Climate change resulting in more frequent flooding of the Wooramel River that leads into Shark Bay is threatening the unique ‘living rock fossils’ that make the area a World Heritage site, according to researchers from The UWA Oceans Institute, Curtin University and the CSIRO.

Shark Bay was added to the World Heritage List in 1991 as it contains living examples of the most ancient records of life on Earth: stromatolites.

These stromatolites – rocky structures formed over millennia by blue-green algae or cyanobacteria – thrive in Shark Bay’s Hamelin Pool, where an unusual undersea landscape has created an environment twice as saline as normal seawater.

“But climate change is disturbing the natural system,” says Emeritus Winthrop Professor Diana Walker of The UWA Oceans Institute.

“The Wooramel River, which flows into Hamelin Pool, has flooded three times in the last year, washing in a huge amount of sediment and damaging Shark Bay’s seagrass meadows.

“Usually the river only floods every eight years or so.”

Professor Walker, Winthrop Professor Gary Kendrick and other marine scientists from the Oceans Institute, Curtin University and the CSIRO are investigating how these disturbances are affecting Shark Bay’s World Heritage values.

The research forms part of a Caring for Our Country project funded by the Australian Government to the Western Australian Marine Science Institution.
Strengthening The UWA Oceans Institute

The next year is shaping up to be a busy and productive time for The UWA Oceans Institute, judging by recent developments.

For instance, I’m delighted that four of our colleagues were recently awarded ARC Future Fellowships for their outstanding work.

Our congratulations go to Asst/Prof Thomas Wernberg and Assoc/Prof Ryan Lowe, and newcomers Wayne Davies (from the University of Oxford) and Dr Jan Hemmi (from ANU).

And they’re not the only ones in the limelight. Winthrop Professor Mark Randolph and Professor David White are both finalists in the WA Science Awards to be announced in early December. We wish them well.

And as you can read elsewhere in this newsletter, OI researchers have been successful in obtaining funding of more than $4.5 million to help us pursue our vision of Oceans Solutions.

In other good news, the OI team has been strengthened with the recent additions of Tracy Parker, our new General Manager, and Warren ‘Starry’ Star, our new Boating and Diving Officer.

I’d like to welcome both and celebrate their addition to the team.

In addition, a new Oceans Institute body has been set up including all those members representing the OI in different programs and forums. These program leaders will help me drive the UWA Oceans Institute to the successful future we all envisage.

The Oceans Solutions vision we wish to develop is progressing with an engagement of industry, government and society with workshops being planned before the end of the year to share our views on how to solve problems through an intelligent use of the oceans.

We will soon convene workshops to discuss the future role of the ocean as a source of water, the role of science in responding to disasters in the marine environments, and challenges in the spatial planning of operations in the ocean.

We have also worked to enhance the visibility of career development opportunities in marine research at UWA and address gaps in present offerings. In two years, we will have helped develop a unique postgraduate program offering opportunities to students worldwide to be trained in excellence in marine research, while participating in our unique Ocean Solutions vision.

Indeed, interest in the UWA Oceans Institute is rising as indicated by the increased number of visitors, both nationally and internationally (the top countries by number of visitors to our web – after Australia – are US, UK, India, Germany, Canada, Spain, China and New Zealand).

Our web page is being updated and improved, so we hope that the number of visitors will continue to increase in the future.

Professor Carlos M. Duarte
Director, The UWA Oceans Institute

Marine life off Australia ‘most at risk’

Marine life in the areas to the north of Australia and elsewhere along the Equator, as well as the waters off Australia’s east coast, have emerged as being at particular risk from temperature changes due to climate change, according to a study published in the international journal Science.

The researchers found that the velocity of climate change is pronounced in the biodiversity hotspot of the ‘Coral Triangle’ off Australia, which includes the waters of New Guinea, Indonesia and the Solomon Islands.

The paper’s authors include Professor Carlos Duarte, the Director of UWA Oceans Institute. For the full story, visit www.oceans.uwa.edu.au
OI invited to be part of bid for a Commonwealth fisheries policy

The UWA Oceans Institute has been invited to add its support to a proposal to introduce a fisheries policy for Commonwealth countries.

During the recent CHOGM meeting in Perth, senior OI staff discussed the proposed policy with Dr Nicholas Watts, the Commonwealth Human Ecology Council’s delegate to CHOGM.

The Council is a humanitarian organisation that aims to keep fisheries and marine governance on the agenda of Commonwealth countries.

It wants CHOGM leaders to establish and implement a Commonwealth policy on fisheries by 2015.

It says such a policy would enhance the sustainability of Commonwealth fisheries and fisherfolk communities in terms of their livelihoods, food and biodiversity.

The proposed policy is also expected to lead to enhanced regional fisheries governance, as well as regional cooperation between Commonwealth universities and research institutes.

While in Perth, Dr Watts met the Director of the Oceans Institute, Professor Carlos Duarte, and Winthrop Professor Gary Kendrick to discuss the proposed policy.

The CHEC says there is an urgent need for such a policy to support Commonwealth nations in meeting the challenges they face from illegal, unreported and unregulated fishing; from marine ecosystem deterioration; and from the effects of climate change such as sea level rise and ocean acidification.

The Commonwealth Human Ecology Council believes the Perth CHOGM gathering was an opportune time to push for change.

Climate issues and biodiversity, including fisheries, were discussed at the Perth CHOGM.

The Perth gathering is also the first of three consecutive CHOGMs to be held around the Indian Ocean, with Sri Lanka due to be the venue for the next gathering and Mauritius earmarked for the 2015 CHOGM.

Ocean flora retreating to the brink

Warming ocean waters are causing seaweed communities to retreat south to escape the heat, according to a study led by Assistant Professor Thomas Wernberg from the Oceans Institute.

The results published in the latest edition of *Current Biology* predict that, given future warming, up to one quarter of species in southern Australian waters might retract towards extinction.

“We found that continued warming might drive potentially hundreds of species towards the edge of the Australian continent beyond which there is no refuge,” says Assistant Professor Wernberg.

“The potential for global extinctions is concerning because one quarter of all macroalgal species in the world are found off Australia and these marine habitats support equally unique fish and invertebrate communities.”
Development of the $63 million Indian Ocean Marine Research Centre (IOMRC) is well underway, with concept designs progressing well.

The project consists of two elements – construction of the $52 million IOMRC building on The University of Western Australia’s Crawley campus, and an $11 million upgrade of the Watermans Marine Research Facility at Watermans Bay.

At a project update for stakeholders and participants in early October, John McLean of Ferguson Architects presented floor plans and perspective drawings of the proposed facilities.

UWA’s Pro Vice-Chancellor for Research Professor Alistar Robertson – who also chairs the IOMRC steering committee – gave an overview of the project, and Mr McLean outlined the major features of the two buildings.

Central to the IOMRC is an open-plan design that will facilitate collaboration between researchers from the four key partners: The University of Western Australia, the Australian Institute of Marine Science (AIMS), CSIRO and the Department of Fisheries WA.

Opportunities

A major feature of the Crawley building will be a 130-seat auditorium. “There’s an opportunity for the auditorium to open out into an interaction space,” Mr McLean said, “which will be an advantage for conferences and other functions.”

To minimise energy use, the building is being designed to target a Five Star Green Star Rating - a benchmark in sustainable development. “We will have windows facing north and south, to take advantage of passive solar design principals,” said Mr McLean.

“So we can achieve good daylight without an overuse of artificial lighting.

“At Watermans, we are focusing on maximising the number of laboratories and aquaria for seawater facilities,” he said.

Professor Robertson commended participants for their work in the design process. “We’ve had excellent engagement among the four organisations and fantastic work by the stakeholders at all levels,” he said.

The Watermans Bay upgrade is expected to be completed by the end of 2012, with occupancy by early 2013. The completion date for the Crawley building is set for the end of 2014.
OI secures $4.5 million in research funding

The UWA Oceans Institute has been successful in securing more than $4.5 million in research funding.

The Institute was awarded more than $4 million in Federal Government grants from the Australian Research Council in early November.

It was awarded a further $500,000 of research grants from UWA and the Office of Naval Research’s NICOP program.

One of the biggest ARC grants is $700,000 earmarked for a national geotechnical centrifuge facility which will be part of the proposed Indian Ocean Marine Research Centre being built on UWA’s Crawley campus (see story opposite page).

UWA and several other universities will also contribute $880,000 for the new centrifuge that will be used for testing the seabed soils that have to support large offshore structures such as oil and gas rigs.

“The funding, a total of $1.58 million, will provide a 10-metre diameter geotechnical centrifuge and upgrading of the physical modelling facilities here at UWA Oceans Institute,” says Winthrop Professor Mark Cassidy, the Director of the Centre for Offshore Foundation Systems and Deputy Director of the Oceans Institute.

“With the new centrifuge, we’ll be able to spin large amounts of soil – up to 2.4 tonnes of soil – up to 100 times the force of Earth’s gravity.

“We have the only geotechnical centrifuges in Australia, and this will be our third centrifuge.

“This is really required in light of the larger tests we’ve been asked to do by the offshore oil and gas companies.

“With the new centrifuge to be based at the IOMRC, our facilities will be among the best in the world.”

ARC grant details:

ARC Linkage Infrastructure and Equipment Facilities funding: COFS’s geotechnical beam centrifuge. Principal investigator: Prof. Christophe Gaudin. Amount: $700,000 (total cost: $1.58 million).

ARC Discovery Project: Coupled physical and bio-geochemical dynamics on the Australian North-West Shelf. Investigators: Gregory Ivey (UWA), Ryan Lowe (UWA), Peter Strutton (UTas), Nicole Jones (UWA), Miles Furnas (AIMS), Richard Brinkman (AIMS). Amount: $520,000.

ARC Discovery Project: Quantitative measures of brain evolution in early vertebrates. Prof Shaun Collin, Prof. R. Northcutt. Total: $360,000.


ARC Linkage Project: Long-term changes in the phenology of Australia’s temperate marine macroalgae: has climate change impacted the world’s most diverse algal flora? Dr Thomas Wernberg, Dr Carlos Gurgel. Total $240,000. Partner Organisations: Botanic Gardens of Adelaide and State Herbarium of SA, SA Department of Environment and Natural Resources.

For a list of other new research grants see Page 12
Tracy to provide strategic direction for the OI

Tracy Parker has been appointed as the new General Manager of The UWA Oceans Institute. Tracy has a strong background in strategic development and business performance management. At the OI she will provide strategic advice to help the Institute achieve its vision – to provide ocean solutions for humanity’s grand challenges – and to develop and enhance financial and resource management.

Before joining the OI, Tracy held the positions of Strategic Analyst for the UWA Business School and various senior management roles at UNSW Global.

She holds a Bachelor of Commerce in corporate administration and management and a Master of Commerce in strategic value management.

“I’m happy to be part of the team working with Carlos on his vision to develop and promote oceans solutions,” she says. “It’s an exciting time for the Institute as we move to consolidate the development work of Alistar, Gary and Christine and move into the next phase.”

OI bids farewell to Christine

Christine Shervington has stepped down in her role as General Manager of The UWA Oceans Institute but she will still be heavily involved in developing marine research facilities at UWA.

Christine has taken up a new position as Strategic Coordinator of the proposed Indian Ocean Marine Research Centre (IOMRC).

Around 40 staff and students attended a function at the OI building in September to acknowledge Christine’s achievements.

In a message from Spain, Oceans Institute Director Carlos Duarte thanked Christine for her excellent work in helping establish and promote the Oceans Institute.

“You work, together with that of past Acting Director Gary Kendrick and past Executive Assistant Maryann Evetts, the first OI management team, has brought the Oceans Institute to be a major actor in marine research in Australia and internationally,” wrote Professor Duarte.

Attendees also heard thanks from Professor Gary Kendrick, Winthrop Professor Shaun Collin, Winthrop Professor Chari Pattiaratchi, and Dr Jamie Oliver of the Australian Institute of Marine Science.

In Christine’s new position as Strategic Coordinator of IOMRC, she will assist the development of the world-class, $52 million marine facility to be built on the UWA Crawley Campus, as well as the $11 million refurbishment of the Watermans Marine Facility.
Ryan takes shark science to remote WA high schools

Lots of teenagers dream of a career in science – doctor, vet and marine biologist are often high on the list – but many consider it out of their reach.

But Ol’s Ryan Kempster just might be able to help them realise those dreams.

Ryan has been invited to join UWA’s Travelling Scientist Program, which takes inspiring young PhD students to remote and regional WA high schools, to encourage the students to consider a career in science.

Travelling scientists explain their research in a fun and engaging way, talk about how they became a scientist, and essentially open up new study and career options that students may never have considered.

“We’ll be talking about what we do as scientists but also how we got there in the first place,” says Ryan, who studies marine neurobiology and, in particular, the sensory system of sharks. “It’s good for kids to know that it doesn’t always have to be a linear path into a career – you can change your mind and explore lots of different areas along the way.”

Ryan originally wanted to be a vet, he says, but now loves his work as a shark biologist and has even set up a popular shark conservation group, Support Our Sharks.

Inspiring kids

The Travelling Scientist Program was established by UWA’s SPICE program and Science Futures Foundation in late 2009. Associate Professor Jan Dook, who coordinates the program, says, “It’s about inspiring kids to think about their options.”

“Kids in the metropolitan area have easy access to events at the university, listening to talks and career advice,” she says. “Kids in remote and regional areas don’t have that.”

“So we ask young, dynamic scientists to tell their own story, to get kids to consider something they probably have never thought about before.”

Ryan proved his skills as a science communicator earlier this year when he claimed both top prize ($3000) and the people’s choice award ($500) in UWA’s Three Minute Thesis competition.

Ryan went on to compete in the international 3MT in late September, held at UWA’s Octagon Theatre. He won his way into the final round, finishing in the Top 11 out of 42 speakers from Australia, New Zealand and Fiji.

For Ryan’s suggestions on how to deliver an effective 3MT, read his three top tips below.

Ryan will make his first trip to WA high schools as a Travelling Scientist in early 2012.

Ryan’s top three tips for giving a great 3MT

Slide: The first thing the audience will see is your slide. A bad slide will immediately disengage your audience. You need the slide to be simple and self-explanatory, so avoid using text, figures and confusing diagrams.

Timing: Write a script that lasts about 2:30 – I’ve seen good talks go overtime by just 1 second and get disqualified. Talk slowly and take pauses between key points so the audience can really take in what you’re saying.

Stage presence: Be engaging and move around the stage (slowly!). Time your movements around the stage with the talk itself – this will help you recall your next line (and avoid those embarrassing silent moments).
Nitin’s research is making waves

While undertaking his PhD at The UWA Oceans Institute, Nitin Repalle studied wave phenomena in partially-filled LNG tanks – what’s called the ‘sloshing’ effect – with the aim of making LNG transport in ships a safer option.

Now he’s using those same skills to harness the ocean’s waves to create electrical energy for our homes and businesses, as well as desalinated water.

Nitin has submitted his thesis and was recently appointed a hydrodynamics engineer with Carnegie Wave Energy.

The company is developing its CETO technology – which involves submerged buoys anchored to the seabed – to harness the power of the ocean’s waves to produce electricity and desalinated water.

Nitin says wave energy is a largely untapped source of renewable energy with huge potential.

“Ocean waves are a vast source of clean energy whose total power on the world’s coastlines has been estimated to be 10 TW, the same order of magnitude as the world’s current power demand,” he says.

“In fact, the CSIRO’s 2010 clean energy report identifies that by converting just 10% of Australia’s near-shore wave energy, half of Australia’s current electricity consumption could be met.”

There are still challenges to be overcome such as harnessing power from the irregular behaviour of waves and coping with extreme weather conditions, but Nitin says the company is well on its way to developing commercial-scale units providing zero-emission electricity.

“My work involves a lot of numerical computations to optimise the hydrodynamic behaviour of a CETO device to the metocean conditions and build virtual prototype models to enhance the power absorption capacity from the waves in an economically feasible way,” Nitin says.

Cyclone simulator is a winner

Researchers at the Oceans Institute and the School of Civil and Resource Engineering have won a major award at the recent WA Innovator of the Year awards.

Winthrop Professor Liang Cheng and Professor David White and their team of researchers won the Woodside oil and gas encouragement award for the Large O-tube Facility.

Professor Cheng, the project leader, said the experimental facility simulated the effect of cyclones at seabed level, supporting new design methods for the stability of pipelines during storms.

The facility was designed and built by UWA and began operating last year from the University’s Shenton Park site.

For the full story, visit www.oceans.uwa.edu.au.
Starry’s diving and boat expertise set to benefit researchers’ voyages

The Oceans Institute welcomes its first full-time diving and boating safety officer, Warren Starr (preferred name ‘Starry’).

Starry will keep the Institute up to speed with ongoing changes to diving and boating policy and legislation, and aims to streamline the current field trip planning process. Eventually, Starry’s work will make it simpler and easier for researchers to ‘piggyback’ on each other’s field trips, facilitating collaboration between different research areas.

Starry’s other roles will be to maintain and upgrade the Institute’s boats and equipment, and he will soon provide a short induction course for members on safe boating and diving practices.

“Basically, we’d like to make it a safer place for everyone, but also still very practical,” says Starry. “It’s about familiarisation – if you’re using equipment you’re familiar with it’s a lot safer and a lot better.”

In September, the Institute acquired a new small research vessel, the 5.5 m Marlu, which Starry says will aid research in the waters around the West Australian coast.

Starry is a Master IV Captain and experienced instructor, having clocked up more than 5000 dives in oceans around the world. He recently returned to Western Australia from the Bahamas, where he managed an estate and worked in a variety of roles, from captain on a luxury yacht and project manager to the designer and builder of large aquaria.

Starry says he is open to staff and student feedback on how boating and diving practices can be improved. He’s based in Room 114 at the OI’s Edward Street building and can be contacted on 6488 7314 or 0457 835 527.

Hagfish use slime to choke predators

A new study has found the primitive hagfish, also known as a “snot eel,” can defend itself by releasing a noxious slime that chokes would-be predators.

The long, thin hagfish are almost blind and have no jaws but use tooth-like rasps to prey on dead and dying fish. Fossil records suggest hagfish have evolved for a little over 500 million years.

Researchers from The University of Western Australia, New Zealand’s national museum Te Papa and Massey University in Auckland recorded underwater footage which reveals – for the first time – the hagfish repelling sharks and bony fish using its gooey defence mechanism. The study was published in Scientific Reports.

“As soon as it is attacked, the hagfish releases a mucus-like substance from a battery of slime glands, which makes predators gag before quickly retreating,” says Associate Professor Euan Harvey from the Oceans Institute.

For the full story and video, visit www.oceans.uwa.edu.au.

Researchers have captured the first ever video footage of a hagfish ‘sliming’ its predators. (Photo: Te Papa Museum)
COFS researchers feature in WA science awards

Two OI researchers have been recognised for their outstanding work by being selected as finalists in the 2011 WA Science Awards to be held in December.

Winthrop Professor Mark Randolph is one of three finalists in the Scientist of the Year category. Professor Randolph is Professor of Civil Engineering with the Centre for Offshore Foundation Systems (COFS) and Director of Advanced Geomechanics. His research has been hailed as instrumental in developing and translating geotechnical engineering expertise into workable solutions for the offshore oil and gas industry.

A colleague of his at COFS, Professor David White, has also been nominated as a finalist in the awards. Professor White, an Australian Research Council Future Fellow, is a finalist in the Early Career Scientist of the Year category.

Professor White is a geotechnical engineer who is pioneering a new field of research into the behaviour of shallow seabed sediments. Results from his research are now used to assess the stability of all major pipelines currently being designed to pipe Australia’s offshore gas resources.

Science and Innovation Minister John Day will announce the winners of the awards, as well as the 2011 inductee to the WA Science Hall of Fame, on 8 December at the Perth Convention Centre.

Shark Bay stromatolites

Continued from Page 1

Surprisingly, it is the seagrass meadows in Shark Bay that are responsible for creating Hamelin Pool’s unique salty conditions that allow stromatolites to thrive.

Over the past 4,000 years, seagrasses have collected sediment to build a barrier known as the Fauré Sill around the top of Hamelin Pool, limiting ocean circulation.

“The trapped water inside the pool evaporates at a very high rate and – because it doesn’t mix well with the wider ocean – this water becomes extremely salty,” says Professor Kendrick.

“With climate change, the amount of sediment washing into Hamelin Pool is only expected to increase, which poses a major threat to the seagrasses.

“We’ve looked at growth rates and shoot lengths of seagrasses buried by sediment and we know that they are significantly affected.” A large area of defoliated seagrasses was observed on Wooramel Bank to the north-east of Hamelin Pool.

The current research will help marine scientists to understand how increased sediment input and changing ocean circulation patterns will affect the Fauré Sill ecosystem, and how this will ultimately affect the stromatolites.

“Shark Bay is world-renowned for its high diversity of marine flora and fauna, and for its unique ecosystems,” says Professor Walker. “Our current research will help to confirm how climate change will affect these natural assets.”
International accolades flow for offshore rig research

A pair of UWA Oceans Institute researchers have picked up two prestigious awards for their work aimed at preventing mobile jack up drilling rigs breaking through the seabed and toppling over.

The research of Winthrop Professor Mark Randolph and Assistant Professor Shazzad Hossain, both with the Centre for Offshore Foundation Systems, has led to improved design approaches and ways of preventing so-called ‘spudcan penetration incidents’.

When mobile drill rigs are installed and preloaded onto the seabed, there is a risk that the spudcan – the base of the rig’s giant legs – will punch through a strong top layer of seabed soil and penetrate into the weaker layer underneath, possibly toppling the rig.

Such collapses can be very dangerous and lead to a loss of lives, as well as costing millions of dollars. Notable cases include the collapse of the Sapphire Driller rig off the Ivory Coast in 2009 and the Maersk Victory drilling unit toppling in waters off South Australia in 1996.

“We cannot do any field trial testing due to the expense, so we mimic the case histories in a centrifuge, and then carry out parametric numerical analysis,” says Asst/Professor Hossain.

The pair used the drum centrifuge at COFS to model the intense pressures that spudcans have on the seabed. To do this, the centrifuge would spin soil samples at rotation equivalent to 200 times that of earth gravity.

“We are also getting field data from industry to validate against so the outcomes will be applicable directly to the offshore industry,” he says.

The pair wrote up their research (‘Deep-penetrating spudcan foundations on layered clays: centrifuge tests’) which was published in the prestigious journal Geotechnique.

They also carried out numerical analysis which was also published in Geotechnique – ‘Deep-penetrating spudcan foundations on layered clays: numerical analysis’. This paper resulted in the pair winning the Institution of Civil Engineers (UK) David Hislop Award.

Assistant Professor Hossain travelled to London in October to receive the award, presented by the Institution of Civil Engineers.

Their work also led to Asst/Professor Hossain winning the Trollope Medal for 2010, presented by the Australian Geomechanics Society, for an outstanding paper on geomechanics.

Students contribute to international carbon initiative

Two OI students are among 19 researchers from around the world who were invited to England to take part in a unique venture aimed at solving the global challenges of carbon capture and storage (CCS).

Steven Cheng and Xiaojun Li, of the Centre for Offshore Foundation Systems, took part in a collegium organised by The Lloyd’s Register Educational Trust at the University of Southampton in July.

Working in teams, the researchers produced four technical reports looking at ways to overcome carbon capture and storage challenges utilising the world’s oceans.

“My group focused on a concept design to store CO₂ in depleted oil/gas reservoirs located in the UK sector of the southern North Sea,” said Xiaojun.

“It supplies an entire solution for CO₂ sequestration with seamless transition from capture and transportation to storage. The solution includes the unique feature of using nearby offshore wind farms to power the storage process.”

Steven says his group looked at a ‘Green Town’ concept, and finding ways of engaging entire communities in the process of carbon capture and storage.

The four reports produced by the researchers are available at www.lr.org/about_us/lret/collegiumbooks2011.aspx
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<tr>
<th>TITLE</th>
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<td>The connectivity of the Australian North West Shelf with the Leeuwin Current</td>
<td>2011</td>
<td>Office of Naval Research NICOP program</td>
<td>$442,700</td>
<td>Ivey G (UWA), Jones N (UWA), Lowe R (UWA), Kelly S (UWA), Brinkman R (AIMS), Steinberg C (AIMS), Book J (NRL), Burrag De (NRL)</td>
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<td>The influence of nonlinear internal waves on mixing and transport in the ocean</td>
<td>2011</td>
<td>UWA Research Development Award</td>
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<td>Internal tides in the Timor Sea and Bonaparte Basin</td>
<td>2011</td>
<td>UWA Research Development Award</td>
<td>$23,414</td>
<td>Kelly S</td>
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<td>Structure and propagation of an internal tide beam in the Tasman Sea</td>
<td>2011</td>
<td>UWA Research Collaboration Award</td>
<td>$15,000 (Oregon State University)</td>
<td>Kelly S, Jones N, Ivey G, Simmons H (University of Alaska), Klymak J (University of Victoria), Nash J</td>
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<td>Building an international research collaboration on Nitrogen fixation in the Indian Ocean</td>
<td>2012</td>
<td>UWA Research Collaboration Awards</td>
<td>$12,000</td>
<td>Waite AM, Achterberg E (Univ Southampton)</td>
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<td>Fisheries Research and Development Corporation</td>
<td>2010-11, 2012-13</td>
<td>The Biological Oceanography of Western Rock Lobster Larvae I &amp; II</td>
<td>$413,324, $250,000</td>
<td>Waite AM, Beckley L, Caputi N, Delestang S, Feng M, Jeffs A, Thompson PA</td>
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<td>ANNIMS Springboard</td>
<td>2011-12</td>
<td>Sedimentation in the Southern Ocean</td>
<td>$13,000</td>
<td>Waite AM, Trull T (University of Tasmania and Antarctic CRC)</td>
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<td>Comparing changes in extreme sea level: Australia and northern Europe</td>
<td>2011-12</td>
<td>Go8 Germany Joint Research Co-operation Scheme</td>
<td>$14,400</td>
<td>Pattiaratchi CB, Haigh I</td>
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<td>New insights into blue whales, the Sri Lankan enigma: linking oceanography, prey, and blue whale distribution in an ecological cul-de-sac</td>
<td>2011</td>
<td>UWA Research Collaboration Award</td>
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<td>Long-term changes in perched beach morphology and response to climate change in Australia and the UK</td>
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<td>UWA Research Collaboration Award</td>
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<td>Group of Eight European Fellowship: Mihanovic</td>
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<td>ENI Australia</td>
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<td>Effects of sedimentation on seagrass: experimental exposure development</td>
<td>2011</td>
<td>Woodside Energy Ltd (R2D3)</td>
<td>$48,000</td>
<td>Hovey R, Statton J, Ooi J, Kendrick GA</td>
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<td>Understanding the spatial ecology of the western rock lobster</td>
<td>2011</td>
<td>WA Dept. of Fisheries</td>
<td>$84,000</td>
<td>Kendrick GA, Van Niël K</td>
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<td>Assessing the ecological impact of the western rock lobster fishery in fished and for the unfished areas: demersal fish surveys</td>
<td>2011</td>
<td>FRDC 2008/13</td>
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<td>Seagrass monitoring in Owen Anchorage mooring scars</td>
<td>2011</td>
<td>Oceanica Consulting Pty Ltd ex Cockburn Cement Pty Ltd</td>
<td>$62,094</td>
<td>Hovey R, Kendrick GA</td>
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<td>Key ecological features – Abrolhos Islands WA</td>
<td>2011-2013</td>
<td>Australian National Environmental Research Program</td>
<td>$220,000</td>
<td>Kendrick GA, Harvey EA, Van Niël K</td>
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New publications

Refereed journals


Book chapters

From turtle embryos to offshore foundations: OI postgrads showcase their research

Postgraduate students undertaking research at the Oceans Institute had a chance to showcase their work at a researchers’ presentation at UWA in October.

The students delivered engaging, three-minute talks and explained how their work aims to shed light on some of the mysteries of the Indian Ocean, as well as provide solutions to complex challenges facing society and the environment.

Jamie Tedeschi, for example, spoke about her research into marine turtle embryos, which are highly sensitive to changes in temperature.

She aims to determine whether the developing turtles are at risk from climate change, or whether they will be resilient enough to cope with extreme temperatures.

Another researcher, Xiaojun Li, spoke of his research into ‘mudmat’ foundations – temporary footings for large sub-sea structures associated with drilling.

At the end of a drilling project, mudmat foundations must be removed from the sea floor for maintenance or re-use at other sites, which can pose major challenges.

The standard method of removal, says Xiaojun, is to attach a cable to the structure and haul it upward to a recovery vessel.

“The problem is that when you lift it up, there could be huge suction forces between the seabed and the foundations,” he says.

UWA Oceans Institute joins Facebook

The UWA Oceans Institute has launched a new Facebook page to generate discussion between members and the public, and to inform anyone interested in marine science about the OI’s latest research.

The page will include information on news, research, awards, publications, photographs, blogs, events and studying at UWA. As of early November, the page has more than 160 ‘likes’.

Join us at: www.facebook.com/uwaoceansinstitute

Prix d’Excellence for Carlos Duarte

A leading world marine research body has awarded its highest honour to the Director of UWA Oceans Institute, Professor Carlos Duarte.

The International Council for the Exploration of the Sea (ICES) awarded its Prix d’Excellence to Professor Duarte in Gdansk, Poland, in September.

ICES Awards Committee Chair Dr Edward Houde said Professor Duarte was an outstanding marine ecologist who has made many valuable contributions to marine science and oceanography.

“His broad reach extends to all parts of the globe where he has conducted research on marine ecosystems, especially the flux of carbon, microbial ecology, and comparative analysis of ecosystems,” Dr Houde said.

ICES is a network of more than 1600 scientists from 200 institutes and 20 member countries dedicated to promoting marine research in the North Atlantic and adjacent seas.

Professor Duarte’s expertise has also been recognised on another front: he was recently appointed an associate editor of the prestigious science journal Global Ecology and Biogeography.
**Asha appointed as 2012 TED Fellow**

Asha de Vos, a PhD student studying blue whales off the Sri Lankan coast, has been selected as one of 25 TED Fellows for 2012. TED is a global non-profit organisation that brings together “the world’s most fascinating thinkers and doers” to exchange ideas and present their research (see [www.ted.com](http://www.ted.com)). The fellowship enables Asha to attend the TED2012 conference in Long Beach, California, and participate in the TED Fellows community.

**ANNiMS conference at UWA in November**

The third annual conference of the Australian National Network in Marine Science will be held at UWA from Nov. 29 to 1 Dec. 2011. The conference brings together early career marine researchers from WA, Queensland and Tasmania to present papers and posters in a relaxed and supportive environment, and to exchange ideas, collaborate and network. The conference theme is ‘Marine Science in Tropical, Temperate and Southern Oceans.’ Registrations have now closed.

**Dan wins $1000 Young Investigator award**

Dr Dan Smale has won a UWA Young Investigator award of $1000 for his outstanding performance as an early career researcher. Dr Smale’s research focuses on documenting patterns of marine biodiversity, and understanding the processes that drive such patterns. In the last four years he has published 21 scientific papers and conducted research in marine ecosystems from the Seychelles to WA to Antarctica.

**OI experts oppose shark cull plan**

In response to calls for a shark cull following the recent fatalities in WA waters, shark experts from The UWA Oceans Institute have spoken out in strong opposition to the plan. Winthrop Professor Shaun Collin and PhD student Ryan Kempster rebut claims that shark numbers are increasing in WA waters and encourage non-lethal protection measures such as spotter planes and patrol boats.

**Janelle new OI postgraduate student rep**

Janelle Braithwaite has been elected as the new postgraduate student representative to The UWA Oceans Institute Board. Janelle, whose research is focused on determining critical habitat for humpback whales, will hold the position for the next two years. The OI Board takes responsibility for setting the Institute’s strategic direction.
A new way of measuring fish

Associate Professor Euan Harvey and his colleagues have spent literally thousands of hours looking at underwater video of fish recorded in remote locations around Australia and New Zealand.

If all goes to plan, they’ll be able to automatically count and measure the fish using computer software rather than human eyes glued to a video screen.

Associate Professor Harvey, who works with UWA’s School of Plant Biology and the Oceans Institute, and his research partners have been awarded a three-year, $450,000 Australian Research Council Linkage grant to develop a computer algorithm to count and measure fish.

At the moment, Harvey and his colleagues film fish communities by placing a stereo-video system in a frame similar to a craypot which is dropped on the ocean floor, along with a bag of bait to attract fish.

But using people to count and measure the fish on resulting video is incredibly time-consuming and expensive.

“At the moment, depending on where we are dropping the cameras and how many species and individual fish there are, it will take between two and three and a half hours to process one video,” says Assoc/Professor Harvey.

“If you put that in dollar terms, that’s probably about an extra $100 per deployment for someone to sit there and analyse them.”

Harvey and his team records up to 2,000 hours of fish video a year.

“At the moment, we’ve got about 28 stereo video systems, and they could be in use anywhere from the Kimberley and the North-West Shelf to Guam or Hawaii,” he says.

“What we do is go to an area and deploy up to 10 cameras at any one time for an hour, pick them up and then move them to another site, so we get broad spatial coverage.

“We’re working with the Fisheries Department, CSIRO and the Australian Institute of Marine Sciences (AIMS), NOAA, The National Museum in New Zealand and staff and students from other universities, and the cameras will go to wherever the work is based.”

Harvey and his colleague Professor Mark Shortis from RMIT University in Melbourne pioneered the use of stereo-video as a tool to monitor and measure fish populations about 18 years ago.

“That was the key thing, because using basic trigonometry you can calculate x, y, and z points – if you’ve got two points you can calculate the distance between them and that means you can measure the length of fish very accurately,” explains Harvey.

The algorithm project promises to make it easier for marine agencies to monitor finfish communities as well as improve husbandry in aquaculture, with work on developing the algorithm set to begin early next year.

“I would hope that we’d start by February or March,” he says.