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Marine disaster: the MV Tycoon breaks up at Christmas Island … the UWA Oceans Institute dialogue focused on how scientists should help respond to such calamities. (Photo: Robyn Stephenson)

Best practice code proposed for disasters

In this issue

A code of best practice to help guide scientists involved in responding to marine disasters has been proposed at a major workshop held at UWA.

The proposal arose at the UWA Oceans Institute dialogue – *The Role of Science in Responding to Marine Disasters* – held in March.

The dialogue is one of several such events this year looking at 'big picture' issues affecting Australia's marine environments.

"Whenever disasters, whether natural or human-made, occur in the marine environment there is a need for scientific advice," explained Winthrop Professor Carlos Duarte, the Director of the UWA Oceans Institute.

"However, if not properly articulated, all too often the advice from scientists is delivered in an unarticulated way, too late, or conflicting assessments come from different research groups or individuals, leading to confusion rather than solving the problems."

He said the goal of the dialogue was to help stakeholders become more proactive in responding to marine disasters around Australia.

Part of this involved identifying the diversity and likelihood of the multiple risks facing Australia's marine environments; defining the role scientists should have in responding to such disasters and establishing best practice; and proposing actions to help improve responses to marine disasters.

The dialogue looked at recent disasters such as the shipwreck of *MV Tycoon* at

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Director's welcome

Making progress in pursuing ocean-based solutions

The UWA Oceans Institute continues to make progress towards its goals of increasing excellence in marine science and deriving ocean-based solutions for humanity's grand challenges.

We are also continuing to expand our membership, with new members, postdoctoral fellows and PhD students broadening our interdisciplinary capacities even further.

The progress and vision of the Oceans Institute was welcomed by our Advisory Board, which met for the first time on 6 March (see Page 6).

That same week, we also held our inaugural Ocean Solutions Dialogue, which addressed the role of science in responding to disasters in the marine environment (see our front page story and also Page 6).

The preparatory brainstorming for the next workshop in the series, on spatial planning for safe and sustainable operations in marine environments, was held on March 15. This yielded a series of ideas and actions we will share with our partners in the subsequent workshop.

In other significant news, Environment Minister Bill Marmion has announced funding of $7.2 million for the Pilbara Marine Conservation Partnership, a project to help manage the conservation significance of coral reef ecosystems in the Pilbara/Ningaloo region.

This project involves a team of UWA Oceans Institute and CSIRO researchers, led by Dr Russell Babcock (CSIRO), and is an important milestone in our contribution to providing the scientific underpinnings to conserve WA's unique coral reef ecosystems.

Winthrop Professor Carlos M. Duarte
Director, The UWA Oceans Institute

Professor Duarte has launched a new blog called The Blue Marble, hosted by The Conversation website. Follow his posts at ***www.theconversation.edu.au/columns/carlos-duarte-4497***

Shark alarm research features on ABC's Catalyst

Four deaths due to sharks in the past 18 months have led to the media dubbing WA as the 'shark attack capital of the world'.

That title may not be accurate, but researchers at the UWA Oceans Institute are looking at ways of helping prevent such attacks, by studying electroreception and other sensory modalities in sharks and developing solutions such as shark repellent devices.

The research, including an interview with Winthrop Professor Shaun Collin, is to feature on ABC's science program Catalyst.

The program will air on May 3 on ABC 1. You will also be able to view it at Catalyst's website at **www.abc.net.au/catalyst**

Winthrop Professor Shaun Collin interviewed at the Aquarium of Western Australia (AQWA).

First pictures surface of the far away fish of Chagos

Professor Jessica Meeuwig and colleague Dr Tom Letessier have returned from the remote Chagos Archipelago with unique video of the fish and sharks to be found in one of the planet's most pristine marine environments.

"The Chagos Archipelago, in the Western Indian Ocean, is the world's largest no-take marine sanctuary. As it is also extremely remote, its coral reef ecosystems are in outstanding condition," says Professor Meeuwig, Director of the Centre for Marine Futures, and member of the UWA Oceans Institute.

"My personal highlight was to be reminded of what truly healthy, protected tropical marine ecosystems can look like.

"We saw schooling hammerheads fat enough to be pregnant (and may well have been), high numbers of large predatory fish, all surrounded by swirling schools of small fishes.

"We started by doing a bit of diving, trialling a newly configured diver operated stereo video system; the diversity, cover, and health of the corals and their associated fishes were exceptional."

Researchers prepare their BRUVS rigs to video the fish of Chagos.

The main goal of the expedition was to document the structure of the fish assemblages of the deeper reefs, lagoons and seamounts of the archipelago using baited remote underwater video systems (BRUVS).

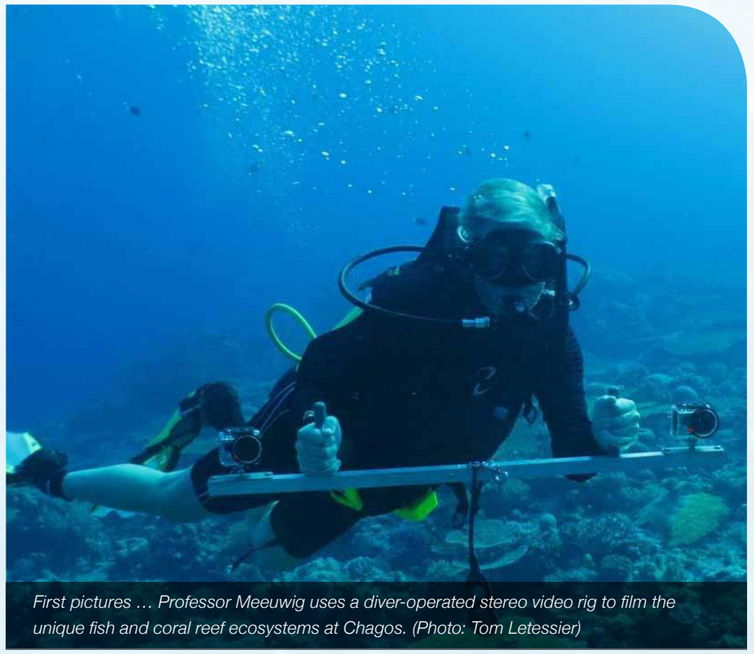
Professor Meeuwig and her colleagues from Australia and the UK deployed BRUVS at more than 200 locations around the archipelago, typically below 25 metres and down to 80m, depths which have never been systematically sampled before.

The video from more than 200 stations is now being analysed at UWA to document what species are present and where, how many individuals of each species are present and their sizes, a key indicator of population health. As the area has been little surveyed before, these data will extend researchers' understanding of species distributions.

"We're pretty excited as even though we just started processing the imagery, we've already identified one species previously only recorded on the east African coast," Professor Meeuwig says.

More importantly, the survey provides a first set of data to establish a baseline with respect to the fish and shark communities of the archipelago.

"Baselines are essential as they help us understand how fish communities change through time as a result of, for instance, ocean warming. Baselines in pristine, protected ecosystems also provide contrasts for other coral reefs that remain open to fishing," she says.



First pictures … Professor Meeuwig uses a diver-operated stereo video rig to film the unique fish and coral reef ecosystems at Chagos. (Photo: Tom Letessier)

How Perth was ‘two hours from disaster’

Seeking solutions to marine disasters … Winthrop Professor Carlos Duarte, Winthrop Professor Charitha Pattiaratchi, convenor Susan Fleming, Dr Larry Madin and Professor Robert Nicholls (l-r) at the lecture held at the Webb Lecture Theatre.

Perth was lucky to escape a major flood calamity early last year, it was revealed at the recent Marine Disasters lecture organised by the UWA Oceans Institute.

“Western Australia, or rather Perth, came very close – within two hours – of having a great disaster with Cyclone Bianca,” Winthrop Professor Charitha Pattiaratchi said.

“The whole of the foreshore and the (Esplanade) train station would have all been flooded.”

Professor Pattiaratchi, of the UWA Oceans Institute and School of Environmental Systems Engineering, was speaking at a public lecture on Responding to Marine Disasters.

He explained that if Bianca had crossed the coast near Perth in January last year as it had been expected to do, it was set to create a record flood level of up to 2.3 metres – about 30cm higher than the Perth’s highest recorded flood level of 1.98 metres and half a metre above the level reached without the effect of the cyclone.

“But the cyclone dissipated two-three hours before it hit land,” he said.

Professor Pattiaratchi, who chaired the numerical modelling working group of the Indian Ocean tsunami warning system, also told his audience of the advances made in tsunami warning systems in recent year years.

The lecture also featured two other speakers.

Dr Larry Madin, of Woods Hole Oceanographic Institution in the US, spoke on the lessons learnt from the Deepwater Horizon oil spill in the Gulf of Mexico, and how Woods Hole researchers had been able to swing into action to help provide key data on the spill.

He said the researchers were able to utilise equipment and technology that had already been devised for other purposes, such as underwater gliders which provided information on current velocities and patterns near the spill.

He said there had also been a need to ‘fingerprint’ the escaping oil to assist with later detection, as well as determine the oil-gas ratio as this would eventually determine the fine imposed on BP.

“To do that, we used a sampler attached to a remote vehicle that we had developed previously to sample fluids from hydrothermal vents,” he said.

Another task where researchers were able to assist was in measuring the flow rate from the well head, which was accomplished by using acoustic equipment.

“That measurement turned out to be the most accurate one which led to the eventual estimate of the total amount of oil spilt,” Dr Madin said.

“Along with that, our sample became the standard for determining what the oil-gas ratio was.”

Also speaking at the lecture was renowned sea-level rise expert Professor Robert Nicholls, of the University of Southampton in the UK. He spoke on the role of science in managing the risks of coastal flooding.

The lecture was held in early March as part of the first UWA Oceans Institute Dialogue. It was organised by the UWA Oceans Institute and the Institute of Advanced Studies, with the support of Shell Australia and the WA Department of Fisheries.

(The second UWA Oceans Institute Dialogue – to be held later this year – will focus on role of science in marine spatial planning.)

Turtle trackers tackle one of biology’s ‘unanswered questions’

A group of UWA Oceans Institute researchers is involved in trying to solve one of the unanswered questions in biology: What happens to baby turtles once they hatch and make their dash from the beach to the water?

“Once they hit the water, they pretty much disappear, and we only see them again when they come back as sub-adults,” says Dr Michele Thums.

“What happens in between no one knows – that period is called the ‘lost years’ because they just disappear and they’re too small to be tracked.”

That is, until now.

Michele and seven colleagues undertook a pilot study earlier this year in which they attached lightweight acoustic transmitters – weighing only 0.4 grams – to the tummies of 26 hatchlings.

The transmitters relayed the turtle movements to an array of receivers set up in the surf where the turtles entered the water after hatching at Eco Beach, about 130 km south-west of Broome.

Acoustic tracking is often used to monitor fish movements, but Michele believes this is the first time the technology has been used with turtle hatchlings.

Other methods, such as satellite tracking or radio tracking, can be either too cumbersome for the tiny, 40-gram hatchlings or have a relatively high degree of error.

The researchers also studied the effects of artificial lighting and how it might affect the turtles’ movements in the water.

Michele says early results indicate the acoustic tracking can be a relatively cheap and effective means of tracking turtle hatchlings as they leave nesting beaches and swim offshore.

Since the successful pilot study, Michele and her team are now busy raising funds to conduct the full experiment. This will examine the influence of artificial lighting on the swimming direction of hatchlings at their point of entry to the sea and provide an understanding of how waves and currents influence their movements offshore.

Turtle tracker … Dr Michele Thums shows one of the turtle hatchlings with a lightweight acoustic transmitter attached to its tummy.

OI Advisory Board appointed

The University of Western Australia has appointed an Advisory Board to help guide the Oceans Institute in achieving its goals.

The Advisory Board will provide guidance on emerging issues in industry, government and the general community, and will give direction to help shape the OI's research programs. Board members will also give advice on opportunities for collaborations, partnerships and outreach activities.

The Advisory Board includes state, national and international representatives. The members are:

Dr Ian Poiner is the former Chief Executive Officer of the Australian Institute of Marine Science (AIMS), and is now an AIMS Associate. He is also Chair of the Integrated Marine Observing (IMOS) Board.

Professor Lyn Beazley is the Chief Scientist of Western Australia and a Professor at UWA's School of Animal Biology. She serves on numerous bodies, including the Technology and Industry Advisory Council (TIAC) and the Australian Research Council (ARC) Advisory Groups.

Dr Larry Madin is the Executive Vice President and Director of Research, and a Senior Scientist, at the Woods Hole Oceanographic Institution (WHOI) in Massachusetts. He is a former Chair of the WHOI Biology Department, and Director of the WHOI Ocean Life Institute.

Colin Beckett is the General Manager of the Greater Gorgon Area for Chevron Australia. He is on the Board of the Australian Petroleum Production & Exploration Association (APPEA), and has more than 35 years' experience in the upstream oil and gas industry.

Winthrop Professor Carlos Duarte is Director of the UWA Oceans Institute and a Research Professor with the Spanish National Research Council (CSIC) at the Mediterranean Institute for Advanced Studies (IMEDEA) in Mallorca, Spain.

Expert advice … Dr Ian Poiner, Winthrop Professor Carlos Duarte, Professor Lyn Beazley, Dr Larry Madin and Mr Colin Beckett (l-r) at the first Advisory Board meeting in March. (Photo: Lauren White)

Responding to marine disasters

Continued from Page 1

Christmas Island, *RV Rena* in New Zealand, and the Montara oil spill and fire in 2009.

More than 20 people took part and contributed their expertise to the dialogue, with attendees representing major oil and gas companies, government agencies, and ocean scientists.

The dialogue heard that one of its aims should be to try to identify and build bridges between available scientific knowledge and the knowledge held by industry members.

As well as looking at drawing up a code of practice, attendees also decided to devise a framework to review the available peer reviewed literature on Australia's marine disasters to ascertain best practice procedures.

It is also looking to develop disaster preparedness exercises involving marine scientists, government and industry.

The dialogue has already resulted in closer collaboration with industry, with UWA researchers later holding follow-up meetings with representatives of the offshore oil and gas industry.

As part of the dialogue, a public lecture was held at UWA in which it was revealed that Perth was fortunate to escape a major flooding disaster only last year (see Page 4).

Wild tides of the Kimberley

The tidal range in the Kimberley exceeds 10 metres in Spring, according to Associate Professor Ryan Lowe. (Photo: Ryan Lowe)

With tides as high as a three-storey building, the Kimberley region of north Western Australia has some of the most extreme ocean conditions on the planet.

Here, reef communities must deal with dramatic changes in temperature, exposure to the air, and powerful ocean currents. It's a unique environment, and one we know little about.

But a new project led by Associate Professor Ryan Lowe, from the UWA Oceans Institute and School of Earth and Environment, aims to improve our understanding of these coastal processes and how they affect reef organisms like corals, seagrasses and algae.

"By understanding the detailed physical environment in which these reef organisms live, we can begin to understand how they have adapted to these extreme conditions," he says.

Professor Lowe recently received a five-year grant of almost $700,000 from an Australian Research Council Future Fellowship to better understand the tropical reef-fringed WA coastline, especially the area from the Kimberley to Ningaloo Reef.

"WA has a vast unexplored coastline with many parts still very poorly studied," he says.

"Over the next five years, we will significantly expand our field programs targeting reefs in the northwest, including in the remote Kimberley region, where virtually no data exists."

What sets the Kimberley apart from many other reef systems, he says, is that water currents are generated largely by tides – not by waves.

"The Kimberley is strongly tidally forced – it has the largest tidal range of a tropical coastal region in the world. This is very different from the ocean processes that shape many other reef systems."

Professor Lowe added that the Kimberley's reef ecosystems are some of the most pristine in the world.

"Obtaining baseline data sets and improving our process-understanding is critical so we can monitor for future changes to these iconic marine environments."

Seagrass is oldest living thing

A 15 kilometre-wide patch of seagrass is around 100,000 years old, making it the oldest known living organism on the planet, according to an international study.

A single plant of Posidonia oceanica has grown for millenia by cloning itself.

The researchers, including Winthrop Professor Carlos Duarte, the Director of the UWA Oceans Institute, analysed the DNA of 40 meadows of *Posidonia oceanica* across 3,500 kilometres of the Mediterranean Sea.

They estimated one particular plant to be between 80,000 and 200,000 years old.

The seagrass has been able to grow so large and for so long because it can reproduce asexually, generating clones of itself, says Professor Duarte.

"Clonal organisms have an extraordinary capacity to transmit only 'highly competent' genomes, through generations, with potentially no end," he says.

"Understanding why those particular genomes have been so adaptable to a broad range of environmental conditions for so long is the key to some interesting future research."

Seagrasses are the foundation of key coastal ecosystems but have waned globally for the past 20 years. *Posidonia oceanica* meadows are now declining at an estimated rate of five per cent annually.

"The concern is that while *Posidonia oceanica* meadows have thrived for millennia, their current decline suggests they may no longer be able to adapt to the unprecedented rate of global climate change."

The findings were published in the journal *PLoS ONE*.

Sex helps seagrass seed new life

Some seagrass meadows are thriving without sex (see story above) but a new study shows sex still plays a vital role, in that the seeds produced can disperse hundreds of kilometres from the original colony.

The research, published as the cover story in the journal *Bioscience* in January, forms a major re-think of the way seagrass populations spread, according to lead author Professor Gary Kendrick from the UWA Oceans Institute and School of Plant Biology.

The study found that seagrass meadows of *Posidonia australis* (found off Perth and at Shark Bay) and other species grew mainly by cloning, spreading out using new roots and shoots.

But DNA analysis showed seagrasses also relied a great deal on sexual reproduction involving male and female flowers, pollen, seeds and seedlings.

Seeds could travel hundreds of kilometres in the water to grow new seagrass meadows a long way from the original colony.

"Clearly, the process of dispersing (seeds) over these hundreds of kilometres is an important mechanism for keeping connectivity occurring between populations of the one species," Professor Kendrick says.

Healthy seagrass populations are extremely important for coastal stability and carbon sequestration, as well as forming habitat for a plethora of marine species.

Professor Kendrick says the research is expected to lead to better ways to help manage and restore depleted seagrass meadows.

Arctic fast approaching climate change 'tipping points'

The Arctic region is fast approaching a series of imminent "tipping points" that could trigger an abrupt domino effect of climate change across the entire planet.

That's the conclusion of Winthrop Professor Carlos Duarte, the Director of the UWA Oceans Institute, and others in a paper published earlier this year.

Professor Duarte was lead author of the paper in the Royal Swedish Academy of Sciences' journal *AMBIO* and in a parallel commentary in *Nature Climate Change*.

Professor Duarte said the Arctic region contained arguably the greatest concentration of potential tipping elements for global climate change.

"If set in motion, they can generate profound climate change which places the Arctic not at the periphery but at the core of the Earth system," Professor Duarte said. "There is evidence that these forces are starting to be set in motion.

"This has major consequences for the future of human kind as climate change progresses."

Professor Duarte said the loss of Arctic summer sea ice forecast over the next four decades – if not before – was expected to have abrupt knock-on effects in northern mid-latitudes, including Beijing, Tokyo, London, Moscow, Berlin and New York.

Research showed that the Arctic was warming at three times the global average and the loss of sea ice – which had melted faster in summer than predicted – was linked tentatively to recent extreme cold winters in Europe.

As well as that, Arctic records showed unambiguously that sea ice volume had declined dramatically over the past two decades, Professor Duarte said.

And in the next 10 years, summer sea ice could be largely confined to north of coastal Greenland and Ellesmere Island, and was likely to disappear entirely by mid-century.

Arctic alarm … warmer weather and melting sea ice are signs of a possible domino effect involving worldwide climate change. (Photo: Carlos Duarte)

Asha spreads her tale of ‘unorthodox’ whales worldwide

Putting blue whales centre stage … Asha de Vos gives her talk on blue whales at the TED Fellows conference in California.

UWA Oceans Institute researcher Asha de Vos flew half-way around the world in March to give a four-minute talk about her innovative research on blue whales.

In doing so, she joined an elite group of speakers in having the opportunity to spread their ideas and work worldwide.

Asha was selected to be a fellow with the 2012 TED program, standing for ‘technology, entertainment and design’.

The TED Fellows program is devoted to ‘ideas worth spreading’ and is designed to bring together young innovators and world-changers, basically people regarded among the brightest and best in their fields.

Asha applied to be a fellow and was accepted because of her research into the little-known blue whales of Sri Lanka, which has already been featured in documentaries by the BBC as well as the Seven Network in Australia.

She says giving her talk at the TED conference in California was an incredible experience – but daunting.

“They were a bunch of some of the most incredible, accomplished and passionate people I’ve ever met,” she says.

“The Fellow’s conference was held on centre stage and we had a full house of about 800 people – more people than I’ve ever talked to in one sitting!”

Californian confab … Asha de Vos with renowned oceanographer Sylvia Earle (left) following Asha’s talk on her research with blue whales.

Asha spoke on her research involving non-migrating blue whales, which she describes as the ‘unorthodox’ whale, the most enigmatic and least-known group of blues on earth.

While the talent and talks are stimulating, so is the networking. Asha says she was able to meet and connect with one of her heroes, renowned US oceanographer Sylvia Earle, who has led more than 60 expeditions and spent more than 6,000 hours underwater and is an explorer-in-residence with National Geographic.

“TED gives you incredible access to people you have spent your entire life being fascinated by and it puts everyone on a level playing field,” she says. “Everyone is open to meeting and learning about each other.”

Some 40 TED Fellows are selected world-wide each year, and receive an all-expenses paid trip to present at a conference at either California or Edinburgh, as well as training from experts in helping spread great ideas. The fellowship is a one-year commitment.

“At the moment, I partake in TED conversations, write blogs and connect with the world-wide TED community in any way I can,” says Asha.

*(You can follow Asha’s research at **www.whalessrilanka.blogspot.com**)*

Ocean solutions

Using the law to help protect sharks and other species

Professor Erika Techera is looking to utilise legal frameworks and regional marine planning to help solve issues such as the world’s dwindling shark numbers.

Professor Erika Techera.

Erika is an environmental lawyer at UWA Law School and a member of the UWA Oceans Institute, and is involved in the institute’s Ocean Solutions Dialogue later this year on marine spatial planning.

Her research, with Professor Natalie Klein at Macquarie University, currently involves identifying legal strategies for the sustainable management of shark eco-tourism activities.

“Tourism is an opportunity but it has to be well-managed because otherwise we can have a negative impact,” she says.

Professor Techera says Australia has a long history of tourism involving sharks, such as swimming with whale sharks in WA and cage diving with great white sharks in South Australia.

“There is little literature addressing legal frameworks for the regulation of shark eco-tourism and our work aims to fill that gap.”

She points out that new approaches such as legal regulation and regional marine planning can be critical elements in helping conserve and manage shark populations beyond the tourism sector.

“At the global level, the question is do they need their own legal treaty like whales (the International Convention on the Regulation of Whaling) or should we stick to what we have – which is endangered species listing combined with fisheries regulations?” she says.

The Pacific region is leading the way in developing such legal solutions to help conserve sharks. Measures introduced include the US shark conservation law; Hawaii and Guam’s ban on harvesting sharks for their fins; and Palau’s shark sanctuary.

So could we see shark sanctuaries in Western Australia?

“Shark sanctuaries is a trend we’ve seen internationally but in a country like Australia I think one important approach to take is to look at marine protected area management and strategic regional planning approaches, to balance competing interests” she says.

“In that way, we could perhaps in the future see the ‘zoning’ of the oceans, in the way we see the zoning of all land.”

Heart-stopping shark movie screened at US film festival

An eye-catching film made by ocean researcher Ryan Kempster from The University of Western Australia on the unique survival skills of bamboo sharks has been shown at a prestigious US film festival.

The movie includes extraordinary vision of Ryan's research involving a shark foetus sensing a would-be predator before closing down its heartbeat and lying perfectly still to avoid detection.

Ryan, a shark biologist with the UWA Oceans Institute and School of Animal Biology, said bamboo shark embryos were vulnerable to predators because they developed over several months in an egg case outside their mother's body.

His research showed how even before birth, bamboo shark embryos could use unique electro-sensitive pores in their heads to detect very faint bio-electrical signals emitted by other animals and would-be predators.

Ryan said his research could help increase understanding of how sharks responded to electrical fields.

"It might help us to develop better shark-repellent devices such as those worn by scuba divers and surfers," he said.

Ryan's three-minute film, *Survival of the Stillest: Bamboo Sharks*, was screened at the Beneath the Waves Film Festival in Norfolk, Virginia, on March 23-24.

Film festival organisers said it was chosen from more than 70 others because it combined strong storytelling, research and conservation.

After the initial screening, the festival's films will be shown around the US and abroad.

Ryan said he was thrilled his film would enable people on the other side of the world to learn more about the unique attributes of sharks and the need to protect them.

"It is such a great opportunity to share with others the very exciting research I am working on and hopefully it may generate some valuable collaborations with fellow researchers in the States," Ryan said.

Shark researcher and filmmaker Ryan Kempster with juvenile bamboo sharks in the background. (Photo: UWA/Paul Ricketts)

Corals have built-in resistance to ocean acidification

Corals may be more resilient to the threat of ocean acidification than previously thought, according to a new study led by researchers from the UWA Oceans Institute and School of Earth and Environment.

Oceans are becoming more acidic because they absorb much of the carbon dioxide released by human activities, says Assistant Professor Julie Trotter, a co-author along with Winthrop Professor Malcolm McCulloch and Assistant Professor Jim Falter.

A major concern among scientists is that these changes in water chemistry could have dire consequences for marine life, affecting the ability of animals such as corals to calcify their carbonate skeletons.

"Some recent predictions suggest the wholesale demise of coral reef ecosystems within decades if CO_2 emissions remain unabated," she says.

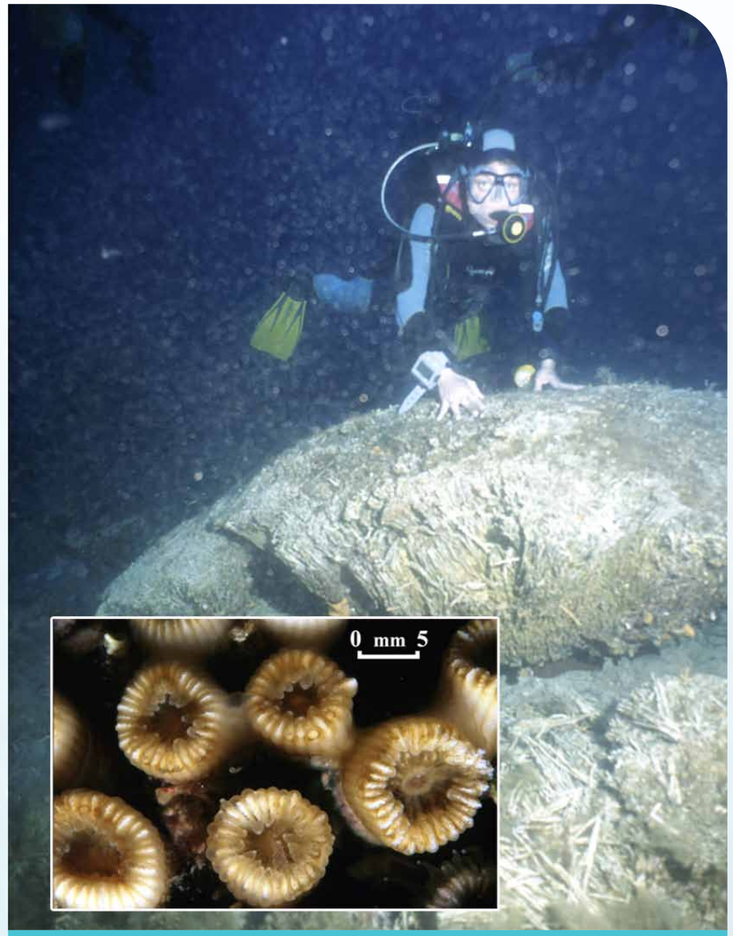
"But these predictions are based on the premise that corals are extremely sensitive to decreasing seawater pH, caused by ocean acidification."

The new research, published in *Nature Climate Change* in April, shows corals have a built-in mechanism that allows them to adjust or 'up-regulate' their internal pH to buffer against the decreasing pH of the surrounding seawater.

"Importantly, this allows corals to continue growing their skeletons over a much wider range of pH than previously thought, providing them with some built-in resilience to the effects of ocean acidification," says Professor Trotter.

"However, the impacts of other important effects, such as increasing temperatures from climate change, are still of great concern because we don't know how quickly species can adapt to this unprecedented warming" she says.

Future research will focus on additional coral species and other marine calcifiers (organisms that form mineralised carbonate) such as coralline algae and tiny plankton, to see how they too may respond to ocean acidification.



Corals, such as this colony of Cladocora caespitosa common to the Mediterranean Sea, should continue to form their carbonate skeletons despite the changing chemistry of seawater (Photo: Sergio Silenzi)

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News in brief

Malaspina wins 'Trip of the Year' award

The Malaspina 2010 Expedition has received the Trip of the Year Award from the Spanish Geographical Society.

Winthrop Professor Carlos Duarte, who coordinated the Malaspina Expedition, accepted the prize in Madrid on March 28.

The global expedition involved some 400 scientists from 18 countries – including the UWA Oceans Institute and the CSIRO.

Robotic AUV takes to the water

The autonomous underwater vehicle – AUV – program has resumed for this year.

The battery-powered underwater robot is being deployed by researchers from the UWA Oceans Institute, CSIRO, Dept of Fisheries and University of Sydney in conjunction with IMOS, the Integrated Marine Observing System.

As part of the 2012 program, the AUV is being deployed around Rottnest Island, the Jurien Bay-Leeman area, and the Abrolhos Islands.

The AUV is designed to take high-resolution images and acoustic data on the seabed, operating at depths from 15m to greater than 50m. It consists of two yellow cylinders joined together with an h-shaped frame holding two propellers (thrusters) and a vertical propeller.

$7m to help conserve Ningaloo, Pilbara reefs

Researchers from the UWA Oceans Institute and CSIRO will receive $7.19 million in industry and WA Government funds to help conserve the globally-significant Ningaloo and Pilbara reef ecosystems.

UWA and the CSIRO will also contribute $4.22 million to the project. WA Environment Minister Bill Marmion announced the funding in February as part of a $60 million Gorgon Joint Venture conservation package over the next 30 years.

Jellyfish not taking over the world's oceans

Despite widespread media reports, there is no hard evidence to support claims that jellyfish numbers are increasing worldwide at an alarming rate.

That was the finding of a study – published in *BioScience* in February – by a team of international marine scientists including Winthrop Professor Carlos Duarte, Director of the UWA Oceans Institute.

For the full story, visit **oceans.uwa.edu.au**

How the sawfish really uses its saw

Far from a sluggish bottom feeder ... the sawfish uses its saw to sense electric fields and strike vigorously at its prey. (Photo: David Wachenfeld/Triggerfishimages.com)

Contrary to previous assumptions, new research has shown that a sawfish's saw can actually sense electric fields to locate prey, helping it hone in for the kill.

The study, led by Dr Barbara Wueringer from the UWA School of Animal Biology and Oceans Institute, also shows that the sawfish uses its long saw to side-swipe and impale its prey.

The research smashes the myth that sawfish are purely bottom feeders that use their saw to rake the sandy bottom. It also provides evidence that the fish, which develop in freshwater river systems, feed closer to the surface than previously thought.

The discovery, published in the journal *Current Biology*, could help save the sawfish from extinction by providing vital information for captive breeding programs and strategies to save them from falling victim to commercial fishing nets.

Sawfish share a common ancestry with shovelnose rays and it's believed they evolved their saw-like rostrum with teeth on the outside to extend their niche in the underwater world.

Once common in tropical and subtropical regions of the Indo West Pacific, freshwater sawfish spend their young life in river systems until they reach adulthood — about age 10 and at least three metres long — when they move into the ocean.

Sawfish feed on catfish, mullet and freshwater prawns. One strike from their saw can split a fish in half.

Four species, which are protected in Australia, are found in the northern half of the country.

"Despite the worldwide decline of sawfish, there is an indication the populations in Australia are still in good condition," Dr Wueringer says.

"Officially they have never been targeted and so they are caught only as by-catch. "Unfortunately, their saws are often taken for trophies by both commercial and recreational fishers and their fins are popular in the shark fin trade.

"The more we know about them the better we can protect them. The first step might be to develop by-catch diversion strategies. And for captive sawfish, we can make sure they get the right stimuli to survive and reproduce," Dr Wueringer says.

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