

April 2018

Issue 217

ISSN 03700-9026

Inside this issue:

Meet the SANCOR Postdoctoral Fellows	4
Tracking the global footprint of fisheries	6
Student Opportunities & Vacancies	8
International contributions to <i>The Law of the Sea</i>	9
Book: <i>Pain forms the character</i>	10
Concern over health risks of desalination	11
Ocean turbulence under the spotlight at workshop	12

SANCOR'S CURRENCY AND STRENGTH IS INFORMATION

SANCOR Newsletter

We spent nine years tracking South Africa's white sharks. What we learnt

How big is South Africa's white shark population? Nobody really knows: estimates range from 500 to more than 1200. This is an important question because the species is under enormous pressure. South Africa's sharks come from two genetic lineages – one related to Australia and New Zealand, and one found only in waters around its coastline.

In places like KwaZulu-Natal, white sharks are culled in large numbers by shark nets and drumlines. They are accidentally caught in gill nets and longlines intended for other fish. They are also losing prey, as many of their favoured fish species are overfished and those species populations are declining.



A white shark attacks a seal. Photo by Dave van Beuningen.

White sharks are an important bellwether species. They are top predators that feed on a variety of squids, fish, seals, and other sharks; this means they're able to influence what the ocean's ecosystems look like and how they function.

By studying and monitoring white shark populations, scientists are able to provide accurate data for conservation purposes. For example, a finding that white sharks from South Africa are capable of swimming to Australia, motivated governments to support extra protection for the species by listing them on CITES which is an international agreement between governments which monitors trade of threatened species.

That's why a team of researchers from the University of Cape Town, Rhodes University and an organisation called Shark Spotters spent nine years studying the white shark population at Seal Island. This is located in False Bay, on Cape Town's coast, and is a popular haunt for sharks since seals are also among their favoured prey.

Apart from doing a "head count" of sharks, we noticed a fascinating trend. Seal Island is mostly used by

juvenile and sub-adult sharks. But once the sharks – particularly females – reach maturity (around 33-years-old) they are rarely seen in the area again. This partly confirms what we already knew: Seal Island is an important habitat for one segment of the white shark population and needs to be conserved.

The mature white sharks, meanwhile, must be using other habitats to feed and reproduce. But we don't know where those habitats are, and that's a problem – without knowing what their chosen habitats are and what threats they might face in those areas, we can't offer informed recommendations about conserving either the animals or their habitats. We can't conserve what we don't know.

In a different ocean, the Pacific, scientists have managed to crack the code of where the mature white sharks go. Through satellite tagging of adults they have identified a defined space in the middle of the ocean, halfway between Hawaii and Baja California, which they call the Shared Offshore Foraging Area. Similar technology is being used to



The author, Alison Kock, is a Marine Biologist affiliated with South African National Parks (SANParks) and the South African Institute for Aquatic Biodiversity.

figure out where South Africa's white sharks go.

Where are the female sharks?

Our study, lasted from 2004 to 2012. During that period we spent 557 hours at sea. We attracted sharks to a research vessel and, on each trip, recorded how many there were, their size and sex. We also used photo-identification of individual sharks to examine their annual visitation patterns.

In total, we recorded 1105 shark sightings and used photo identification to identify 303 unique individuals. Most of the 303 were not sighted at Seal Island again. This suggests transient behaviour for a large proportion of the population.

The most surprising finding was that after visiting Seal Island consecutively for between two and three years, female sharks approaching sexual maturity were rarely seen again. Overall few mature females and no pregnant females were recorded at Seal Island. This suggests that Seal Island is a seasonal feeding ground for young white sharks rather than a nursery area or adult gathering site.

The same thing was true elsewhere in South African waters. We compared our findings to research from several other gathering sites and discovered that mature white sharks both male and female, but especially females, are rarely seen anywhere in the country's waters. This indicates that they use other habitats to feed and breed.

But where do they go? Not knowing where mature sharks are is a major gap in our understanding of South African white shark ecology.

Satellite tracking has provided us with our first clue. The trackers suggest that the South West Indian Ocean islands and deep oceanic habitats off the continental shelf are areas where we can start looking. These are spaces ranging from a few hundred to a couple of thousand

kilometres away from South Africa's coast.

Source:

Kock, A. (2018, March 26). We spent nine years tracking South Africa's white sharks. What we learnt. *The Conversation*, Edition: Africa. Retrieved from <https://theconversation.com/we-spent-nine-years-tracking-south-africas-white-sharks-what-we-learnt-93140#republish> ☒

Call for Applications for Joint Projects

South Africa / Norway
Cooperation on Oceans
Research including Blue
Economy, Climate Change,
the Environment and
Sustainable Energy
([SANOCEAN](#)).

Closing date:
25 April 2018



Invitation to South African Universities to Express Interest in Aquaculture Research Collaboration for a Maximum Period of 5 Years

The Department of Agriculture, Forestry and Fisheries (DAFF), as the lead Department for the development of the aquaculture and inland fisheries sector, is responsible for implementing aquaculture policies and programmes in South Africa. A National Programme for Aquaculture Research and Technology Development was prepared to improve competitiveness, sustainability, and to promote expansion and diversification of the aquaculture sector. To ensure continued implementation of the Programme, the Department calls for local universities to submit an expression of interest to collaborate with the Department in the following key focus areas: • Diversification and Competitiveness: * Reproduction * New species * Breeding and genetics * Production systems * Technology transfer and pilot/demonstration projects * Nutrition and feed development * Markets and post-harvest technology • Sustainable Production: * Aquatic animal health and welfare * Environmental

interactions (including impact of aquaculture on the environment) * Aquaculture food safety * Aquaculture socio-economics • Inland fisheries.

Elements of training and capacity building through cooperative education, institutional collaboration and inter-exchange of scientific knowledge and resources between the Department and respective Universities may also be considered.

Universities must be willing to enter into Memorandums of Agreement with the Department for a maximum period of 5 (five) years. Specific research project proposals and agreements will be deliberated upon once the overarching agreement is entered into.

Universities are required to demonstrate their ability to collaborate in specific aquaculture research areas by submitting a detailed Expression of Interest, accompanied by CVs and profiles of academic staff/experts.

The closing date for submission of expression of interests is 30 April 2018.

For more information on this call, please contact Mrs Fatima Daya, e-mail: FatimaS@daff.gov.za (cc: fatimat.zsamodien@gmail.com and NosiceloN@daff.gov.za). For enquiries: Tel. (021) 430-7006/079 491 7050.



agriculture,
forestry & fisheries

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA

Meet the SANCOR Postdoctoral Fellows

The SANCOR-NRF Postdoctoral Fellowship Awards promote the development of highly skilled emerging scientists in the marine and coastal environment. SANCOR is proud to introduce the current postdoctoral fellows:

Dr Dimitri Veldkornet obtained his PhD in Botany from the Nelson Mandela Metropolitan University in 2016. In 2017, he received the SANCOR postdoctoral fellowship award and is hosted by the Department of Biodiversity and Conservation Biology at the University of the Western Cape. Dimitri is passionate about the estuarine environment, particularly the influence of environmental changes on estuaries. His postdoctoral research project, Vulnerability of Estuarine Species and Habitats to Global Change: Inferences made from Species, Habitat and Phylogeographic modelling, seeks to explore how climate change will alter the distribution of genetic lineages, species and habitats in estuaries. With his supervisor, Dr Anusha Rajkaran, they have already



Dr Dimitri Veldkornet

produced results that show salt marshes along the southeast coast of South Africa will probably experience range contraction with changes in rainfall and temperature. His research will also contribute to the National Biodiversity Assessment 2018, where, for the first time phylogenetic diversity will be used to prioritise estuaries for conservation. Dimitri is very thankful for this opportunity and is enjoying the research and teaching experience gained at the University of the Western Cape.

Dr Emma Lockerbie received her postdoctoral award in 2018. She is based at the University of Cape Town in the Biological



Dr Emma Lockerbie

Sciences department. Her research focuses on the use of indicators to aid decision support for the implementation of an ecosystem approach to fisheries. During her PhD she developed a decision tree framework capable of synthesizing trends in ecological, fishing and environmental indicators to assess and categorise multiple marine ecosystems. For her postdoctoral research she will continue with this work, but will now attempt to use this framework to predict future states of marine ecosystems. The predictive capacity of current models is not always reliable, however, one way to circumvent this is to identify

a variety of alternative plausible futures. Strategies for fisheries management can then be developed that are robust across these various scenarios and responsive to unpredictable ocean dynamics. A range of potential fishing and climate scenarios will be decided upon, and modelled indicators will be used to determine the state of marine ecosystems under these conditions. The first ecosystem studied will be the Southern Benguela, hopefully followed by the North and South Catalan Seas.

Dr Daniel Lemley also received his postdoctoral award in 2018. He is based in Port Elizabeth at the Nelson Mandela University Botany Department and the Institute for Coastal and Marine Research. His research interests include: Estuarine ecology, Eutrophication, Microalgal dynamics, Hypoxia, Harmful Algal



Dr Daniel Lemley

Blooms. Daniel's postdoctoral research focusses on Harmful algal blooms in South African estuaries. Harmful algal blooms (HABs) are predominantly caused by proliferations of microscopic algae, with potential consequences including oxygen depletion, loss of important nursery areas, toxicity to higher trophic levels, and shifts in community structure that can lead to severe social (e.g. aesthetic degradation, loss of subsistence resources) and economic (e.g. loss of tourism, collapse of fisheries)

repercussions. The proposed research is aimed at addressing the occurrence of HABs in South African estuaries, and is an important undertaking given the increased incidence of these phenomena related anthropogenic impacts, at both a local and global scale. Multiple temporal and spatial scales will be assessed to understand how these phenomena are able to persist over extended periods in a single system, and the implications thereof. The information obtained from this project will be used to inform management on the best way forward in terms of monitoring, prevention and mitigation of HABs in South African estuaries and coastal waters. ☞

4TH GEO JULY 4-6, 2018 TOULOUSE, FRANCE

BLUE PLANET SYMPOSIUM

Our Future is Blue: Linking Ocean and Coastal Information with Societal Needs

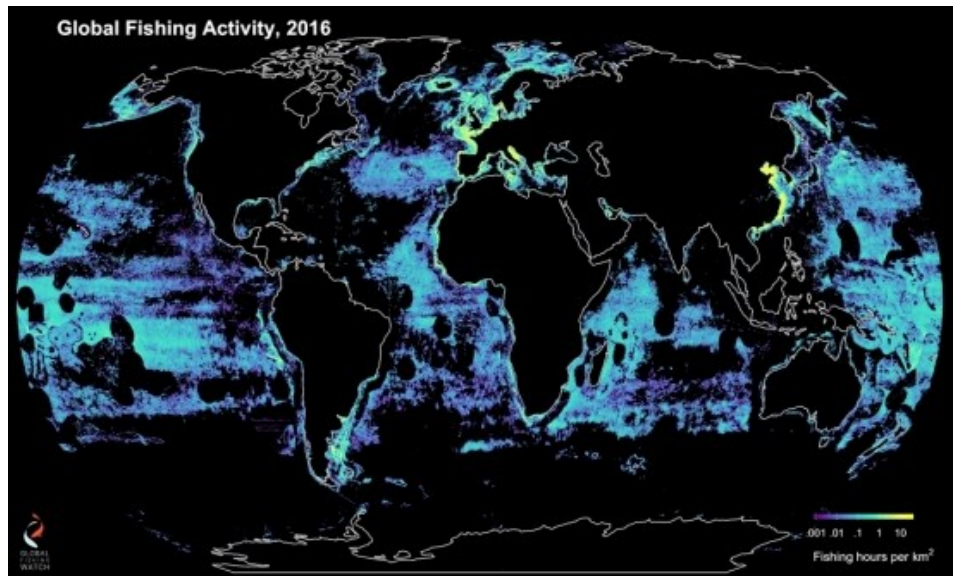
Tracking the global footprint of fisheries

The global fishing fleet is so big it can be seen from space. Really.

Fishing activity now covers at least 55 percent of the world's oceans — four times the land area covered by agriculture — and can now be monitored, in near real time, to the level of individual vessels. In fact, 70,000 vessels of the global fishing fleet traveled 460 million kilometers in 2016, equivalent to traveling to the moon and back 600 times.

Using satellite tracking, machine learning and common ship-tracking technology, scientists from the University of California Santa Barbara (UCSB) teamed up with colleagues at Global Fishing Watch, National Geographic Society's Pristine Sea project, Dalhousie University, SkyTruth, Google and Stanford University to illuminate the extent of global fishing — down to single vessel movements and hourly activity. Their findings appear in the journal [Science](#).

"I think most people will be surprised that until now we didn't really know where people were fishing in vast swaths of the ocean,"



This map shows fishing activity by vessels broadcasting the automatic identification system. Photo Credit: Courtesy Global Fishing Watch

said co-author Christopher Costello, a professor at UCSB's Bren School of Environmental Science & Management. "This new real-time dataset will be instrumental in designing improved management of the world's oceans that is good for the fish, ecosystems and fishermen."

While the dataset is hundreds of times higher in resolution than previous global surveys, the total area of the ocean fished is likely higher than the 55 percent estimated. That's because some fishing efforts in regions of poor satellite coverage or in exclusive economic zones with a low

percentage of vessels using the automatic identification system (AIS) were not included.

The team used machine learning technology to analyze 22 billion messages publicly broadcasted from vessels' AIS positions from 2012 to 2016, to answer the question, "What drives commercial fishing behavior?" Based solely on vessel movement patterns, the Global Fishing Watch algorithm was able to identify more than 70,000 commercial fishing vessels, the sizes and engine powers of these vessels, what type of fishing they engaged in, and when and where they fished down to the hour and kilometer.

This new global view of fishing draws on advances in satellite technology and big data processing.

More than 40 million hours of fishing activity was observed in 2016, and while most nations appeared to fish predominantly within their own exclusive economic zones, China, Spain, Taiwan, Japan and South Korea accounted for 85 percent of the observed fishing on the high seas.

“This dataset provides such high-level resolution on fishing activity that we can even see cultural patterns, such as when fishermen in different regions take time off,” said co-author Juan Mayorga, a project scientist in the Sustainable Fisheries Group at the Bren School and with NatGeo’s Pristine Seas. For example, in the Chinese fishing fleet — the largest in the world — during Chinese New Year fishing activity is reduced to levels comparable to those during seasonal bans enforced by the government.

The investigative team also found

that when and where fishing occurs are tied more to politics and culture than to natural cycles such as fish migrations and marine food production. “Our analysis demonstrated that policies, cultures and economics play a huge role in driving fishing behavior,” Costello said.

“In addition, we examined whether fishing diminished when fuel prices were high and found a weak response,” he added. “These are the kinds of things about which we’ve always speculated but haven’t ever been able to test — until now.”

The resulting [interactive map](#) — which is freely available to the public — shows a near real-time view of the fishing patterns of individual vessels and fleets. This allows anyone to see what is going on in their own backyard and to observe where policy boundaries are in place and where they are not.

“By making this data public, we are

providing governments, management bodies and researchers with the information needed to make transparent and well-informed decisions to better regulate fishing activities and reach conservation and sustainability goals,” Mayorga said.

The study not only opens a gateway for improved ocean management but also confirms that fishing activity is clearly bounded according to differing management regimes, which indicates the role that well-enforced policy can play in curbing overexploitation.

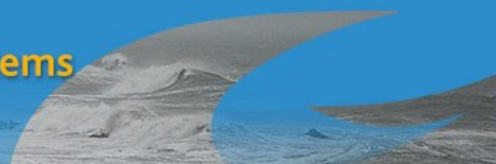
“This collaboration opens up myriad research opportunities,” Costello explained. “We are leveraging the products developed by Global Fishing Watch to address new and important research questions that will improve fisheries sustainability around the world.”

Source:

Cohen, J. (2018, February 21). A Global Footprint. Retrieved from <http://www.news.ucsb.edu/2018/01/8722/global-footprint-fisheries> ↗



ECSA 57 **Changing estuaries,
coasts and shelf systems**
Diverse threats and opportunities
3-6 September 2018 | Perth, WA, Australia



Student / Early Career Training Opportunities	Institution	Closing Date
The MSC Scholarship Research Program is open to undergraduate and postgraduate students studying problems and solutions in fisheries science and management and the integrity of the seafood supply chain. Up to £4,000 per project is available for travel, equipment and other support.	Marine Stewardship Council	3/31/2018
<p>2 PhD projects at Nelson Mandela University</p> <ul style="list-style-type: none"> Understand the formation and decay of the Benthic Nepheloid Layers on the eastern Agulhas Bank. Examine the community composition and productivity of phytoplankton communities on the Agulhas Bank. 	Ocean Sciences Campus, NMU	4/3/2018
<p>POGO-SCOR Visiting Fellowship Programme</p> <p>The fellowship offers early career scientists from developing countries the opportunity to visit other oceanographic centres for a short period (1 to 3 months) for training on aspects of oceanographic observations.</p>	POGO-SCOR	4/9/2018
<p>CLIVAR-FIO Joint Summer School on 'Past, Present And Future Sea Level Changes' will be conducted from June 25 to 30, 2018, and the UNESCO/IOC ODC Training Course On 'Ocean Forecast Systems' will be organised from July 2 to 7, 2018. These courses will be held jointly and we encourage you to apply both.</p>	CLIVAR, UNESCO	4/10/2018
<p>L'Oréal-UNESCO For Women in Science Sub-Saharan Africa PhD and Postdoctoral Fellowships.</p>	L'Oréal-UNESCO	4/30/2018

Vacancies	Organisation	Location	Closing Date
Strategic Conservation Planner	SANParks	Port Elizabeth	3/30/2018
Environmental Resource Economist	SANParks	Port Elizabeth	3/30/2018
Seabird Ranger	SANCCOB	Robben Island	3/30/2018
Marine Biologist	British Antarctic Survey	Antarctica	4/1/2018
Marine Environmental Planning Analyst	International Seabed Authority	Jamaica	4/5/2018
Field Assistant	RSPB	Gough Island, Tristan da Cunha	4/6/2018
Senior Field Assistant	RSPB	Gough Island, Tristan da Cunha	4/6/2018
Research Director Marine Resources	CSIRO	Hobart or Brisbane	4/15/2018
Lecturer in Marine Biology/Ecology	Bangor University	Wales, UK	4/18/2018
Quantitative Fisheries Scientist	CSIRO	Hobart, Tasmania	5/15/2018
Coastal Systems Modeller	CSIRO	Australia	5/18/2018

International contributions to The Law of the Sea

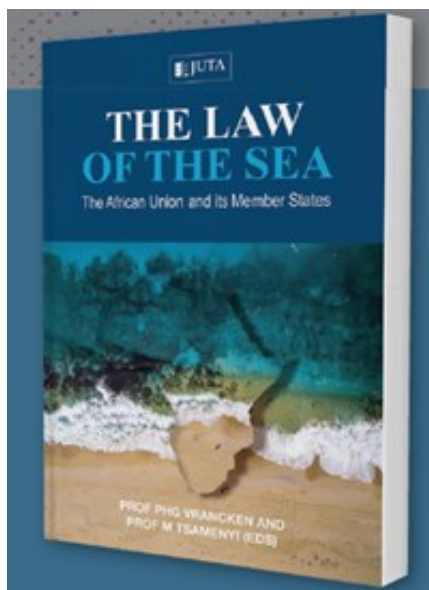
Prof Patrick Vrancken, who is the incumbent of the South African Research Chair in the Law of the Sea and Development in Africa at Nelson Mandela University, is the main editor and one of the authors of *The Law of the Sea: The African Union and its Member States*.

The book of 27 chapters with 30 co-authors, recently published by Juta, provides the first foundation for an assessment and the further development of the legal aspects of ocean governance in Africa.

Africa's 2050 Integrated Maritime Strategy focusses on fostering increased wealth creation from the oceans and seas by developing a sustainable thriving blue economy in a secure and environmentally sustainable manner.

The book is meant to be a reference work for role players in the African Maritime Domain, including agencies and governments, business, civil society, lawyers, scientists and students.

Prof Vrancken, as a renowned international expert of the law of the



sea, also contributed as one of 64 authors to the United Nations Convention on the Law of the Sea – A Commentary, published last year in Germany and edited by Alexander Proelss, Professor of Public International Law at the University of Trier.

Prof Vrancken is the only contributor from Africa and one of the only five contributors based in the developing world of this work, which has already become an indispensable element of the literature in the field.

Nelson Mandela University launched its Ocean Sciences Campus in September last year focussing on interdisciplinary



Prof Patrick Vrancken, South African Research Chair in the Law of the Sea and Development in Africa at Nelson Mandela University.

studies in Ocean Sciences and the blue economy.

As Chair at the campus, Prof Vrancken's research focusses on South Africa and the law of the sea; Development in Africa and the law of the sea and the legal aspects of marine tourism.

Source:

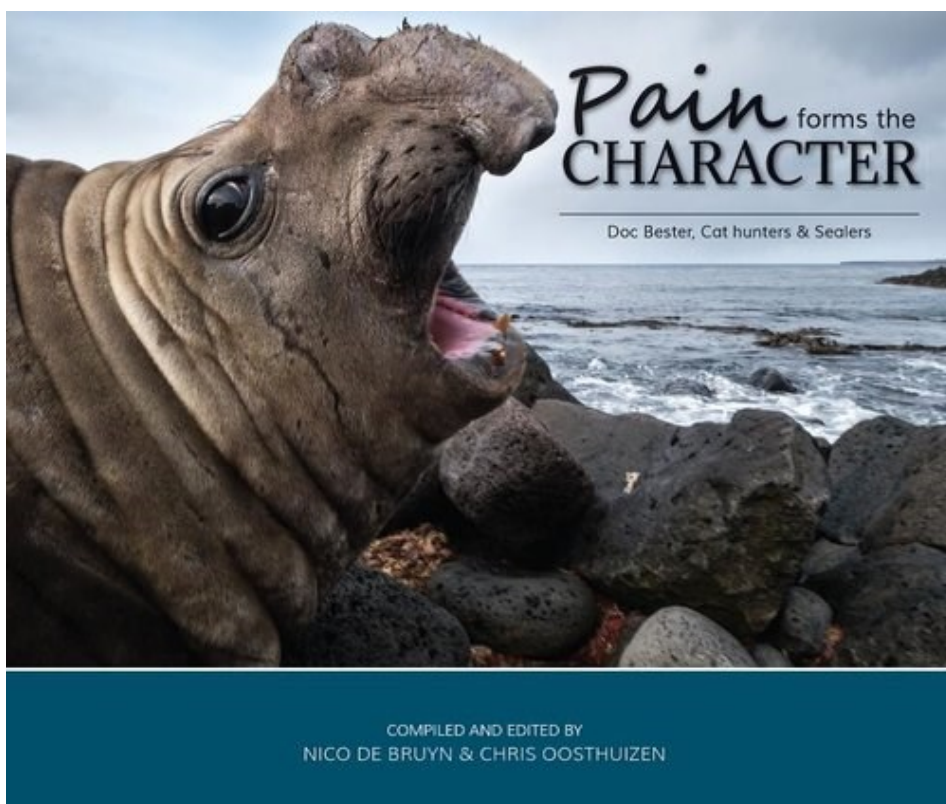
International contributions to the Law of the Sea. (2018, February, 13). Nelson Mandela University News. Retrieved from <http://news.mandela.ac.za/News/International-contributions-to-the-Law-of-the-Sea> ⚡

Book: Pain forms the character

Would you live on a remote, cold, wet and windswept island in the great Southern Ocean for a year, with only a handful of companions?

For some it is paradise.

Pain forms the character journeys through four decades of extraordinary wilderness adventure, tribulations and delights. Through first-hand accounts, it captures the nostalgia, and blood, sweat and tears of the “cat hunters” and “sealers” of Marion Island. On this far-flung island midway between South Africa and Antarctica, feral cats once wreaked havoc on the millions of native seabirds. But then, through scientifically coordinated arduous perseverance, a great conservation triumph was attained: the largest island cat eradication feat in history. Today, more than three decades later, a globally recognised seal research programme which commenced during the cat hunting days continues to flourish. The generous scientific output and



conservation benefits, however, do not describe how many lives were perpetually influenced through participation in these endeavours.

The colourful and enormously influential 40-year long ‘island career’ of “Doc” Marthán Bester – cat hunter, sealer and university professor – provides context throughout. From his 1970’s student expedition days on Gough Island, to coordination of cat hunting, and leadership of marine mammal research at Marion

Island, the enriching stories of those who worked within his sphere of influence capture the essence of the cat hunter and sealer legacy.

Pain forms the character was compiled and edited by Nico de Bruyn and Chris Oosthuizen and published by the [Antarctic Legacy of South Africa](#).

For more information visit <http://www.marionseals.com/painformsthecharacter> ☞

Concern over health risks of desalination

While the desalination of water is one of the leading solutions the City plans to implement to deal with the water crisis, the scientific community has expressed concerns around the quality of the water.

At a meeting between the Water Research Commission (WRC), the City of Cape Town and the University of the Western Cape (UWC) discussing concerns around seawater quality and desalination, the Department of Environmental Affairs said it was going to implement new regulations around effluent disposal and water quality.

The department's Natasha Baijnath-Pillay said: "We have to ensure the effluent does not have an irreversible impact on the environment and is not in contradiction to the community. Effluent disposal must be managed in a way to maintain or improve the receiving water body."

She said the South African water quality guidelines for coastal marine waters were being reviewed.

"We want to prevent effluent from



Construction is under way on a desalination plant at Strandfontein Beach. This plant will be one of several to supplement the City of Cape Town's fresh water supply. Photo: African News Agency.

polluting the water body to the point that it cannot be used somewhere else."

UWC Professor Leslie Petrik said the chemical pollution of seawater needed to be taken into account.

She said she had checked the tender document for desalination and they did not talk about monitoring these compounds. She said desalination was to be

considered with great caution.

"The water must be tested for the total organic carbon and toxicity," she said.

A group from the Philippi Horticultural Area (PHA) Food & Farming Campaign protested outside the City offices, after they were invited to the meeting, then told it was fully booked.



Prof Leslie Petrik (Environmental and Nano Sciences Research Group Leader in the Department of Chemistry at UWC) outlined the findings of her study on the desalination and seawater quality in Table Bay at a recent MA-RE SANCOR Seminar. The results are published in an [article](#) in *The South African Journal of Science*.

The campaign's Nazeer Sunday said: "There are two studies done that took samples of living creatures in the sea like mussels and lobster. They found the levels of persistent organic pollutants in these living creatures are 10 to 100 times, so we are at risk of that health threat.

"We wanted to be a part of the conversation around the new water supply because we have a constitutional right to information.

"There are problems around seawater and we need to create public awareness."

WRC spokesperson Khosi Jonas said: "The objective of this meeting was to review the scientific methodology and analysis that were done by these two institutions in their measurements and analysis of emerging chemical contaminants in waste water and sea water.

"We tried to communicate that this meeting's intent was to review the science of the two research outputs and was not looking at any broader topics and thus was not appropriate for a larger group. But based on the interest, we would

definitely host a follow-up meeting to accommodate the demand."

Jonas said after the protest that she had personally invited the members of the PHA into the meeting but they had declined.

Source:

Daniels, N. (2018, March 1). Concern over health risks of desalination. IOL, *Cape Times*. Retrieved from <https://www.iol.co.za/capetimes/news/concern-over-health-risks-of-desalination-13538766> ↗

Ocean turbulence under the spotlight at workshop

The University of KwaZulu-Natal's (UKZN) Department of Civil Engineering held the first ever workshop on Ocean Turbulence in South Africa during 22-26 January 2018.

The workshop was facilitated by Derek Stretch, Professor for Environmental Fluid Mechanics, with funding provided through an Office of Naval Research (ONR) global grant.

Turbulence at microstructure scales (a centimetre or less) is an important mechanism for mixing in

the ocean where regions of enhanced turbulence can influence the entire marine food web. Turbulence is, however, difficult to measure and requires very sensitive and specialised equipment and highly skilled scientists to process and interpret the data.

The week-long workshop aimed at advancing South Africa's expertise and capacity in state-of-the-art ocean measurement techniques and was taught by specialists in microstructure measurements from Rockland Scientific in Canada, Dr Ralf Lueck and Mr Evan Cervelli.

20 scientists, postgraduate students, and technicians from Durban, Cape Town and Stellenbosch attended to learn about the theory of turbulence and practical measurement techniques.

The workshop included sessions on instrument handling and data processing. Participants enjoyed a trip to the Durban Harbour where they measured the turbulence in the water column generated by a large vessel entering the harbour. They appreciated being able to get hands-on practice with data processing and data visualisation using Matlab.

Following this workshop, a UKZN research team from the environmental fluid mechanics laboratory spent a week in Sodwana Bay measuring small scale turbulence in the Agulhas current, one of the world's strongest ocean currents. The team included Stretch, Dr Sam Kumarasamy, Dr Justin Pringle, Dr Katrin Tirok, Mr Atish Deoraj, and Mr Chris Muledy and was joined by Cervelli and Lueck from Rockland Scientific who supported the field measurements.

This research project by Stretch running through the same ONR

grant investigates turbulence and mixing in the coastal ocean near Sodwana Bay, an area that is linked to the Agulhas system. The highly energetic Agulhas Current provides an ideal opportunity to develop new insights and understanding of the turbulent mixing processes in the area and their role in the functioning of the marine ecosystem. Regions of enhanced turbulence are associated with heightened biological activity with increased densities of zooplankton and mid-level nekton which in turn attract top marine

predators. Sodwana Bay is known for enigmatic species like coelacanths, manta rays, and whale sharks.

Source:

Tirok, K. (2018, March 20). Ocean Turbulence Under the Spotlight at Workshop. UKZN News. Retrieved from <https://www.ukzn.ac.za/news/ocean-turbulence-under-the-spotlight-at-workshop/>

Issued by the
South African Network for Coastal and Oceanic Research



Enquiries may be directed to the editor:

Mrs Carmen Visser

Private Bag X2, Vlaeberg, 8018

Phone: 021 402 3536

Fax: 086 440 1518

E-mail: sancor@daff.gov.za

Our Focus: Science in the Marine and Coastal Environments

SANCOR's activities are made possible through financial contributions from the Department of Agriculture, Forestry and Fisheries (DAFF), the Department of Environmental Affairs (DEA) and the National Research Foundation (NRF).

Disclaimer: SANCOR's main function is to disseminate information. SANCOR encourages robust, indeed provocative debate about any matters relevant to the marine science community. The views and opinions expressed in all communication from SANCOR are not a reflection of the views of SANCOR or the SANCOR Secretariat.

Visit our website:

<http://sancor.nrf.ac.za>

Follow us on Twitter:

<https://twitter.com/SANCORCommunity>

Find us on Facebook:

<https://www.facebook.com/SANCORCommunity/>



**agriculture,
forestry & fisheries**

Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA



RISA
Research and Innovation
Support and Advancement