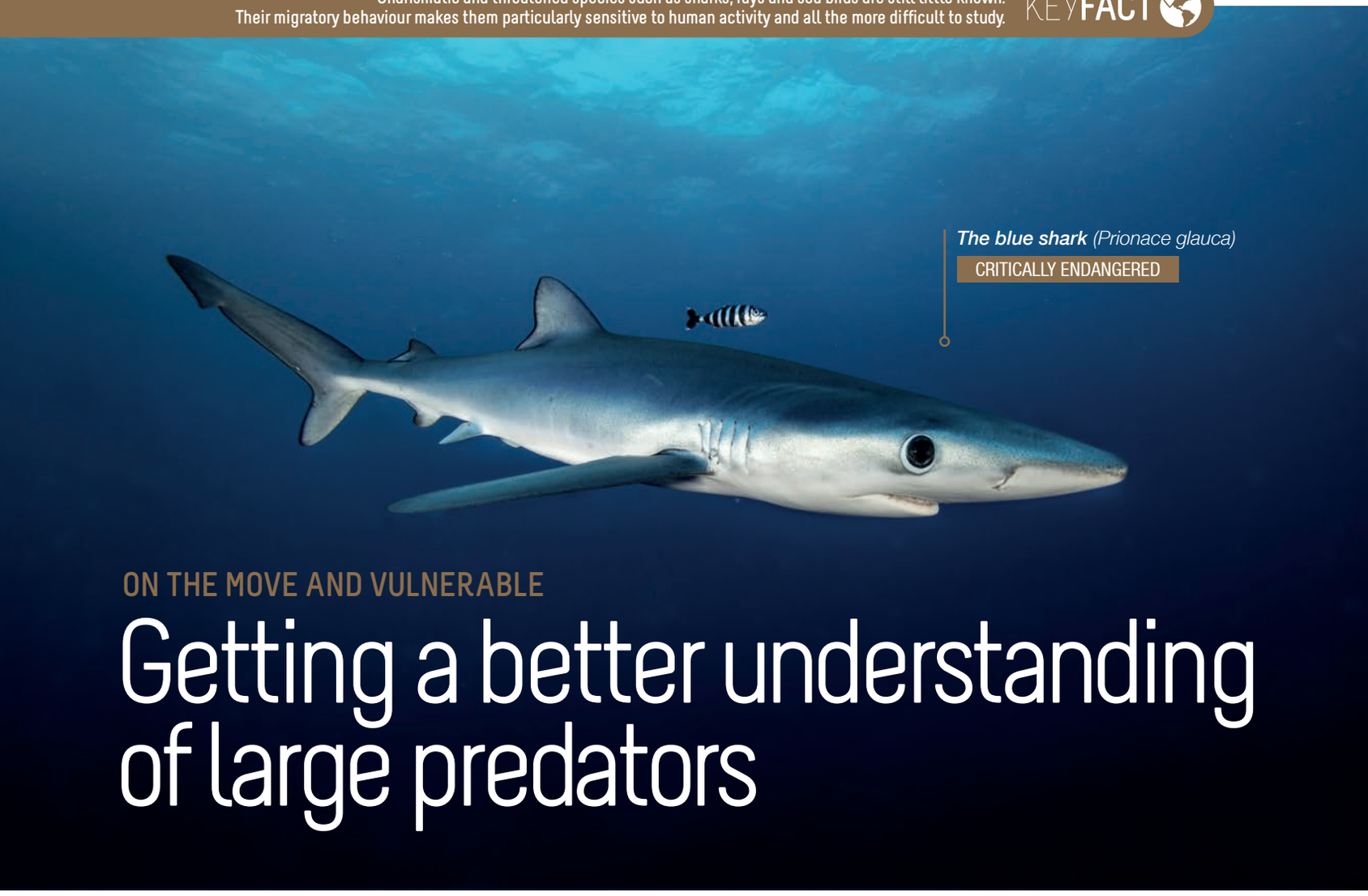
H.S.H. Prince Albert II of Monaco welcomed the President of the Republic of Cabo Verde, Mr Jorge Carlos Fonseca, and his delegation to present the work of the Monaco Explorations in his country. This event took place in the presence of partners on 11 April 2018 at the Oceanographic Museum.

We therefore urgently need to understand how these ecosystems work. They are a complex habitat, extremely rich in various species, some of which are endemic, but they create significant problems when reaching the coasts.

Various samples were collected and are being analysed in Luminy at the Mediterranean Oceanology Institute (MOI) linked to the University of Aix-Marseille. The objective is to understand the reasons for this unprecedented proliferation over the past 7 years. Human influence is suspected as a result of intensive farming practices, discharging fertilizer into rivers which then flow into the Atlantic. We should have an answer in 2 years.

Until then, the Monaco Explorations will continue their journey. The teams are currently in the Pacific and have already completed two missions in Malpelo and Hawaii. ■

Charismatic and threatened species such as sharks, rays and sea birds are still little known. Their migratory behaviour makes them particularly sensitive to human activity and all the more difficult to study. KEYFACT



The blue shark *(Prionace glauca)*
CRITICALLY ENDANGERED

ON THE MOVE AND VULNERABLE

Getting a better understanding of large predators

Large predators play a key role in the way the marine ecosystem works. Some species travel long distances throughout their lives. They are particularly vulnerable in the Mediterranean basin, so the Mediterranean Science Commission (CIESM) works to better understand them to protect them efficiently.

The workshop held by the Mediterranean Science Commission (CIESM) and its guest experts during the Monaco Ocean Week 2018 had three goals: to refine knowledge of shark populations and extend this field of research to large marine predators in the Black Sea, the Atlantic seaboard between Portugal and Morocco, and particularly sea birds.

The CIESM, historically headquartered in Monaco, recently launched a task force on sharks in the Mediterranean. This task force brings together researchers from several countries aiming to record species found in the Mediterranean waters and to study their dynamics.

By comparing different studies in Turkey, Croatia, Italy and the Portugal Atlantic seaboard, it became clear that half of different shark species in the Mediterranean - nearly 80 - are threatened, and over a third are in danger.

The causes are generally the same everywhere: overfishing, illegal fishing and the accidents it causes, pollution, destruction of natural fish habitats, etc.

This is why it is important to better understand these large predators to be able to protect them.

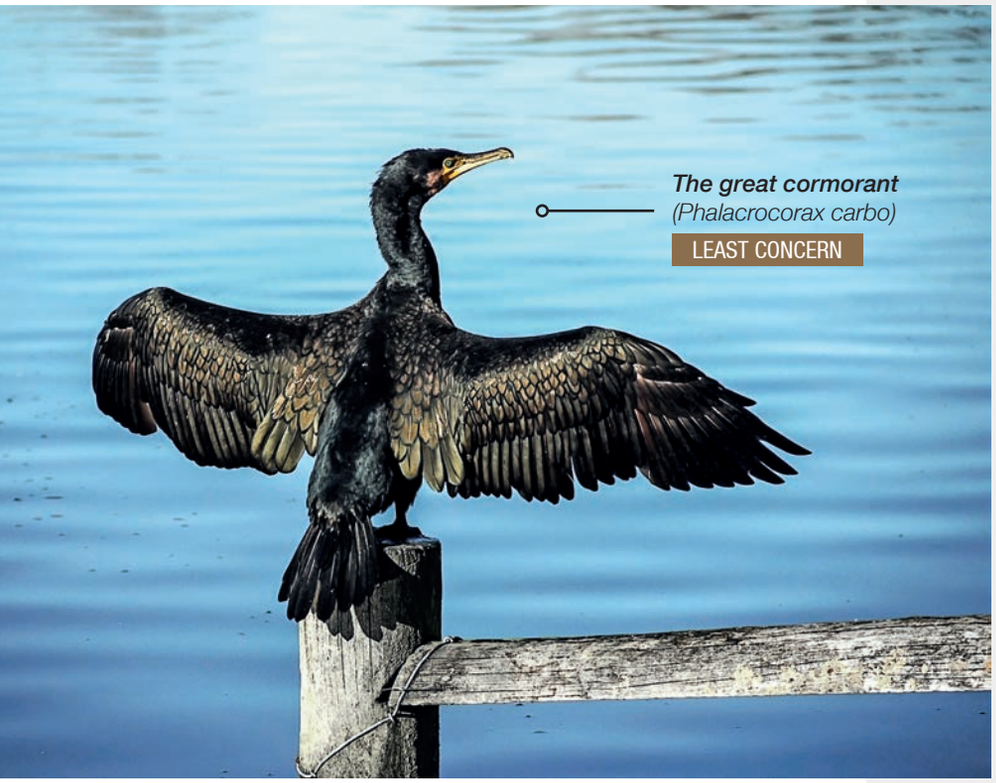
Researchers agreed that new information is required as current data is believed to be out-of-date: especially information about species movement and migration, reproduction and feeding of sharks. The studies carried out in different countries allowed to highlight the use of more careful techniques to implement the tracking and gathering of the necessary data: prioritising fish DNA. To do this, new technologies (tags, drones, underwater cameras...) were combined with fishers' empirical knowledge.

The impact of climate change and the consequences should also be noted, i.e. the variation in sea levels, changes in temperature, coastal erosion and pollution, as they have a significant effect on the survival of species in the Mediterranean.

All information obtained and modelled should help draw up a better overview of knowledge on surface and deep water and identify sensitive zones and species to be protected as a priority. Currently, fewer than a dozen shark species are protected.

"We must have a better understanding of environmental issues in the Mediterranean to responsibly guide political and social decisions.
We must implement additional measures to make progress in regions which we have not yet explored"
Frédéric Briand, managing director of the CIESM

The shortfin mako shark *(Isurus oxyrinchus)*
CRITICALLY ENDANGERED



The CIESM has just decided to extend its field of research to sea birds for the first time. This is an alternative method to measure the impact of the sea on biodiversity (without just studying its intrinsic biodiversity).
These birds are mostly migratory species and we are unsure of the numbers, routes or the characteristics of their migration, i.e. their habitats, the threats they encounter and different elements which affect their journeys.
The focus has been placed on a priority: having a better understanding of key factors which regulate bird colonies, notably their reproduction and nesting.

The initial research revealed the importance of measuring the impact of falling fish stocks on the survival of these birds, and the consequences of climate change on their migration and nesting. Several hypotheses have been put forward, such as the implementation of platforms as an alternative solution to habitat degradation or protected feeding zones.

New technologies (radar, GPS, etc.) are carefully used to collect data which also reflects the health of the oceans traversed by these birds. Like fish, they are highly affected by pollution, overfishing and bycatch, and even more so by microplastics. Over 300,000 birds might be affected each year.

These debates have also underlined the need for regional collaboration and shared methodologies to be able to compare data from the different countries or zones in question. Depending on these results, new species will be defined to be studied and protected. ■

SUCCESS STORY

The return of the bluefin tuna

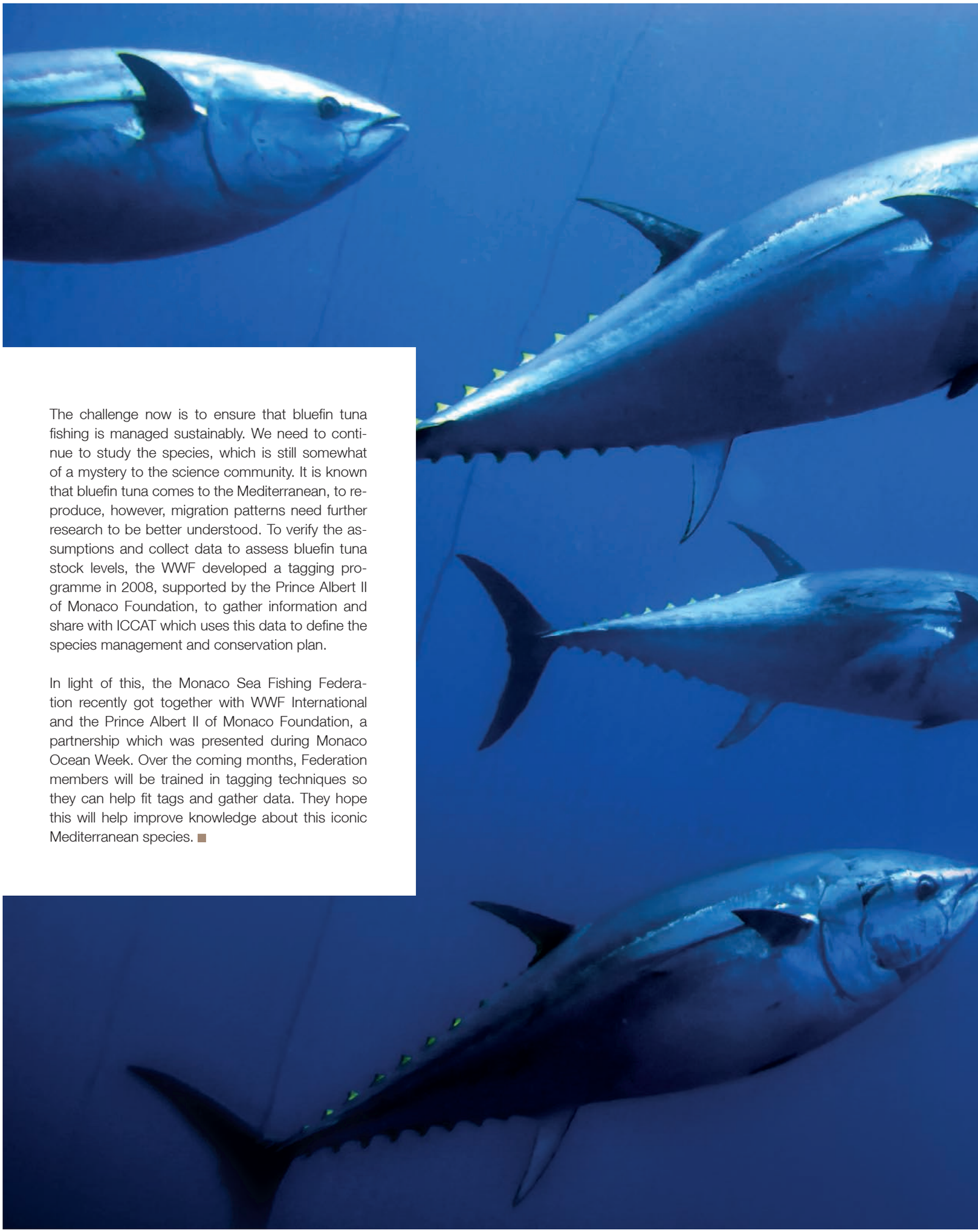
A presentation of the project led by the Monaco Sea Fishing Federation and WWF, which aims to track the movements of bluefin tuna in the Mediterranean, was held on Saturday 14 April at the Stars'N'Bars.

A famous victim of overfishing, Mediterranean bluefin tuna *(Thunnus thynnus)* has taken centre stage at the international level over the past ten years.

Monaco was the first "bluefin tuna-free state" following a moratorium in 2008. At the time, bluefin tuna stock was particularly low and the species was close to ecological extinction. In the same year, the Prince Albert II of Monaco Foundation established a strategic partnership (which is still in place) with WWF International, allowing discussions about saving the species at the highest political levels. Monegasque government departments, supported by the Prince Albert II of Monaco Foundation, launched a bluefin tuna registration procedure in Appendix I of CITES in July 2009. Whilst the political outcome in March 2010 did not quite match expectations, effective communication helped raise consumer awareness, put pressure on bluefin tuna stock regulation bodies (mainly ICCAT, *the International Commission for the Conservation of Atlantic Tunas*) and reduce fishing quotas as part of a recovery plan.

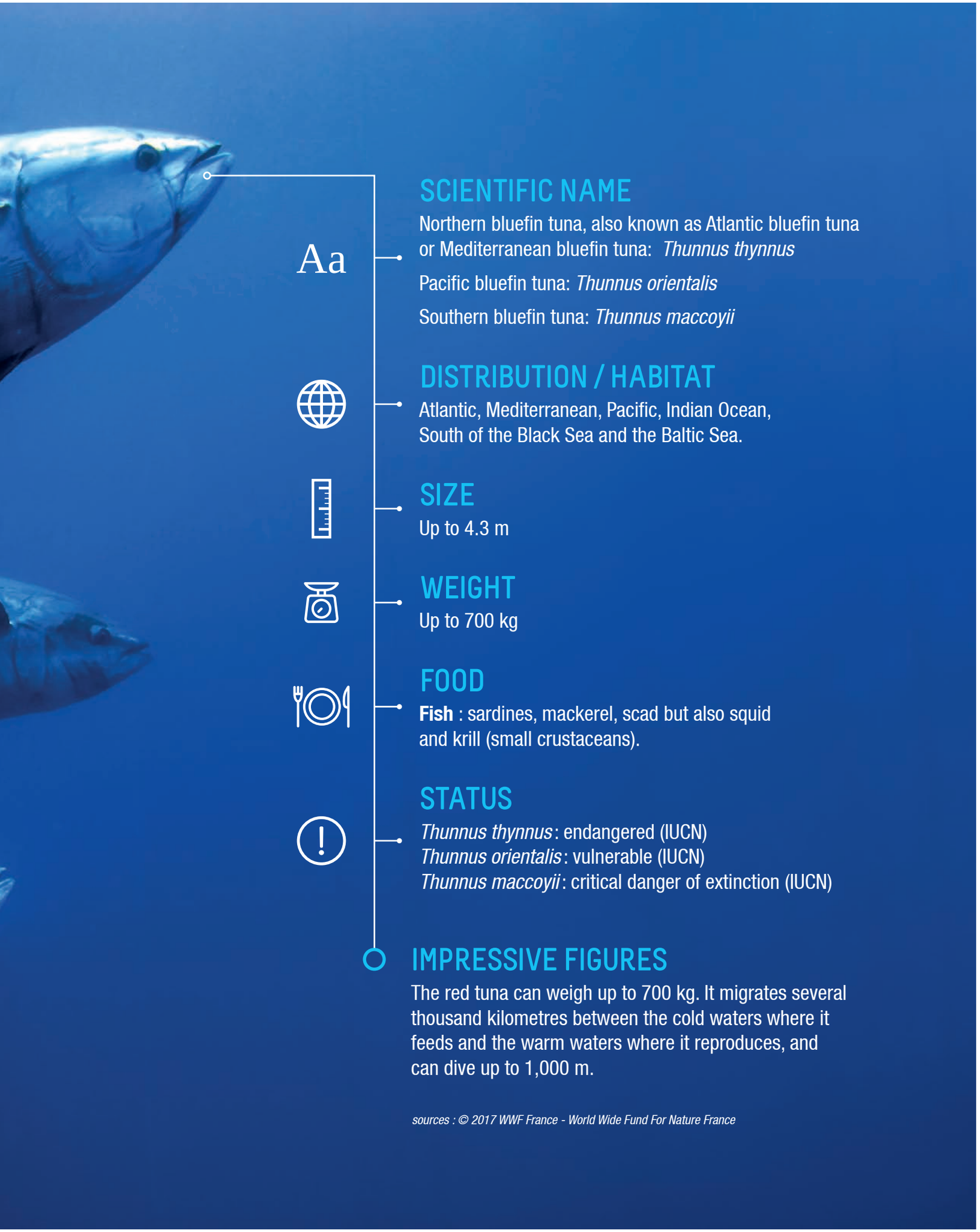
The effort made by leading figures paid off, as the ICCAT *Permanent Committee for Research and Statistics* noted, in its 2017 assessment, that bluefin tuna stock in the East Atlantic and Mediterranean is no longer being overfished.

The Prince Albert II of Monaco Foundation applauds this result, which recognises the commitment made by the Principality, NGOs and actors of the fishing sector to protect bluefin tuna. It also demonstrates how States can take measures to recover the stocks of a threatened species.



The challenge now is to ensure that bluefin tuna fishing is managed sustainably. We need to continue to study the species, which is still somewhat of a mystery to the science community. It is known that bluefin tuna comes to the Mediterranean, to reproduce, however, migration patterns need further research to be better understood. To verify the assumptions and collect data to assess bluefin tuna stock levels, the WWF developed a tagging programme in 2008, supported by the Prince Albert II of Monaco Foundation, to gather information and share with ICCAT which uses this data to define the species management and conservation plan.

In light of this, the Monaco Sea Fishing Federation recently got together with WWF International and the Prince Albert II of Monaco Foundation, a partnership which was presented during Monaco Ocean Week. Over the coming months, Federation members will be trained in tagging techniques so they can help fit tags and gather data. They hope this will help improve knowledge about this iconic Mediterranean species. ■



SCIENTIFIC NAME

Northern bluefin tuna, also known as Atlantic bluefin tuna or Mediterranean bluefin tuna: *Thunnus thynnus*

Pacific bluefin tuna: *Thunnus orientalis*

Southern bluefin tuna: *Thunnus maccoyii*

DISTRIBUTION / HABITAT

Atlantic, Mediterranean, Pacific, Indian Ocean, South of the Black Sea and the Baltic Sea.

SIZE

Up to 4.3 m

WEIGHT

Up to 700 kg

FOOD

Fish : sardines, mackerel, scad but also squid and krill (small crustaceans).

STATUS

Thunnus thynnus: endangered (IUCN)
Thunnus orientalis: vulnerable (IUCN)
Thunnus maccoyii: critical danger of extinction (IUCN)

IMPRESSIVE FIGURES

The red tuna can weigh up to 700 kg. It migrates several thousand kilometres between the cold waters where it feeds and the warm waters where it reproduces, and can dive up to 1,000 m.

SEA, BEAUTY AND ETHICS

Marine biodiversity in the service of humans

The Ocean and marine organisms offer an infinite range of applications in crucial fields such as health, food and human longevity. However, this growing use must be sustainable and equitable. A theme discussed at Monaco Ocean Week.

UNDERSTANDING MARINE BIODIVERSITY

The potential of the Ocean must be understood to be able to develop these applications. For this purpose, Professor Denis Allemand, director of the Scientific Centre of Monaco, underlined that biodiversity is understood as a range of genes, species and ecosystems and their interactions.

However this marine diversity is not well-known and we estimate that more than 80% of species have yet to be discovered.

98% of marine organisms live attached to a substrate and 30% of them are found in coral reefs. As a fixed organism cannot flee when it is in danger, it develops toxicity to defend itself against predators. This chemical diversity is, according to Denis Allemand, an El Dorado which could be further explored. It could lead to various applications in pharmacology, notably cancer-fighting, analgesic or antibacterial molecules.

Another field of research is being examined: plankton, which have varieties that are still far from being discovered. The *Kahi Kai association*, which includes biologists, oceanographers and scientists from across the world, is currently developing a large database by photographing these marine organisms. 100,000 images have already been uploaded, recording a thousand species, some of which are threatened or in danger of extinction.

BIODIVERSITY WITH UNLIMITED PERSPECTIVES

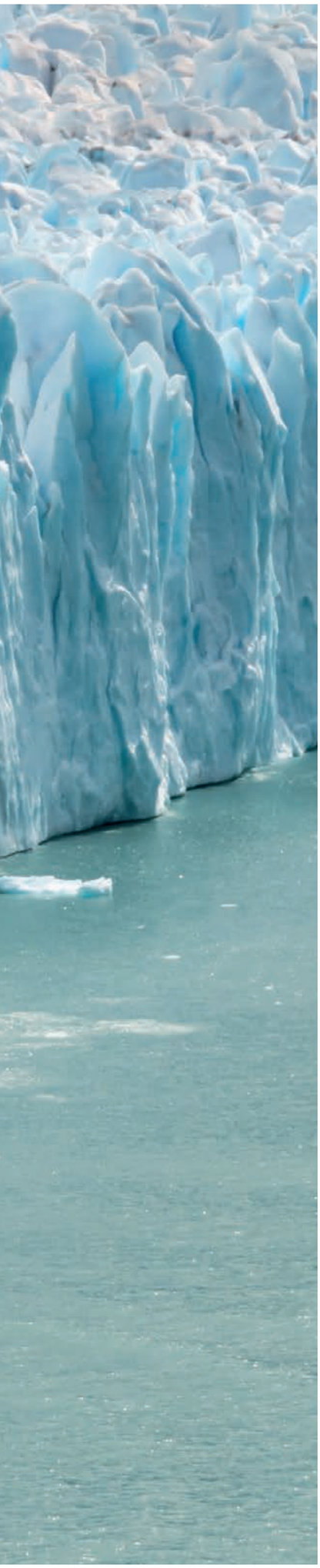
In-depth observations of urchins, cuttlefish and jellyfish have helped us to discover molecules which have an effect on cell renewal, nerves or capturing cancerous cells. As advised by Éric Röttinger, from the Nice Institute for Research on Cancer and Ageing, *"researchers need to spend more time at the aquarium. In our laboratory, we observe corals and jellyfish, which are excellent examples of longevity, living for 4,000 years. If we understand how they work, we could understand how to fight ageing. Through our experience with sea anemones, we discovered that regeneration is similar to embryogenesis in some genes only"*. Rachid Benchaouir and his marine biology startup Coraliotech has highlighted the anti-UV properties of certain coral proteins, which could be used in cosmetology or pharmacology. He develops them using artificially cultivated corals. ■

Michèle Barbier
Founder of the Institute for Science & Ethics

ETHICAL USE OF SEABEDS

As noted by Michèle Barbier, Founder of the Institute for Science & Ethics, *"marine biodiversity can be used in various fields: we can produce dyes, wellness products, human or animal food, biomaterials, cosmetics, cancer-fighting, healing or medical emergency medications (such as universal blood for short-term blood transfusions) etc. Marine resources have the potential to provide a sustainable source of considerable diversity and commercial opportunities for local economies".*

This is an emerging market held 70% by the USA, Germany and Japan. A fairer and more balanced distribution of the benefits from using these resources is required, as underlined by the Nagoya protocol and the CIESM 9-point protocol, which promotes fair and sustainable use of marine resources.



25

THE OCEAN, A THREATENING AND THREATENED ENVIRONMENT

CLIMATE CHANGE

The specific example of Small Island Developing States

Small Island Developing States (SIDS) are particularly exposed to climate change and were the topic of a dedicated conference on April 10th, 2018. Its purpose: to take stock and consider avenues for action after COP23.

Palau is a classic SIDS, with small and sparsely populated islands, at the front line of climate change.

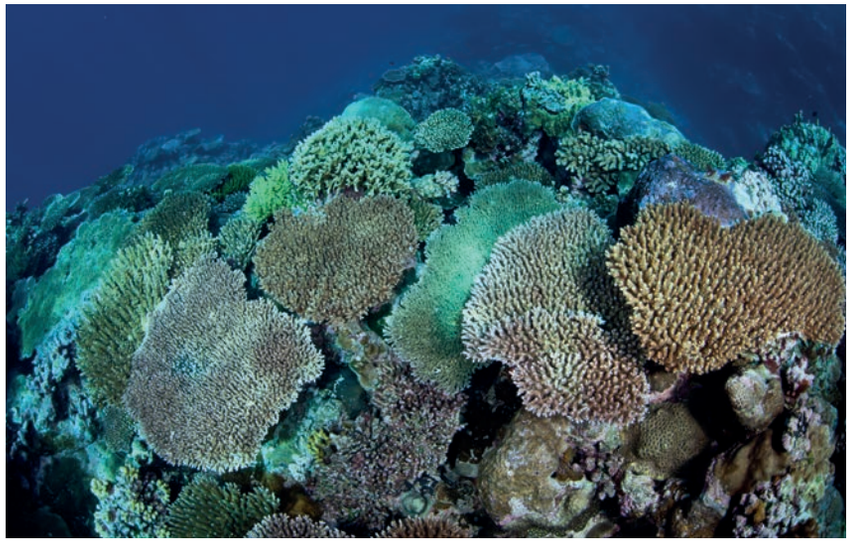
Economists and legal experts met to debate and consider the specific case of Small Island Developing States (SIDS). All aspects were considered: economic, political, legal... and diverse experiences from various geographic regions were shared.

All the speakers aimed to review actions which have been taken, planned or which could be planned to limit the damage of global warming, both in terms of high sea and coastal fishing, and food-producing cultures and destruction of transport or water distribution or electricity equipment. Negotiations regarding the Paris Agreement in December 2015, which rounded off COP21, allowed 37 SIDS to become aware of their particular exposure to the risks caused by climate change, and to ask for active policies as a result. Nicolas Imbert, from the NGO Green Cross, introduced the debate by underlining various challenges for SIDS from policies decided during COP23, the latest phase of climate negotiations supported by the UN.

Albert Maruani, professor emeritus at Nice University, insisted on the various regulatory methods offered by economic sciences to support actions to protect the environment, underlining the limits of systems which solely rely on price effects. Sandra Cassotta, from Aarhus University in Denmark, then spoke about the legal implications of climate change on SIDS. The legal framework is developing quickly but some basic principles, such as identifying responsibilities at the source of devastating climate change, are difficult if not impossible to establish. We therefore need to innovate in legal matters to define methods to offset the damage caused.

The following presentations looked at specific geographic zones. Nathalie Hilmi, from the Scientific Centre of Monaco, largely illustrated the effect of Pacific coral reef degradation, where the impacts on fishing, coastal erosion and rising water levels are already very clear, threatening human survival on numerous islands.

For Angélique Brathwaite from the University of Barbados, the theme of her speech was the changes and regulation of fishing in the Caribbean. Faced with the threat of depleted marine resources, various self-regulation agreements have been signed, and their implementation must be monitored. In reference to regulating fishing activities, Nicolas Pascal, from the NGO Blue Finance, shone a light on the potential of marine protected areas, particularly those created through public-private partnerships.



(Above) Healthy coral reefs act as a natural barrier and protect the coast and the local populations from weather phenomena (Below) Some communities are particularly vulnerable to the effects of climate change.

Philippe Jean-Pierre, from the University of La Réunion, presented the expected benefits of a political scheme implemented on La Réunion to take advantage of synergies and innovation dynamics.

Finally, Erwan Lannon, from Ghent University, looked at legal matters to assess how European Community actions could support United Nations actions.

Sania El Kadi, UNESCO representative of the Palau delegation, a country which led the SIDS group until last year, welcomed the high-quality debates and the interesting proposed actions. Pascal Petit from Paris Nord University was the panel's moderator. He concluded by underlining the relevance of handling these questions of fighting against environmental degradation from multi-disciplinary perspectives, combined with experience in the field by qualified NGOs. ■

INTER VIEW

"SIDS live with and from the Ocean, but they are not seen as the victims"

Sania El Kadi
UNESCO representative of the Palau delegation

What does characterise SIDS?
Sania El Kadi: SIDS are small countries, mainly with coastal populations, often far from other nations but surrounded by large marine areas, rich in various resources. There are forty worldwide and 13 in the Pacific. The Rio summit in 1992 recognised their significant economic fragility.

How is this economic fragility justified?
They are small open economies, with limited human capital and distant from global markets, which restricts their opportunities and supplies - with significant external dependency, making them vulnerable to asymmetric shocks. SIDS have little food independence, little subsistence farming and although they have access to consumer products thanks to significant port activity, their products are expensive as they never set the prices themselves. This puts them in danger in the event of a climate disaster.

What does the Ocean mean for SIDS?
They live with and from the Ocean. They are directly affected by the consequences of climate change and the danger is imminent: two islands in the Solomon Islands disappeared overnight, Kiribati and the Marshall Islands have purchased land from Fiji, and Papua New Guinea is negotiating the status of climate refugees with Australia. But they are not recognised as victims!

What solutions are you studying to support them?
Several options discussed during the Monaco Ocean Week are being studied. SIDS could be forerunners in renewable energy (solar or wind) if they innovate in terms of technology and business models.
Without a doubt, we need to implement a global approach with prospects, a roadmap to help them take control of their destiny, even if they need financial and monetary stability without fiscal inflation to do so. We need to make them less dependent on their neighbours and climate problems.

How can other countries help?
The damage that they experience is irreversible, and the biggest countries are often the culprits. It would be good if a protocol was signed between the SIDS and wealthy countries to help quantify the losses and damages and make them less reliant on donations and assistance. We need to be creative with regards to solutions, encouraging bottom-up local initiatives and encouraging private investors to take an interest.

Palau is an archipelago with over 500 islands spread across Micronesia, in the West Pacific Ocean. Palau is a classic SIDS, with small and sparsely populated islands, at the front line of climate change. It does not have many diplomatic representations with large countries, but it has a voice in UNESCO, which Sania El Kadi brought to the Monaco Ocean Week 2018.

MANAGING TOXIC MICROALGAE

Risks for the Environment, Food and Health and Supervision Strategy

Monaco Ocean Week 2018 focused on a major topic which affects various regions: toxic microalgae and the danger they represent for an increasing number of people when eating contaminated fish and shellfish.

The International Atomic Energy Agency (IAEA) organised, in partnership with the RAMOGE agreement, workshops on toxic microalgae: risks for the environment, food and health and supervision strategy.

These workshops brought together over 60 participants from across the world to attempt to assess the state of knowledge, share experiences and plan measures to try and mitigate the effects of toxic microalgae. They focused specifically on Gambierdiscus, which is responsible for Ciguatera, and also ostreopsis, for its possible negative impacts on human health, marine ecosystems and the local economy.

This event was held over 4 days at the Oceanographic Museum of Monaco. Managers and scientists from the marine sector were able to draw on the experience of twenty internationally renowned experts in the field of toxic microalgae.

Ostreopsis toxic microalgae, which usually live in tropical warm waters, were identified fifteen years ago, initially in the Mediterranean on the RAMOGE coast. They were probably transported by boat ballast waters, and were able to develop in our region due to the highly favourable climate conditions. For several years, ostreopsis blooms have been a problem and RAMOGE zone scientists have been working in collaboration with the health authorities to get a better understanding of the ecology and dynamics of these microalgae, as well as to establish supervision procedures by observing their concentration levels on beaches during the summer.

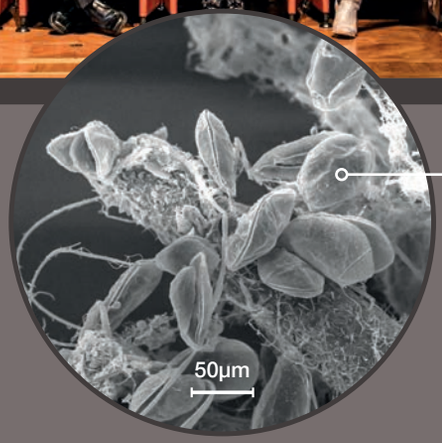
Gambierdiscus are also toxic microalgae usually living in tropical waters. Eaten by herbivorous fish or shellfish, which are themselves eaten by predators, these microalgae produce powerful neurotoxins which are found throughout the food chain. These toxins, known as ciguatoxins, accumulate in the flesh of fish without poisoning them, but they are toxic to humans which eat the fish.

Ciguatera affects local populations in the Caribbean and sub-tropical regions where fish are often the main source of protein, but it also increasingly affects tourists or isolated populations who import an increasing amount of these fish, often with a high added value for local populations. "*Ciguatera is a well-known food poisoning transmitted through fish or gastropods. Its vectors are mobile so difficult to identify*", confirms Dr Philippe Hess from Ifremer. At a global level, this type of food poisoning remains the most common type of poisoning by consuming seafood which has been well preserved. Toxins cannot be destroyed by cooking, freezing or drying.

"Toxins cannot be destroyed by cooking, freezing or drying"

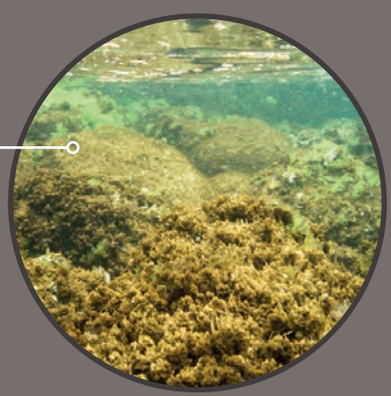
Food poisoning can be caused by algae toxins, but also bacteria, parasites, viruses or chemical products. There are various symptoms and they can be minor or severe, acute or chronic and take different forms: skin and eye irritation, vascular, neurological and respiratory problems, and even liver cancer. Poisoning can be fatal or emerge years after the toxin was ingested. Because the symptoms can be diffused, sufferers do not always go to the doctor (some cannot afford to do so) and tourists only go to the doctor when they return home.

According to WHO, food poisoning makes one person in 10 ill, which to date amounts to 33 million years of life lost per year, particularly amongst children under 5. Young people and poorer populations are most commonly affected.



Ostreopsis is a micro-organism, i.e. a microscopic organism, too small to be seen with the naked eye, with just a single cell. It is assimilated into a water-shaped marine microalgae which belongs to the dinoflagellates group (has two flagellates).
Ostreopsis ovata attached to a macroalgae (electron microscope).
© J.M. Fortuiio, M. Vila. /CM-CS/C.

Macroalgae covered by a thick Ostreopsis biofilm.
© Luisa Mangialajo



Ostreopsis mucilaginous aggregates on the surface.
© Luisa Mangialajo

The scientific community revealed that it understands how ciguatoxins transmit from algae to fish and then to humans and how these toxins transform to become more toxic. It also revealed that the toxins in question are different depending on the ocean.

There are various fields of research left to explore: identifying toxins and the most important fish species to monitor, improving classification of the toxin and level of toxicity, assessing the level of risk depending on the species, modelling the transmission of the toxin throughout the food chain from the algae to large carnivores, defining surveillance methods and schedules, implementing effective treatments, and measuring the human and economic impact of this poisoning, which mainly affects tropical regions in the Indian ocean, Caribbean and the Pacific islands, even though it now reaches Europe or the Mediterranean region.

The health risk of ciguatera has not been sufficiently known. Doctors are not always trained in how to detect food poisoning cases caused by fish. It is therefore important to raise the awareness of these doctors and that of medical organisations. One of the workshops during Monaco Ocean Week 2018 reflected on the implementation of a simple guide, so that the countries in question take this danger into consideration and that those who are already aware of the danger adopt a methodology to treat symptoms and illnesses. This documentation should increase the number of information materials (kits, TV ads, etc.) to raise awareness amongst health authorities in each country, doctors, and perhaps even the population.

Various international organisations (FAO, WHO, etc.) have acknowledged the importance of this topic. As noted by Elisa Bertalet from Global Harmful Algal Blooms, the international coordination programme for algae research, *"there is no local solution. We must promote a global strategy. Ciguatera is a significant public health problem, with a significant economic impact which we can curb provided that we understand the poisoning mechanisms and manage the risks"*.

Participants representing thirty countries from Africa, Asia-Pacific, Latin America, the Caribbean and Europe welcomed the lively and varied dialogues, information shared and awareness needed in all countries, even those without declared cases. Marie-Yasmine Dechraoui Bottein (IAEA) underlined the need to develop research and development on this topic and to find cross-functional solutions to an increasingly widespread phenomenon. ■

INTER VIEW

Marie-Yasmine Dechraoui-Bottein
Researcher in environmental toxicology at the IAEA environmental laboratories in Monaco

A researcher in environmental toxicology at the IAEA environmental laboratories in Monaco, Marie-Yasmine Dechraoui-Bottein leads a research programme on the control and prevention of marine biotoxin impacts on the environment, food safety and public health. She is also the technical administrator of national, regional and inter-regional technical cooperation projects which aim to reinforce marine environment management capacities of Member States, and therefore contribute to sustainable socio-economic development by using nuclear techniques.

In partnership with the RAMOGE agreements, IAEA organised workshops on toxic microalgae: risks for the environment, food and health and supervision strategy, which took place during the second Monaco Ocean Week. Marie-Yasmine Dechraoui-Bottein was scientific and technical manager and provided an argued summary.

"Climate change, pollution and increased consumption of shellfish and fish are making ciguatera a growing global threat"

How is Gambierdiscus emblematic of problems caused by toxic microalgae?

Gambierdiscus are microalgae which live in or near sea and ocean beds, mainly along tropical and subtropical coasts. These microalgae are particularly interesting as over 15 different species have been identified to date, some of which are nearly 1,000 times more toxic than others. Moreover, they are different depending on whether they are located in the Indian ocean, Pacific or Caribbean. But what makes them different from other toxic microalgae is certainly their impact on human health: these microalgae - measuring just a few tens of micrometres and whose blooms cannot be seen by the naked eye - are responsible for the largest number of non-bacterial food poisoning cases, and at a global level.

How is your organisation, the International Atomic Energy Agency (IAEA), involved in this topic?

The IAEA's first foray into toxic algae goes back to 1998, in response to a request from a member state where algae toxins are a continued threat to food safety. The IAEA has continued to work on this topic, responding to increased demand from its Member States. The IAEA now contributes to development in over 40 countries in terms of bloom management, providing scientific and technical assistance to reinforce supervision of microalgae in the environment and detecting biotoxins in fish products.

What skills does your agency bring?

Nuclear and isotopic techniques are powerful tools to assess contamination rates, study their sources, behaviour and effects. By using laboratories with cutting-edge experimental equipment and the scientists working there, the IAEA develops research programmes aiming to better understand the accumulation and transfer of biotoxins in ecosystems through nuclear techniques. An important mission for the IAEA is also to train new researchers in this field, so we regularly host students and interns. These projects are part of the IAEA sector 2 programme "IAEA nuclear techniques to develop and protect the environment". They therefore contribute to reaching sustainable development objectives.

What will be its role in recommendations from these workshops?

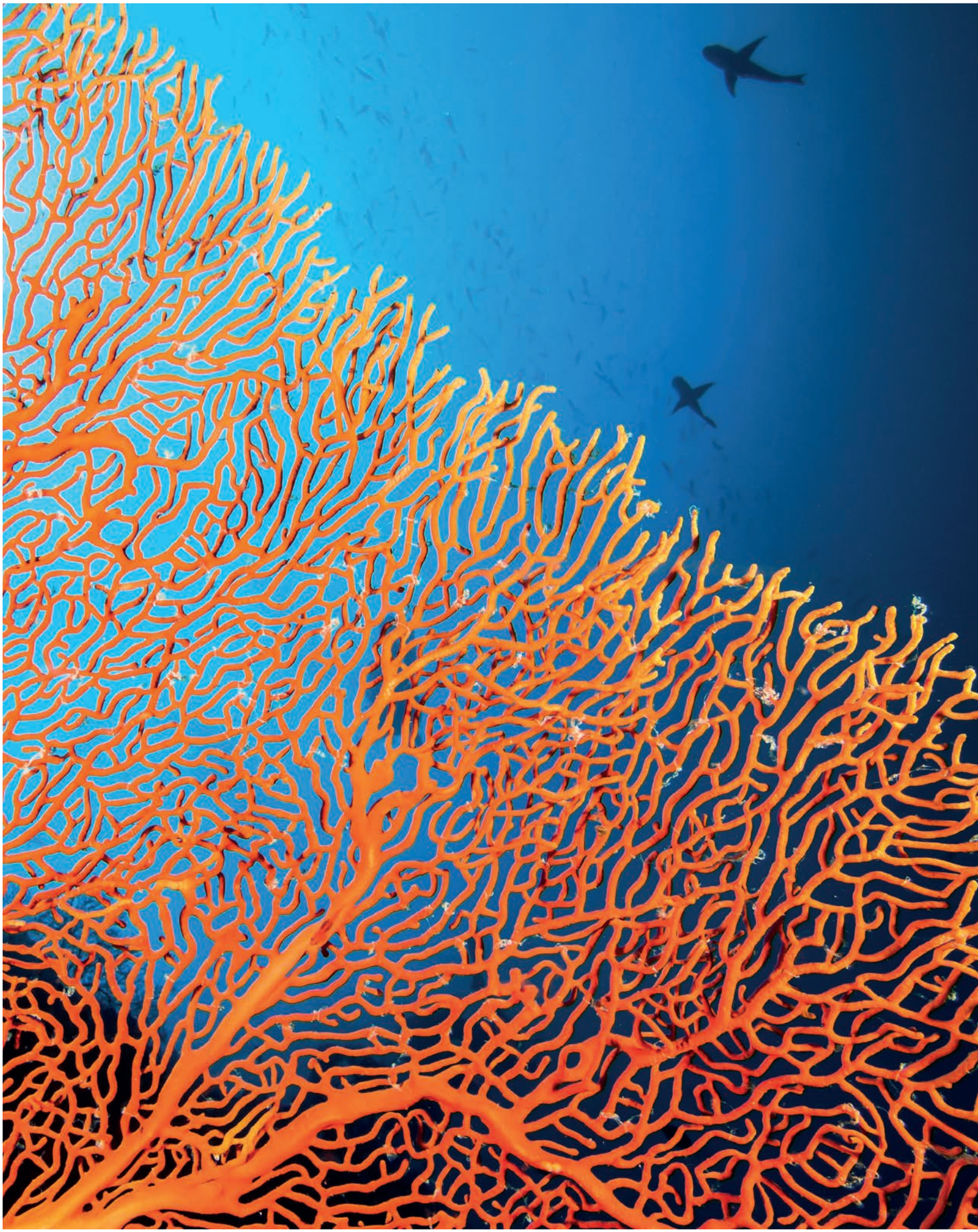
These workshops brought together researchers, managers and experts from over 30 countries. Scientific recommendations included optimised use of methodologies, and operational recommendations included improved food and health supervision management strategies at a regional and global level. IAEA could help Member States to implement some of these recommendations, by reinforcing the capacities of the most affected states, such as the small island States, through the production of reference materials and the validation of analysis methods, by continuing research to better understand how toxins accumulate in organisms and to maximise the technical impact of its projects, by developing strategic collaborations and synergies with other institutions and agencies such as WHO, IOC-UNESCO and FAO. An inter-agency global strategy on ciguatera is currently being developed.

What role does climate change play in propagating ciguatera?

Toxic algae species responsible for ciguatera, like all living species, have optimal growth conditions. These species were known as tropical or subtropical species.

However with global changes, and in particular with ocean temperature changes, these optimal conditions are found in oceans and seas which are increasingly far from the tropics. Toxic microalgae responsible for ciguatera have been found in the Canary Islands and Madeira, where cases of food poisoning caused by locally caught fish have been recently declared.

Climate change, pollution and increased consumption of shellfish and fish are making ciguatera a growing global threat.



35

THE OCEAN : BIODIVERSITY WHICH WE MUST PROTECT

MARINE PROTECTED AREAS

Two MPAs merge to protect marine mammals

On 13 April 2018 during Monaco Ocean Week, the Agoa Sanctuary in the West Indies and Pelagos Sanctuary in the Mediterranean signed a memorandum of understanding to share their actions and experience with a common goal: protecting marine mammals.

These two Sanctuaries share a common goal: guaranteeing a favourable conservation environment for marine mammals by protecting them, as well as their habitats, from the direct or indirect negative impacts of human activity.

The cooperation between the two Sanctuaries is the continuation of the “Monaco Explorations” and the journey of the ship “Yersin” in October 2017 to the West Indies, with the support of the Prince Albert II of Monaco Foundation. The terms of this cooperation focus more specifically on:

Best practices in terms of governance and cross-border cooperation and the implication for local players in protecting marine mammals;

The measures to manage and assess their effectiveness, notably supervision of nautical events and activities such as whale watching - with particular attention on the approach distance of these species - and the measures to reduce underwater noise and collisions between boats and large cetaceans;

Twinning projects between municipalities of the two Sanctuaries;

Training and awareness actions regarding marine mammals to the benefit of managers, local stakeholders and the public.

The signing ceremony took place at the Oceanographic Museum of Monaco in the presence of H.S.H. Prince Albert II of Monaco, H.E. Mr Bernard Fautrier, Minister Plenipotentiary and Vice-President, Chief Executive Officer of the Prince Albert II of Monaco Foundation, H.E. Mr Xavier Sticker, Ambassador for the Environment, Mr Cyril Gomez, Chair of the Meeting of the Parties to the Pelagos Agreement, Mrs Fannie Dubois, Executive Secretary of the Pelagos Agreement and her deputy, Mrs Constanza Favilli, as well as Mr Robert Calcagno, Chief Executive Officer of the Oceanographic Institute. ■

The Pelagos Sanctuary

The Agreement regarding the creation of a Mediterranean Sanctuary for marine mammals was signed in Rome on 25 November 1999 by France, Italy and the Principality of Monaco and entered into force on 21 February 2002.

The Sanctuary covers 87,500 km^2 of water and is managed by the governments of the three countries. These countries benefit from the coordination of a permanent Secretariat based in the Principality of Monaco and the support of a scientific and technical committee.

The Pelagos Sanctuary is the largest Marine Protected Area (MPA) in the Mediterranean and the only international MPA dedicated to protecting marine mammals.

The Agoa Sanctuary

The Agoa Sanctuary covers the entire exclusive economic zone of the French West Indies (Martinique, Guadeloupe, St. Martin and St. Barthélemy), i.e. a surface area of 143,256 km^2. It is governed by 53 local Ocean bodies. It has an international status since 27 October 2012.

“Cetaceans put on a show **during the Monaco Ocean Week”**

PHOTOGRAPHIC EXHIBITION AND SIGNING OF A MEMORANDUM OF UNDERSTANDING BETWEEN THE ACCOBAMS AND PELAGOS AGREEMENTS

On 10 April 2018 at the Galerie des Pêcheurs during Monaco Ocean Week, the permanent Secretariats of ACCOBAMS and the Pelagos Agreement signed a memorandum of understanding to formalise their already effective partnership and optimise efforts by member countries shared by both Agreements in terms of cetacean protection.

The ACCOBAMS zone contains several marine protected areas for cetaceans, the largest and most famous of which is the Pelagos Sanctuary. An ACCOBAMS pilot zone, the Pelagos Sanctuary undertakes, through this memorandum, to implement Resolutions made through ACCOBAMS. This commitment will be implemented via innovative initiatives which will be adopted and implemented by countries which are Parties to ACCOBAMS and promoted beyond its borders.

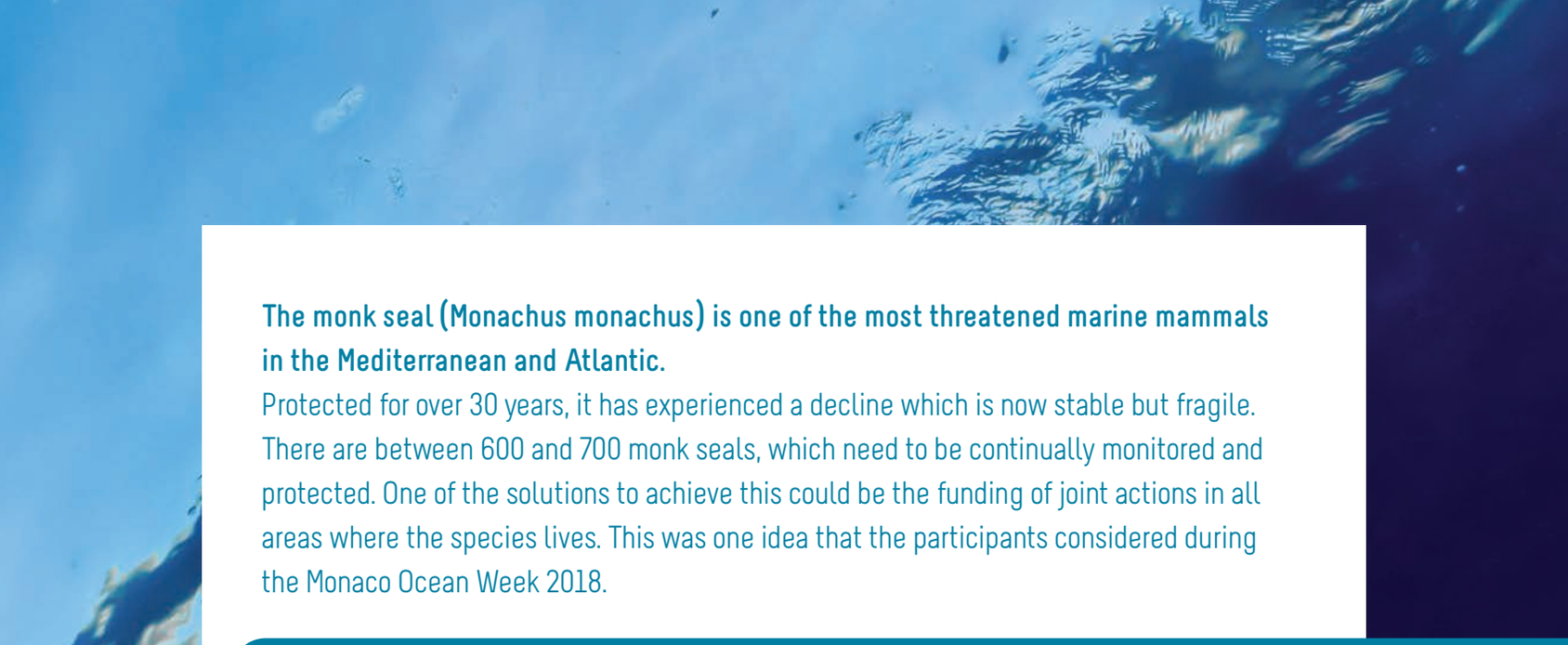
The signing took place in the Galerie des Pêcheurs, in the presence of H.S.H. Prince Albert II of Monaco and Mrs Ségolène Royal, French Ambassador for the Poles and Chair of the Association Désirs d'Avenir which acts in environmental protection.

This was also a chance for ACCOBAMS, the Pelagos Agreement and the "CIMA Research Foundation" to unveil their multimedia photographic exhibition on cetaceans partially taken from the "Pelagos Noise" project, which looks at the estimated impact of noise from maritime traffic on the sperm whale and the Cuvier's beaked whale (ziphius).

AN ICONIC SPECIES

Funding the protection of the monk seal

The Monaco Ocean Week gave the opportunity to hold a fruitful workshop bringing together experts in the protection of the monk seal and foundations committed to safeguarding Mediterranean biodiversity. The on-going discussions should allow to improve synergies between the needs in the field and fund allocations.



The monk seal (Monachus monachus) is one of the most threatened marine mammals in the Mediterranean and Atlantic.

Protected for over 30 years, it has experienced a decline which is now stable but fragile. There are between 600 and 700 monk seals, which need to be continually monitored and protected. One of the solutions to achieve this could be the funding of joint actions in all areas where the species lives. This was one idea that the participants considered during the Monaco Ocean Week 2018.

KEYFACT **Three monk seal species have been recorded worldwide: the Mediterranean monk seal (critical danger of extinction), the Hawaiian monk seal (danger of extinction) and the Caribbean monk seal (extinct in 1950).**

A SPECIES WHICH WE MUST CONTINUE TO PROTECT

Formerly hunted for their skin and oil, monk seals fled their traditional habitats which were destroyed by urban development. They are the collateral victims of intensive fishing leading to lower fish stocks, but also other human activities such as diving, tourism, navigation and even inappropriate behaviour.

To survive, they fled to the least accessible or protected and monitored zones, such as the Madeira archipelago and Ras Nouadhibou in Mauritania, but also the Turkish, Greek, Cypriot coasts, etc.

In the Atlantic, their disappearance peaked in 1997 and the first measures taken jointly in 2000 by Portugal, Spain, Morocco and Mauritania helped reverse this trend. In twenty years, the number of individuals tripled and over 80 births have been recorded each year.

There are similar problems in the Mediterranean, although they differ depending on the country and zones in question. A global action plan for the 2014-2019 period was developed by RAC-SPA *(the Regional Activity Centre for Specially Protected Areas)* to protect the monk seal. It focuses on protecting the species and its habitat, tracking individuals to have a better understanding of the reasons for their death, and raising public awareness to reduce the human activities which cause them harm.

Knowledge also needs to be improved about the species itself, notably its genetic diversity, to assess its ability to adapt and survive environmental changes.

IMPROVED ALLOCATION OF FUNDS

It is vital to collect this information to clarify matters for decision makers. Many costly actions need to be implemented. This includes installing infrared cameras or using drones to track the caves where colonies have established, counting births or measuring juvenile mortality, and compensating fishermen when their nets are damaged by seals.

Through this workshop, the participating funding organisations were able to have a better understanding of the problems and issues, leading to more effective financial support: The Prince Albert II of Monaco Foundation, Switzerland for the Oceans, Octopus, Sancta Devota Foundation, The Critical Ecosystem Partnership Fund, Adessium Foundation, The Thalassa Foundation, Euronatur and MAVA Foundation for Nature.

Discussions helped identify some priorities to improve monk seal protection, although they acknowledged that each population group had its own requirements. These priorities include protecting new habitats and allowing old habitats to be repopulated.

It was agreed to draw up an action plan which defines these requirements, the impact and cost of measures to be carried out, but also to distribute and coordinate the financial support of different parts of this action plan between funders: the goal is also to attract other donors and continue to mobilise and coordinate all parties involved. ■

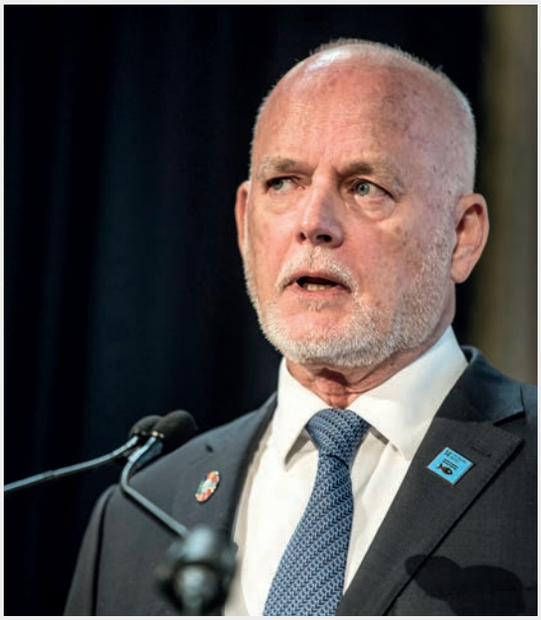
LOOKING FORWARD TO 2020

"Only by working together will we save the Ocean"

Guest of honour of Monaco Ocean Week 2018, Peter Thomson, the United Nations Secretary General's Special Envoy for the Ocean, launched the Friends of Ocean Action in Monaco. This informal network of opinion leaders, business representatives and scientists created at the Davos Forum has agreed to do anything it can to reach the objectives set by the United Nations Conference on Oceans by 2020.

INTERVIEW

Peter Thomson
United Nations Secretary General's Special Envoy for the Ocean



© Douglas Robertson

What is "Friends of Ocean Action"?

It is a unique, informal group of leaders from international organizations, NGOs, business, technology, science and research. The Friends of Ocean Action come together to build, scale-up and fast track practical solutions to the most pressing challenges facing the ocean in line with Sustainable Development Goal (SDG) 14: To "conserve and sustainably use the oceans, seas and marine resources for sustainable development."

Why was it so important that Friends of Ocean Action took part in MOW 2018?

The Friends of Ocean Action was launched at the World Economic Forum Annual Meeting in Davos, and brings together some of the world's most committed and influential activists, business-leaders and thought-leaders to help shape global action to ensure a future healthy and sustainable Ocean. This influential, multi-sector global network, amongst other actions, is setting specific objectives to help meet Sustainable Development Goal 14, the Ocean Goal, and advance a set of high level, impactful initiatives and solutions in time for the proposed UN Ocean Conference in 2020.

With four of the Ocean SDG targets maturing in 2020, urgent action is required to ensure that these are on track. The MOW 2018 offered Friends of Ocean Action the ideal platform to hold the Inaugural meeting, and start identifying and mobilize impactful solutions for the ocean as well as maintain the much needed momentum to get to 2030, when all the targets will need to be met.

In this Inaugural Event, made possible through the kind support of H.S.H. Prince Albert II of Monaco and the Prince Albert II of Monaco Foundation, the Friends of Ocean Action identified the key issues, and associated solution areas to some pressing ocean challenges, and shaped the work plan for the year ahead.

What topics were discussed during this inaugural meeting?

During the high level workshop of the Friends of Ocean Action, solutions were identified for Friends of Ocean Action to take forward. These included sustainable fisheries; illegal, unreported and unregulated fishing; ocean food security; ocean data; plastic pollution; marine protected areas; ocean finance; emission reductions targets for the shipping industry.

What are the next steps to reach these objectives by 2020??

Friends of Ocean Action will continue working on the key ocean issues to 2020 to help achieve ocean health and related SDG targets. The Friends, as an informal group of highly influential stakeholders in the ocean agenda, will use their networks to amplify and scale up existing solutions and identify new ones where needed, complementing international intergovernmental processes and initiatives in a concerted effort to achieve a sustainable ocean economy, crucial for humanity.

Are you confident that the objectives will be reached by 2020?

Only by working together will we the Ocean. I am confident that the Friends of Ocean Action, and the other ambitious and impactful initiatives, such as the High Level Panel on a Sustainable Ocean Economy, will all work together towards the same goal of achieving a healthy ocean.

In the past years a sense of urgency was raised which needs to be maintained and translated into momentum to implement impactful solutions to save the ocean. We have a plan for this, which is SDG14, and we are now seeing promising responses from the global community in working together towards this ambitious and much needed goal.

AN INNOVATIVE MECHANISM

Long-term funding of Marine Protected Areas

An MPA is a powerful tool for long-term conservation of the marine environment. In a limited marine area, this includes nature protection objectives (fauna, flora, ecosystems) and sustainable development of economic activities such as fishing and responsible tourism. KEYFACT

It is vital to create protected areas in the Mediterranean. Funding their day-to-day operation to allow them to become more effective was a hot topic during the second Monaco Ocean Week.

MPAs represent 7% of the marine surface area in the Mediterranean. Whilst they largely contribute to preserving biodiversity and best practices in terms of local economic development, few of them benefit from sustainable funding. Some don't have annual budget at all. We have therefore planned to implement a long-term funding mechanism which will rely on national policies to create and manage MPAs. This leading solidarity system - Environmental Funds to support Mediterranean MPAs - was created on the initiative of France, the Principality of Monaco and Tunisia. It is chaired by Xavier Sticker, who is also French Ambassador for the Environment and Chair of the Monegasque M2PA Association.

This Funds was supported by public donors such as the Principality of Monaco which contributed €500,000 to M2PA in 2016, and private donors such as Leonardo DiCaprio Foundation which gave $400,000 to kick off the initiative. Basel Zoo also supports this initiative through its "Franc volontaire pour la nature" scheme, a voluntary contribution by visitors to support conservation work.

It has innovated this year with the signing of a partnership agreement with the Oceanographic Institute of Monaco, which agrees to pay 5 cents from each entrance ticket to the Oceanographic Museum for its 650,000 visitors, so approximately €30,000 per year. Other zoos or aquariums in a dedicated and committed network will join those first trendsetters.

During Monaco Ocean Week 2018, two major international development agencies officially provided their technical and financial support: the *Global Environment Funds* (GEF) and the *French Fund for the Global Environment* (FFEM) to help develop this Mediterranean initiative.

Thanks to its launch in 2016, marine protected areas in the Kuriat islands in Tunisia, the Al Hoceima National Park in Morocco and the Karaburun Sazan Marine Park in Albania have all received tailored support and guidance. ■

© Renaud Dupuy de la Grandrive - Djebel Moussa / Maroc

KEYFACT

1960's
Creation of the first MPAs in the Mediterranean.

2013
France, Monaco and Tunisia laid the foundations for sustainable, solidarity funding of MPAs during IMPAC 3 (International Marine Protected Areas Conference).

2015
Official launch of M2PA to offer sustainable MPA funding, extended to civil society.

2017
1st support for Mediterranean MPAs, on the initiative of France, Monaco and Tunisia.

2018
Signing of technical and financial partnership agreements with GEF and FFEM, and signing of an agreement between the Oceanographic Institute and M2PA for sustainable funding of Mediterranean MPAs.

What is the M2PA Association?

M2PA is a Monegasque association for sustainable funding of Mediterranean MPAs. Created in 2015, it is an alliance for the Mediterranean bringing together governments, regional organisations and NGOs, and has to date eleven members including France, the Government of the Principality of Monaco, Tunisia, Morocco, Albania, Spain, the Prince Albert II of Monaco Foundation, UNEP SPA/RAC (Specially Protected Areas/Regional Activity Centre), MEDPAN, WWF, IUCN, the Conservatoire du Littoral (French coastal protection authority), the PIM initiative and the Oceanographic Institute of Monaco.

A SUCCESSFUL SUSTAINABLE FUNDING SYSTEM

Why have the environmental funds been such a success?

To answer this question, a discussion and experience sharing workshop was organised by M2PA and facilitated by the Conservation Finance Alliance and the Prince Albert II of Monaco Foundation.

The objective was to learn about initiatives in progress around the world to establish connections between institutional or private donors, increase cooperation and exchanges between different environmental funds and help donors to get involved with a full understanding of the issue.

The guests of honour - the South American environmental funds (Meso American Reef Fund and the Latin American and Caribbean Network of Environmental Funds), African environmental funds (Banc d'Arguin and Coastal and Marine Biodiversity Trust Fund) and European environmental funds (Prespa Ohrid Nature Trust) - shared their experiences. All points of view were discussed thanks to the thirty different attendees - ranging from private foundations to NGOs - and this helped to define the keys to success to make these funds as efficient as possible.

POWER OF NETWORKING

Aquariums work to help fund Mediterranean MPAs

The creation of a network of European aquariums and zoos affected by ocean preservation was another highlight of the Monaco Ocean Week 2018.

On Friday 13 April 2018, Monaco Ocean Week hosted an international meeting of aquariums and zoos for the benefit of Mediterranean Marine Protected Areas. Representatives from aquariums in Valencia, Seville, Banyuls, Genoa, Boulogne sur Mer and Basel Zoo were in attendance alongside directors of establishments in Greece, Croatia, Montenegro, Slovenia, etc. In total, over twenty countries and organisations discussed information and their involvement in defending and funding Mediterranean MPAs.

#MYMEDSEA TO REACH OUT TO THE PUBLIC

On the initiative of the Oceanographic Institute, an international network of aquariums and zoos working to support Mediterranean MPAs was created, with the main goal to fundraise to support Mediterranean MPAs, and to raise public awareness about the topic.

Whilst Monaco Ocean Week 2018 was the first meeting of the founding members of this network - Basel Zoo and the Oceanographic Museum of Monaco - several aquariums were also in attendance: Pula in Croatia, Crete, Kotor in Montenegro, aquariums in Valencia and Seville for Spain, Genoa in Italy, Nausicaa in Boulogne sur Mer and the Banyuls biodiversarium in France.

They are all committed to reaching out to the public to raise awareness about MPAs and their funding requirements. In addition to launching a shared hashtag (#MyMedSea) which helps track their actions, exhibitions, educational activities and general public awareness campaigns have been widely encouraged.

© Matthieu Foulquié

FUNDRAISING

The other challenge was to contribute to sustainable funding to protect Mediterranean MPAs. The Oceanographic Institute unveiled its initiative which involves donating 5 cents per ticket sold to the 650,000 visitors to the Oceanographic Museum of Monaco to the dedicated environmental funds. This financial contribution of approximately €30,000 per year was featured in an agreement signed between the two organisations.

Basel Zoo talked about its *"Franc volontaire pour la Nature"* initiative, which involves encouraging visitors to voluntarily pay an extra franc on top of their entrance ticket price to help fund environmental protection work. Result: 90% of visitors took part, as this additional contribution was well explained to them.

"When you explain what it will be used for and the benefits that the visitor will receive, they are happy to take part" explained the zoo director Olivier Pagan, something which other establishment representatives confirmed. ■

© Michel Dagnino

INTER
VIEW

Xavier Sticker
French ambassador for the environment

What makes the Environmental Funds for Mediterranean MPAs different?
Worldwide, over seventy environmental funds contribute to fund protected natural areas on land or at sea. M2PA is the first initiative of this kind in the Mediterranean.

One of its special features is that it is a regional initiative, at a Mediterranean level. Ministers from coastal States are providing their political support, as demonstrated recently at the Conference of the Parties to the Barcelona Convention for the Protection of the Mediterranean.

"Protecting our planet is tomorrow's great challenge, and M2PA will do its part to help."

Another special feature of M2PA is long-term investment in Marine Protected Areas (MPA) funding through a partnership with MPA managers, government and civil society. This involves supporting recurring expenses such as patrolling, monitoring the health of ecosystems. These additional resources allow often underfunded MPAs to be effectively managed.

Of course, beyond these innovations, M2PA has a lot to learn from its discussions with other environmental funds, including some with several decades of experience. This year, during Monaco Ocean Week (MOW), we organised workshops with the Conservation Finance Alliance network with environmental funds in Africa (Bacomab), Central America (Meso-American Reef Fund) and Europe (Prespa Ohrid Nature Trust), as well as development agencies and major NGOs such as Conservation International.

When M2PA was created in 2013, what was its goal? How has it changed?
M2PA was the brainchild of France, Monaco, Tunisia and the Prince Albert II of Monaco Foundation, who combined forces to create an international collaboration platform in 2015 for sustainable funding of the Mediterranean MPAs. Launched as a Monegasque association, the initiative was joined by other Mediterranean countries, but also regional organisations and non-governmental organisations. After Morocco and Albania, the most recent member is Spain, which joined in April 2018 during the second edition of MOW.

In basic terms, since its launch, M2PA has made progress on its roadmap: organising as an initiative, refining the definition of its working methods, mobilising resources with public and private donors, and developing pilot projects supporting MPAs. We have already seen the initial results. In early 2018, the Global Environment Funds (GEF) demonstrated its confidence by donating one million dollars and the French Funds for the Global Environment (FFEM) donated one and a half million euros. This funding is in addition to the initial contribution of five hundred thousand euros by Monaco and private funding. And for over a year, M2PA has supported the Al Hoceima national park in Morocco, and the Kuriat islands marine area in Tunisia. The impact of improved quality of management of MPAs can already be measured, as seen by the return of marine birds and the increase in fishing resources around the Al Hoceima park.

Why has M2PA opened up to civil society?

Since the origins of M2PA, non-governmental organisations have worked alongside the three founding States. The Prince Albert II of Monaco Foundation is a founding member. The MedPAN network of Mediterranean MPA managers is a pillar of the initiative, and its president is one of M2PA board members. IUCN Mediterranean and WWF Mediterranean, to name a few, are also members of M2PA. The Oceanographic Institute of Monaco is the latest member. The M2PA initiative is therefore more strongly based in environmental networks mobilised to protect the Mediterranean.

Cooperation is also key with non-governmental players in regions where M2PA operates. This cooperation is one of its keys to success. To ensure effective support of sustainable MPA management, it is essential to work as close as possible to the field and involve local communities. These communities have implemented citizen initiatives to protect the Mediterranean, whether by specifically participating in MPA management or by raising public awareness of the importance of respecting the environment. Through projects in collaboration with national authorities, M2PA provides support to dynamic NGOs which are involved in nature conservation work.

Proof of this is the statement given at the MOW by the president of the Tunisian NGO "Notre Grand Bleu", a key stakeholder in our partnership with the Agency for Coastal Protection and Development (APAL) for management of the Kuriat islands marine protected area.

What progress does the partnership agreement with the Oceanographic Institute of Monaco signed in 2018 represent?

Very early in the development of M2PA, private donors made contributions: the Leonardo DiCaprio Foundation, with a contribution of hundreds of thousands of dollars; but also Basel Zoo and the Oceanographic Institute of Monaco, with both agreeing to pay M2PA a percentage of their entrance tickets, so a few cents per ticket - but with a cumulative value of several tens of thousands of euros per year. In terms of the agreement which we signed in April, the Oceanographic Institute coordinates a network of partner institutions, mainly zoos and aquariums planning to become contributors or involved in awareness actions regarding protection of the Mediterranean. With the support of H.S.H. Prince Albert II of Monaco, the Oceanographic Institute met with representatives from these zoos and aquariums during MOW 2018.

What budget do the Mediterranean MPAs have now? What share do these Funds represent?

There are huge differences between the funding of MPAs on the North and South sides of the Mediterranean. What does a national marine park on the north side with many staff and an annual budget of several million euros have in common with a small protected area on the south side without any operating budget, where the managers don't have any equipment or fuel for sea patrols, scientists do not have the resources to assess the condition of ecosystems, and public trips are not provided? M2PA wants to support the second category initially. This is why projects have been developed in Tunisia, Morocco and Albania. It's still early days.

What are the next steps in terms of sustainable funding of Mediterranean MPAs?

We are continuing to make progress on several fronts. In financial terms, mobilisation of resources remains a priority. After the GEF and FFEM, other private and public donors will be approached to provide a capital contribution and reach our co-funding objectives. In operational terms, four to eight new funding agreements should be concluded to support MPAs during the 2018-2019 period. A range of potential projects is in progress in Morocco and Tunisia, but also in Albania and elsewhere in the western part of the Mediterranean. In methodological terms, the contributions by GEF and FFEM will be partially used to reinforce environmental fund structuring, drill down on its priorities and develop investment and fundraising strategies. Since the summer of 2017, the initiative has gathered pace thanks to the arrival of a permanent coordinator, Romain Renoux, who will soon be supported by another employee for administration and financial matters.

We are looking forward to 2020. The IUCN world nature conference will meet this year in Marseille several months before the important COP15 regarding the agreement on biological diversity in China, and the environment in the Mediterranean will be under the spotlight. I hope that M2PA will have visible success to be recognised as part of the "Solution Agenda" for biodiversity. Protecting our planet is tomorrow's great challenge, and M2PA will do its part to help.

Artisanal fishing is increasingly threatened although it is a solution to current ecological threats. KEYFACT

AT THE HEART OF THE DEBATE

Artisanal fishing is a solution, not a problem

Does fishing play a role against saving biodiversity in the Mediterranean? Not at all if it remains artisanal, well managed and has a place in the original geographic and economical fabric. This topic was addressed on 11 April, through a conference organized by ECOMERS and Low Impact Fishers of Europe (LIFE), in partnership with the Prince Albert II of Monaco Foundation, and gathering researchers from CNRS, the University of Côte d'Azur and representatives of the fishing sector.

Small-scale coastal fishing using boats which are less than twelve metres long and which do not use a towed gear represent 70 to 80% of European fishing fleet. However it has been excluded for several decades by the Common Fisheries Policy.

A tradition in the Mediterranean since ancient times, this fishing sector is part of a cultural heritage and a non-aggressive economic activity for biodiversity and the environment, provided that it is managed correctly. It helps manage resources locally, not far from the ports where the fishers are working, whilst limiting impacts related to transport by using short channels to sell the fish.

A SECTOR IN CRISIS

Economically, small-scale fishing creates three jobs on land for one job at sea. However it is a sector in crisis, particularly in the Mediterranean where fauna, flora and biodiversity are highly affected by the excessive behaviour of industrial, illegal or non-commercial fishing which sometimes destroys marine habitats, overuses marine resources and creates pollution. This alarming situation is a threat to food safety, means of survival, the biological diversity of marine ecosystems and the culture of coastal communities.

Artisanal fishing is not doing well. Its fleet and population are ageing and are not being replaced frequently enough. The average age of its boats is 28 and their numbers are dwindling. Even though its global revenue of €630 million per year is increasing, the sector is constantly losing jobs (fewer than 20,000 in recent years), as young people are not attracted by falling returns in a sector which is failing to modernise.

Moreover, the fleet often suffers from poorly adapted legislation, red tape and overly restrictive standards and policies, whether they be European or governmental, of training or of information, tend to forget about them.

But all hope is not lost. A series of measures common to Europe aim to promote artisanal fishing and allocate development possibilities to environmental and social criteria.

SAVING ARTISANAL FISHING

Initially, we must avoid losing tangible and intangible heritage (boats, traditional fishing techniques, recipes, stories, local knowledge) and include fishers in commercial sectors and local development processes.

With appropriate reinforcement of skills, financial support and infrastructure, renewal of professional profiles, sectors and organisational structures, and adapted policies, small-scale fishing could effectively contribute to more sustainable and balanced development of coastal Mediterranean regions. The European Commission's MedFish4Ever action plan, which has aimed to protect vulnerable zones and collectively limit fishing efforts since 2003, is an example of the political change needed to guarantee sustainable Mediterranean fishing.

The creation of *LIFE* (Low Impact Fishers of Europe) is also an example of this. Launched in 2012, *LIFE* is a platform which aims to place small-scale fishers back at the forefront of policy so that they become decision-makers in Europe and a stakeholder in negotiations, whilst encouraging good professional practices. *LIFE* includes 10,000 artisanal and responsible fishers, often from family businesses, from 16 countries from the Baltic to the Mediterranean.

THE ROLE OF RESTAURANT OWNERS

Restaurant owners are also asking for strong and healthy artisanal fishing. Two of them - Jean-Pierre Rous who promotes Slow Food and José Orsini, chef and owner of Bistrot du Port in Nice - have spoken about the need to pass on this culture of eating well to the younger generations and change how customers view food to underline the importance of quality.

In their eyes, the first rule is to respect product seasonality. The second, thanks to their expert advice, is to agree to try 'forgotten' fish. This stops fishers from overlooking lesser requested species.

To do this, direct links have to be reinforced between fishers and restaurant owners and there must be a negotiation of standards which are deemed overly restrictive.

THE EFFECTIVENESS OF MPAs AND PROHIBITED AREAS

Other initiatives have been shown to be effective. MPAs and prohibited areas, for instance. Three of them were represented during the Monaco Ocean Week conference on 11 April 2018: the Côte Bleue marine park, created in 1982, the Cap Roux marine park, created in 2004, and the Cap d'Agde marine park, which is more recent. Their directors emphasise that they have seen excellent results very quickly. Each of them have noted that in a few years, there were larger fish in greater numbers, and that biomass was increasing. However this success requires an active partnership between various players, notably fishers, who are often responsible for monitoring the prohibited areas against illegal fishing.

Co-management within the MPAs and prohibited areas has been a key factor in their success. Improved governance is a vital element to preserve small-scale fishing and resources which belong to everyone.

IMPROVED GOVERNANCE

This objective was promoted by the innovative project Oz Miñarzos, a reserve in Galicia, in the north of Spain. Due to inefficient governance, a lack of an international legal framework and an increase in the number of rules which are imposed but inapplicable, Spanish artisanal fishers decided to create a marine reserve which they co-manage jointly with the State, scientists and NGOs. In 16 years, it has been expanded on their request from 2,000 to 100,000 ha, and recommends collective and transparent governance principles. *"The current so-called top-down model encourages unfair competition and bad practices"*, explains Antonio Garcia Allut, from the Lonxanet Foundation. *"To preserve the shared marine resources which the fishers rely on, we must experiment and develop new methods of organisation, new rules and new collaborations between countries"*.

Mediterranean states must urgently develop a regional action plan for small-scale coastal fishing. Several actions are needed: improving knowledge, guaranteeing sustainable, profitable and socially responsible artisanal fishing, banning destructive practices, encouraging bottom-up initiatives and co-management and organising sustainable fishing areas and MPAs.

"All is not lost", underlines Maria Jose Cornax, director of policies and advocacy at Oceana Europe. *"But general interests must be prioritised ahead of private interests"*. ■

THE IMPORTANCE OF WOMEN

Women are not a common sight in the fishing sector, and yet many of them work in it. They are involved in collection, they might be on board or involved in aquaculture, the sale of fish, product processing or marketing. They innovate, educate or act behind the scenes in banks, administration, auctions...

"Their contribution is vital and positive, particularly in artisanal fishing, where they often do not receive a salary, have no social benefits and are never featured in the statistics. They are invisible" laments Marja Bekendam, spokeswoman for AKTEA, the European network for women in fishing.

Thanks to its action, a legal framework has been progressively put in place for the fisherman's wife, which still needs to be transposed from European law to each country's law.

INTERVIEW

Paolo Guidetti
Professor at the University of Côte d'Azur and director of the Ecomers laboratory

Despite its low environmental impact and economic relevance, artisanal fishing is rarely considered. Why?

Despite its benefits, it suffers from being a fragmented sector. This fragmentation affects its political representation. National and European decision-makers have often opted to listen to semi-industrial or industrial fishing companies which are better organised and therefore better represented.

Moreover, since fishing products have been globalised, consumers have lost touch with Mediterranean species. Demand is limited to a few well-known fish, which are not necessarily local.

How can we restore this?

The most important thing seems to be working on food knowledge and education, by promoting the benefits of short channels of sale. This needs to involve both consumers and political decision-makers. Eating locally means eating fresher, healthier fish from a food point of view, whilst limiting its transport as much as possible, sometimes to only hundreds of metres.

How is artisanal fishing a relevant solution, particularly in the Mediterranean?

The Mediterranean is the cradle of three cultures (Islam, Christianity and Judaism) which have often developed thanks to the sea. Coastal populations deployed different fishing techniques using varied resources which are part of common culture and diversity. With an overriding concern in mind: protecting what feeds them.

To preserve this local culture, we need older fishers to pass on their traditional knowledge to younger fishers. This is something which they often don't have the opportunity to do. Local fishing also needs to be linked to other important actors, which generate income. This includes fishing tourism, where tourists get onto boats and learn about the benefits of small-scale fishing.

In your opinion, what are the best solutions to rejuvenate it?

In addition to developing these new activities, we need to reduce the red tape and help older fishers to pass on their knowledge. Without a doubt, we also need to define a more modern profile of fishers who understand modern challenges, i.e. durability and the need to integrate other short fish distribution chains. Something which some are already doing.

Other than the fishers themselves, which other professionals can help?

Restaurant owners have a crucial role to play, by acting as ambassadors for local products. Hotel management schools also have a role by promoting ethics and local culture. Finally, researchers like me who must protect the cultural heritage of each region.

Are the European Union and governments of the countries involved aware of the urgency?

Yes, but there is a significant waiting period between initial awareness and implementing actions. However the fishing population is ageing and time is not on our side. But we shouldn't forget that ten years ago, the European Union wanted to stop artisanal fishing. This is no longer the case now that it is better organised and better represented.

What is the first port of call, in your opinion?

We must avoid losing intangible heritage linked to people, fishers. But it is difficult to collect. When we are fundraising, some criticise us for focusing on the past. However it's quite the opposite. By protecting the past, we are working to support the future.

ENCOURAGING BIODIVERSITY IN PORT ZONES

Biohut®, environmental watchtowers in the Ports of Monaco

Biodiversity is not just limited to natural and wild zones. A port can also help. This is already the case in Monaco.

A NEW REEF OF LIFE

A Biohut® is a nursery for coastal fish larvae. When groupers, bream, etc. lay their eggs, they are dispersed by the currents until they become larvae. To develop, the larvae nest in small coastal areas which are significantly affected by human activity. In fact, few manage to survive. Out of 600,000 eggs laid, only one or two will become adult fish!

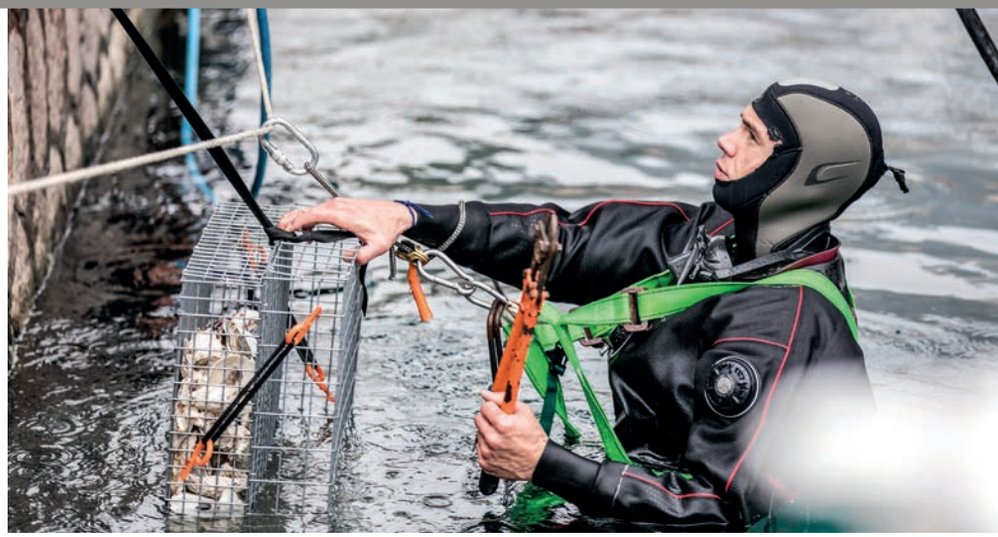
The idea is to recreate a reef in zones inhabited or urbanised by humans. It will offset the “concretisation” of areas by encouraging the growth of fauna and flora.

These nurseries in ports provide a home and shelter for the larvae which enter the ports. Designed using grids and oyster shells, they are protected from predators and can find food. These “cages” are then placed in strategic and protected locations in the ports, under dock platforms or on dams, and monitored. They should not impede boat traffic in any way. They require maintenance each year.

Launched four years ago in the Principality, the Biohut® were first tested in six other Mediterranean ports. As for today, seventeen ports are equipped, including the two of Monaco. The Hercule port has 22 nurseries, and Fontvieille port has 18.

The results are conclusive. Larvae grow and two times more abundance and diversity are found in places equipped with Biohut®. Life is settling. Thanks to the installation of ecological corridors, juvenile fishs leave the Biohut® safely and protected from predators. The port acts as a nursery again.

KEYFACT During the Monaco Ocean Week, schoolchildren and the general public witnessed the live installation of Biohut® in the port of Monaco.



THE RETURN OF RARE SPECIES

In Monaco, the first results have established that over 2,000 juveniles have visited the nurseries. They belong to ten halieutic fish species (sea bream, black bream, mullet...) and two rare species, including the tentacled blenny. In addition, fauna and flora (crabs, anemones, etc.) are growing to such an extent that 76 new species have been recorded, a sign of large diversity which encourages native species.

The Biohut® process increases biodiversity in port zones at the condition that the port invests in infrastructures, such as technical areas or the recovery of wastewater and sewage, to limit sources of pollution as much as possible.

The Biohut® process is also an excellent educational tool to raise public awareness of the issues experienced by the marine environment. For example, each year during Monacology, students attend workshops on the life cycle of fish.

The projects in progress are also aiming to classify the biological sounds emitted by the Biohut®, to assess the richness and biodiversity. The first results are very encouraging and should help developing new tracking tools. ■

Is an active port necessarily an enemy of biodiversity? Quite on the contrary, it can help support it.

Whilst the Ports of Monaco have already received the Clean Ports environmental certification, the department of maritime affairs, the department for the environment and the Ports of Monaco operating company have worked since 2014 on the Biohut® project to help protect fish populations.

LA BELLE CLASSE SUPERYACHTS

For responsible yachting

To open the Monaco Ocean Week 2018, the Yacht Club of Monaco organised the 8th edition of its environmental symposium, La Belle Classe Superyachts. Various initiatives carried out worldwide in yachting to help protect the environment were discussed.

The Yacht Club of Monaco (YCM), which is very responsive to actions carried out by the Prince Albert II of Monaco Foundation in favour of protecting the environment, noted during a dinner-debate on 10 April 2018 that it got involved in October 2017 in one of its programmes, and that it had signed the "Mr.Goodfish" partnership agreement to promote responsible consumption of seafood. The YCM has agreed to propose sustainably fished products on its restaurant menu.

BOATS OF THE FUTURE: AT THE FOREFRONT OF INNOVATION FOR GREATER ENVIRONMENTAL SUSTAINABILITY

During this dinner, a new generation of boats was presented, offering innovative solutions to produce less pollution. This was the case for the foiler, the flying boat from the *Hydros Foundation*, which can reduce fuel consumption by 30 to 40% thanks to a system of underwater wings.

Jérémie Lagarrigue, co-founder of the *Hydros Foundation*, announced that he is working on a new foiler project which could reach 5 times the speed of wind and cross the Atlantic in under 3 days. This would allow certain goods containers to cross the ocean, significantly reducing their greenhouse gas emissions.

The *Hydros Foundation* is also responsible for the Hydrocontest in Saint Tropez, the first student contest dedicated to maritime energy efficiency. With the Yacht Club de Monaco, it has developed the *Solar and Energy Boat Challenge*, a solar or clean energy boating challenge.

In this line of the boats of the future, Bertrand de Lesquen, director of the *Marine and Oceans* review, and Fabien de Varenne, President of *Sea Proven*, presented the *Sphyrna*, the largest civil drone in the world. 17 metres long, powered by an electric motor supplied by solar, wind and hydraulic energy, the *Sphyrna* is an autonomous ocean vessel dedicated to science for an improved understanding of the oceans but also to allow States to monitor, protect and operate their maritime space. *"The objective is to create a constellation of drones of different sizes, which can be disassembled and placed in containers so they can be transported, on request, to the four corners of the globe to tackle various challenges"*, Bertrand de Lesquen explained.

The Sphyrna drone moored to the YCM dock during the *Solar & Energy Boat Challenge* and its support vessel, the *Solar Odyssée*, will carry out the *Sphyrna Odyssey* mission between 15 July and 31 August created by the University of Toulon and the *Longitude 181* association, which aims to track mammals in real time across Toulon and part of the Pelagos Sanctuary. The *Sphyrna Odyssey* Mission will notably help to limit the significant risks of collision between boats and mammals during the summer season.

Another innovation was presented by Erin Clarck, who represented the shipowner of the Norbisbruk site 790 expedition yacht project. *"We are building a 80 m explorer boat with electric batteries and all the innovations possible in terms of environment, able to navigate at an economical cruising speed. Its battery life is 20 to 23 days, even with guests on board, which allows this boat to access the most remote parts of the planet without having an impact on the environment."*

RECYCLING WASTE FOR USE AS A CLEAN METHOD OF PROPULSION

Another innovative concept was presented by its creator Simon Bernard: the Plastic Odyssée. *"Every minute, the equivalent of the weight of 3 elephants in plastic is dumped into the ocean. Plastic Odyssée is a worldwide expedition on a laboratory boat, which is autonomous by recycling plastic waste: waste is gathered at each stopover and recycled on-board the boat, without creating polluting microparticles. The objective is to demonstrate that this plastic is too valuable to end up in the Ocean."*

TRAINING TO PASS ON KNOWLEDGE TO THE YOUNGER GENERATIONS

All of these initiatives inspired Katia Richomme-Huet, a professor in strategy, sustainable development and entrepreneurship. With her business school students, she has the project to create a database of best practices of shipowners, captains and manufacturers in Mediterranean countries whose economic impact would be evaluated.

Cristina Ruiz, *La Belle Classe Superyachts* manager, used the occasion to talk about the training centre set up by the YCM : *La Belle Classe Academy*, aimed at Yachting professionals, owners and crew members to learn about best practices in terms of the environment.

In conclusion, innovation and training are the two key areas to allow the yachting industry to become cleaner and more responsible. ■

59
THE FUTURE IS BLUE

"Saying 'yes' to the Ocean is trusting the future" enthuses the sailor explorer Yvan Griboval "it's imperative to protect it".

THE FUTURE IS BLUE

Say "yes" to the Ocean!

Returning from a solo round-the-world sailing expedition, Yvan Griboval spent 152 days at sea including 60 on an unprecedented and successful oceanographic expedition in the Antarctic Circumpolar Current. This "OceanoScientific Expedition 2016-2017" was part of the Monaco Explorations, which aim to have a better understanding of the Ocean to protect it.

Yvan Griboval returned from this Grand Tour with an optimistic view of the future - which he thinks is blue.
"The Ocean covers 71% of the planet and produces over 50% of the oxygen we breathe. It is the most promising source of life and food for the 7.6 billion humans on earth; rising to eight, nine and ten billion in the future", he continues. To support his case, he asked three personalities to share future solutions for sustainable use of the ocean.

Professor Philippe Lebaron, director of the *Banyuls-sur-Mer oceanology observatory*, confirmed that the ocean is still an unexplored region with various unknown organisms but a source of innovation with regards to cosmetics and pharmacology.

His laboratory studies therapies targeted against cancer using marine molecules. He has also noted the effectiveness of microscopic organisms in the treatment of pollution.

Doctor Jean-Marc Fromentin from Ifremer referred to the appropriate example of bluefin tuna in the Mediterranean. *"Ten years were needed for politicians to listen to scientists and put conservation before economics"*, he underlined whilst congratulating the courageous initiative supported by Prince Albert II of Monaco by banning trade in 2009. Thanks to careful respect of this ban and quotas, the stock has improved greatly for several years. An excellent example to benefit threatened species which we must use more rationally and sustainably for the good of all.

Finally, the philosopher Corine Pelluchon, from the University of Paris-Est Marne-la-Vallée and author of *"Éthique de la considération"*, underlined the need to reconnect humans with their natural state. *"We feel more alive when we are reconciled with nature"* she concluded.

To conclude, Yvan Griboval announced the composition of an Ocean Hymn by the composer Yvan Cassar *(Deutsche Grammophon)*, famous for his arrangements alongside Johnny Hallyday, Mylène Farmer and Roberto Alagna. It will be performed during the first Grand Concert for the Ocean, planned for 2019. *"To remind everyone - even the most sceptical - of the importance of protecting the ocean for future generations"*. ■

Jérôme de Bontin
Manager of Mekar Financial Services

BLUE FINANCE

Investing in sustainable development

There are many projects linked to ocean preservation but they are often difficult to fund. How can we convince investors to back them?

There are plenty of projects linked to responsible ocean development, but they often struggle to gather funding. Beyond contributions from States and philanthropic organisations, receiving funding from investors and economic decision-makers is a major challenge to support actions in favour of ocean protection.

Business leaders, asset management advisers, venture capitalists... talked about their experience in the specific fields of transport, offshore renewable energy and sustainable fishing. Others talked about funding energy transition plans and maritime activities.

They were all introduced by Jérôme de Bontin, who manages *Mekar Financial Services*. Before giving them the floor, he illustrated the vastness of the ocean and the projects to understand it better through *Point Nemo*. This point in the Ocean is the furthest point from any emerged land. Located in the south Pacific, it is so isolated that the nearest humans are those on the International Space Station!

This gives us an idea of the area left to explore...

Helena Vines Fiestas, Head of Sustainability Research and Policy for BNP Paribas, underlined that the financial world consider climate change and ocean preservation as major topics as they are a risk factor at a global level. She encouraged tracking changes to economic sectors which depend on it, notably aquaculture.

The diversity and variety of company projects involved in environmental problems in the ocean were demonstrated by the business leaders in attendance, each indicating innovations in their own fields.

Sébastien de Halleux *(Saildrone)* underlined the importance of taking measurements to improve protection. However exploring the ocean is difficult and expensive. This led to his idea of designing saildrones, drones which are powered by the wind, whilst being able to collect data worldwide, even in inaccessible locations and regardless of the weather conditions.

Margaret Hepburn, CEO of *Hepburn Bio Care*, demonstrated that it was possible for cruise ships to not pollute the waters that they cross. Her company promoted a full range of green cleaning products with the following goal: *"Let's make oceans great again"*. After cruises, she is targeting hotels and other coastal tourist infrastructures.

Finally, Joseph Stanislaw, Founder of *Cambridge Energy Research Associates*, promoted a system to recover energy from renewable sources such as water, sun and wind. The objective is to convince new markets to reduce production costs.

All these initiatives to preserve the oceans offer major prospects for significant development. A criterion which should be key for investors. ■

Presentation of the exhibition "From coral to the reef: a gem in danger" to H.S.H. Prince Albert II of Monaco.

From left to right: E. Tambutté (CSM), E. Béraud (CSM), M. Colognoli (Coral Guardian), D. Allemand (CSM), H.S.H. Prince Albert II of Monaco, H.E. X. Stiker, O. Jude (Phoctopus) and R. Vevers (The Ocean Agency).

MONACO'S COMMITMENT

Preserving coral reefs

The main conference hall at the Oceanographic Museum of Monaco hosted an exceptional evening on Friday, 13 April 2018, presenting the Principality of Monaco's commitment to coral reefs, in the presence of H.S.H. Prince Albert II of Monaco.

Monaco's work to protect reefs has been recognised for many years, firstly with research work by the Scientific Centre of Monaco, a pioneer and leader in the Coral Physiology field and the impact of acidification on the oceans for over 30 years, but also the ongoing financial support provided by the Monaco Government to the actions of the International Coral Reefs Initiative (ICRI). A further commitment was the Coral Reef Life Declaration launched in Malta in 2017 during the *"Our Oceans"* conference by His Serene Highness Prince Albert II of Monaco, His Royal Highness the Prince of Wales and in the presence of Her Majesty Queen Noor of Jordan, on the initiative of the Prince Albert II of Monaco Foundation, plus the magnificent coral aquariums at the oceanographic Museum of Monaco. Some figures help illustrate the importance of these ecosystems which cover just 0.2% of the ocean surface but are home to nearly one third of all marine organisms known to date, which supply support and income to over half a billion people across the world.
This evening was dedicated to four events:

The opening of the exhibition "From coral to the reef: a gem in danger" by H.S.H. Prince Albert II of Monaco. This exhibition was organised by the Scientific Centre of Monaco with its partners, the French NGO Coral Guardian, Phoctopus, a Monegasque association linked to the Monegasque Subaquatic Activities Federation and The Ocean Agency. Planned up to January 2019 in the VIP lounge of the oceanographic Museum, this exhibition presents the beauty of the reefs, from their intimate details observed under a scanning electron microscope, to the largest coral colonies, not forgetting the damage experienced by coral reefs due to bleaching, direct human activity or invasions by the starfish Acanthaster. The exhibition also demonstrates close links between reefs and human societies.

Workshop summary. The presentation, by Dr. Nathalie Hilmi, Research Manager for Economics and the Environment at the Scientific Centre of Monaco, with conclusions from the workshop on science-based solutions to save coral reefs from ocean acidification and other environmental stresses (conclusions found on the CSM website).

The presentation by the International Coral Reef Initiative *(ICRI)* by H.E. Xavier Sticker French ambassador for the environment and H.E. Bernard Fautrier, Vice-chair and Chief Executive Director of the Prince Albert II of Monaco Foundation and Minister Plenipotentiary responsible for missions with the Ministry of State for matters related to sustainable development of the co-chairing between Monaco, Australia and Indonesia.

The showing of the film "Chasing Coral" in the presence of Richard Vevers, founder and CEO of The Ocean Agency, and inspiration and actor in the film. This film shows the beauty and diversity of coral reefs and their importance to humans. Using surprising and shocking images, this film shows the disappearance of corals following bleaching of their colonies due to the relentless increase in sea temperatures. An increase of 1 to 2°C is enough to cause the death of an entire ecosystem in just a few days, as if the Amazon rainforest lost 30% of its surface area in just one month! A film which encourages action... but rapid action before the irreversible death of our oceans. ■

MONACO: COMMITTED TO CORAL

From July 2018, and until 2020, the Principality of Monaco, Australia and Indonesia are succeeding France and will co-chair the International Coral Reefs Initiative (ICRI), whilst 2018 will be designated as the International Year for Coral Reefs.

The ICRI aims to promote understanding and solutions at a global level to protect coral reefs and related ecosystems (mangroves, seagrass).

Coral reefs are increasingly faced with wide-scale bleaching, mainly due to increased temperatures. One of the challenges leading to 2020 will be to have a global overview of the condition of these ecosystems, which have considerable environmental and socio-economic importance.

This co-chairing was announced during MOW 2018, during the opening of the photographic exhibition at the oceanographic Museum of Monaco: "From coral to the reef: a gem in danger".

BEYOND PLASTIC MED

A commitment for a plastic-free Mediterranean

Everyone should be involved in the battle against plastic pollution. How can we ensure that everyone gets involved? BeMed promotes specific initiatives and supports a network of Mediterranean stakeholders working against plastic pollution.

Plastic pollution in the sea is now one of the most serious ecological problems affecting the Ocean. Once dumped into the sea, plastic can take up to 500 years to degrade. Each year, over 8 million tonnes of plastic are dumped in the Ocean. By drifting into midwater, plastic can strangle or suffocate various animal species. When exposed to the sun, it breaks into microplastics which can be ingested by fish and enter the food chain. It is therefore a potential threat to human health.

Faced with this very alarming fact, the Prince Albert II of Monaco Foundation, Surfrider Foundation Europe, the Tara Expéditions Foundation, the MAVA Foundation and the IUCN have decided to work together within the "Beyond Plastic Med" (BeMed) task force to raise awareness and mobilise the public and stakeholders around specific actions.

8 to 10 million tonnes of plastic waste
dumped in the Ocean each year.(1)

1 in 3 plastic waste items
end up in the environment.(2)

IN THE
MEDITERRANEAN SEA
over 1 million plastic particles per km^2 (4) which makes it the most polluted sea worldwide.

Between 100 and 1000 years
the number of years it takes for a plastic bottle to decompose! (3)

If we do not reduce our pollution,
the mass of plastic waste will equal the mass of fish in the Ocean by 2050.(2)

Sources:
(1) Jambeck et al. 2015 - Science
(2) The New Plastics Economy - Ellen Mac Arthur Foundation
(3) Marine Debris Program - National Oceanic and Atmospheric Administration
(4) Van Sebille et al. 2015 - Environmental Research Letters

THE 13 BEMED MICRO-INITIATIVES 2018

On 13 and 14 April, during the second edition of the Monaco Ocean Week, the Beyond Plastic Med initiative organised a meeting in the form of a feedback session between its project leaders. Eighteen prize-winners selected during calls for micro-initiatives in 2016 and 2017 met in Monaco to share best practices to be implemented during work in the field.

The 2016 winners were able to talk about their initiative by promoting the successes and difficulties encountered during their actions. These presentations acted as a starting point for discussion workshops to create guidelines and advice for future initiatives.

Generally, all participants defined an effective action as one which directly targets the sources of pollution: changing social behaviours, reusing and recycling plastic waste, developing alternatives, introducing new regulations...

Amongst the key points of the success of these actions, the BeMed winners insisted on the importance of:

Reaching out to the general public: a clear, positive and hopeful message to encourage as many people as possible to join the initiative.

Encouraging small changes which are easy to implement and cheap, to avoid sacrificing comfort standards which people do not want to lose.

Having a known personality as an ambassador for the initiative to attract the public's attention more easily and ensure good media coverage.

Positioning the action within a broader international network to ensure viability of the initiative and to encourage shared effort.

Proposing sustainable solutions on all levels: a single-use paper bag, although a genuine alternative to plastic bags, creates more waste than a reusable fabric or recycled plastic bag.

Demonstrating the economic value of the proposed solutions to encourage political and industrial changes.

During Monaco Ocean Week 2018, thirteen micro-initiatives chosen this year as part of BeMed were unveiled in the presence of H.S.H. Prince Albert II of Monaco. They will receive financial assistance through to 2019.

Development of the capabilities of associations involved in the battle against plastic waste - *Lagambiente onlus* - Italy

Public commitment through community awareness campaigns - *Association Jlij pour l'Environnement Marin* - Tunisia

Research and awareness on the sources of microplastic in the Ocean - *Mediterranean SOS Network* - Greece

Creation of a network of regions committed to reducing plastic - *Royal Albanian Foundation* - Albania

Proposal of an alternative to plastic bags - *Zero Waste Montenegro* - Montenegro

Raising families' awareness of the use of plastic on a daily basis through a blog - *TERO Single Member PC* - Greece

General public involvement in the location of sources of plastic waste through social networks - *Friends of the Earth Cyprus* - Cyprus

Recycling single-use plastic bags into reusable bags - *Association du Docteur Fatiha* - Morocco

Supporting campsites and holiday villages to reduce their use of plastic and raising awareness of people on their holidays - *Méditerranée 2000* - France

Involvement in writing a regulation on plastic waste - *Grup Balear d'Ornitologia i Defensa de la Naturalesa* - Spain

Organising sea expeditions and implementing an educational programme to raise young people's awareness of the Mediterranean sea - *Participe Futur* - France

Integration of an awareness module regarding the problem of plastic in teaching watersports - *Surf and Clean* - Spain

Establishment of a waste management protocol for a zero-waste beach - *Eco-union* - Spain

Don't throw plastic in the sea, put it in the bin! Please protect the sea!!
Malia

BEMED WORKS ALONGSIDE CHILDREN FOR AN AWARENESS AFTERNOON.

The purpose of this event was to get children to be more aware of the scope of the problem and to get them to reflect on simple solutions which they can implement at their own level.

Five workshops were offered:

1 Quiz

The children took part in a quiz regarding the problem of plastic waste. Some of the topics discussed included production and waste degradation time, recycling, impacts on the environment and impact on human health.

2 "Surprises of the sea"

By getting them to put their hands in opaque boxes, the children had to identify the waste and natural elements found on our beaches and put the waste in the correct bins.

3 "Waste degradation time"

The children were able to learn about the degradation time of waste found in the ocean by ranking them in order from most degradable to least degradable and by placing them on a timeline.

4 "Heroes of the Ocean"

By sharing their ideas on how to reduce plastic pollution in the Ocean on a daily basis, the children learned about three watchwords: Reduce, Reuse and Recycle (the three Rs). They left with a "heroes of the Ocean" card on which they copied the three actions which they preferred, one for each of the three Rs.

To protect the Ocean, don't throw rubbish on the ground as it will end up in the Ocean. Please recycle it instead!
Maëlle

5 "Message in a bottle"

By playing as Captain Nemo in The Mysterious Island (Jules Verne), the children wrote messages for the Ocean. Each message was shared with the rest of the class and then slid into a glass bottle.

Let's save the Ocean!
Let's recycle plastic,
let's reuse what we have and let's reduce our waste! Now!
Lana

1

3

4

Dear Sea,
I promise that me, my friends and my family will do everything to help you, protect you and not pollute you but clean you! Marie

2

5

31.4% of fish stock is used at a biologically unsustainable level, 58.1% at the maximum level and 10.5% is under-exploited (source: FAO 2016) KEYFACT

FROM THE SEA TO OUR PLATES

Raising awareness about sustainable consumption from a young age

For the second year running, the "From the sea to our plates" event organised on 11 April at Stars'N'Bars raised awareness amongst the general public and schoolchildren regarding sustainable consumption of seafood, and the tools to help them make positive decisions when shopping. On the agenda: school workshops, awareness stands and tastings of sustainable recipes. Plenty to make consumers more aware and responsible!

RAISING AWARENESS AMONGST YOUNG AND OLD

Five classes from Monaco (École François d'Assise Nicolas Barré, École de la Condamine and International School of Monaco) as well as a group of children from the Centre du Découverte du Monde Marin took part in six educational workshops.

Activities allowed them to learn about species which they usually eat, the consequences of overfishing and the active role they can play on a daily basis to protect the Ocean.

Amongst the workshops on offer, Mr.Goodfish performed a role play in which children played each actor of the sector, from fisher to consumer, learning about sustainable fishing and consumption. It was an opportunity to understand how fish arrives on their plate and how to make the right choices!

The Marine Stewardship Council (MSC), a fishing certification body, went even further by providing - sometimes surprising - details about species biology.

At the end of the morning, children showed everyone their message for the Ocean, encouraging visitors to commit to protecting it.

Activities and information stands provided by the exhibition partners Mr.Goodfish, the World Wild Fund for Nature (WWF), the Marine Stewardship Council (MSC) and the Regional Committee for Maritime Fishing and Marine Farming (CRPMEM) of Provence Alpes Côte d'Azur, also helped raise awareness amongst visitors.






JUAN ARBELAEZ
Plantxa,
Boulogne-Billancourt

LAURENT COLIN
Le Méridien Beach Plaza,
Monaco

PHILIPPE JOANNÈS
Fairmont, Monaco

FRÉDÉRIC RAMOS
Novotel, Monaco

MARCEL RAVIN
Monte Carlo Bay,
Monaco

BENOIT WITZ
Hermitage, Monaco

MIXING GOURMET FOOD AND RESPONSIBLE CONSUMPTION

To illustrate that it is possible to eat delicacies made with sustainable products, Monegasque chefs (Laurent Colin, Philippe Joannes, Frédéric Ramos, Marcel Ravin, Benoit Witz) and a Parisian chef (Juan Arbelaez) led a live cooking show, assisted by students from the Monegasque hotel and catering school (Lycée Technique et Hôtelier de Monaco).

Children and visitors were lucky to taste the succulent *"Stuffed courgette flowers with mussels and a Provençal style stew made with peas and broad beans"*, the delicious *"Horse mackerel tartar and beetroot coulis"* and the exceptional *"Caramelised mackerel on rice cannelloni with algae, seasoning, cucumber and radish"*, some of the secrets of which are revealed on the Mr.Goodfish website. ■

Students from the Lycée Technique et Hôtelier de Monaco met, with the chefs, the challenge of sustainable seafood consumption.

WHAT IS MR.GOODFISH?

Mr.Goodfish is a European programme launched in 2010 by three aquariums: Nausicaá in France, Acquario di Genova in Italy and Aquarium Finisterrae in Spain. The Prince Albert II of Monaco Foundation coordinates the program in the Mediterranean since 2013. Its aim is to reduce human pressure on fragile stocks, by developing positive behaviour among the fisheries sector and consumers.

To do this, each season and for each coast, Mr.Goodfish publishes a list of products recommended by their expert committee depending on the size of the fish, its seasonality and resource levels on the website www.mrgoodfish.com. Mr.Goodfish adopts a positive approach which does not ban consumption but rather offers an alternative to professionals and the general public, so they can make positive changes.

In France, over 500 professionals have already joined this programme. Amongst the new members, the **Lycée Technique et Hôtelier de Monaco** and the restaurant **Plantxa** made their commitments official by signing the Mr. Goodfish partnership agreement on 11 April 2018 during the “From the sea to our plates” event.

GETTING THE MESSAGE ACROSS

The sea on film

© Michel Dagnino

To raise awareness amongst a wide public, Monaco Ocean Week 2018 organised several film screenings in the evening.

FRAGILE LEGACY

BY DAVID O. BROWN

This 30 minute documentary looks at the heritage of the Cornell Blaschka collection. It is made up of five hundred glass models of marine invertebrates created by Leopold and Rudolf Blaschka and acquired in 1885 by Andrew Dixon White, the first president of Cornell University in the USA. The collection is used to teach marine biology.

Dr. Harvell and the filmmaker David O. Brown went on a quest to find the live models which inspired this unique collection 150 years ago. The film traces the life and the evolution of these invertebrates whilst looking at the beauty and fragility of marine biodiversity. How many living species still exist from those which were reproduced in the 19th century? And how did they survive?

At the end of the screening, a discussion around the theme of "Art and Science" was held with Dr. Harvell, marine biologist at the Cornell University ecology and evolutionary biology department, and Nadia Ounaïs, doctor of oceanology and director of international relations at the Oceanographic Institute.

DOLPHINS

BY KEITH SCHOLEY

“Dolphins” (“Blue” in the French version) is the latest release by the Disneynature label, an entity created in 2008 dedicated to wildlife documentaries.

Each film looks at an ecosystem through a different species and contains an environmental message. Keith Scholey has already created three feature films for Disneynature: *“African Cats”* about lions in Tanzania, *“Bears”* about a family of bears in Alaska, and *“Dolphins”*, about the seabed and coral reefs.

Blue is a young dolphin who must learn to leave his mother and hunt to survive and find his place. On his journey, he encounters predators, surprising friendly species and others which are less friendly. They are all part of a superb underwater ballet with sparkling colours, both harmonious and dangerous.

INTO THE ARCTIC 3

BY CORY TRÉPANIER

A Canadian landscape painter, Cory Trépanier is also an explorer and film producer who films his travels in Canada’s far north.

His “Into the Arctic” trilogy started in 2006 and ended ten years later with this third episode. This latest film looks at the environmental problems of the Arctic and is the tale of his fourth expedition. For nine weeks, Cory Trépanier covered 25,000 km in the footsteps of the Franklin expedition on the island of Beechey in 1845 and along the Thomsen river.

The special feature of his films is that he combines the breathtaking beauty of the landscapes, his paintings and the threats caused by humans and nature in these changing regions.

75

MONACO OCEAN WEEK PARTNERS

FONDATION PRINCE ALBERT II DE MONACO

THE PRINCE ALBERT II OF MONACO FOUNDATION

In June 2006, H.S.H. Prince Albert II of Monaco decided to create his Foundation as a response to the challenges facing our planet. Active at an international level, the Prince Albert II of Monaco Foundation works to advance environmental protection and the promotion of sustainable development by mobilising citizens, political leaders, scientists, NGOs and economic actors.

Since its creation, the Foundation has focused its activity on three major issues: climate change, biodiversity and water resource management. It targets three priority areas: the Mediterranean, the Polar Regions and Least Developed Countries (LDC).
For several years, ocean conservation has been a key concern of the Foundation.

The Foundation mobilizes funding to assist projects in the field. It also initiates campaigns such as the fight against plastics pollution in the Mediterranean through the BeMed initiative, the protection of the monk seal by bringing together leading specialists and the development of Marine Protected Areas (MPAs), by creating an environmental fund for MPAs in the Mediterranean with France and Tunisia.

The Foundation also works hard on sustainable management of sea resources. To this end, together with the Monaco government, it has worked to recover bluefin tuna stocks in the Mediterranean and is in charge of developing the Mr.Goodfish campaign along the Mediterranean coast. Mr.Goodfish aims to raise awareness amongst the public and professionals regarding sustainable seafood consumption and the ways they can act to preserve marine resources.

Since 2010, the Foundation together with the oceanographic Museum of Monaco has organised the Monaco Blue Initiative, a thinktank focused on MPAs. It also launched the Monaco Ocean Week, which hosts more than 30 events each year featuring speakers of the highest level.

Regarding climate and the ocean, the Foundation has brought together a number of organisations based in the Principality such as the Scientific Centre of Monaco and the International Atomic Energy Agency's marine laboratory to create the Monegasque Association for Ocean Acidification.
With the support of the government of Monaco and a number of other countries, the Foundation also instigated the future IPCC report on Oceans and Climate, due in September 2019.

The Prince and his Foundation actively pushed for the Paris Agreement to explicitly include the ocean. Together with the government of Chile, they launched the "Because the Ocean" Declaration in which 23 signatory countries call for the development of specific ocean-related measures in their national climate change mitigation and adaptation plans.

www.fpa2.org

Gouvernement Princier
PRINCIPAUTÉ DE MONACO

PRINCE'S GOVERNMENT

Protection and Conservation of Seas and Oceans.

H.S.H. Prince Albert II of Monaco has followed in the footsteps of his ancestors in making the sustainable management of seas, oceans and marine resources a national and international priority for Monaco.

The Monaco government works tirelessly to this end, and particularly within the framework of the 2030 Agenda for Sustainable Development adopted by the United Nations.

This was the impetus for the Government's strong mobilization behind the events of Monaco Ocean Week, led by the Prince Albert II of Monaco Foundation with the participation of the entire Principality.

While the Principality of Monaco may not have a large maritime domain, it does have extensive expertise with regard to seas and oceans, which it has had occasion to put into practice on a very broad scale.

This expertise makes it a natural ally of the United Nations and many other international organizations, where Monaco's voice is expected, heard and highly regarded.

The relevance of the Principality's actions in the sea and ocean domain builds on the coherence of its involvement with the activities of many institutions based in the Principality. These include the International Hydrographic Organization; the International Atomic Energy Association's Environment Laboratories, which host the International Coordination Centre on Ocean Acidification; the secretariats of ACCOBAMS (Agreement on the Conservation of Cetaceans in the Black Sea, Mediterranean Sea and Contiguous Atlantic Area), the PELAGOS Agreement, the RAMOGE Agreement and the Mediterranean Science Commission (CIESM).

Through its actions on conservation and the sustainable development of the oceans, the Monaco Government enhances the Principality's political visibility on the international stage according to the guidelines established by H.S.H. the Sovereign Prince.

This international presence and mobilization also reflect the national policy of environmental exemplarity consistently highlighted and shared with other states in international forums.

As a way to broaden awareness of the importance of conserving marine resources for future generations, Monegasque schoolchildren also took part in a number of events during this Ocean Week.

Institut océanographique
Fondation Albert Ier, Prince de Monaco

THE OCEANOGRAPHIC INSTITUTE, PRINCE ALBERT I OF MONACO FOUNDATION

Founded in 1906 by Prince Albert I, the Oceanographic Institute is a public interest organisation which ensures the link between the ocean policy of the Principality, the scientific community, socio-economic players and the general public. To carry out its mission as an environmental mediator - launched by H.S.H. Prince Albert II of Monaco - the Institute initiates numerous projects both nationally and internationally: art exhibitions, film and documentary screenings, seminars and conferences, publications, awards, educational programmes, awareness campaigns...
Since 2017, the Oceanographic Institute has cooperated fully with The Monaco Explorations, a 3-year-long round-the-world campaign launched by H.S.H. Prince Albert II of Monaco.
The Institute is supported by its two establishments: the Oceanographic Museum of Monaco and the Maison des Océans in Paris:

The Oceanographic Museum of Monaco
Since its inauguration on 29 March 1910, this Temple of the Sea has become an international benchmark. Towering 85 metres above the waves, it offers a dazzling dive in search of over 6,000 specimens and stands as a place for discussions and culture, for sharing experiences regarding the protection of the ocean, the common heritage of humankind.

From its aquariums to its historical collections, from the Shark Lagoon to Turtle Island on the panoramic terrace, the Institute offers a unique opportunity to learn to understand, love and protect the ocean.

Since July 2018, the brand new space *"Monaco & the Ocean, from exploration to protection"*, occupying almost 700 m^2, has related the commitment of the Princes of Monaco - Prince Albert I, Prince Rainier III and H.S.H. Prince Albert II of Monaco - to the protection of the marine world by an immersive scenography.
Its aim is to use interactive tools to raise public awareness and involve people in the preservation of the marine world.

Early 2019 an open-air care centre for sea turtles will be opened. It will include a clinic and convalescent pool, which will allow the turtles receiving care to recover without interference and under close supervision. Visitors will be able to observe these animals and learn about the threats which hang over this endangered marine species.

La Maison des Océans in Paris
La Maison des Océans hosts numerous events every year. It is also home to the offices of major actors in the environment and ocean protection: (The Foundation for Research on Biodiversity, the Ocean and Climate Platform, the Pew Charitable Trusts, CRIOBE, the Prince Albert II of Monaco Foundation, CIESM, etc.), making it a real environmental hub. With various spaces which can be privately rented, it offers a unique setting for receptions, cocktail parties, filming, seminars, workshops, conferences, etc.

www.institut-ocean.org

THE SCIENTIFIC CENTRE OF MONACO

The Scientific Centre of Monaco (C.S.M.) is an autonomous public Monegasque institution created in 1960 by Prince Rainier III. Devoted to scientific research, the C.S.M. today counts three departments:

A MARINE BIOLOGY DEPARTMENT

Created in the early 1990s, this research unit specializes in the study of tropical and Mediterranean coastal coral ecosystem functioning in light of global climate change. Its research draws on techniques from molecular biology, ecology, biochemistry and microscopy but also environmental economics. The C.S.M.'s strength is in bringing together unique expertise in coral physiology and ecophysiology with the long-term ability to grow coral in controlled conditions and with modern technical equipment of the highest quality.

A POLAR BIOLOGY DEPARTMENT

Created as an Associated European Laboratory with the C.N.R.S. and the University of Strasbourg, this department provides the scientific underpinnings for using penguins as indicators of change within polar ecosystems.

A MEDICAL BIOLOGY DEPARTMENT:

Providing a bridge between basic research and clinical applications, this department groups together:

- four translational research teams (of which one is an associated international laboratory) bringing the results of basic research to clinical services. These teams develop research projects on anti-cancer compounds, gene therapies for neuromuscular diseases and the study of the relationship between the intestinal microbiota and immunity;
- an agency working for the development of clinical research in the Principality;
- an observatory for the use of umbilical cord blood in the treatment of sickle cell anaemia;
- an environmental health unit linking human health to environmental changes occurring in the ocean. This activity takes place in the context of the Human Health Division of the C.S.M.'s Medical Biology Department being designated as a WHO Collaborating Centre for Health and Sustainable Development.

The juxtaposition of these different teams within a single organization enables the creation of promising and original interface programmes, such as using coral to shed light on the mysteries of aging. The Centre attracts candidates from all over the world: since its move to new headquarters in 2013, more than 60 specialists have arrived from 15 European and other countries (the USA, Japan, Australia, New Zealand, Palau, Brazil, the Caribbean, Canada, Oman, Saudi Arabia...).

YACHT CLUB DE MONACO

The Art of Living the Sea

The Yacht Club de Monaco's new building itself resembles a ship, anchored at the quai Louis II. Inaugurated on June 20, 2014, it bears the prestigious signature of English architect Lord Norman Foster and was conceived with respect for the environment. This commitment was rewarded in June 2016 with ISO 14001 certification, an environmental management process that grants the Club eco-responsible business status.

The YCM extends this philosophy beyond its walls by encouraging environmentally orientated round-the-world sailing expeditions to use Monaco as their starting point. One example is Mike Horn who set off on May 8, 2016 on his Pole2Pole adventure covering 42,000 kilometres by sail, by road and on foot and visiting both poles. A few months later, on November 17, 2016, Yvan Griboval set out on his OceanoScientific Explorer, a 16-metre sailboat, for a completely energy-independent, non-stop solo circumnavigation of the globe.

Founded by Prince Rainier in 1953 and presided over by Prince Albert II of Monaco since 1984, the YCM is a private club counting 2,000 members of 68 nationalities.

The YCM is resolutely turned toward the future, including that of energy, hosting its first solar and electric boat gathering in 2016. Organized in collaboration with the Union Internationale Motonautique (UIM) and the Prince Albert II of Monaco Foundation, this event gives free rein to the imagination and talent of young engineering students eager to use these races as a platform to raise public awareness of modern, clean technologies' potential in the fight against global warming. The gathering, unique in the Mediterranean, is the first and only competition among solar-powered racers on a single stretch of open sea.

www.yacht-club-monaco.mc

THE PELAGOS AGREEMENT

Following the bycatch of various dolphins in the nets of fishers in the Ligurian Sea in the late 1980s and the support of various associations, France, Italy and the Principality of Monaco signed the Pelagos Agreement regarding the creation of a Sanctuary for Marine Mammals in the Mediterranean on 25 November 1999 in Rome, with the goal to protect marine mammals and their habitats from threats deriving from human activity such as pollution, noise, collisions with ships, bycatch, reduced food stock, disturbances, etc.).

The Sanctuary covers a maritime area of 87,500 km^2 and 2,022 km of coastline including the maritime territory of five Regions (Provence-Alpes-Côte d'Azur, Corsica, Liguria, Tuscany and Sardinia) and 241 municipalities.
Eight species of cetacean are regularly present in the Sanctuary, including five dolphin populations, Ziphius (Cuvier's beaked whale), sperm whales and fin whales.

The Pelagos Sanctuary is managed by the governments of France, Italy and the Principality of Monaco with the support of a permanent Secretariat based in Monaco and the support of the Scientific and Technical Committee.
Each country is responsible for applying the Agreement's provisions within its own territory.

Research activities carried out as part of the Agreement have allowed major progress to be made in terms of understanding of marine mammals and their threats.

Thanks to legislative measures, bycatch in fishers' nets is no longer a threat for cetaceans. France, Italy and the Principality of Monaco are continuing their efforts, notably to reduce pollution by limiting the use of plastic and by involving coastal communities through a Partnership Charter. Various training and awareness actions are also being launched so that the protection of marine mammals and the quality of our environment is everybody's business.

The Pelagos Sanctuary is on the list of Specially Protected Areas of Mediterranean Importance (SPAMI). It is the largest Marine Protected Area (MPA) in the Mediterranean and the only international MPA devoted to the protection of marine mammals.

ACCOBAMS

An international agreement for marine biodiversity.

The Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS) is **an intergovernmental cooperation tool for the conservation of marine biodiversity**. This **Agreement** embodies riparian countries' commitment to preserve all species of cetaceans and their habitats by applying measures to mitigate impacts of economic activities.

ACCOBAMS responds to the need expressed by four international, European and Mediterranean Conventions specialized in the conservation of marine biodiversity and in protection of the marine environment: the **Barcelona Convention** for the Protection of the Marine Environment and the Coastal Region of the Mediterranean and its Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean, the **Bonn Convention** on the Conservation of Migratory Species, the **Bern Convention** on the Conservation of European Wildlife and Natural Habitats and the **Bucharest Convention** on the Protection of the Black Sea Against Pollution.

The agreement was concluded under the auspices of the Bonn Convention, signed in Monaco on **November 24, 1996**. The Agreement Area consists of the **maritime waters of the Black Sea, the Mediterranean and the Atlantic area** west of the Straits of Gibraltar (this area was extended in 2010 to the entire Portuguese and Spanish Atlantic coast) covering 24 countries. The Agreement participates in global conservation processes in sea and Ocean conservation.

In order to improve knowledge on marine biodiversity and to offer countries credible and acceptable conservation measures, the agreement relies on a Permanent Secretariat (based in Monaco), a Scientific Committee and a Monitoring Committee tracking application of these measures.

Conservation measures include :

- **Obligations** to prohibit all voluntary capture; to reduce accidental capture of cetaceans in fishing nets; to conduct impact assessments for all activities liable to affect cetaceans and to reinforce the fight against pollution;
- The **evaluation and management of interactions between human activity and cetaceans** (fishing, pollution and waste, underwater noise from all sources, collisions with ships, tourist activity...);
- **The protection of habitats**, namely by creating **Specially Protected Areas** and by maintaining **migration corridors**;
- **Research and monitoring** to justify conservation measures and improve their effectiveness;
- **Capacity building** to enable effective implementation of conservation measures and the collection of relevant data;
- **Information, training and education programmes** for the public and for professionals;
- **Emergency response capability** for the rescue of wounded, ill or stranded animals and follow-up for improving scientific understanding of the causes of such events.

https ://accobams.org

THE RAMOGE AGREEMENT

Wishing to preserve the Mediterranean and implement measures to limit marine pollution, Prince Rainier III de Monaco announced his desire to establish cooperation between France and Italy as early as the 1970s. This initiative became reality on May 10, 1976 with the signature of the **RAMOGE** agreement. Its name combines the first syllables of the names of the three cities that then limited its zone of application: Saint-**RA**phaël to the west, **MO**naco, and **GE**noa to the east.

This agreement forms part of the Barcelona Convention and its Mediterranean Action Plan. In 1981, the original zone of application was enlarged to extend from Marseille to La Spezia to take into account States' regional administrative structures.

The RAMOGE agreement is an instrument to allow the three countries to establish a pilot zone to combat marine pollution and enable marine conservation. This Agreement introduces the notion of sub-regional cooperation and solidarity on the scientific, technical, legal and administrative levels. It allows the three States to jointly determine and carry out actions on behalf of integrated coastal management. Since 1993, the agreement has also developed an operational arm, instituting an intervention plan common to the three countries in case of accidental marine pollution, called the RAMOGEPOL plan. The RAMOGE agreement also endeavours to sensitize users of the sea and the general public to responsible behaviour with regard to biodiversity and the marine environment.

Among its activities, the Agreement has tracked Ostreopsis ovata for over 15 years, a single-cell microscopic algae which usually lives in warm tropical waters but which has appeared for the first time in the Mediterranean, on the RAMOGE coast.

Probably transported by boat ballast water and considering the highly favourable climate conditions, this microalgae has been able to develop in our region. For several years, Ostreopsis ovata blooms have been observed in the entire north-western part of the Mediterranean.

Proliferation is generally harmless, however when the species that proliferate are toxic, they are known as HABs (Harmful Algal Blooms) which can potentially have negative impacts on human health, marine ecosystems and the local economy.

The toxic effects are usually limited to flu-like symptoms such as fever, cough, nausea, cold, conjunctivitis and respiratory problems. Affected people have not necessarily been in direct contact with the water, but they just need to have inhaled droplets in the air, transported by the wind, for the symptoms to show.

The cooperative work by scientists in the RAMOGE Agreement with health authorities has helped exchange information to better understand ecology and the dynamic of Ostreopsis and to establish procedures to track the level of concentrations of microalgae on beaches during the summer season, and to provide crisis management methods when a bloom occurs.

During Monaco Ocean Week 2018, the RAMOGE Agreement came together with the International Atomic Energy Agency to share its experience and extend its cooperation in terms of management of HABs with over thirty countries affected by this problem, in all regions worldwide.

CIESM - MEDITERRANEAN SCIENCE COMMISSION

The Mediterranean Science Commission (CIESM) promotes multilateral marine research in the Mediterranean and Black Sea since 1910. The Commission has grown since its founding to 23 Member States, with the recent accession of the Russian Federation in October 2013.

Focused on one of the most troubled, conflict-ridden region of the world, CIESM represents a unique forum for peaceful dialogue and exchange of scientific knowledge among thousands of marine researchers who apply the latest tools and approaches to understand, monitor and protect a highly vulnerable Mediterranean Sea.

Acting as a think-tank, the Commission is engaged since its conception in:

- promoting trans-frontier, cross-basin scientific cooperation through its international programmes,
- providing advice to Member States, research institutes and international Agencies on emerging issues and research priorities for the Mediterranean/ Black Sea Basin (expert workshops, triennial congress, atlas)
- developing independent, impartial proposals to economic stakeholders and decision makers for a sustainable maritime governance in the Mediterranean/ Black Sea (white papers, charts…).

The Commission integrates a broad spectrum of marine disciplines, federating more than 8,000 active researchers from hundreds of institutes located in fifty countries. This exceptional expertise, coordinated by a scientific team at CIESM Headquarters based in Monaco, covers the most important sectors of marine research.

www.ciesm.org

THE INTERNATIONAL HYDROGRAPHIC ORGANIZATION (IHO)

The International Hydrographic Organization (IHO) is the intergovernmental body charged with ensuring that all seas, oceans and navigable waters be hydrographically surveyed and mapped through the coordinated efforts of national hydrography services. The IHO has been hosted by the government of Monaco since its creation in 1921 and currently counts 89 member States throughout the world.

Hydrography consists of measuring water depth (bathymetry) and determining the position of all navigational hazards resting on the seabed such as shipwrecks and rocks. It is carried out primarily by ships and special craft using depth sounders and sonar, and by aircraft equipped with lasers. Useful information can also be obtained from satellite observation. Hydrography also measures tides and currents.

Hydrographic information is crucial to the safe, efficient and sustainable conduct of all human activity on, in or under the sea. Without hydrography, no ship sails; without hydrography, no port is built; without hydrography, no infrastructure is developed in the sea; without hydrography, no environmental program is implemented; without hydrography, no coastline is safe nor any island protected; without hydrography, no search and rescue operation is attempted; without hydrography, no maritime boundary is delineated. Hydrography is integral to the protection and sustainable development of the oceans in ensuring the marine environment is respected and that no negative economic or social impact is incurred.

The IHO has as its mission :

- To promote the use of hydrography for navigational safety and marine environmental protection as well as for all other maritime activities, while building public awareness of hydrography's importance;
- To improve the global coverage, availability, accessibility and quality of hydrographic data, information, products and services;
- To expand global hydrographic capacity as well as funding, training, science and techniques;
- To establish and support development of international norms for hydrographic data, information, products, services and techniques to achieve the greatest possible uniformity;
- To provide authoritative advice on all hydrographic questions in a timely manner to governments and international organizations;
- To facilitate coordination of hydrographic activities among member States;
- To improve cooperation in hydrographic activities between States at the regional level.

INDEMER: THE INSTITUTE OF THE ECONOMIC LAW OF THE SEA

INDEMER, the Institute of the Economic Law of the Sea, was created in 1985 with the status of a Monegasque Association under the high patronage of His Serene Highness the Sovereign Prince of Monaco.

INDEMER has a Board of Directors, chaired by Mr Jean-Charles Sacotte, and a Scientific Board chaired by Ms Annick de Marffy-Mantuano.

Its objectives are:

- To carry out all studies and research concerning legal, economic, social and environmental issues raised by the use of the maritime space and the marine environment;
- To organize symposia, seminars, round tables and meetings of experts gathering the most highly qualified international specialists;
- To publish works related to these activities (reviews, books, theses, conference proceedings…);
- To annually publish and distribute the "Directory of the Law of the Sea", a complete working document that reports on and analyzes legal acts and events of the previous year relating to maritime affairs and the law of the sea while providing a critical perspective;
- To promote knowledge of maritime affairs and the law of the sea;
- To recognize research relevant to its mission by awarding a prize every two years.

INDEMER's main achievements pursuant to its objectives are:

- Holding 12 international meetings since 1994, all the works of which have been published;
- Publication of the Directory of the Law of the Sea since 1996, the 21st tome appearing in 2017. This 900-page document is the only one of its kind in French, and is recognized as a global reference on the law of the sea;
- Since 1994, INDEMER has awarded 9 Prizes recognizing doctoral theses on the law of the sea.

www.indemer.org

INTERNATIONAL ATOMIC ENERGY AGENCY

The International Atomic Energy Agency (IAEA) was founded in 1957 within the United Nations system as a specialized body working towards the safe, secure, and peaceful use of nuclear science and technology. Today, the IAEA also actively contributes to the implementation of the UN Sustainable Development Goals for effective social, economic and environmental development. One of the IAEA's principal goals is "to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world". For its efforts to prevent nuclear proliferation and enhance the peaceful uses of nuclear energy, the IAEA was awarded the Nobel Peace Prize in 2005.

As part of the Department of Nuclear Sciences and Applications, the IAEA Environment Laboratories assists Member States in protecting the environment through improved monitoring and radioactivity assessment capacity. The Environment Laboratories develop nuclear and isotopic techniques that help better understand physical and chemical processes in the Ocean and that are shared with the Member States through technology transfer and capacity building efforts. Seafood safety, radioactive tracers, harmful algal blooms and the ocean carbon cycle are some of the topics that are currently being addressed by the Laboratories.

Nuclear and isotopic techniques can constitute unique tools to advance ocean acidification research. They allow scientists to assess past changes in seawater chemistry, as well as to evaluate the biological response of marine species to ocean acidification (e.g. primary production, growth, calcification rates etc.).

The IAEA Environment Laboratories has been engaged in ocean acidification activities since 2013. It hosts the Ocean Acidification International Coordination Centre (OA-ICC) - a project launched at the RIO +20 conference. The OA-ICC implements the following three key overarching activities: science, capacity building, and communication. The project also contributes to the Global Ocean Acidification Observing Network (GOA-ON), supports joint experiments and inter-comparison exercises, advocates for a stronger collaboration between natural and social sciences, works towards the development of best practices in ocean acidification research, and offers free access to its unique bibliographic data base on ocean acidification.

Frequently the OA-ICC organizes regional training courses for scientists from developing countries and supports their participation in international scientific events.

The project offers daily updated information on ocean acidification research results, related jobs, meetings etc. on its news stream and provide comprehensive resources grouped according to audience and language on its website.

The OA-ICC contributes on a regular basis to major international publications and participates in high-level international meetings addressing the problem of ocean acidification.

MONEGASQUE ASSOCIATION FOR THE PROTECTION OF NATURE (AMPN)

The AMPN is an NGO in charge of managing Monaco's marine protected areas. It was created in 1975 to fulfil H.S.H. Prince Rainier III's wish to preserve a section of the Monegasque coast.

The AMPN created Monaco's marine protected areas in 1976 and 1986 and is responsible for their management.

The first, with a surface of 33 hectares, is located to the east of the Monegasque coast bordering the Larvotto neighbourhood and contains a Posidonia meadow.

The second, which aims to preserve the Spélugues coral reef, has a surface of 2 hectares and is situated at the opening of Port Hercule.

For over 40 years, the AMPN has implemented protection and management measures with the help of volunteers, divers from local clubs and the Universities of Nice, Marseille, Montpellier and Genoa.

Artificial reefs have helped reinforce habitats to encourage population by fauna and flora in initial years. Innovative reefs created using a 3D printer were immersed in November 2017. Their design mimics the complexity of the natural environment and will create better performing tools to manage coastal seabeds.

Various research programmes have focused on the Posidonia meadow, the impact of reefs on fish and the study of their complexity, the dynamic of invertebrate populations, the study of the reproduction of urchins or the in-situ cultivation of red coral.
Two studies are in progress to analyse the reserve effect and demonstrate the link between the Larvotto marine protected area and the diverse avifauna.

Community science projects are also regularly promoted. Volunteer divers help to clean the seabed. Training is offered to identify and classify fish to assess populations, list heritage species such as grouper or brown meagre, monitor the arrival of non-indigenous species and track the health of fan mussels. The EOCOCIMED programme retrieves sea user comments via social networks to reinforce its knowledge of biodiversity.

Public awareness campaigns are also organised. Conferences, films, reports, exhibitions and entertainment are offered to get the public involved in protecting the marine environment.

There is an interest in making Monaco Marine Protected Areas part of the international dynamic.

The AMPN is now a member of the MedPAN network of Mediterranean MPA managers and takes part in the marine protected areas managers' forum. Locally, it aims to promote networking of marine protected areas in Alpes-Maritimes and Monaco to develop an integrated and sustainable coastal management tool.

Its presence during national or international events raises awareness of the specific features of Monaco MPAs and the actions carried out there. It reinforces scientific partnerships in the framework, notably significant research work on reefs created with a 3D printer.

www.ampn-nature-monaco.com

BEYOND PLASTIC MED - BEMED

The Beyond Plastic Med (BeMed) initiative was created after noting that with over 3000 billion microplastic particles, the Mediterranean Sea is the most polluted sea in the world. In order to act for a plastic-free Mediterranean, the Prince Albert II of Monaco Foundation, the Tara Expéditions Foundation, Surfrider Foundation Europe and MAVA Foundation came together to launch the BeMed initiative. Launched during the international conference *"Plastic in the Mediterranean: what next?"* which was held in Monaco in 2015, the BeMed initiative is now coordinated by an extended group as IUCN wanted to get involved alongside its founding members.

As BeMed's objective is to act at the source of the problem, the initiative aims to support and develop a network of Mediterranean stakeholders committed to curbing plastic pollution, implement sustainable solutions, encourage the research of new alternatives and mobilise stakeholders and the general public by raising awareness and sharing best practices.

BeMed leads awareness initiatives with the general public, organises and/or takes part in workshops and international conferences and supports actions in the field. Notably, BeMed launches a call for micro-initiatives each year to support NGOs, local authorities, scientific institutions or small companies in the Mediterranean region which aim to fight against plastic pollution on the shoreline and in the Mediterranean Sea.

The supported initiatives are part of priority areas of action: researching alternatives to plastic, raising awareness and passing on knowledge, advising and helping to implement new regulations, bringing together and mobilising players, collecting data and research.
Since 2016, 24 micro-initiatives have been launched in 12 different countries.

In the near future, BeMed will also work alongside companies to support them with their strategy to reduce their plastic footprint and initiate collective actions towards a regional circular economy.

MONEGASQUE ASSOCIATION FOR OCEAN ACIDIFICATION – AMAO

Ocean acidification, along with climate change, is one of the main consequences of increased atmospheric CO_2 due to human activity.

The Prince Albert II of Monaco Foundation instigated creation of the AMAO (Monegasque Association for Ocean Acidification). H.S.H. the Sovereign Prince publicly announced its establishment in his Dec. 3, 2013 speech during the Ocean Acidification International Reference User Group meeting.

The AMAO's purpose is to disseminate, promote and facilitate international actions on ocean acidification and other global factors of stress on the marine environment.

To this end, the AMAO undertakes to unify communication among the different institutions working in Monaco on ocean acidification: the Prince Albert II of Monaco Foundation and the Monaco Government, the IAEA's environment laboratories, the Scientific Centre of Monaco and the Oceanographic Institute.

The AMAO is also composed of representatives from the International Union for Conservation of Nature (IUCN) and France's National Centre for Scientific Research (CNRS).

It has several objectives:

RAISE AWARENESS

The AMAO works constantly to build awareness, beginning with the Monaco Declaration launched by 155 scientists from 26 countries during the October 2008 international symposium in Monaco, "The Ocean in a High-CO2 World".

UNDERSTAND AND ANTICIPATE IMPACTS

The CSM and the IAEA organize workshops every two years on the socio-economic impacts of ocean acidification. These workshops allow experts from the natural and human sciences to discuss and evaluate the economic and societal consequences of ocean acidification and to develop mitigation and adaptation strategies.

INFORM AND SENSITIZE CITIZENS AND DECISION-MAKERS

The *Ocean Acidification International Reference User Group* annually gathers scientists, industry representatives and NGOs on this issue.

The AMAO's actions include building public awareness of ocean acidification by developing communication tools and organizing conferences and exhibitions.

CARRY THE DEBATE FORWARD

Thanks to the activities of the *2015 Oceans Initiative,* the AMAO greatly contributed to placing oceans at the centre of discussions during the Paris COP21 in 2015.

The AMAO is committed to identifying the most effective adaptation, protection and restoration solutions in order to minimize damage.

The AMAO is participating in preparations of the IPCC's special report on "climate change, the oceans and the cryosphere."

SOLUTIONS

The AMAO coordinates the *"The Ocean Solutions Initiative"* project which assesses solutions offered by the ocean to minimise the impact of acidification and climate change on marine ecosystems and the services they provide.

COORDINATE INTERNATIONAL PROJECTS

Under its *'Peaceful Uses Initiative'*, the IAEA created the 'Ocean Acidification International Coordination Centre in Monaco to promote and facilitate international action on ocean acidification.

ENVIRONMENTAL FUND FOR MEDITERRANEAN MARINE PROTECTED AREAS (MPAS)

Marine Protected Areas (and other protective measures) cover 179,798 km^2 of the Mediterranean.

7.14% of the Mediterranean therefore has an official preservation status.

More numerous in the North than the South, some MPAs have had remarkable results when protection measures and resources to respect them have been put in place. Unfortunately, the majority of sites do not have sufficient financial means to effectively tackle objectives to protect marine ecosystems.

To deal with these shortcomings, during the ministerial segment of the **third international conference for Marine Protected Areas** in October 2013, **France, Monaco** and **Tunisia** launched an initiative to create an environmental trust fund for Mediterranean Marine Protected Aareas (MPAs).

The initiative received **political support from coastal countries in the Mediterranean, as part of the Barcelona Convention and the Union for the Mediterranean.**

To steer these funds, Tunisia, Monaco and France have decided to create the **Association for sustainable funding of Mediterranean MPAs - M2PA (Mediterranean Marine Protected Area)**.

France - represented by its Ambassador for the environment - chairs the association; other founding members include the Monaco Government, Tunisia and the Prince Albert II of Monaco Foundation.

Since then, **Morocco**, **Albania** and **Spain** have joined the Association and other countries have shown significant interest. Several regional organisations are also members[1].

The fund is based on an innovative funding system aiming to capitalise on a substantial financial sum based on a pre-determined investment strategy to draw regular profits, which will be reinvested sustainably into the reinforcement and efficiency of Mediterranean MPAs.

This environmental fund works alongside and supplement various national policies and existing systems as part of the Barcelona Convention Mediterranean Action Plan. It will have the following objectives:

- Reinforcement, efficiency and sustainability of existing MPAs;
- Support to regional Mediterranean MPA networks;
- Reinforcement of non-EU countries' involvement, via their national MPA strategy;
- Progressive funding of new MPAs.

The mobilisation of **other financial partners** via a fundraising policy with **public and private backers** (environmental sponsorship, biodiversity compensation, blue carbon projects, etc.) in addition to current financial partners[2] will be key to tackle the challenges of creating an ecologically representative network in the Mediterranean of well linked effectively managed MPAs.

[1] IThe Regional Activities Centre for Specially Protected Areas (Barcelona Convention), the MedPan Association, WWF Mediterranean, IUCN Mediterranean, the Conservatoire du littoral et des rivages lacustres, the Association of Small Mediterranean Islands, the Oceanographic Institute/Aquarium of Monaco.

[2] Monaco Government, Prince Albert II of Monaco Foundation, oceanographic Institute, Leonardo DiCaprio Foundation, Basel Zoo.

Find out more: Twitter @M2Pas - rrenoux@m2pa.org

STARS'N'BARS

Monaco's first sports bar and family restaurant STARS'N'BARS (founded by Kate and Didier in 1993) have made environmental awareness, well-being and personal development a priority, while offering a diverse menu based on home-made, organic and locally sourced dishes.

STARS'N'BARS is a vital player in the sustainable development of the Principality, and plays an active role in events such as the Monaco Ocean Week, the Ever Salon, The Africa Eco Race, The E-Prix, to name a few.

Ecological initiatives are a key concern to the restaurant, and they were the first to say no to plastic straws, plastic water bottles, single-use coffee cups and to install a composter on their terrace!

STARS'N'BARS has reduced its carbon *"food print"* by launching meat-free days, only serving Mr.GoodFish sustainable fish and offering filtered water bottled on site.

Today the family restaurant serves as an EcoHub with:

- Vegetarian, gluten-free, organic meat and responsibly caught fish (Mr.GoodFish) options,
- A terrace on the port surrounded by a 120 square metre vegetable garden,
- 100% of the restaurant's electricity comes from renewable energy and the restaurant also has its own electric vehicle fleet,
- Cleaning of the port and the surrounding area with local students,
- Monacology, an association cofounded by STARS'N'BARS and environmentalist Olivier Arnoult in 2004 which aims to raise children's awareness of the environment. In 2017, Stars'n'Bars and Monacology welcomed Yann Arthus Bertrand, in partnership with the Grimaldi Forum and the oceanographic Museum,
- Workshops, meetings and monthly conferences in the restaurant based on ecology, personal development, well-being and nutrition,
- Activities and games for children regarding recycling, clean energy and reducing waste, and protecting the sea.

"Everyone needs to reduce their carbon footprint: the future of our planet and our children depends on it", Didier argues.

www.starsnbars.com/en

Science Ethics
Institute for Science & Ethics

INSTITUTE FOR SCIENCE & ETHICS

The Institute of Science and Ethics, based in Nice, is a private institute that develops ethical guidelines and provides advice on ethical approaches in marine science. The objective is to anticipate the risks, whether environmental or related to human health and free will, of any innovative project for a sustainable, stable and resilient Earth system.

The founder, Dr. Michèle Barbier, is an independent ethics adviser, an expert in ethics at the European Commission and a scientific officer at the Mediterranean Science Commission, CIESM.

Through the reflection and implementation of methodologies, the Institute provides solutions to minimize the risks associated with any innovative project. In addition, the Institute promotes dialogue with policy makers and stakeholders, the management of major consortia, coordination and scientific communication, the implementation of university training and professionalization.

The Prince Albert II of Monaco Foundation would like to thank all of its partners which took part in the second edition of the Monaco Ocean Week.

The Government of Monaco | The Oceanographic Institute | The Scientific Centre of Monaco | The Yacht Club de Monaco | The Monaco Department of Maritime Affairs | The Monaco Town Hall | The United Nations | International Coral Reef Initiative | The Pelagos Agreement | The Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS) | The RAMOGE Agreement | Monaco Explorations | The Mediterranean Science Commission | The International Hydrographic Organisation | The Institute of the Economic Law of the Sea | The International Atomic Energy Agency's Environmental Laboratories | The Monegasque Association for the Protection of Nature | Beyond Plastic Med | The Monegasque Association for Ocean Acidification | The Association for Sustainable Funding of Mediterranean Marine Protected Areas | World Wildlife Fund | Tara Expeditions Foundation | Surfrider Foundation Europe | The Mava Foundation | International Union for Conservation of Nature | Edinburgh University | The Science and Ethics Institute | Low Impact Fishers of Europe | Med Donors | OceanoScientific | DisneyNature | Ecocean | The Monaco Sea Fishing Federation | Marine Stewardship Council | Mr.Goodfish | The Regional Committee of Maritime Fishing and Marine Farming of Provence-Alpes-Côte d'Azur | The Oceanographic Laboratory of Villefranche-sur-Mer | Société des Bains de Mer | Slowfood Monaco Riviera Côte d'Azur | FMB | Monaco Goût et Saveurs | The Centre de Découverte du Monde Marin | Lycée Technique et Hôtelier de Monaco | Ecomers | Stars'N'Bars | Novotel Monte-Carlo | The Fairmont, Monaco | The Monte Carlo Bay | Hermitage Hotel, Monaco | Le Méridien Beach Plaza, Monaco | La Plantxa | ISCAE Business School | IPAG Business School and all participants of this second Monaco Ocean Week.

Print by: Graphic Service - Certifié Imprim'vert (www.gsmonaco.com)
This book is printed on FSC-Certified paper.

Photos credits: photo coverage Monaco Ocean Week 2018: Cedric Fruneau
Shutterstock.com: Lukassek / Eugene Suslo / Take Photo / Wattanakarn Vladimirov / wildestanima / krisgillam / Kenneth William Caleno / Guido Montaldo / Goldilock Project / Norimoto / Ethan Daniels / Rich Carey / frantisekhojdysz / zaferkizilkaya / Damsea / RAndrei / bellena / krutar / orifec_a31

Coordination: **the Monaco Ocean Week team of the Prince Albert II of Monaco Foundation: Philippe Mondielli, Auriane Pertuisot, Nadège Massé**
Conception and design: **DCS/T2BH - Venise Group**
Writing: **Véronique Le Bris / The Prince Albert II of Monaco Foundation**

Gouvernement Princier
PRINCIPAUTÉ DE MONACO

FONDATION
PRINCE ALBERT II
DE MONACO

Institut
océanographique
Fondation Albert Ier, Prince de Monaco

CENTRE SCIENTIFIQUE DE MONACO

Yacht Club de Monaco

The organizers thank Rolex for its support
to the Monaco Blue Initiative since 2011
and to the Monaco Ocean Week since its creation

ROLEX

- monacooceanweek.org -


monaco
ocean week

monacooceanweek.org

FONDATION
PRINCE ALBERT II
DE MONACO

Villa Girasole 16, Boulevard de Suisse
98000 MONACO
Tél : +377 98 98 44 44
Fax : +377 98 98 44 45
www.fpa2.org