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BREMEN AT THE RED SEA

ZMT renews its cooperation with the Jordanian Marine Science
Station in Aqaba

Once again ZMT and the University of Jordan have united to conduct joint research at the Red Sea. The Marine Science Station on the Gulf of Aqaba had partnered with ZMT once before (1995-2000) as part of the Red Sea Programme on Marine Science funded by the Federal Ministry of Education and Research (BMBF). ZMT Director Hildegard Westphal and the President of the University of Jordan Aqaba Branch, Redha Al-Khawalideha signed a Memorandum of Understanding in October 2012 to both renew and strengthen these ties.

FAMILIAR GROUND

The Red Sea Programme has assisted in establishing research infrastructure at the Marine Science Station in Jordan. Scientists from ZMT and other German institutions supported the University of Jordan in the education and training of its young researchers. According to the initiator of the new partnership, Christian Wild from ZMT, the engagement has borne fruit. "Six former PhD students from the Red Sea Programme are now working at the Marine Science Station," says Wild. "The director of the station, Riyadh Manasrah, is one of them." With the groundwork laid, Bremen and Aqaba will now work together on coordinating scientist exchanges, joint project development with various ZMT departments, and the advising of doctoral students.

LIVING THE VISION

"The precariousness of the region's political situation has left the Red Sea a little-researched area," says reef ecologist Christian Wild. "What makes the Red Sea so incredibly interesting is its high seasonal fluctuations and the major shifts in significant environmental parameters that result." In the long term it is important to understand these natural processes both in the Gulf of Aqaba and beyond, home to countless coral reefs, mangrove forests and seagrass beds. To do this, it is necessary to cooperate with other coastal nations as well, such as Israel, Egypt, Sudan, Saudi Arabia and Yemen. "It's the only way to translate our research in the areas of ecology, biogeochemistry and the social sciences into meaningful recommendations for sustainable coastal development," explains Wild. The Marine Science Station is the first partner to join ZMT in this vision. The scientists from Germany and Jordan have launched the new cooperation with the CANCOR (Carbon and Nitrogen Fixation in Coral Reef Ecosystems of the Red Sea) project. Four PhD students, under the direction of Christian Wild, will be investigating the impact of environmental factors on the carbon and nitrogen cycles in the coral reef. [> READ MORE](#)



MANGROVES, SEA CUCUMBERS AND FISH LARVAE

Fellowship recipients at ZMT

Alok Kumar has been to Germany twice before, but for the 29-year-old, the third time's a charm. "I get to work with the most renowned scientists in tropical coastal ecosystems research," says Kumar. "It doesn't get better than that!"

Alok Kumar is one of the three current recipients of the joint fellowship between ZMT and the NAM S&T Centre, which gives young scientists the opportunity to conduct research at ZMT for a period of up to three months. In India, Kumar is writing his dissertation on the biogeochemistry of mangrove forests. His work at ZMT is being supervised by Tim Jennerjahn, who heads up the institute's work group on ecological biogeochemistry. The geoscientist from Bremen is no stranger to supervising ZMT/NAM S&T Centre fellows. His last experience was so positive that his advisee applied for a German Academic Exchange Service (DAAD) scholarship so she could spend another year at ZMT working on her doctorate. "A three-month stay like this always opens up opportunities," says Jennerjahn. Kumar is learning new methodologies and techniques at ZMT. As his advisor is quick to note, the benefits for the institute are also many. "We publish together," he says. "And who knows – new projects in India could open up as a result of our collaboration."

NAM-ZMT FELLOWSHIPS

The Centre for Science and Technology of the Non-aligned and Other Developing Countries (NAM S&T Centre) is a long-standing partner of ZMT. Each year, they co-sponsor up to five scientists from around the world for a research stay at ZMT of up to three months. The fellows **Khin Nyein Chan** from the Mandalay Technological University in Myanmar, **Lisa Fajar Indriana** from the Indonesian Institute for Sciences and **Alok Kumar** from Jawaharlal Nehru University in New Delhi are currently researching with the working groups led by ZMT scientists Tim Jennerjahn and Andreas Kunzmann. [> READ MORE](#)

BREEDING ENDANGERED SPECIES

The other two fellows – Khin Nyein Chan from Myanmar and Lisa Fajar Indriana from Indonesia – are working with the ecologist Andreas Kunzmann and aquarist Achim Meyer. Their stay at ZMT also includes a project with the Klimahaus Bremerhaven. The 31-year-old scientist from Indonesia specialises in the rearing of sea cucumbers. These echinoderms are known as a delicacy in many parts of Asia. Sea cucumber harvesting also represents an additional source of income for women and children in tropical regions. The high market demand, however, is leading to the marine creature's disappearance along entire stretches of coastline. This trend could be staid, however, if sea cucumbers respond positively to aquafarming. As Kunzmann points out, Lisa Fajar Indriana's work in the area of sea cucumber breeding is a great addition to the research already being done at ZMT. "We imported 50 sea cucumbers from Indonesia," he says. "It's now up to Lisa and Achim to get them to spawn."

“A three-month stay always opens up opportunities.”

What sounds so easy can be tough-going in a laboratory. If this young scientist is successful in determining the ideal conditions for cultivating sea cucumbers, she could publish her results in a manual for use in other regions of the world. "This would help create income-generating opportunities for other women," explains Kunzmann. Lisa Fajar Indriana might be able to return to ZMT later in 2013 to help implement the project as a PhD student.

Khin Nyein Chan from Myanmar who holds a PhD in Biology is investigating the microbiological influences on fish larvae breeding at ZMT. Chan's research is driven by the question of how to improve the conditions for fish bred in captivity so as to decrease larval mortality. The results of her work are interesting for both the aquarium and fishing industries, and ZMT is currently working with a microbiology lab in Münster in the same field of research. Acting as a bridge between Münster and Bremen, the scientist from Myanmar commutes between the two project sites.

OPENING DOORS

They come from different fields of research but share a common interest – they are the future PhD students in ZMT's new graduate school SUTAS. Hildegard Westphal talks about the new programme.

What roles do education and capacity building play at ZMT?

Westphal We provide education and training to both German and international students involved in tropical research and development. The number of our doctoral students has increased considerably over the past year. The bar has been raised in terms of training as well, with a need for broad, interdisciplinary knowledge beyond disciplinary strength. That is why we have been offering a structured academic programme for PhDs for a good year now. And in 2013, we will be opening the doors of the SUTAS graduate school. Capacity building – alongside research – is a core component of our mission. ZMT has been actively committed to this area from the very beginning, both at home in Bremen and abroad in our partner countries in the tropics. At the end of the day, it is all about working side by side with our partners in the name of science.

How is the new graduate school set up?

Westphal SUTAS is open to all doctoral candidates working in the area of sustainable use in tropical coastal regions. The programme will consist of six core projects, all focusing on the same geographical region. Focus areas range from the ecology of coral reefs and sea grass beds to biogeochemical cycles, fisheries management and nutrition. The first core region under investigation will be the Tanzanian island of Zanzibar located in the Indian Ocean. Our doctoral students will examine a particular issue – in this case fisheries and aquaculture – taking an interdisciplinary approach. While they pursue their own individual research topic, programme members will also learn about the approaches of their colleagues. This set-up stimulates scientific exchange, which is so valuable, without neglecting individual areas of specialisation.

Is it correct to say that interdisciplinary discourse is an important aspect of ZMT's capacity building programmes?

Westphal Knowledge transfer is a key aspect of ZMT research – this is the only way to address the complexity of tropical coastline use. For cross-disciplinary knowledge transfer to truly work, one needs experts who are excellent in their respective fields of research. For our educational programmes, this means offering specialised depth and

exchange across the disciplines. SUTAS also facilitates an interdisciplinary way of thinking through seminars, summer schools, student days, and guest lectures.

Other German scientific institutions are also involved in SUTAS – why?

Westphal By cooperating with other institutions – for example with the Leibniz Institute for Epidemiology and Prevention Research – we can expand our scientific expertise within the SUTAS consortium. Our goal is to investigate a broad spectrum of related issues – from ecosystem services to questions of health. The graduate school also gives students from other institutions the chance to experience the ZMT approach. And with our socio-ecological focus at ZMT, SUTAS adds a new facet to the spectrum of Northern Germany's marine research and education landscape.

SUTAS: Sustainable Use of Tropical Aquatic Systems

The graduate school SUTAS, which is funded by a grant from the Leibniz Association, will officially open its doors on 1 January 2013. The academic programme focuses on resource use in tropical aquatic systems, covering topics from ecosystem functioning to epidemiology. The graduate school, which was designed by an interdisciplinary consortium, will be headed by Matthias Wolff at ZMT. [> READ MORE](#)

Hildegard Westphal

has been the director of ZMT since 2010. The geologist also heads up the Department of Biogeochemistry/Geology at ZMT. [> READ MORE](#)



SPICE III

Field work launched

In August 2012, the field work of the bilateral project SPICE III (Science for the Protection of Indonesian Coastal Marine Ecosystems) launched. Coordinated by ZMT, the focus of the third phase of this collaborative German-Indonesian marine research is to collect scientific data on both the structure and function of the Indonesian coastal ecosystems, as well as the anthropogenic and climatic factors that impact them. The goal of the international, interdisciplinary research team is to establish sufficient baseline data to enable sustainable ecosystem management. In July 2012, ZMT had presented the SPICE research programme to Germany's Chancellor Angela Merkel in Jakarta. In September 2012, the German-Indonesian SPICE III team briefed Indonesian policymakers and business leaders on planned project activities. [> READ MORE](#)

BMBF Feasibility Study

On the lookout for new biodiversity centre sites

ZMT is a member of the Leibniz Network on Biodiversity, a consortium of Leibniz institutes devoted to biodiversity research. In November 2012, the network began assessing select countries in Latin America and Southeast Asia as potential locations for biodiversity centres on behalf of the Federal Ministry of Education and Research (BMBF). ZMT, with its extensive network and experience in the target countries, is an important partner for the consortium in this endeavour, and is responsible for the Latin American countries under review. The project involves analysing research institutions, organisations and structures, identifying potential new sites and partners, researching implementation and financing requirements, and the writing of business plans. [> READ MORE](#)

MAREE

"Black Nemos" now at the German Oceanographic Museum

Thanks to the computer-animated Hollywood blockbuster "Finding Nemo", the anemone fish – also called the clownfish – has become an all-time favorite for fish-lovers and aquariums around the world. With clownfish under threat from wild fisheries, and stringent export regulations as the result, the breeding of these fish has grown increasingly important. For this reason ZMT researchers at the marine experimental facility have been studying the life cycle of the anemone fish since 2009. Pia Kegler, a PhD candidate at ZMT, has succeeded in breeding a less common variant of the fish in the aquarium facility. Kegler's subjects, with their black-coloured scales, are in high demand on the aquarium market. The "black Nemos" bred

ZMT FACES

The Berlin author **Bernhard Kegel**, who holds a PhD in Biology, has been named ZMT's "embedded writer". Kegel's novels are known for their carefully researched scientific backdrops. The science novelist, a fellow at the Hanse Wissenschaftskolleg (HWK) Institute for Advanced Study, will accompany ZMT researchers to Aqaba, Jordan in 2013. His latest novel, *Ein tiefer Fall*, was published in 2012 with mare verlag.



Gabriele Boehme, the longest-serving member of our administrative staff, will be entering a well-deserved retirement in January 2013. She has been with ZMT since the beginning, and is known for her great commitment to colleagues and students. She became a member of the newly formed works council in 2010, serving as its chairperson. The ZMT staff wishes her all the best in her future endeavours!



PUBLICATIONS

Articles

Modelling coral polyp calcification in relation to ocean acidification

Sönke Hohn and Agostino Merico. 2012. *Biogeoscience* 9, p. 4441-4454. doi: 10.5194/bg-9-4441-2012.

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Livelihoods of ornamental coral fishermen in South Sulawesi/Indonesia: implications for management

Sebastian Ferse et al. Sept. 2012. *Coastal Management* 40(5), p. 525-555. doi:10.1080/08920753.2012.694801.

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at ZMT have found a new home at the German Oceanographic Museum in Stralsund. They are on view for all to admire in a newly created display tank.

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