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Exploring the Sunda Shelf with Universiti Malaysia Terengganu
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Lessons from the Pandemic

*UMT researchers study how Covid-19 pandemic
affected Malaysia's maritime business
and offer recovery strategies*

From Belgium With Love

*World-renowned Belgian aquaculture
scientist makes his mark at UMT as
Sultan Mizan Professorial Chair holder*

The Pride of Terengganu

*Terengganu Drawbridge is the latest
attraction in the state*

A Course Like No Other

*UMT and Herriot-Watt University synergize their expertise
to offer unique annual field course*

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U N I V E R S I T I M A L A Y S I A T E R E N G G A N U



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Ostorhinchus compressus, or ochre-striped cardinal fish, is one of the common reef fishes of Terengganu and can be found in Redang Archipelago.

Ocean of Discoveries For Global Sustainability

New Programmes

► Bachelor of Science Degree in Marine Geoscience (with Honours)

The aim of this three-and-a-half-year programme is to produce graduates competent in managing the earth's resources for sustainable development. Students will be exposed to comprehensive knowledge of marine geology that covers geology, geospatial, and geophysics. The programme is designed to provide hands-on learning through which students will have direct practical experience in the functioning of geology and the operation of relevant equipment.

Courses include physical oceanography, sedimentology, geophysics exploration, geotectonnic and structure, geographical information system, and ocean floor surveillance and exploration.

Some of the career prospects include geospatial analyst, geophysicist, petroleum geologist, hydrogeologist, sedimentologist, environmental geologist, and mining geologist.

► Bachelor of Mechanical Engineering Technology in Naval Architecture (with Honours)

This four-year programme combines the science, naval architecture, and engineering of ship machining systems. It provides professional knowledge and skills for jobs in the shipping, marine, and oil and gas industries. The programme is designed to involve 60% hands-on learning in line with industry requirements.

The programme includes core courses related to naval architecture, hydrostatic and static/dynamic stability of ships or floating structures, ship machining and instrumentation, ship power plants, ship management and operating systems, and safety based on standards by the marine safety agency and the International Maritime Organization (IMO).

Some of the career prospects include naval architect, ship design consultant, marine operations officer, engineering technologist for machine/instrumentation, and marine surveyor.

► Bachelor of Management in Maritime Operations (with Honours)

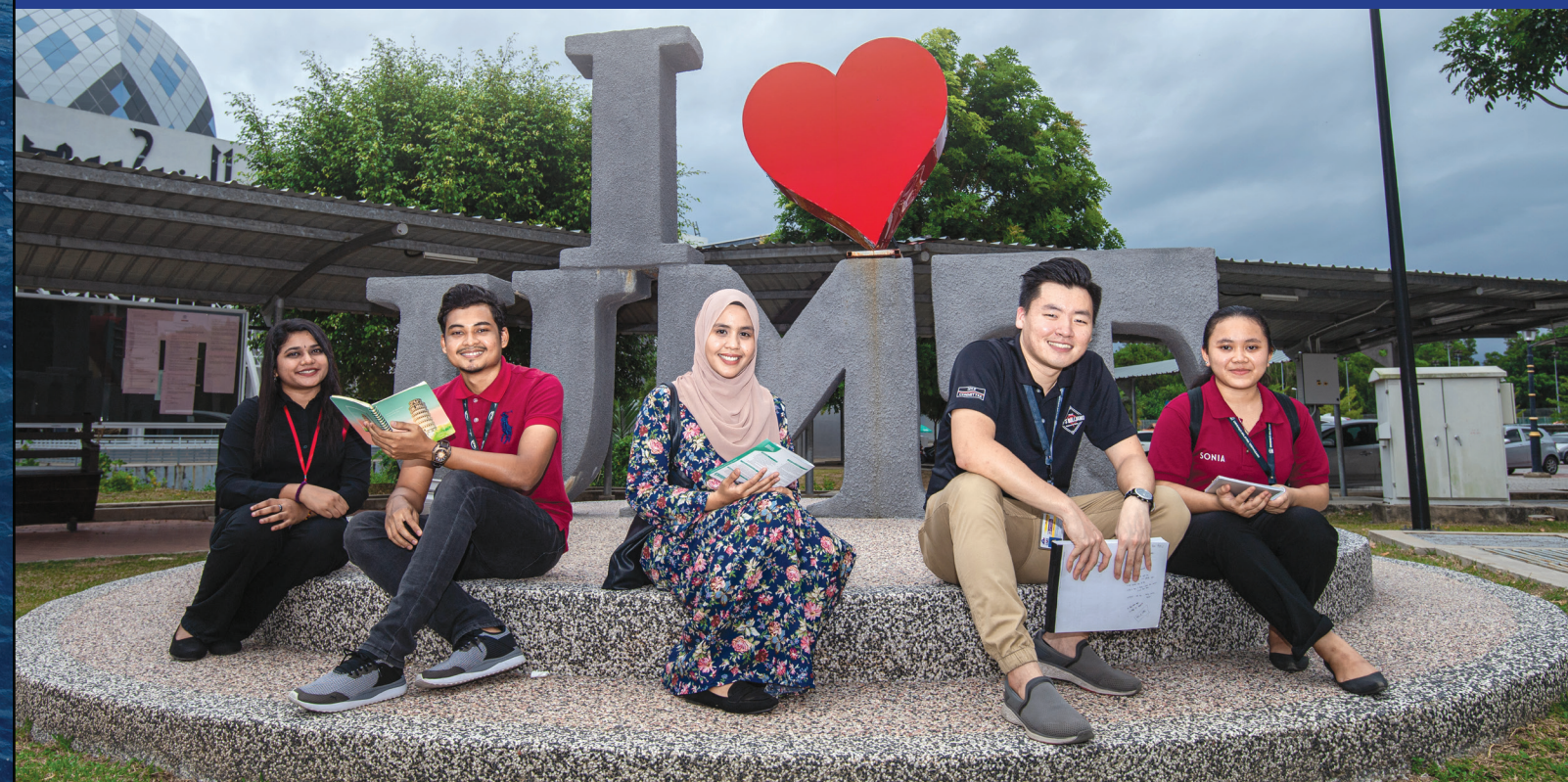
This three-year programme aims to produce graduates with extensive knowledge and technical skills in nautical science and current shipping technology who can meet the demands of the maritime sector both at sea and on land. Through learning, training, and research, students will gain knowledge of areas related to maritime operations, and they will become graduates who are holistic, skilled, creative, innovative, and competitive.

Graduates will have the opportunities to find careers in the navy, maritime enforcement agencies, port authorities, shipping and port companies, ship classification agencies, and some other related agencies. In addition, graduates can decide to pursue postgraduate studies in the same area of expertise. Graduates can also decide to run their own businesses, such as supply shipping equipment, operate personal service agencies that provide consultations, or offer other various services in the maritime sector.

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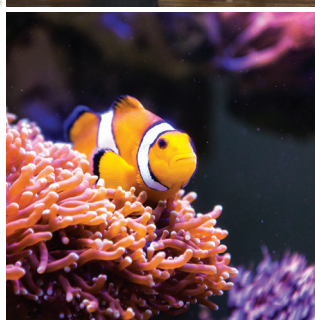
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The Pride of Terengganu



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FROM THE VICE CHANCELLOR

As 2021 has greeted us only recently, it is still not too late for me to wish a Happy New Year. Like everyone else, I hope that as this new year progresses things will get better on all fronts.

The year 2020 left us with unfond memories. The Covid-19 pandemic caught the world off guard and subsequently led to major crisis everywhere, with many livelihoods vanished, even lives lost. In the context of education, pandemic-induced partial lockdowns in most countries meant temporary closure of schools and universities for several months. Students learnt and teachers and lecturers taught from home. Classes went online.

During those several months, UMT was quieter than usual. There was no sound of students' footsteps entering and leaving the classrooms. There was no sound of lecturers' chuckles interspersing their spirited research conversations in the hallways. The students were not here. Neither were the lecturers. Classrooms and laboratories were vacant, parking lots empty.

Thank God, when the pandemic appeared to be under control a few months later, UMT was back and running, though not at full speed. The lecturers were back at the office, but most students still progressed through their classes online at home.

Because of the pandemic, many of what UMT planned last year unfortunately did not materialize. Many research activities were put on hold. Many collaborative efforts were postponed. I felt disappointed by the dramatic turn of events, but I was never discouraged. I knew that UMT was in the best position to pull through at the end, given UMT's preparedness to weather these kinds of challenges.

During those trying times, several achievements by UMT were enough to keep everyone motivated and eager to look past the current situation and aim for more successes in future.

One of the most encouraging news for UMT came when QS Asia University Rankings Report for 2021 was released in November last year. For the first time, UMT has broken into Asia's top 200 universities, occupying the 195th place. UMT was able to move up 48 spots from last year, an achievement credited to the high-quality work culture and commitment of everyone at UMT in ensuring successful execution of the strategic plans.

It goes to show that UMT is being more recognized at the global level. As a young university, UMT getting such recognition is worthy of highlighting.

I am so proud of the achievement, and I think everyone at UMT is too. But UMT will not rest on its laurels; it will continue to implement formulated strategies to achieve future targets. As a matter of fact, UMT plans to be Asia's top 150 universities in 2022.

Another proud achievement of this young university was the improved ranking in the 2020 UI GreenMetric World University Rankings (UIGM) that came out in December last year. UMT moved up 65 spots to sit at 338 among 912 participating universities. The achievement marked another historical event for UMT. As it moves forward, UMT aims to be the most sustainable and environmentally friendly campus.

Now let's talk about this current issue of Voyages of Discovery. This issue to me is special. That the team was able to have it finally published reflects the team's strong dedication in overcoming the challenges and the constraints imposed by the pandemic. Congratulations! With this issue out, it means there are a few more highlights about UMT to be shared.

The theme of the current issue is marine science, which is timely considering the emerging threat currently is microplastic pollution, small pieces of plastic that exist in the environment as well as in the oceans as a result of plastic pollution. The problem is now compounded, owing to our over dependence on plastic products. Several research interest groups under the Ocean Science and Sustainable Environment cluster have been established to examine this issue.

An article about UMT researchers studying of the effects of Covid-19 pandemic on Malaysia's maritime business and another about witnessing coral spawning in situ during the pandemic period simply prove how committed they are in their work that even big obstacles failed to get in their way. I am proud to have these kinds of researchers at UMT.

There is also a story about how international students were coping with the pandemic and the partial lockdown, and how they appreciated the support and assistance offered by UMT. Their positive words about the kindness shown by UMT staff melted my heart. I have always maintained that international students are UMT's ambassadors to the outside world, so it is important that they are accorded the best treatment.

Welcome to this issue of Voyages of Discovery. Happy reading!

**PROFESSOR DATO' DR.
NOR AIENI HAJI MOKHTAR**

Vice Chancellor, Universiti Malaysia Terengganu



Lessons from the Pandemic

UMT researchers study how Covid-19 pandemic affected Malaysia's maritime business and offer recovery strategies



In early 2020, four UMT researchers were kept on their toes by one particular event. The movement control order (MCO) was just enforced by the Malaysian government as a preventive measure against the Covid-19 pandemic that began to hit the country. The order meant that all industries in the country except a few infrastructure services and stores selling daily necessities had to be closed. These researchers knew the enforcement would surely affect one of the biggest contributors to Malaysia's economy—the maritime business. Their prediction was not merely unsubstantiated guess. After all, their specialization is maritime research.

They also knew there was something they should do. After some discussion, they decided to pull together and put their expertise to good use.

They conducted a detailed study several months after the MCO was first implemented to determine the impact on the maritime business. They analysed the issues from every possible angle, interviewed some of the people affected first-hand by the outbreak, and came up with strategies for speedier recovery.

All four researchers are from the Faculty of Maritime Studies, but each has a different area of maritime specialisation. Dr Jagan Jeevan specialises in seaports and hinterlands. Dr Izyan Munirah Mohd Zaideen specialises in maritime policy. Dr Nurul Haqimin Mohd Salleh specialises in maritime operations. Dr Masha Nur Salsabiela Menhat specialises in maritime logistics and operations.

“The pandemic would surely have great effects on one of the biggest contributors to the Malaysian economy—the maritime business.”

Seeing the benefits of collaborative efforts by researchers with different expertise, the four researchers had a discussion with their faculty dean, Associate Professor Ts. Dr Mohamad Rosni Othman, about forming a research interest group under the faculty. Dr Mohamad Rosni immediately gave the proposal his endorsement.



MBHRIG members engage in a fruitful discussion in the faculty lobby.
Sitting from left: Dr Izyan Munirah, Dr Masha Nur Salsabiela.
Standing from left: Dr Jagan, Dr Nurul Haqimin



Dr Mohamad Rosni acknowledged the effects of the pandemic and the MCO on maritime business.

“For maritime activities, especially the seaport sectors, it has indeed been a difficult time with many challenges,” he said. Research interest groups can provide significant contributions during this pandemic, he added.

The group was called the Maritime Business and Hinterland Research Interest Group (MBHRIG), with Dr Jagan as the group's leader.

Unsung Front Liners

During the initial MCO most industries were ordered to halt their operations, but not the maritime logistics industry. Its importance to the country's economy and the people's wellbeing is often overlooked, Dr Mohamad Rosni said.

The main players in the maritime logistics industry, such as seaport operators, shipping lines, freight forwarders, and inland terminal operators were not acknowledged, Dr Mohamad Rosni said. While most Malaysians were protecting themselves from the pandemic by staying at home, these people did not have such luxury. They had to keep the businesses running to help maintain Malaysia's economy.

“They were our unsung front liners,” he said. “Although their contributions were just as significant, their nature of work made them less noticeable than nurses, doctors, and the police.”

Dr Jagan, who is also head of Maritime Management programme at the faculty, added that logisticians' roles during the MCO caused by the Covid-19 pandemic MCO were undervalued.

“Many Malaysians do not realise that the food and other goods that are ordered online would not have arrived on their doorsteps without the maritime logistics' roles,” he said.

Interviews with seaport operators

One of the group's goals was to determine how badly the Covid-19 pandemic affected the seaport operators. So, they identified a few seaport operators from Port Klang, Lumut Port, and Penang Port and interviewed them to obtain some answers. Due to the MCO, they were not able to meet in person and had to conduct the interviews via telephone.

“Those who were interviewed acknowledged that times were difficult, and that many of their businesses were severely affected,” Dr Izyan Munirah said.

Seaport operators said they could not earn much income. The pandemic prevented them from running their core business



Seaport operators could not earn much income as the pandemic prevented them from importing and exporting various types of cargos. Their priority was essential goods, such as food items, medical supplies, and Covid-19 prevention kits, all non-wealthy cargos

of importing and exporting various types of cargos. Their priority was essential goods, such as food items, medical supplies, and Covid-19 prevention kits, all non-wealthy cargos.

Seaport operators also claimed that they became less competitive, less attractive, and less productive. The reasons they gave were the pandemic-induced new standard operating procedure for import and export that was more time consuming, inability to obtain replacement parts, and female workers having to take frequent leaves due to unavailability of baby-care centres.

“If this situation prolongs, it will cause a lot of damage to the reputation of Malaysian seaports and affect their competitiveness,” Dr Izyan Munirah said.

Disruption Analysis

While Dr Izyan Munirah investigated how badly the seaport operators were affected, her research partner Dr Nurul Haqimin examined how badly the operations were disturbed. According to him, the disruption experienced by Malaysian freight and hinterland businesses was at the third level, based on disruption analysis. The third level involves vessels’ delay, deviation, and possibly operational stoppage.

“If this situation prolongs, it will cause a lot of damage to the reputation of Malaysian seaports and affect their competitiveness.”

At the time of the investigation, the disruption was vessels’ delay, caused by new restrictions and measures by port states and the government.

However, Dr Nurul Haqimin said that in some cases the outbreak caused seaports and shipping services to be totally stopped as a preventive measure by the government.

“For example, the Penang-Langkawi ferry service was suspended as announced by the Penang Port,” he said.

Vulnerable connectivity

Dr Masha Nur Salsabiela, another researcher in the group, meanwhile investigated the effect of the outbreak on seaport-hinterland connectivity. She said that the outbreak exposed the vulnerability of Malaysian seaport efficiency and hinterland connectivity to catastrophic situations.



“Approaches to tackle these issues across the national and regional network of supply chains are crucial to avoid economic collapse and critical supply chain disruptions,” she said. .

Turning to Geo-economics

Based on what they found from the study, the group agreed that the MCO caused by the Covid-19 pandemic caused a lot of hiccups in seaport operations.

Thus, the next question they needed to answer was how to prepare these seaports, once the pandemic has subsided, in order to improve their performance and regain their clients’ trusts. Dr Jagan and his team proposed turning to geo-economics.

Geo-economics is the study of spatial, cultural, and strategic aspects of resources with the aim of gaining a sustainable competitive advantage. The same concept can be referred to as the use of economic instruments to promote and defend national interests and to produce beneficial results.

According to Dr Jagan, the geo-economics concept was used in the logistics-based mega project One Belt One Road (OBOR) in which three main components—spatial, temporal, and policy—

were utilised as key pillars for its successful execution.

Dr Jagan proposed separate hinterlands for Pelabuhan Tanjung Pelepas (PTP) and Johor Port that will enable both to boost their operations post-pandemic. Now they share the same hinterland, and their usage can overlap during freight consolidation or deconsolidation.

The group also proposed the setup of dry ports to reduce delayed container movements to and from the seaports. According to Dr Jagan, this is currently practised at Wiri Inland Port in New Zealand. One of the benefits is the inland port helps seaports reduce the demurrage charges and manage delayed containers transferred from the seaport.

The group also proposed a comprehensive digitalisation of seaport sectors to be in line with the Industrial Revolution 4.0 (IR4.0) and maintain their competitiveness and make them more attractive to their clients. IR4.0 that started in 2010 has already motivated seaports to be prepared for the changes. However, they have been held back by several factors such as labour structure flexibility, skill and competence level, adaptive skills, and infrastructure suitability. The group felt that policies need to be revisited to prepare the sectors towards IR4.0.



The pandemic exposed the vulnerability of Malaysian seaport efficiency and hinterland connectivity to catastrophic situations

“A clear division of hinterland between PTP and Johor Port, support from dry ports, and policy restructuring should be re-aligned to enhance the post-Covid-19 recovery,” Dr Jagan said.

The researchers agreed that applying geo-economics to boost the seaport performance in the southern region of the country can lend a new lease of life to the maritime trade.

Bounce-back strategies

As for the Malaysian freight and hinterland businesses, Dr Nurul Haqimin advised them to reconsider their priority, reconfigure the way they conduct business, review the order of thinking, and upgrade managerial, supply chain, and business skills.

Dr Masha urged the main players in supply chains, the shippers and logistics service providers, to focus on building resilience and enhancing efficiency in the operations.

“When disruptions occur, they can recover quickly and resume business, more resilient than before,” she said.

Dr Masha said that the Malaysian government should provide financial support to enable transport and logistics service providers to stay in business throughout the pandemic and post-pandemic.

Using the study’s findings, the group managed to write several articles, and these have been published in international journals. This is one way the group can share their experience with others having similar interests.

The study allowed the group to identify the impact of the Covid-19 pandemic on the maritime business, especially the seaports. Some issues that arose because of the pandemic, such as stricter standard operating procedures and female workers taking frequent leaves, will gradually resolve themselves once the pandemic disappears. However, according to the group, other issues can only be resolved through proper strategies, which the group has put forth.

With these strategies implemented, the maritime industry should be more pandemic-resistant. If another similar occurrence were to happen in the future, Dr Jagan and his co-researchers would be less worried, as they know the maritime business would be least affected.

The main players in supply chains, the shippers and logistics service providers need to focus on building resilience and enhancing efficiency in the operations



Embracing the Role

Newly set up faculty is already playing its part in establishing UMT as globally esteemed marine-focused university



A faculty in UMT may have drawn the envy of other faculties and institutes. Its uniquely designed building, with the front resembling the shape of a ship, is a favourite small talk topic inside and outside of UMT. In addition, as the tallest on the university campus, the building stands out from the rest. But these privileges seem justified, considering the big responsibilities the university has placed on the young faculty.

The Faculty of Science and Marine Environment has an important role to play in supporting the aim of UMT to become a globally esteemed marine-focused university. In line with its role, the faculty offers excellent marine-based academic programmes and engages in ocean science research. In addition, the faculty works hard at establishing its international working.

Associate Professor Dr Marinah Mohd Ariffin, dean of the faculty, said the faculty is already doing all this despite its young age.

“We may be new, but we have begun to be noticed in the field of marine science at the international level,” she said.

*Dean of Faculty of Science and
Marine Environment Associate
Professor Dr Marinah Mohd
Ariffin*



*Aerial view of Faculty
of Science and Marine
Environment*

The beginning

Having existed for less than two years, the faculty is indeed considered new. It was first established August 2019, as a result of university-wide restructure meant to improve UMT's global competitiveness.

Prior to that, there were two separate schools, School of Fundamental Science and School of Marine Science and

Environment. According to Dr Marinah, these two schools were conducting their own separate research, but at some point, they needed each other's expert contributions. Because each school was under different management, it was difficult to coordinate such collaborative efforts. It was for this reason that university management decided to merge the two schools and house the multidisciplinary experts under one roof.



“Now that the two schools were combined, we are now a stronger faculty because we are supporting each other,” Dr Marinah said. “Those who were from the School of Fundamental Science have strong fundamental knowledge, while those from the School of Marine Science and Environment are more geared towards conducting research on marine and environment. To do applied research successfully, we need a strong fundamental. So now we can collaborate between scientific multidisciplines.”

According to Dr Marinah, since UMT’s niche area is marine science and aquatic resources, most of what the university does is in line with United Nation’s Sustainable Development Goal 14 (SDG14), Life below Water. This goal describes enhancement of conservation and sustainable use of ocean-based resources through international law as well as measures to be taken to mitigate the challenges facing the oceans. Dr Marinah said that learning and research at the faculty are parallel with UMT’s niche area and therefore also emphasize SDG14.

“We study every aspect of marine organisms and marine ecosystem, physical, chemical, biological,” she said.

Academic programmes

With multidisciplinary lecturers as faculty members, the faculty can afford to offer a wide array of undergraduate and postgraduate degree programmes. For undergraduate, currently there are eight, including chemical sciences, analytical chemistry and environment, biological sciences, biodiversity conservation and management, marine science, marine biology, marine geoscience, and nanophysics.

“Our aim is to produce graduates who are really knowledgeable in their scientific fields,” Dr Marinah said.

It appears the faculty has managed to achieve that aim judging from some of the graduates’ success stories.

According to Dr Marinah, one of the graduates is now working as advisor to Malaysia’s Minister of Environment and Water. And several others are building their careers with Department of Marine and other marine-related organisations.

“The faculty may be new but has begun to be noticed in the field of marine science at the international level.”

The faculty also wants its graduates to not limit themselves to local jobs only but be brave enough to look for employment outside of Malaysia, where demand for marine science is much greater or to further studies overseas. It seems the faculty has succeeded in its strategies.

“We have graduates working in Singapore and other countries as well,” Dr Marinah said. “Some of our former students are doing their PhD in Hong Kong and the UK in marine science.”

For postgraduate, the faculty offers master’s programme by research and Doctor of Philosophy programme in four main research interests: marine science, marine biology, biodiversity conservation and management, as well as analytical and environmental chemistry.

The faculty also offers one new postgraduate programme, master’s degree by coursework in environmental forensic.

“We are the only faculty in Malaysia to offer such programme,” Dr Marinah said. The programme is in its second year.

Research

Research at the faculty falls under the research cluster ‘ocean science and sustainable environment’ and is within the scope of SDG14. For more effective implementation, the faculty classifies its research into several research interest groups (RIG), with three mainly focusing on marine environment—Microplastic Research Interest Group (MRIG), Research and Education on Environment for Future Sustainability (REEFS), and Ocean Pollution and Ecotoxicology (OPEC). These coordinated teams embark on well-planned marine and environmental research programmes with international collaborators and funding from the government and NGOs.

“Our aim is to gather specialists in the field of marine science, environmental science and ecosystem under one organization to provide a better chance of uniting and strengthening the network between the organisations and institutions,” Dr Marinah said.

One of the emerging pollutants in today’s oceans is microplastic, small pieces of plastic that exist in the environment as well as in the oceans as a result of plastic pollution. Because of our over dependence of plastic products these past few decades, the problem is now compounded. MRIG was established to examine these issues.

Research at the faculty falls under the research cluster ‘ocean science and sustainable environment’ and is within the scope of SDG14



The group is led by Dr Yusof Shuaib Ibrahim, senior lecturer at the faculty specialising in microplastic analysis and taxonomy and ecology of marine invertebrates. He said that the group was first set up in 2018 comprising researchers from multidisciplinary fields including marine biology, analytical chemistry, environmental chemistry, applied material science, microbiology, physical oceanography, and environmental science. Then in 2020 the group added several leading researchers in the fields of entomology, food microbiology, and biotechnology.

“Studies have shown that microplastics have a variety of harmful effects on marine organisms such as shrimp, bivalve, plankton, coral reefs, sponges and even their environments as a consequence of this pollution,” he said.

As Southeast Asia is one of the world’s most populated regions, its impact towards marine plastic pollution is significant. However, there are still many questions unanswered about the degree of plastic pollution in its waters. To answer such questions, on-site data is critical in helping researchers and scientists assess the level of pollution in our marine environment. REEFS is complementing MRIG on this.

To gather such data, REEFS has initiated The Ocean Monitoring Project in collaboration with The International SeaKeepers Society, a non-profit organisation focusing on the health of the world’s oceans and climate.

Spearheaded by UMT environmental chemist Dr Poh Seng Chee, marine biologists Dr James Tan Chun Hong and Dr Muhammad Hafiz Borkhanuddin, and biochemist Dr Siti Nurtahirah Jaafar, the project also involves UMT student scientists as well as marina operators.

Dr Poh explained that the Ocean Monitoring Project is a long-term research and monitoring study that involves water sampling, and the collection of data over specific periods and different seasons at different locations.

Interested boaters and yacht owners acting as ‘citizen scientists’ are roped in for a minimum of three months to assist in collecting water samples along their sailing route.

“The use of these private yachts helps to reduce costs and allows the scientists to focus more time and funds on research instead,” he added.

This project is the first one of its kind in the region, focusing on the waters along the East and West Coasts of Peninsular Malaysia with plans to include other regions later.

OPEC is also supporting research on plastic wastes and their impact. Established in January 2020, it is staffed by a dedicated team of scientists with a wide range of experience in all types of pollution and ecotoxicology studies. The mission of OPEC is to empower marine and aquatic resource-based research through robust research networks with national and international collaborators for global sustainability.



Led by Associate Professor Dr Ong Meng Chuan, Marine Science Programme coordinator, OPEC focuses on a wide range of research on pure and applied aspects of chemical, biological, physical and aquatic sciences associated with how humans impact their environment.

“Research members and associates within this group use a wide variety of biology samples and sediments, and techniques within the field and laboratory to study toxicology, monitoring of aquatic pollution to the understanding of how humans impact their environment is through understanding of sub-lethal impacts of pollutants on organisms, their populations and ecological communities,” Dr Ong said.

The group’s success is due to its close collaboration with other local and international institutions and industries, Dr Ong said, adding that OPEC also focuses on the effects of a wide range of contaminants including metals, plastics, water quality, endocrine disruptors, nanoparticles, pesticides and hydrocarbons.

International networking

One of the faculty’s goals as Dr Marinah mentioned is to increase its visibility at the international front. One of the ways to achieve this is by expanding the faculty’s networking and partnerships overseas.

“To improve our international visibility, we not only encourage our lecturers to set up research networking with top tier overseas institutions, but we also send our students there for internship,” Dr Marinah said. “For almost two years now, we have been sending our undergraduate students to Italy, Sweden, and Russia.”

Dr Marinah said that, internationally as far as marine science is concerned, the faculty intends to be a representative of the tropical areas.

“Our tropical climate is different from those of other places, so we can share some significant region-specific knowledge regarding marine science with the rest of the world, for attaining global sustainability,” she said.

In the short time that the faculty has come into existence, it has been able to successfully assume the role of helping UMT to achieve global visibility in the field of marine science, credit to the strong commitment from its staff and capable management.

Given its important role in UMT’s book, the Faculty of Science and Marine Environment deserves to be where it is currently located, in the uniquely designed and tallest building on campus.



Members of MRIG, REEFS, and OPEC research interest groups pose in the faculty's hallway. From left: Dr. Poh Seng Chee, Dr. Yusof Shuaib Ibrahim, Associate Professor Dr. Marinah Mohd Ariffin, Associate Professor Dr. Ong Meng Chuan, Associate Professor Dr. Hasrizal Shaari

From Belgium with Love

World-renowned Belgian aquaculture scientist
makes his mark at UMT as Sultan Mizan Professorial
Chair holder

In 2016, UMT was looking for a distinguished professor to be the new holder of the Sultan Mizan Professorial Chair. As fate would have it, world-renowned aquaculture scientist formerly of Ghent University, Belgium, was available, and he had also wanted to come aboard. UMT appointed him, and so far the investment appears to have paid dividends.

Since becoming the chair holder, a role through which he shall prime UMT as the pacemaker in the region's marine environment research, Emeritus Professor Dr Patrick Sorgeloos has made significant contributions to scholarship as well as research and development, not only at UMT, but also in the community.

"Taking up this honorary position as Sultan Mizan Professorial Chair at UMT has given me much satisfaction," Professor Sorgeloos said.

His decision to become the incumbent of the chair was influenced by several reasons, but none more sentimental than on account of Professor Dr Yeong Yik Sung, his former student and alumni of Ghent University, now Director at UMT's Institute of Marine Biotechnology (IMB). After his retirement, Professor Sorgeloos could finally find more time to do what he had always wanted to—assist the alumni at their place of work. All the while, he said, he had Professor Yeong in mind.



Professor Sorgeloos receives his appointment certificate from His Royal Highness Sultan of Terengganu Sultan Mizan Zainal Abidin (third from left), witnessed by Professor Dato' Dr Nor Aieni Mokhtar, UMT Vice Chancellor (second from left), and Dato' Mohammed Azlan Hashim, Chairman of UMT Board of Directors, in an official ceremony on 18 November 2016

Professor Sorgeloos obtained his PhD in Marine Biology in 1975 from Ghent University, Belgium. In 1986, he became Ghent University's first professor of aquaculture. Until his retirement as emeritus professor in 2013, Ghent University had produced more than 250 master's alumni from over 50 countries and 70 PhD alumni from over 20 countries in the field of aquaculture.

Professor Sorgeloos is a strong promoter of international networking in aquaculture and has been involved in many collaborative projects in Europe, Asia, Latin America, and Africa.

Sultan Mizan Professorial Chair

UMT Sultan Mizan Professorial Chair, named after His Royal Highness the 13th Sultan of Terengganu Tuanku Mizan Zainal Abidin Ibni Almarhum Sultan Mahmud Al-Muktafi Billah Shah, is a prestigious award created to help the university elevate the quality of research and other academic undertakings.

Professor Dr Mazlan Abd Ghaffar, UMT Deputy Vice Chancellor for Research and Innovation, said that appointment to professorial chair represents the highest recognition given by UMT to a foreign visiting professor with lifetime achievements.

"The appointment is made to seek his or her expertise and experience to boost research and academic development in the field of aquaculture at UMT," Professor Mazlan said.

Chair holder is expected to lead research teams and create networking links with researchers from similar fields as well as conduct workshops and seminars, Professor Mazlan said, to place UMT among the ranks of leading higher learning institutions around the world.

"Chair holder also plays pivotal roles in the supervision and mentoring of UMT's young scientists in aquaculture and other related fields of research," he added.

Enjoying the role

Professor Sorgeloos was appointed to Sultan Mizan Professorial Chair on 18 November 2016 in an official ceremony graced by His Royal Highness Sultan of Terengganu Sultan Mizan Zainal Abidin himself.

Since his appointment, Professor Sorgeloos has loved every minute of his time at UMT, being able to get involved in many aspects of academics at the university.

"I feel happy that I am able to interact with the students during classes, discuss with professors and lecturers when evaluating the aquaculture curricula at UMT, as well as assist in the preparation and implementation of new R&D projects for both academic and public interest," he said.

"I also try my best to facilitate new contacts and exchange programmes with other universities in Asia as well as in Europe, as well as co-organise seminars and workshops for aquaculture stakeholders in Malaysia," he added.

"I feel happy that I am able to interact with the students during classes, discuss with professors and lecturers."

Initial contribution

One of Professor Sorgeloos's initial contributions to UMT was assisting the university in securing its first European Union's Horizon 2020 Grant, in partnership with six other prominent institutions from Europe and South-East Asia. The EUR 2 million grant was for the setup of the European Asian aquaculture Technology and innovation Platform (EURASTiP).

The EURASTiP Research and Education Exchange programmes benefitted many UMT academic staff, who received travel grants to Belgium, Spain, Croatia, and The Netherlands and mobility grants to participate in education workshops on innovative teaching in aquaculture, he said.

Smart partnerships

Professor Sorgeloos was successful in making UMT a partner university in the EU-Erasmus+ programme, with a grant valued at EUR 4.424 million. The 5-year programme expected to start in 2021 will allow UMT to jointly offer the prestigious International Master of Science in Health Management in Aquaculture with several partner universities from Europe and the ASEAN region.

Professor Sorgeloos's effort to establish collaborations between UMT and the rest of the world started several years earlier, beginning with several joint programmes with universities from China. He helped set up the ASEAN Fisheries Education Network (ASEAN-FEN), a team comprising fisheries and aquaculture-oriented universities located within the South-East Asia region, currently with 42 institutional members.



"The mutual objective is to support and enhance the fisheries and aquaculture sector in the region through education, research, and public outreach," Professor Sorgeloos said.

Professor Sorgeloos played an instrumental role in the setup of a joint bioinformatics laboratory between UMT's IMB and UGent's Flemish Institute of Biotechnology (VIB). The laboratory assists UMT Bioinformatics Group in carrying out high impact research for publication in high impact journals. Professor Dr Tengku Sifizul Tengku Muhammad, one of the research group members, said that Professor Sorgeloos "paved the way for UMT Bioinformatics Group to establish a collaboration with a world-renowned scientist, Prof Yves Van de Peer from Ghent University."

Co-organized seminars

Professor Sorgeloos helped UMT to host its first International Seminar on Aquaculture Technology (iSAT 2018) and was instrumental in getting Ghent University to co-organize the event. A platform for sharing the latest aquaculture technology by academics with the industry, the seminar discussed aquaculture issues, such as aquatic organism diseases, microbial management, breeding technology, and bioinformatics. He recounted helping with the seminar as "a great experience to work with UMT Vice Chancellor Professor Dato' Dr Nor Aieni and share her vision of giving more international exposure to UMT."

The success of iSAT led Professor Sorgeloos to assist in hosting another seminar the following year, the Biotechnology International Seminar (BIS 2019), which gathered experts from UMT, Ghent University, other international institutions, and the private sectors.

"Prominent speakers from Ghent University, many of whom have published frequently in high impact journals, for example Nature and PNAS, were invited to speak at the seminar," Professor Sorgeloos said.

Involvement in research

Professor Sorgeloos' involvement in the current research of several postgraduate students at UMT has paid off, with more than 10 papers already published in Q1 and Q2 journals. Realizing the importance of capacity building, Professor Sorgeloos spearheaded allocation of three Mama Magda Aquaculture Fund, UGent scholarship programme, to UMT for the development of joint-PhDs with professors from UGent. This initiative is expected to boost research collaboration and publications between the two institutions in early 2021.

UMT is primed as the
pacemaker in the region's
marine environment research
with strong involvement from
Prof. Sorgeloos

Professor Sorgeloos is jointly supervising with Professor Yeong the construction of a brine shrimp *Artemia* hatchery at UMT. A translational research project approved by the university. The project is expected to position UMT as a front-runner in the research and production of *Artemia* in Malaysia, thus enabling the country to tap into the lucrative global *Artemia* market, currently valued at more than US\$350 million (RM 1.5 billion).

"As part of a community project, UMT is providing training to communities around Kuala Nerus in Terengganu to culture and produce *Artemia*," Professor Yeong said.



Above: UMT is poised to be the front-runner in the research and production of *Artemia* in Malaysia

Right: Professor Sorgeloos gives a lecture during IMB Biotech Talk Series

Future endeavours

As his latest contribution, Professor Sorgeloos has invited Professor Yeong to join the new International *Artemia* R&D Consortium, which will organise its first international workshop under the auspices of the Food and Agriculture Organisation (FAO) at the next FAO Global Conference on Aquaculture in Shanghai in this year.

Professor Sorgeloos has also suggested for UMT to initiate new international multi-stakeholder cooperation on innovative shrimp and crustacean hatchery techniques and new applications of *Artemia*. These he said are topics that could contribute to FAO's target or recommendation for "more sustainable intensification of aquaculture."

Professor Sorgeloos has indeed distinguished himself in the discipline he represents. In his capacity as the Sultan Mizan Professorial Chair holder, he has been able to use his expertise and experience to help pave the way for many of UMT's successes.

"I hope to be of further assistance to UMT," Professor Sorgeloos said.

For as long he remains the chair holder, UMT can expect more successes coming its way.

"Professor Sorgeloos has indeed distinguished himself in the discipline he represents."

Above: Professor Sorgeloos gives a presentation during BIS2019

Left: Professor Sorgeloos in one of the meetings with Prof. Dato' Dr Nor Aieni Mokhtar, UMT Vice Chancellor



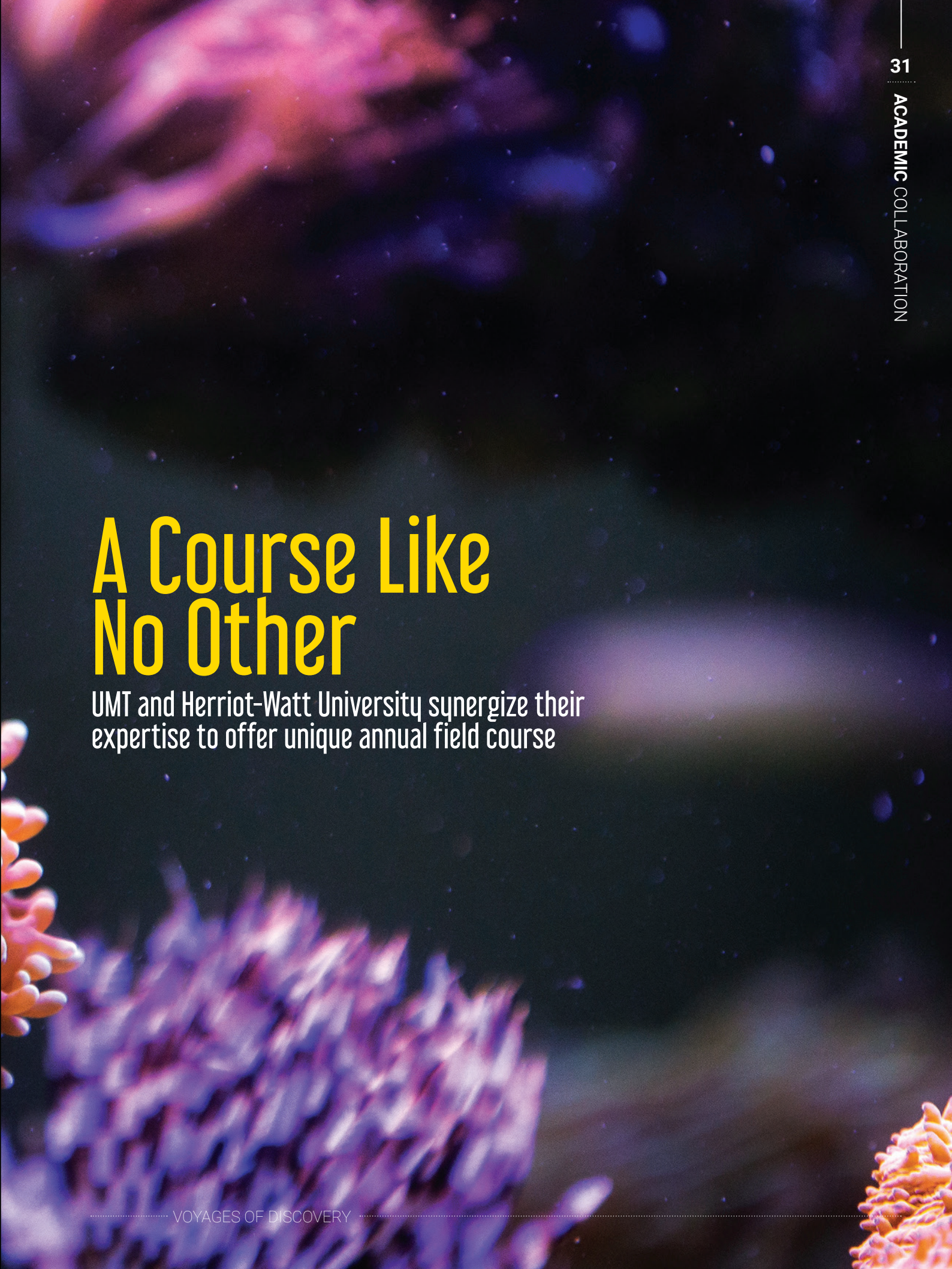
Professor Sorgeloos receives UMT-published book *Beautiful Terengganu* from the Vice Chancellor as a small token

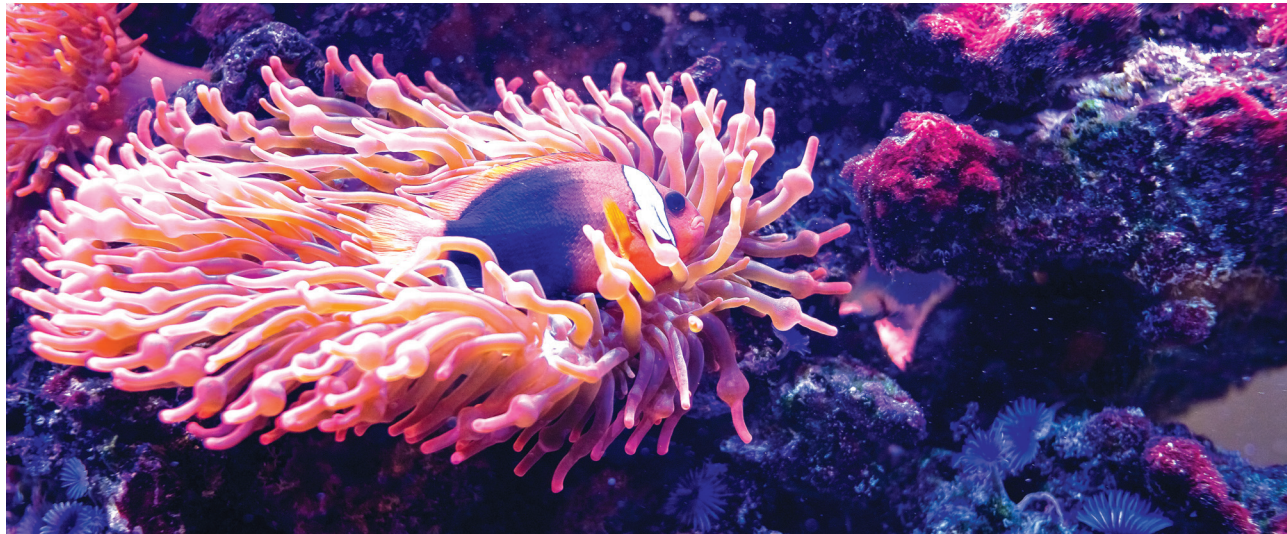




A Course Like No Other

UMT and Herriot-Watt University synergize their expertise to offer unique annual field course





Top: Students not only learn about coral reefs but also fish species

Above: One of the activities is a trip to Bidong Island, where UMT research station is located

“The synergistic relationship went back several years ago.”

For the past few years, nearing the mid-months, UMT research stations usually have some extra visitors. Mostly tall, big, and with blue eyes and brown or blonde hair, these visitors are obviously not local people. They are in fact students from Herriot-Watt University (HWU), United Kingdom, who come to the stations for the hands-on component of their unique course.

UMT and HWU have been co-organizing an annual course called Tropical Reefs Monitoring and Management since 2014, with the theoretical part of the course taught to students at the HWU campus and the hands-on component experienced at UMT research stations.

“UMT and HWU are no strangers to each other,” said Associate Professor Dr Marinah Ariffin, dean of the Faculty of Science and Marine Environment (FSME), which coordinates the hands-on component of the course. “The synergistic relationship went back several years ago with several successfully organized field courses already in the book.”

Unique course

The Tropical Reefs Monitoring and Management course can be considered unique for the fact that it is co-organized by two universities thousands of kilometres apart.

“As its name suggests, the course is about how to monitor and manage tropical reefs through utilizing proper surveying methods and identifying threats that can damage coral reefs, such as heat and pollution that can cause coral bleaching,” she said.

The creation of the co-organized field course back in 2014 was timely. According to Dr Marinah, it was developed to address the challenges for students taking the course at HWU campus in studying the tropical marine environment. The field course is also in line with HWU’s programme of teaching and research in climate change issues, Dr Marinah said.



HWU students together with programme facilitators

Hands-on experience

For the hands-on component of the course, students come to UMT for a 12-day stay. They are usually accompanied by several researchers from HWU. Students visit several of UMT research stations including Bidong Island, Setiu Wetlands, and Chagar Hutang Turtle Sanctuary and get involved in some activities at these places.

“Normally they spend most of the days at Bidong Island,” said Dr Siti Nurtahirah Jaafar, senior lecturer at FSME and one of the instructors.

At Bidong Island research station, students are introduced to different methods of coral reefs surveying and monitoring. They are also exposed to sampling techniques carried out by UMT researchers.

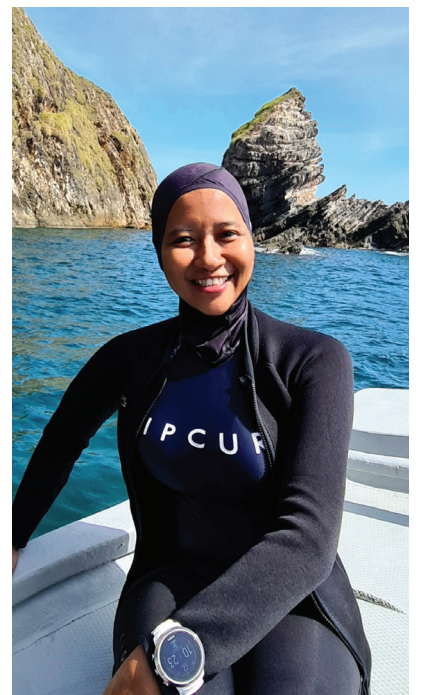
They are also introduced to the variety of fishes, corals, and other invertebrates that characterise coral reefs in the tropical region, especially in the east coast of Malaysia.

The field work students undertake typically involve a pre-diving briefing by dive masters. Students also receive hands-on training on how to assemble their dive equipment, go through dive safety inspection, and set up a transect line across a marine habitat or part of it so that the number of organisms of each species along the transect can be observed and recorded at regular intervals.

Before starting their fieldwork, students are divided into two groups—the snorkelling team and the diving team.

“Regardless of which group students are in, each student has the opportunity to carry out benthic monitoring on coral reef communities and are able to appreciate the diversity of fishes, corals, and other invertebrates which inhabit coral reefs in tropical regions,” Dr Siti Nurtahirah said.

Dr Siti Nurtahirah, one of the course instructors





“The level of academic expertise, SCUBA capability, safety, and organization is exemplary every time.”

Associate Professor Dr Mark G. J. Hartl, School of Energy, Geoscience, Infrastructure and Society, Institute for Life and Earth Sciences

Benthic macroinvertebrates are animals without backbones. They can be seen with the naked eye. They live on, in, or near the bottom of water bodies.

“These organisms are often used to monitor water quality in rivers, creeks, and streams as they are good health indicators of aquatic ecosystems,” Dr Siti Nurtahirah said.

Some of the HWU students carry out benthic monitoring the conventional way while a few have the chance to use videography to visually record and analyse the organisms on the selected coral reef sections.

At the end of the fieldwork, the tradition has been that the instructors and researchers from both universities have a meeting. Among items commonly discussed are improvements on teaching methods for better knowledge delivery and plans for future collaborations.

Positive feedback

Each year, HWU students have had only positive things to say about their experiences at UMT, Dr Marinah said.

However, due to the Covid-19 pandemic that hit the world in early 2020, there were no students at the research stations for that year.

One of the students from 2019 batch, Glenn Jakob Bodholdt Jessen, considered himself lucky enough to have had the chance to take part in the course.

“I was happy I had the opportunity to take in this learning experience in a cross-disciplinary and multi-cultural setting,” he said. “It was an intense two weeks and I gained experience in several surveying techniques under the skilful guidance of both Heriot-Watt and UMT staff.”

The hands-on field trip was not the only event he had a chance to experience. On top of it, there was also time to explore the local culture and great Malaysian cuisine, he said.

HWU researchers who accompanied 2019 batch had positive things to say about UMT as well.

Associate Professor Dr Mark G. J. Hartl from the Centre for Marine Biology and Biodiversity at HWU who accompanied the group of 21 students last year said that UMT research stations on Bidong Island provided students with an immersive experience in a safe and well-managed environment.

“UMT has developed an excellent research and teaching facility in an incredibly special place,” he said.

Win-win partnership

His colleague Associate Professor Dr William G. Sanderson felt that the research stations provided an excellent facility for their students.

“The level of academic expertise, SCUBA capability, safety, and organization is exemplary every time,” he said, “and not to mention the extremely dedicated and welcoming UMT staff.”

“The classroom and open water diving and snorkeling are a short distance apart, making it an intense hands-on teaching experience, as well as a memorable cultural experience,” he added.

Similar positive view also came from Associate Professor Dr Joanne S. Porter, also from the Centre for Marine Biology and Biodiversity at HWU. She said that the field course allowed HWU students to experience the real-world challenge of climate change by physically studying the reef environment and observing the impacts that the reef was experiencing.

“The field course enables them to develop the relevant skills sets in survey technique, observation, recording, teamwork, and reporting. These are attributes recognized by employers as essential for the activities of their organisations,” she said.

The synergistic efforts between the two universities have thus far benefited both sides according to Dr Marinah. HWU students have had the opportunities to obtain experiences of a lifetime, and UMT has improved its visibility at the international level.

She also said that the involvement of experts from both universities in the field course has resulted in an exchange of knowledge and skills in marine research, which can be further fostered through future collaborations between the two universities.

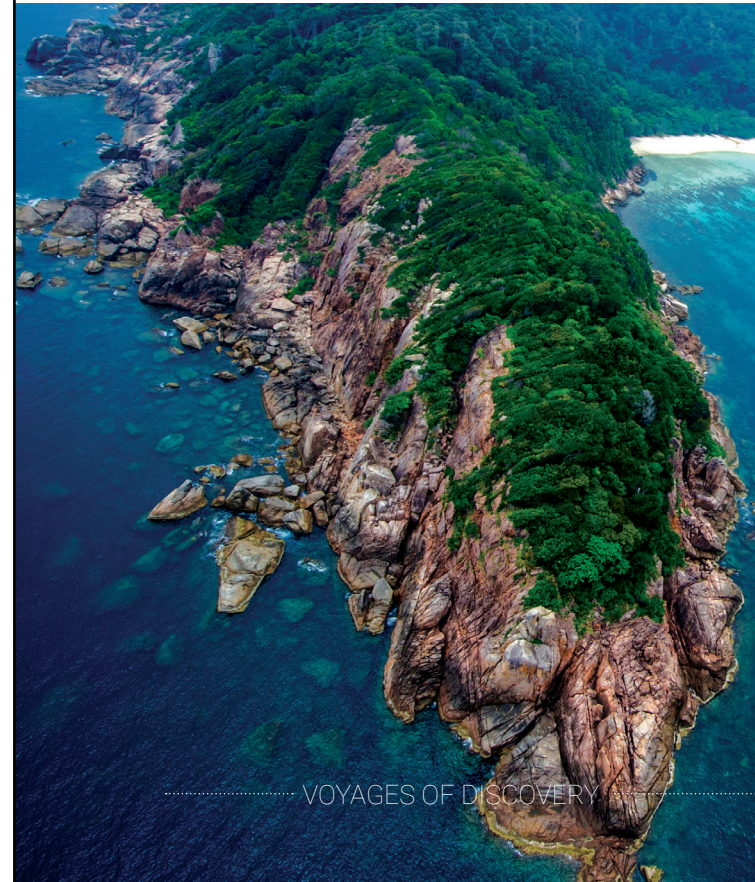
Dr Marinah felt a little disappointed that the field course could not be organized in 2020 due to the emergence of the Covid-19 pandemic worldwide.

“We are looking forward to organizing the field course in 2021,” she said.

Given the benefits gained by both universities from co-organizing the field course, there are plenty of reasons for UMT and HWU to continue offering it for a long time.

UMT research stations will be ever ready to welcome the HWU students for years to come.

Associate Professor Dr. William G. Sanderson, School of Energy, Geoscience, Infrastructure and Society, Institute for Life and Earth Sciences



Associate Professor Dr. Joanne S. Porter, School of Energy, Geoscience, Infrastructure and Society, Institute for Life and Earth Sciences

Glenn Jakob Bodholdt Jessen (MSc Marine Biodiversity and Biotechnology)

Cleaner Homes for Ocean Dwellers

UMT's collaboration with RHB as industry partner to preserve marine ecosystems is the first in Asia Pacific



When a group of UMT students started a small campaign back in 2018, they had no idea it would eventually take off to the next level. The success is for the most part owed to an involvement from a subsidiary of the fourth largest fully integrated financial services group in Malaysia.

For the past two years, RHB Islamic Bank Berhad in its role as a strategic partner has been collaborating with UMT to bring the Ocean Hope campaign to a wider audience with the goal of making a larger impact.

Ocean Hope is a campaign that aims to help preserve the marine ecosystems and the environment. Its goal is in line with the United Nation's Sustainable Development Goals.

To meet its aim, the campaign seeks to enhance ocean literacy among Malaysians. One of the primary targets is the youths, whom the campaign intends to turn into environmental champions through efforts such as educational programmes, school tours, and forums.

Professor Dato' Dr Nor Aieni Mokhtar, UMT Vice Chancellor, said that the smart partnership between UMT and RHB Islamic Bank Berhad has created opportunities for both institutions to reach out to the communities and enhance ocean literacy among the public.

"Ocean literacy is vital to create greater awareness towards sustainable use of ocean resources and its conservation," she said. "An ocean literate person will be able to understand the functioning of the oceans and our life relation with it."

Dato' Adissadikin Ali, Managing Director of RHB Islamic Bank Berhad, said UMT has full support from their side.

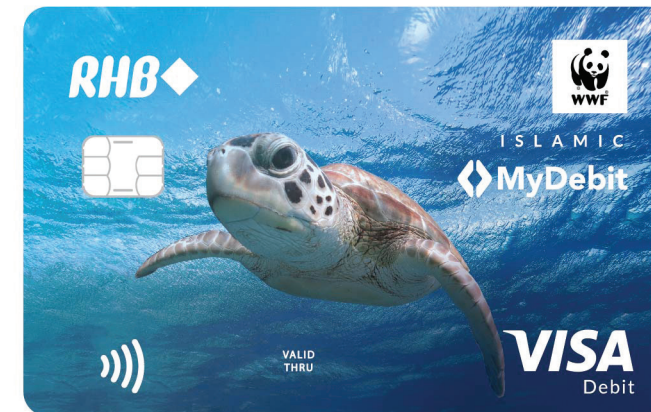
"We are delighted to play an integral role in promoting environmental sustainability while at the same time maintaining the balance of the marine ecosystem by supporting UMT's ocean research and development studies," he said.

Ocean Hope

Ocean Hope has a modest beginning. In December 2018, the academic club for marine biology students, Marina Club, conducted a workshop and a forum called Waste Management for Ocean Hope Workshop. Students briefed participants from the local community on best methods to manage and reduce their daily waste. They showed the people how poorly managed waste would greatly affect the oceans.



Dr Maizah, Marina Club Advisor and Ocean Hope Coordinator



The RHB VISA WWF Debit Card-I with the green turtle *Chelonia mydas* on it

The local people loved the workshop, and a local mass media even covered it. A nearby school later invited the students to hold the event in its compound. This eventually led to the Ocean Hope-School Tour 2019.

Dr Maizah Mohd Abdullah, Marina Club advisor, said that the high spirit and energy shown by the Ocean Hope Troopers—how Marina Club members refer to themselves—inspired her to bring the campaign forward so that it can reach a wider community.

"Since day one when we started this campaign, the team members have given their full commitment," said Dr Maizah, also the Ocean Hope coordinator.

The positive responses and cooperation given by the public was also one of the factors that inspired the team to take the work to another level, she said.

In an effort to find an industry partner to help with the campaign, the team pitched its proposal to RHB Islamic Bank Berhad, and the outcome was a good one.

"To our excitement, they expressed their commitment to get on board with our proposal," Dr Maizah said.

RHB Islamic Bank Berhad agreed to become a strategic partner and work together with UMT on the campaign, paving the way for the campaign to expand its horizons.

Contributions from RHB

One of the initial contributions to the Ocean Hope Campaign from RHB is linked to its savings and current account banking services.

"When customers apply for any participating Islamic retail current account or savings account, they have the option to donate RM3 to UMT's Ocean of Hope campaign," Dr Maizah said, "and on top of that, they can also choose to donate all or part of their profits earned from deposits on a monthly basis, to be channelled to the campaign."

Not only does Ocean Hope campaign receive some financial help, it also receives plenty of publicity, she said.

The fund is used to support research collaborations and organize knowledge transfer sessions involving experts as well as environmental awareness programmes, Dr Maizah said. These are hoped to increase the public's awareness regarding the importance of marine ecosystem conservation and environmental sustainability.

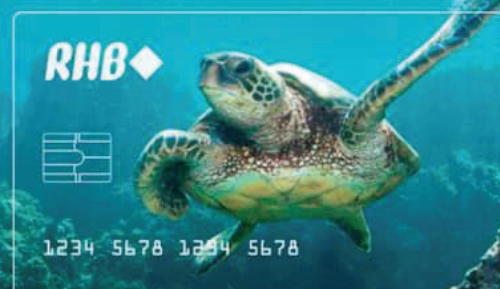
"Many ocean experts from UMT have joined hands to bridge the scientific knowledge from the university to the society, where ocean literacy principles can be instilled through local perspectives," she said.

"Ocean Hope is a campaign that aims to help preserve the marine ecosystems and the environment."



Primary students at Showme Kidz find out more about the green turtle at one of the Ocean Hope School Tour activities

Bringing life
back to our oceans,
one card at a time.



Introducing the first recycled plastic
card in Asia Pacific that supports life below
water via cashless donations -
The RHB VISA WWF Debit Card-i.

With the introduction of Ocean Harmony initiative aimed at supporting marine life, RHB makes a historic first by enabling digital cashless funding that's in line with United Nations (UN)'s Sustainable Development Goal #14¹. By working with WWF-Malaysia and Universiti Malaysia Terengganu (UMT), RHB meets United Nations (UN)'s Sustainable Development Goal #17², all in an effort to achieve ocean conservation goals, together.

1. Conserve and sustainably use the oceans, seas and marine resources for sustainable development
2. Strengthen the means of implementation and revitalise the global partnership for sustainable development



Debit cards from recycled plastics

In collaboration with UMT and Worldwide Fund for Nature Malaysia (WWF-Malaysia), RHB launched a debit card known as RHB VISA WWF Debit Card-i, made from recycled plastic. Paired with payWave technology, the card is the first of its kind in Asia-Pacific.

"Each card takes 3 gm of plastic out of the ecosystem, which translates into savings of thousands of tonnes of plastic, if the banking industry moves in this direction," Dato' Adissadikin Ali said.

Dr Maizah said that the specially produced debit card will be instrumental in helping the Ocean Hope Campaign to promote ocean conservation.

"The green turtle *Chelonia mydas* featured on the card is classified by the International Union for Conservation of Nature Red List of Threatened Species (IUCN Red List) as endangered due to poaching, illegal trade, consumption of its eggs, habitat loss, climate change, and pollution," Dr Maizah said.

When using the debit cards, customers indirectly will be reminded of the importance of maintaining healthy oceans, she said.

"For UMT, this initiative not only supports the ocean conservation effort directly but also helps the university to promote its research to a wider audience through the strong network and wide customer base within RHB Banking Group," she said.

Ocean Hope Webinar

In 2020, Ocean Hope Campaign organised an online Ocean Hope Webinar 2020 (Ocean Literacy) that impacted many ocean interests nationally and globally.

"The webinar involved six ocean experts from UMT and three from the NGO as the moderator and speakers, as well as students of the Marina Club.

This programme was supported mainly by the Sustainable Ocean Alliance (SOA), a non-profit organisation based in San Francisco, California that develops leaders, cultivates ideas, and accelerates solutions in the field of ocean health and sustainability. Nearly 1000 participants registered from many countries including Malaysia, Indonesia, Singapore, Brazil, Turkey, New Zealand, Norway, Italy, Hong Kong, Sri Lanka, India, Germany, Taiwan, USA, UK, Spain, South Africa, Philippines, Mexico, Thailand, Canada, Tanzania, Ecuador, Sweden, Argentina, Honduras, and Australia. The webinar also managed to receive 10,000 views on its Facebook Live broadcast.

Ocean Hope Webinar 2020

ORGANISED BY:



DR ABDULMAULA HAMZA
UNIVERSITI MALAYSIA TERENGGANU

SATURDAY, 9 MAY 2020

BIRDS OF THE
EAST COAST

MR ANUAR MCAFFEE
MALAYSIAN NATURE SOCIETY



DR HASRIZAL SHAARI
UNIVERSITI MALAYSIA TERENGGANU

WEDNESDAY, 13 MAY 2020

WILL COVID-19 HAVE A LASTING
IMPACT ON ENVIRONMENT?

MISS JAGEDESWARI
GLOBAL ENVIRONMENT CENTRE



DR TAN CHUN HONG
UNIVERSITI MALAYSIA TERENGGANU

SATURDAY, 16 MAY 2020

COVID-19, FRIEND OR FOE
TO CORAL REEFS CONSERVATION?

MR ALVIN CHELLIAH
REEF CHECK MALAYSIA



DR JASNIZAT SAIDIN
UNIVERSITI MALAYSIA TERENGGANU

WEDNESDAY, 20 MAY 2020

BIOTECHNOLOGY APPROACH TO
PROTECT OCEAN ENVIRONMENT

ASSOC PROF DR KESAVEN
UNIVERSITI MALAYSIA TERENGGANU



zoom LIVE | 10-11 AM MYT GMT+8

DIARI KAMPUS BIO
MARIN UMT
DIARI KAMPUS

#oceanliteracy

FSSM

SUPPORTED BY :



The online Ocean
Hope Webinar 2020
(Ocean Literacy) from
9 to 20 May, 2020

Knowledge transfer programmes

In addition, the Ocean Hope campaign also reached out to the Terengganu island community. A group of UMT ocean experts were invited by the Kapas Conservation Society (KCS) for a knowledge transfer programme recently. Future activities have been planned together with KCS to enhance the skills and competency of Pulau Kapas society in marine conservation.

"I hope that the Covid-19 pandemic will ease soon so that our annual school outreach programme, the Ocean Hope School Tour, can be resumed as early as possible," Dr Maizah said.

"We hope to reach more schools not only in Terengganu but also a wider school community nationally in the next event," she added.

Ocean Hope Educational Portal

UMT worked with RHB to develop the Ocean Hope Educational Portal to enhance the national ocean literacy. The portal was launched in December 2020 and can be accessed at <https://oceanhope.umat.edu.my>.

"The portal serves as the main reference point for Malaysians in general, and RHB customers in particular, to discover and learn more about the oceans," Dr Maizah said. Visitors to the portal

can find out more about Ocean Hope Campaign, the different types of animals living in the oceans, and programmes and events held. For young visitors, there are fun games to play with themes related to the oceans.

In the pipeline

Dr Maizah revealed that one of the conservation research projects in the pipeline is the geo-tagged turtles, where RHB-I customers will be able to monitor the movement of the turtles and at the same time be able to learn about the ocean habitat.

The strategic collaboration between UMT and RHB Islamic Bank Berhad allows both organisations to leverage their respective strengths to help the Ocean Hope campaign meet its goal, which is to convey the importance of preserving marine ecosystems and the environment to as many people.

With the strong support from RHB Islamic Bank Berhad, UMT was able to take what was once an in-house, student-run project to greater heights. Its owners, the Ocean Hope Troopers, should be happy knowing what they started have now gained national attention.

Third Year's The Charm

After three years of trying their luck to witness coral spawning in-situ at Bidong Island, UMT researchers were finally able to record the spawning of 15 coral species



“It was the highlight
of my years of
research.”
-Dr Tan

The last trip Dr Tan Chun Hong and his team of UMT coral researchers made to Bidong Island to try and record coral spawning was not easy. Because of Covid-19-induced Movement Control Order, they first had to obtain permission from the authorities. Then they had to do everything themselves—carry food supply, lug gas tanks, even cook meals. But in the end, everything was worth it.

After three years of trying their luck to witness coral spawning in-situ at the island, Dr Tan and the team were finally able to record the spawning activities. Altogether, they managed to record the spawning of 15 coral species.

“It was the highlight of my years of research,” Dr Tan said.



Unique tiny creatures

Corals are living organisms, tiny marine invertebrates with skeletons made of calcium carbonate. In these skeletons are tissues and organs including the mouth, stomach, and reproductive system.

Corals usually live in clear unpolluted water areas. They thrive better near tropical islands. More than 600 species of coral reefs can be found within the Coral Reef Triangle, an area covering roughly five million square kilometres of water, formed by six countries including Malaysia.

Corals do reproduce. Like other animals, sexual reproduction requires fertilisation between sperm and eggs. Corals release their matured eggs into the water to be fertilised and dispersed, a process known as spawning.

A unique phenomenon known as synchronous coral spawning has been documented. This is when multiple coral colonies of different species release their eggs and sperm simultaneously. When it happens, millions of eggs and sperm are released to the surface of seawater, and fertilisation is maximized.

Spawning period usually occurs when the moon is full. In Malaysia, depending on the location and species of corals, this is at the beginning of the year, from February to April, and the end of the year, from October to November.



In search of spawning corals

Dr Tan has been studying the coral spawning phenomenon in the country's waters since 2004. He started when he was an undergraduate, then continued through his master's and PhD studies. In his 17 years of research on the reproduction of hard corals, it was the first time he was able to record the spawning of corals in-situ.

In early 2020, Dr Tan and his team decided to make another attempt at witnessing coral spawning at Bidong Island. They wanted to understand the spawning patterns of hard coral (scientific name: Scleractinian) there. Specifically, they wanted to examine which day coral spawning would occur and which coral species would spawn during post monsoon season from March to April.

"Coral spawning is an especially important natural process to ensure the survival of the coral species. If this process does not occur, the balance of the marine ecosystem will be affected because there are no new seeds to replace dead or broken reefs," Dr Tan said.

Because of the Movement Control Order (MCO) imposed due to the Covid-19 pandemic, Dr Tan must first secure permission from the relevant authorities for him and his small team of UMT researchers to visit Bidong Island. After a lengthy and extensive preparation, they made it to the island and got to work immediately.

"It was tough as we had to literally do everything on our own," Dr Tan said.

"Normally, food and housekeeping services would be taken care of by caretakers appointed by UMT but because of the MCO, they could not come to the island to work. So, our team had to carry all our equipment such as the gas tanks and food supply, and cook the meals on our own," he added.

Since Dr Tan could stay on the island only for four nights, the team had to strategize to ensure optimum results. During the day, the team dived and broke the branches of the coral colonies to check their gonad maturity.

"Those with large and coloured, pink, reddish, oocytes indicate matured colonies and were ready to spawn in the coming or the next full moon," he said. Through their field observations, Dr Tan and his team found that over 17 per cent of the coral colonies had matured before the spawning.

At night, the field observation sessions would start right after sunset, at around 7.30pm. Each observation session normally took about 60 to 90 minutes. All field observations were conducted with SCUBA.

"As we had limited manpower and time, every team member had to make more and longer dives," Dr Tan said.

After four nights of diving, luck was still not on their side. They still came up empty-handed. There was no coral spawning.

"We almost gave up," Dr Tan said.

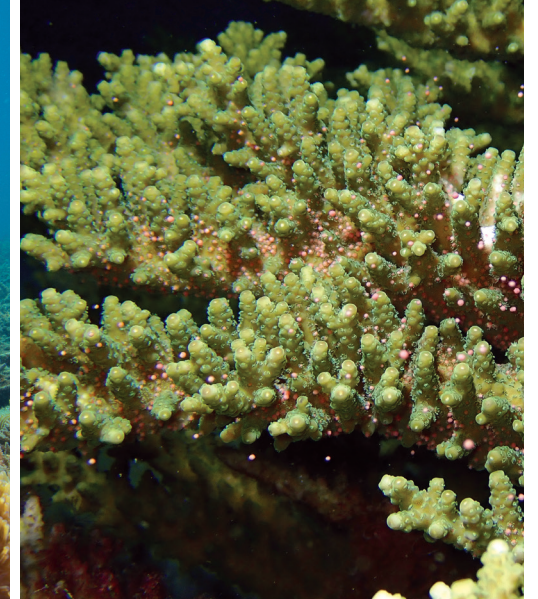
Their break came on the final night. After discussing with his team members, Dr Tan decided to request for an extension of one more night at the research station and to his relief it was granted. That night, he and his team successfully managed to record the much-anticipated coral spawning phenomenon.

A total of 15 species of hard corals (Acropora sp., Montipora sp., and Porites sp.) spawned during the observation period.

Along with the hard corals, there were other invertebrates such as sea urchins, starfish and sea cucumbers that spawned within the same period as well.

Through their research observation, Dr Tan found that the proportion of reproductive active coral was not particularly high, only 17 per cent. This was in contrast with reports on other coral populations in other regions.

The team discovered that March and April are the spawning months for some coral species in Malaysia. Spawning activities are also reported to occur during September and October before the start of the Northeast monsoon season.



Dr Tan and his co-researchers at Bidong Island during the trip to record coral spawning

Effects of global warming

Coral spawning is a very important activity. In a balanced ecosystem, corals provide shelter to more than a thousand other marine lives. Unfortunately, coral spawning synchrony pattern is being affected by increasing global threats. This will subsequently lead to low fertilisation rate and impact coral growth.

According to Dr Tan, branched corals grow roughly 10 centimetres a year, while massive corals grow even less, just one millimetre a year.

Survival of coral reefs is also being threatened by climate change. The increase in seawater temperature due to climate change has led to coral bleaching or fading.

"Colour fading occurs when colourful corals turn white or lose colour due to the temperature of the sea that becomes abnormally hot because of global warming," Dr Tan explained.

Corals at South China Sea thrive in seawater temperature between 26 and 30 degrees Celsius. If the temperature rises above normal for over a long period, such as two weeks and above, the corals must expel the symbiotic algae from their tissues to survive. The process causes the colours of the corals to degrade and fade.

Dr Tan said that coral reefs in Malaysia have experienced large-scale bleaching three times, 1997-1998, 2010, and 2015-2016. In 2010, some areas within marine parks were closed during coral bleaching to avoid further stress on coral reefs.

"The estimated percentage of coral deaths per bleaching event at Malaysia was between five to 10 per cent. This is an extremely high quantity," Dr Tan said.

According to Dr Tan, increased electricity consumption from usage of electrical appliances such as fans and air conditioners during the Movement Control Order (MCO) may have worsened global warming, which in turn will negatively impact coral reefs.

After many years of trying, Dr Tan was finally able to witness coral spawning. Seeing the importance of documenting coral spawning for the purpose of maintaining coral ecosystem, Dr Tan and his team intend to continue with the efforts.

Even if the team have to do everything themselves again, they look forward to future trips. Now that luck is on their side, whatever inconveniences will be well worth it.

Ice Shelf in Danger

Instability of West Antarctic Ice Sheet (WAIS) worsens due to shelf channels by warm water flow in basal corrugations



Findings from a research may have revealed how global warming causes marine ice sheet to melt, a catastrophic event that leads to a rise in sea level in low-lying continents and islands.

The research was carried out by Dr Hafeez Jeofry from the School of Marine Science and Environment for his PhD study. Dr Hafeez investigated the causes of marine ice sheet instability in West Antarctic Ice Sheet (WAIS) in Antarctica and its impending impacts.

The long-term stability of Polar ice sheets under a changing climate has been the subject of ongoing research for a long time, Dr Hafeez said. Over the past years, the instability of the ice sheets caused by global warming has been a major concern.

According to Dr Hafeez, there are two exceptionally large ice sheets on Earth, the Greenland and Antarctic ice sheets. Antarctic ice sheet that occupies Antarctica, which is located at the southernmost latitude, is further distinguished based on where it is, whether in the Eastern region or West region of Antarctica. Although West Antarctic Ice Sheet (WAIS) is smaller relative to its eastern neighbour, it is thought to be much more unstable. This is because WAIS rests on a bed approximately two kilometres below sea level, where the ice is in direct contact with warm ocean water.

Dr Hafeez, who has studied polar ice and geophysical data on them for more than 10 years, explained that the term 'marine ice sheet' describes an ice sheet whose base rests on ground below sea level.

"Marine ice sheet instability (MISI) describes the typical unstable nature of marine ice sheets due to Archimedes' principle, whereby due to seawater being more dense than ice, marine ice sheets can only remain stable where the ice is thick enough for its mass to exceed the mass of the seawater displaced by the ice," he said. "In other words, wherever ice exists below sea level, it is held in place only by the weight of overlying ice."

He further explained that MISI occurs where the grounding line, which separates ice resting on its bed from the one that is floating, retreats over topography that extends upstream.

"As a marine ice sheet melts, the weight of the overlying ice decreases," Dr Hafeez said. "If the melting causes the ice to thin beyond a critical threshold, the overlying ice may no longer be heavy enough to prevent the submerged ice below it from lifting off the ground and allowing water to penetrate the ice underneath."

"When this happens," he added, "the location of the grounding line, the boundary between the ice sheet and the floating ice shelf, becomes unstable."

"Initially, the amount of ice flowing over the grounding line would match the production of ice from snow upstream. When the grounding line is pushed backwards because it is melted by warm water for instance, the ice sheet becomes thicker at the new location of the grounding line, and the total amount of ice flowing through may increase. As this causes the ice sheet to lose its mass, the grounding line is pushed back even further, and this self-reinforcing mechanism is the cause of the instability," Hafeez explained further.

Ice, like steel or wood, is a material that can withstand only so much stress before it bends or breaks. Many ice sheets in the Antarctica stretch out into the sea around them like the cap of a mushroom and float on the water. They have edges that are “buttressed,” or supported, by long tongues of ice shelves, which help keep the ice behind them stable.

But if those ice shelves disappear or melt, they can cause ice sheets on top to break off and fall into the ocean where they will melt and cause the sea level to rise. It has been found that warm water soaking the base of the ice sheets was enough to force key parts of the ice sheet to melt away.

Dr Hafeez said that satellite measurements of ice-surface elevation change, geophysical surveying of the ice sheet bed, and numerical modelling of future changes have shown that several key regions are particularly sensitive to this phenomenon. These regions are where the ice sheet grounding line, separating the grounded ice sheet from the floating ice shelf, lies proximal to a reverse bed slope.

As a result of this topography, grounding line retreat would lead to it resting in deeper water, which may encourage further retreat or MISI.

“Ice shelves are crucial in the stability of an ice sheet by providing the mechanical ‘back force’ support to the ice sheet, hence, the breakdown of an ice shelf would result in the ice sheet becoming unstable,” Dr Hafeez said.

Given the importance of maintaining ice shelf integrity in support of ice sheet stability, it is important to understand the processes which could potentially cause the ice shelf to collapse.

Dr Hafeez said that his research was designed to create an understanding of the internal ice sheet and ice shelf processes proximal to the grounding line at the Foundation Ice Stream located at the northern grid of WAIS through satellite imaging and radar.

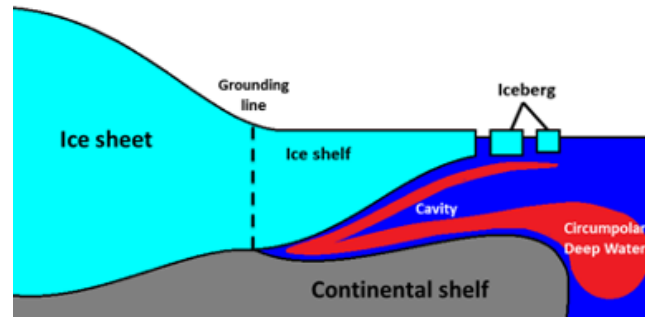


Figure 1: Cross sectional region of the marine-based glaciers of West Antarctica

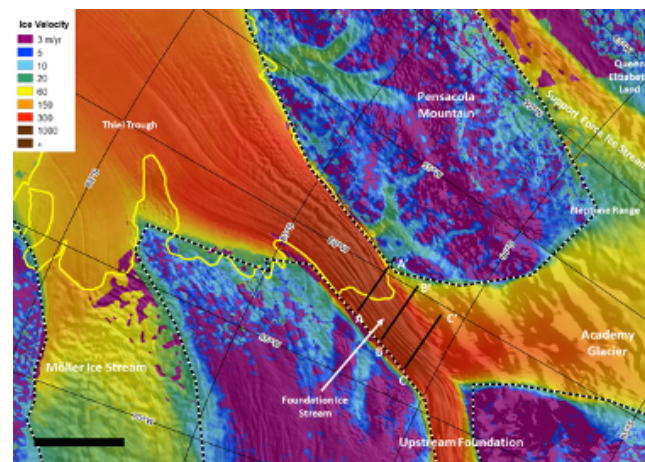


Figure 2: InSAR ice-surface velocity of the Foundation Ice Stream overlain MODIS ice-surface imagery. Grounding line is from the differential satellite synthetic aperture radar interferometry (DInSAR, yellow). Radar transects, annotated in Figure 4, are shown. Thick black scale bar is 50 km

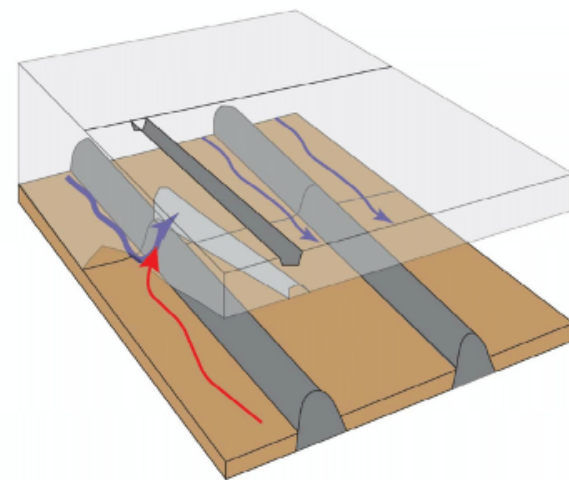


Figure 3: Schematic figure showing the formation of U channel. Cold-based fresh water (blue arrow) mixes with dense warm ice shelf cavity water (red arrow) and rises upwards into the U-channels corrugating ice shelf base downstream

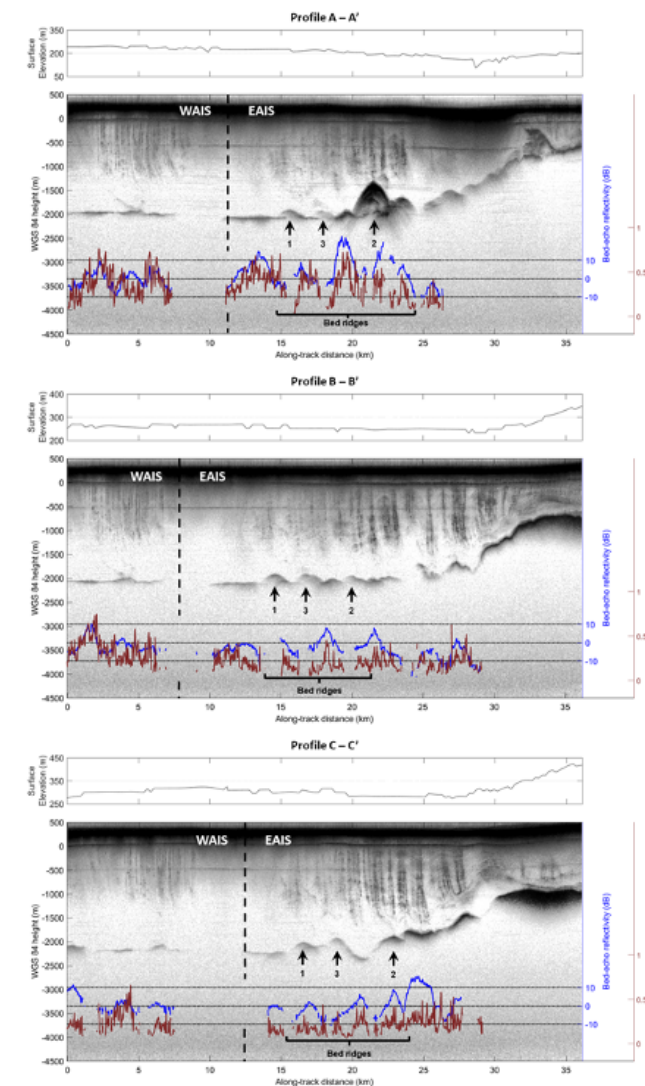


Figure 4: Radar transects revealing the subglacial landforms at the grounding zone of Foundation Ice Stream. Locations of the transects are shown in Figure 2. Basal reflectivity and echo abruptness are provided indicating the presence of basal water

“Moderate Resolution Imaging Spectroradiometer (MODIS) satellite images revealed flow stripes that are parallel to the ice sheet flow on Foundation Ice Stream,” he said.

They also found meandering features on the ice shelf, thought to be formed by water exiting the grounded ice sheet. These meandering features are known as M-channels.

“Ice-penetrating radar data also showed hard-bed landforms that are parallel to the flows beneath the grounded ice sheet, as well as channels cutting upwards into the ice shelf base. These are referred to as U-channels, and they are located directly beneath the M-channels,” Dr Hafeez said.

Dr Hafeez also explained that radar reflectivity and abruptness analyses revealed the presence of subglacial hydrology alongside the landforms, indicating a well-organised drainage system.

“The landforms dictate the exit location of the subglacial water from the ice sheet and into the ocean water beneath the ice shelf, that is, ice shelf cavity. Since the subglacial water is fresher relative to ocean water, the water rises upwards. The warm cavity water mixes with the subglacial water and erodes the ice shelf base causing an upward cutting basal channel extending 130km downstream of the grounding line,” he elaborated.

He said that the hard-bedded landforms influence both the subglacial water system and the ice shelf structure on formerly glaciated regions, indicating that they could be more widespread than previously thought. Consequently, Dr Hafeez said that investigating a similar geomorphological ice sheet and ice shelf characteristics at the Foundation Ice Stream in other parts of the Antarctica is crucial to get a full-scale appreciation of the interconnectivity between the grounded and floating ice environments.



A Mermaid Trapped in a Concrete Jungle

Marine geologist is living her dream profession at UMT

She was born in a city, and her father was an engineer. Yet, despite the different background, growing up, she developed a strong affinity with the oceans.

At 13, after watching a television documentary on hydrothermal vent discovery by scientists at Galapagos Rift, she wished to be one of them, sailing on that research vessel. In that moment, she decided to be a marine geologist.

A few years later, as a young lady, she was having a scholarship interview for her postgraduate study in ocean sciences with a panel. Curious to know why she was so passionate about all things oceans, the panel asked if she grew up in a fishing village or if her father was a fisherman. In response to the question, she said no, and then she simply told them, “I’m just a mermaid trapped in a concrete jungle.”

The strong interest in the oceans eventually brought the young lady, Dr Khaira Ismail, to UMT.

Since she first joined as marine geology lecturer in 2016, with a resume that includes a PhD in ocean sciences from Southampton

University, two month’s experience as research assistant in South Shetland Islands, Antarctica, and swimming and diving skills, Dr Khaira has had some impressive achievements in her field. It is fair to say she loves her profession very much.

At the Faculty of Science and Marine Environment, Dr Khaira mostly lectures to undergraduate students of Marine Geoscience degree programme, the first of its kind in Malaysia, which she helped set up in 2017 when she was appointed as a committee member. The courses include Geostatic and Data Analysis, Geology of Malaysia and Southeast Asia, Seafloor Surveying and Exploration. She also lectures on Tropical Oceanography to master’s degree candidates.

While she has ably fulfilled her teaching duty as expected of a lecturer, research is where she has excelled and made a name for herself among many global marine geologists. Her research interests include seafloor and marine habitat mapping, marine geospatial information science, underwater acoustic technology, deep sea environments, deep sea mining, and marine spatial planning and management.

“The Taman Laut Labuan mapping project was the first comprehensive marine habitat mapping exercise of its kind in Malaysia.”



“My primary research goals are directed towards the development of new marine habitat mapping approaches, using a combination of acoustic survey techniques, computer-based image analysis, spatial statistics, geospatial information science, and video surveying using state-of-the-art underwater technology,” Dr Khaira said.

In 2016, Dr Khaira obtained her first grant to lead a project on mapping the marine ecosystem at the local Taman Laut Labuan. The project that lasted until 2017 was funded by the Department of Marine Parks Malaysia (JTLM), in collaboration with Universiti Teknologi Malaysia (UTM) and the Malaysian Hydrography Centre (PHN) under the Royal Malaysian Navy.

“The Taman Laut Labuan mapping project was the first comprehensive marine habitat mapping exercise of its kind in Malaysia. We produced a marine landscape map with coral coverage estimation, distribution of benthic cover by integrating acoustic data information, in-situ sampling and drone mapping,” she explained.

In 2018, with her experience in habitat mapping, Dr Khaira was invited as a researcher by the University of Hawaii.

“I was a team member of the IkeWai Controlled-Source Electro Magnetic technique project that was carrying out deep imaging of submarine groundwater systems and mapping the coastline of Hawaii Island for its water security,” she said.



She explained that using marine controlled-source electromagnetic imaging, the research revealed a novel way in which substantial volumes of freshwater are transported from onshore to offshore submarine aquifers along the coast of Hawaii Island.

The year 2019 was an especially busy year for Dr Khaira, with several research papers and collaborations lined up. She also went to Duke University in the US for her postdoctoral research titled Next Steps in The Development of Regional Environmental Management Plans for Deep-Sea Mining.

“Deep-sea mining can have a big impact on the environment and marine life, and is deemed highly controversial,” she said.

In addition to her research with Duke University, Dr Khaira is also part of the climate change working group under DOSI (Deep-Ocean Stewardship Initiatives) in the Climate/Minerals Working Groups.

“The DOSI Climate Working Groups comprises 95 members from 18 countries. It aims to provide a platform to centralise information about scenarios and observations to better assess the impact of climate change on deep-sea ecosystems and to address cumulative pressures,” Dr Khaira explained.



Additionally she is also part of the High Seas at Duke, a consortium of individuals, labs and institutes to communicate and collaborate the work related to areas beyond national jurisdiction.

She said that the goal of the working group is to ease the incorporation of this information in environmental impact assessment and management plans, and in the design of Marine Protected Areas.

“It also aims to identify high-vulnerability areas and foster interdisciplinary approaches to investigate how deep-sea ecosystems interact with climate on a functional basis,” she added.

The working group also presents deep-ocean climate science to policy makers through presentations, policy briefs, webinars, and publications.

That same year, Dr Khaira was also appointed as a scientific delegate to the International Seabed Authority’s 25th Session of the ISA Council.

“ISA is the organisation that manages and controls mineral-resources-related activities for the benefit of mankind,” Dr Khaira explained, adding that in so doing, the ISA has the mandate to guarantee the effective protection of the marine environment from harmful effects that may arise from deep-seabed related activities.



On top of this, Dr Khaira joined an international collaboration with the seafloor mapping team at the National Oceanography Centre Southampton, UK as its Malaysian counterpart for ACCORD (Addressing Challenges of Coastal Communities through Ocean Research for Developing Economies – Pathways to Impact). This ongoing project seeks to address habitat mapping issues in shallow water coral reef as well as to identify coral reef distribution using remotely sensed data, especially acoustic data.

As a certified professional geologist by the Malaysian Board of Geologist, Dr Khaira also joined a cruise under the International Seabed Authority Contractor At-sea Training programme. Organised by the Ministry of Oceans and Fisheries, Republic of Korea (MOF-ROK), the programme comes with a contract for the exploration for polymetallic sulphides in Central Indian Ridge. The Indian Ocean Hydrothermal Vent Expedition (INVENT) project was carried out by the Korean Institute of Ocean Science & Technology to gather geological and biological baseline data for four new hydrothermal vent fields along the slow spreading Central Indian Ridge – the Onnuri Vent Field.



To date, Dr Khaira has had the opportunity to work with the best experts in fields related to marine geology. In the local arena, these were Malaysian Department of Minerals and Geoscience, Malaysian Institute of Geology, Malaysian Hydrography Centre, Royal Malaysian Navy, Malaysian Department of Fisheries, and CIMB Foundation. At the international arena, these included Duke University, University of Hawaii, University of Southampton, the National Oceanography Centre in Southampton, UK, the British Council, International Network for submarine Canyon Investigation and Scientific Exchange (INCISE), European Research Council CODEMAP (for Complex Deep-Sea Environments: Mapping habitat heterogeneity as proxy for biodiversity project), HERMIONE (for the Hotspot Ecosystem Research and Man's Impact on European Seas project), UK's MAREMAP (for the Marine Environmental Mapping Programme).

“Having expert linkages and networking is crucial for larger interdisciplinary research or projects,” Dr Khaira said. She felt that this is an area Malaysia needs to improve on in order to move forward and be on par with developed nations

In 2020, Dr Khaira received a Fundamental Research Grant Scheme (FRGS) for a project on Large-Scale Coral Reef Ecosystem Mapping of Pulau Tioman using Machine Learning Algorithm and Trait Based Approach towards Effective Ecosystem Based Marine Management. This new grant for seafloor and habitat mapping work is expected to continue till 2023.

Her present research focuses on developing objective mapping techniques for large scale coral reef ecosystem in a statistically robust and repeatable way, at a variety of scales. Her emphasis is on shallow water coral reefs, extensively available in Malaysia. She will use her techniques previously developed for her work on deep sea environment. Her aim is to map the distribution of coral reef to aid marine spatial management.

“I am intrigued to explore them and prepared to meet all their challenges,” she said.

Since joining UMT, Dr Khaira’s research interest has been triggered by the lack of marine spatial data in Malaysia waters, which made her see the need for Malaysia to have its own national marine mapping programme.

“In short, comprehensive marine spatial data are crucial and beneficial for oceanographic studies, especially to support multidisciplinary research,” she concluded.

It has been working well for Dr Khaira so far. With advancement in technology, she now gets to use modern state-of-the-art apparatus and equipment to carry out her research, unlike during her undergraduate days where she completed her maiden research on habitat mapping at Pulau Pangkor using only a hand-held sonar.

With her deep passion and dedication, it is not wishful thinking to picture her as the next scientist to discover a new hydrothermal vent somewhere along the oceans, sailing on her own research vessel. That would make the wish of the ‘mermaid trapped in a concrete jungle’ come true at last.

“I am intrigued to explore the coral reefs and prepared to meet all the challenges.”
-Dr. Khaira

'I Am the Change'

Marine Biology graduate shines in his role as leader in environmentalism

His cumulative grade point average was 3.85, much higher than that of most students. It is natural to assume he was the type who buried his head forever into textbooks. On the contrary, he was not. To him, being a good student goes beyond getting good grades. So, he devoted some of his time to a cause he was passionate about—creating awareness of marine environmental conservation.

“Having grown up in Labuan, often referred to as the ‘Pearl of Borneo’, I had the privilege to experience the beauty of the ocean when I was very young,” he said.

“To me, the ocean is everything. It is incredible as it provides us with vital resources. Most importantly it brings me so much joy and humbles me, reminding me of how small I am in relation to nature, and makes me appreciate the wonders of the world,” he added.

Mogesh Sababathy, a recent UMT graduate in marine biology, has enough proof to be considered one of today’s bright young environmental leaders. He embraces environmental conservation and protection like a second skin. From his very first year at UMT, he had taken part in whatever activities and programmes that advocated youth empowerment, volunteerism, and love for the environment. Some took him places around the world.

“A wise man once said, ‘be the change, be part of the solution and not the problem’, and these words have kept me motivated,” Mogesh said.

Mogesh’s exemplary attitude drew praises from everyone. Associate Professor Dr Marinah Mohd Ariffin, dean of the Faculty of Science and Marine Environment, said Mogesh was unlike typical students who only believe that all they need to do to be excellent is to work hard to earn knowledge and get the highest scores. She said Mogesh knew that a good student also needs to be an active person in the community and a well-prepared worker for the future.

“Mogesh must have had the right recipe for success as an exemplary student the moment he stepped foot on the university campus that first year,” she recalled.

Dr Maizah Mohd Abdullah, Mogesh’s lecturer, described him as a vibrant and impassioned activist for ocean sustainability. She said that Mogesh was highly committed to instil positive behaviour in local youths as well as encourage them to develop cognizance around environmental protection.

**A good student also needs
to be an active person
in the community and a
well-prepared worker for
the future.”**
-Mogesh Sababathy



Elected as Marina Club President

Mogesh’s environmental leadership was first put on display when he joined the Marina Club, a club for marine biology students at UMT. Through the club, Mogesh spent a good amount of time during his academic years advocating young people at the university and all over the country to behave in a responsible and informed manner towards the oceans and their resources. He helped the club organize many events to increase ocean awareness and literacy at national and international levels.

Most of the events were carried out under the brand Ocean Hope. Events including Waste Management for the Ocean Hope Forum in 2018, Ocean Hope Youth Leadership through Environmental Conservation Forum in 2019, Ocean Hope School Tour, Ocean Literacy Webinar Series, workshops as well as other outreach programmes were attended by more than 10000 youths across the world.

Because of his proven high commitment towards environmental conservation, Mogesh was elected as the club’s vice president for the 2018-2019 session and later president for the 2019-2020 session.



Left: Mogesh and other Marina Club members during one of the environmental programmes

Below: Mogesh and the team during YSEALI Expedition in Jakarta

Empowering youths everywhere

Mogesh’s involvement in Marina Club events ventually made him a recognized young leader outside of UMT.

He was appointed as the Malaysia Chapter Leader under the Sustainable Ocean Alliance (SOA) based in California. SOA is a non-profit organization that calls for solutions to oceans’ problems.

Mogesh was External Relations Officer for Project Map-O Debris based in Brunei. During the Young Southeast Asian Leaders Initiative (YSEALI) Expedition in Jakarta in 2018, he presented the project of his team, which competed for a USD1000 project grant funded by the US Embassy. His team of five members from Malaysia, Indonesia, Brunei, and Singapore won the Best Ocean Sustainable Action Plan and was subsequently invited to attend and present the project at the Our Ocean Youth Leadership Summit in Bali the same year.





• Mogesh representing Malaysia at the 30th International Youth Forum in South Korea from 16-23 July 2019

As Mogesh became more well-known, he began receiving invitations to global events.

He represented Malaysia at the ASEAN University Student Council Union Conference in Japan, the 30th International Youth Forum in South Korea, the ASEAN+3 Youth Environment Forum in Thailand, and the International Virtual Youth Environment Assembly by the United Nations Environment Programme (UNEP).

“My involvements and experiences have shaped me the way I am today. It has made me realise that there are a lot more things to do to be an ocean environmentalist leader,” Mogesh humbly revealed.

“It is about the responsibility that we carry to inspire and educate many other young people who are not aware of what is happening around them,” he said.

“I believe, every day is a new day, I keep learning something new and we grow by experience. One thing to remember is that we are never too good at everything, so we must always seek more knowledge, create networks and learn to accept criticism,” he added.



• Mogesh Sababathy accepting the Youth Ambassador for Peace Award by the Women's Federation for World Peace Malaysia at Dewan Sultan Mizan, Universiti Malaysia Terengganu, on 30 April, 2018

“It is about the responsibility that we carry to inspire and educate many other young people.”

Winning spokesperson

With his many accomplishments already in the book, it took Mogesh no time to gain publicity. He was invited by local and international television and radio talk shows, forums and discourses on youth empowerment to speak on the role of youth in volunteerism and environmental protection. As an eloquent speaker, he never considered the events too big for him.

Mogesh is blessed with a talent in the writing department as well. He was featured in local newspapers and wrote over 12 articles in the media. Most recently, Mogesh wrote to Berita Harian, one of the largest circulated Malay language newspapers in Malaysia, to share his views on how the COVID-19 pandemic has impacted the environment.

Seizing every opportunity

Mogesh is also part of the Jane Goodall's Roots & Shoots Malaysia Award Programme, which recognises young people who complete a series of volunteer activities centred around the core values of respecting, protecting, and nourishing all living things. The programme also aims to encourage Malaysian youths to go beyond awareness and bring positive change to their environment and communities.

“The reason I joined this programme was because I strongly believe that I am at an age that will determine who I will be for the rest of my life—the age of discovery,” said Mogesh, adding that at UMT, he learnt not to be afraid of critics and failures but instead embrace them so that they can mould and build him into a better person.

Commonwealth Youth Award finalist

Just recently, Mogesh has been announced as a finalist for this year's Commonwealth Youth Awards. He is among 20 extraordinary young individuals from 18 countries who have been shortlisted.

When Mogesh received the news via email from the Commonwealth secretariat, he was a bit surprised.

“I was totally speechless,” he said.

With his contributions, Mogesh stands as good a chance as all the other finalists to win the award.

At a young age of 23, Mogesh has accomplished quite a lot. He has proven he has what it takes to be among the world's top young influential environmental leaders. He cares deeply about environmental conservation and protection.

What is more amazing is that although Mogesh is actively involved in numerous ocean conservation efforts, he never compromised on academic achievement. He earned Dean's Award in every semester during his study, and he graduated with first-class honours. Mogesh credits all his success and achievements to UMT and the lecturers.

Mogesh will certainly make his mark again at his future place, wherever that may be. But at UMT he will always be remembered for his efforts towards youth empowerment, volunteerism, and love for the environment.

Mogesh Sababathy was a special kind of student. UMT is more than happy to welcome students like him to its campus anytime.

Home Away From Home

International students at UMT receive excellent support during Covid-19 pandemic partial lockdown



In March 2020, Jordanian Bayan Al-Tarifi was not worried about herself but her parents' well-being back home. Pakistani Hafiz Muhammad Zia Ul Haq, who goes by Zia, on the other hand had something more personal to worry about—getting used to Malaysian local food.

When the Malaysian government began enforcing the Movement Control Order (MCO) to curb the spread of the Covid-19 pandemic, these two UMT international students had quite a memorable experience having to stay put at the residential college for several months together with other 28 international students.

First time away from family

Living in another country is nothing new to Bayan, PhD candidate in Food Science and Technology at the Faculty of Fisheries and Food Sciences. But she had never been away from her family before.

“My family and I spent some years living in Saudi Arabia due to my father’s work. However, this is the first time I am living in a foreign country alone,” said Bayan.

“I do not mind so much being away from them but when the Covid-19 pandemic broke out I was really worried for their wellbeing,” added Bayan, who chose Malaysia to continue her post graduate education when recommended by her sister, who wanted to study here too.

As for her own well-being, Bayan said she did not have much to worry about because UMT’s International Centre took good care of the international students during the MCO period. All she had to do was stay indoors and adhere to Health Ministry’s standard operating procedures (SOP) of maintaining social distancing to break the chain of infection.

“My supervisor was super helpful and even offered to take me to town to get what I wanted to eat,” Bayan said. “In my previous learning institutions at home, I had never encountered such warm treatment.”

*Bayan al-tarifi from Jordan,
Food Science and Technology
Ph.D student under Faculty of
Fisheries and Food Science*

Always thinking of research

Zia, PhD candidate in Finance at the Faculty of Business, Economics and Social Development, was very satisfied with his stay at the residential college during the MCO period.

“Everyone was just so helpful that it made the partial lockdown so much more bearable,” he said. “The university management provided us with the best care possible, making sure we had food and also transport to buy groceries and necessities at the hypermarket.”

While he was adjusting to the inconvenience of the MCO period, Zia was still thinking about his research he hopes will benefit many people.

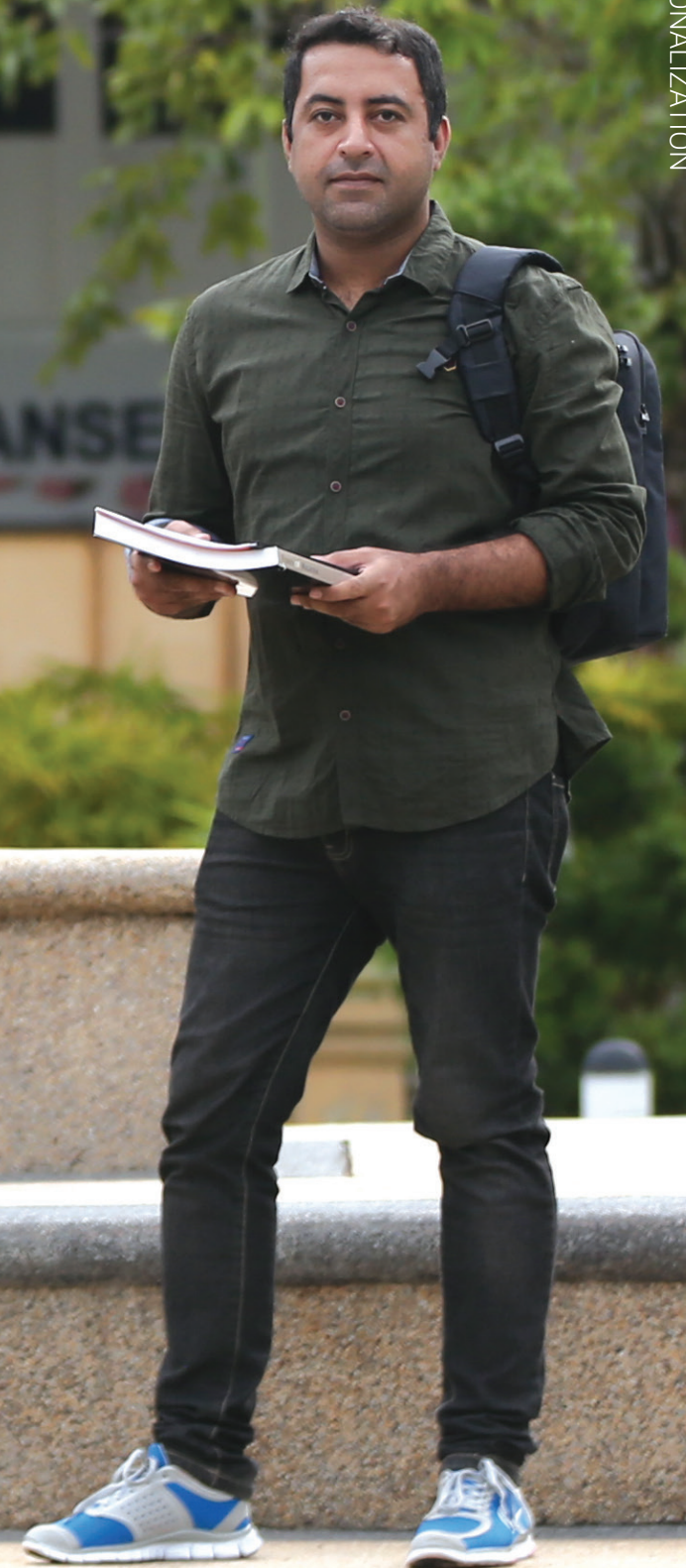
Under the supervision of Dr Wan Muhammad Zainuddin, Zia’s research focuses on household finance.

“Households’ vulnerability and economic deprivation have become a major problem around the world. This has led researchers to study households’ economic outcomes, and various economic factors are expected to play a crucial role in enhancing households’ financial performance,” Zia said.

“The aim of my research is to help low-income households in uplifting their socioeconomic status. From research perspective, the purpose of my study is to examine effectiveness of various microfinance programmes and to explore the factors that can improve households’ financial outcomes,” he added. His research is targeted at low-income households in Malaysia and the results are expected to provide several vital implications for the government, institutions, and low-income households.

“I am quite hopeful that my research is going to have important contribution in the efforts against poverty and economic deprivation,” he said.

*Hafiz Muhammad Zia ul haq
from Pakistan, a Ph.D candidate
in Finance under Faculty of
Business, Economics and Social
Development*



**"I was really thankful that the university opened up the facilities such as the laboratories, the library, the research stations and the cafeterias."
- Bayan Al-Tafiri**



Student volunteers getting food bundles ready for international students staying on campus and around Kuala Nerus, Terengganu during the Movement Control Order (MCO) period



Omar Mahmoud Said Alshajrawi from Jordan, Ph.D student in Biotechnology (Research) under Faculty of Science and Marine Environment



Life almost back to normal

As the number of daily cases and active cases of COVID-19 in Malaysia decreased mid-April 2020, the government decided to ease the MCO to a Conditional Movement Control Order (CMCO). With the movement restrictions more relaxed, international students at UMT including Bayan and Zia could finally resume their research and thesis that had been held up.

"I was really thankful that the university opened up the facilities such as the laboratories, the library, the research stations and the cafeterias as the MCO was eased," Bayan said. "I was worried that I would not be able to complete my research at first but now everything is all good, and I am catching up in terms of my studies."

Bayan said that from July onwards they were all able to resume their studies and research.

"My study is focusing on the effects of anti-aging phytochemical compounds on humans. Part of my research is on food product development in the form of cookies. More importantly, the study focuses on how phytochemicals affect aging, and delay the process by testing different parameters including histology study of skin, liver antioxidant enzymes, blood test, lipid profile and gene expression," she explained.

For Zia, one of the most challenging experiences during the MCO was eating Malaysian local food.

"The university provided us with three meals a day but being foreigners, we were not really used to the local fare that were dished out," he said. "But after a while, we got used to nasi goreng, nasi ayam and so on."

Bayan, who had travelled a little bit to other places in Malaysia, said she had gotten used to the food by now and was simply thankful to have the extra care and attention by her supervisors.

"I would like to thank my main supervisor Dr Azizah Mahmoud, as she is the first one who believed in my idea and has guided me all the way," Bayan said.

She was also grateful to her co-supervisor at UMT, Dr Suvik Assaw, and to Dr Hassan Al-Sheikh, who had helped and supported her in her work in Jordan.

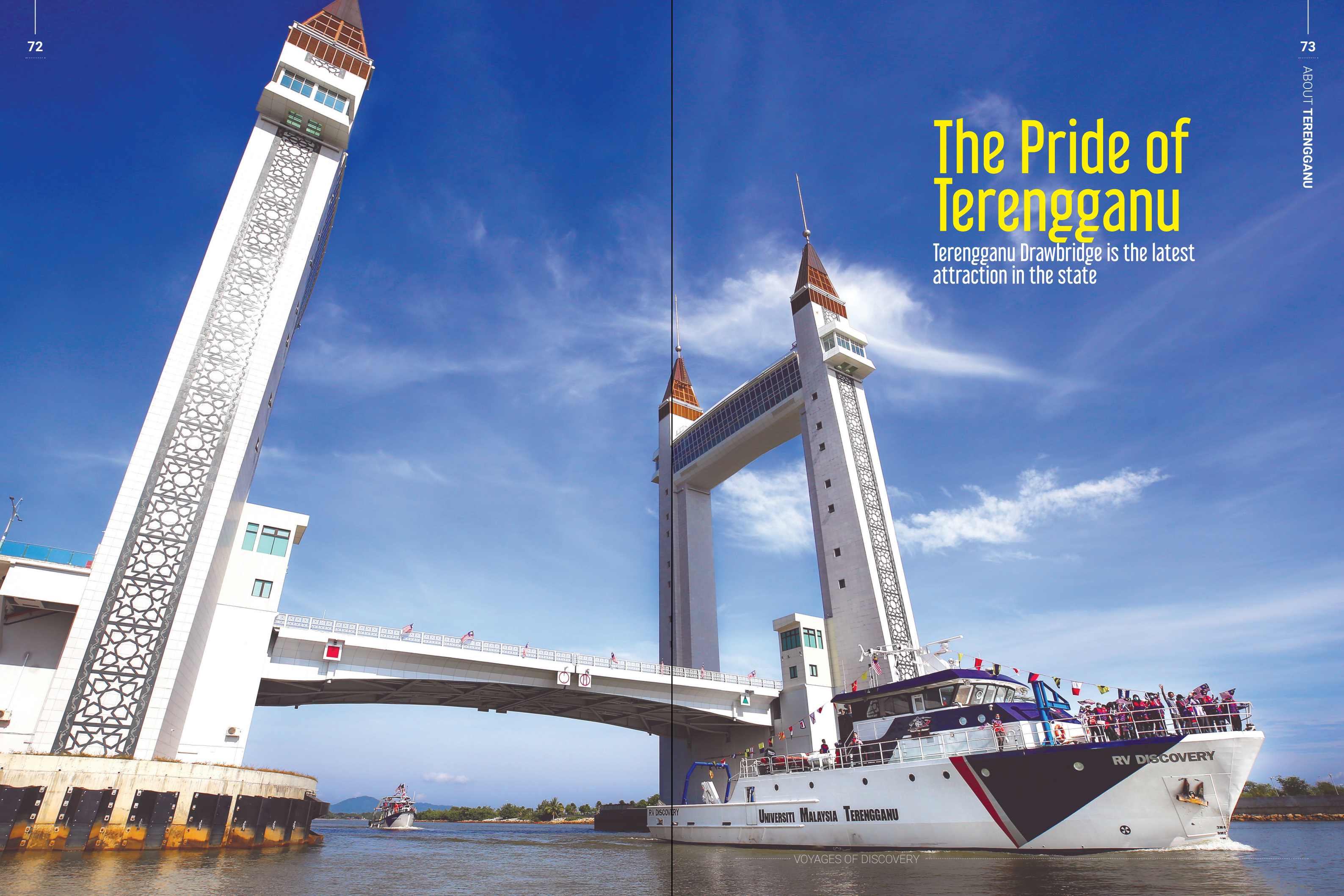
Both Bayan and Zia expressed great interest in finishing their research at UMT and hope to be able to continue their research and studies in their respective fields uninterrupted.

For these two international students and also their peers at UMT, being away from home at the most inopportune time amid the Covid-19 pandemic will probably be a lasting experience. Judging from their comments, it was a good experience, thanks to great effort by UMT through its International Centre to ensure their physical and emotional needs were met.

Owing to the pandemic, Bayan's parents were shown proof of how much she loves them, and local food is no longer foreign to Zia.

The Pride of Terengganu

Terengganu Drawbridge is the latest attraction in the state



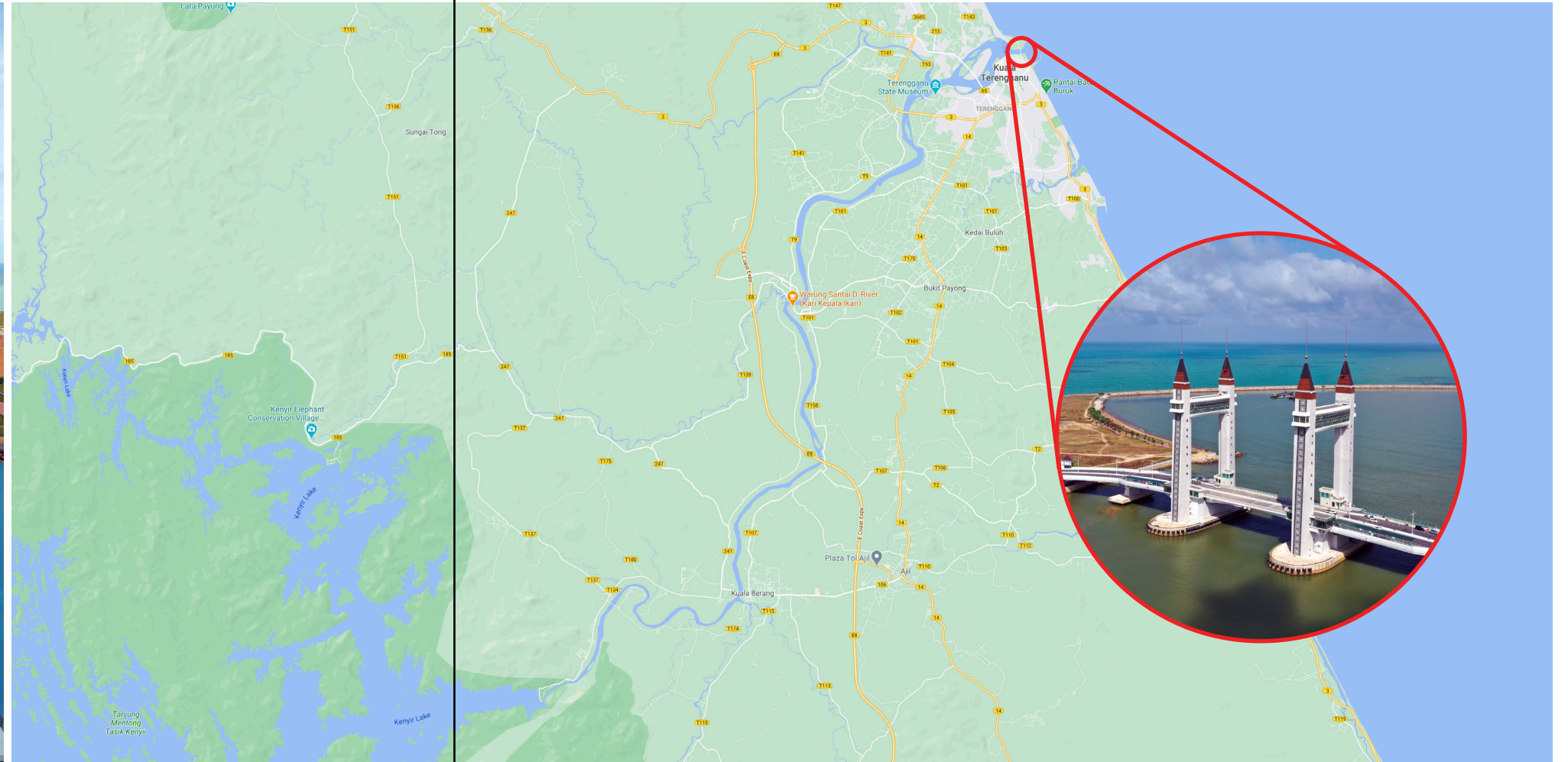


Strolling leisurely along the pedestrian walkway on both sides of the bridge are quite a number of people, almost as many as the cars that pass by them at each minute.

While one by one the cars exit the bridge and immediately disappear into the traffic ahead to get to their destinations, these people remain on the bridge. Some stop to look at the scenic view of the waters below. Some find a good spot from which to take nice pictures of the tall towers. A few others stare at their smartphones for some selfies, with the bridge as background, to capture the moment. They do not seem in a hurry to leave the bridge and go somewhere else.

That is because they are already at their intended destination—the bridge itself.

The bridge makes travelling to and from the city faster, saving motorists as much as 15 minutes



Terengganu Drawbridge is one of the latest attractions in Terengganu. Since it was first opened for public use in August 2019, visitors have kept coming to see the bridge, strategically located in the district of Kuala Terengganu. Its iconic design will surely impress those who have the opportunity to view the bridge up close.

The bridge however does not hold the record of being the first bridge built in the district. There is a reason why several bridges had been built earlier.

There is a river called Sungai Terengganu, or Terengganu River, that originates from Kenyir Lake in Hulu Terengganu district and flows through Kuala Terengganu district and at its mouth spreads out into the South China Sea. The river separates Kuala Terengganu from its neighbouring districts and in some parts areas within Kuala Terengganu itself. Bridges were built over Terengganu River to allow travel from one end of the river to the other through other modes of transportation than just boats or ferries.





Three bridges had been built earlier over the river, more than 20 years apart from one another. These were Manir Bridge in 1969, Sultan Mahmud Bridge in 1990, and Pulau Sekati Bridge in 2017.

Driven by current and future needs, the state government decided another bridge was needed. Hence, Terengganu Drawbridge became the fourth bridge built over Terengganu River to connect Kuala Terengganu and its neighbouring districts.

Terengganu Drawbridge may be the shortest and the narrowest bridge of the four, but it was the bridge getting the largest publicity.

The bridge after all was popularized as the first draw bridge in the South East Asia.

The bridge was strategically built at its current location.

The bridge sits on top of the mouth of the Terengganu River just before it debouches into the South China Sea, connecting the river's South bank in Kuala Terengganu city centre, near Tanjung, and the river's North bank, a reclaimed area of 140 acres in Seberang Takir in Kuala Nerus district. To enable access to the bridge from Seberang Takir, a four-lane coastal road was built on the reclaimed area.

The bridge makes travelling to and from the city faster. It allows users to cut their travelling time between Sultan Mahmud Airport as well as Universiti Malaysia Terengganu and Kuala Terengganu by about 15 minutes.

The construction of the bridge took a while to complete, but judging from the final product, the wait was worth it. The construction began late 2014. The plan was for the bridge to be ready by 2017, but due to unforeseen circumstances, the bridge could only be completed early 2019. After a few trial runs in June, the bridge was first opened for public use in August 2019.



In the size department, the bridge has nothing to shout about. It pales in comparison to even other local bridges, let alone well-known ones. The bridge is 638 metres long and 23 metres wide. It has a 12.5 metre clearance above water.

But it shines in other aspects. Terengganu Drawbridge as its name suggests is not the standard bridge.

The bridge is a bascule bridge, or commonly referred to as a drawbridge or a lifting bridge. It has a set of leaves or spans that swing upward to provide clearance for boats and ships to pass through. Its 76 metre-long bascule is the longest ever built on a bridge.

Although the design of the bridge was inspired by London Tower Bridge, what is unique about the Terengganu Drawbridge is the different technology behind it.



“Usually, it only takes between 10 and 15 minutes for a ship to past through and the bridge to be opened again for traffic.”

Its operations manager, Al-Amin Omar, said that the technology used to open and close the spans is hydraulic-based, the more advanced technique than the gear system.

Al-Amin said that great care must be observed when operating the spans.

“Lifting the spans at one time requires eight to ten staff to perform their duties according to the standard operating procedure,” he said. “These include stopping the traffic, lowering the gates, changing the colour of the traffic lights and ensuring there are no visitors along the pedestrian walkways.”

According to Al-Amin, the whole process of letting a ship pass through does not take very long.

“Usually, it only takes between 10 and 15 minutes before the bridge is opened again for traffic,” he said. “The fastest time so far has been eight minutes.”

The spans can be lifted at varying degrees based on the size of the ship passing through.

“The maximum degree is 78, but usually the spans are lifted until 40 degrees for ships,” he said. “For sailboats, only a single span will be opened.”

Another unique feature of the bridge has not been seen on any other bridges.

There are four 15-storey towers flanking the bridge, two on each side. Skybridges connect the towers on one side to the other across. The towers contain lobbies with lifts that bring visitors up to the towers.

Visitors have several choices of activities once they are up there, said Mohd Nazahar Samsudin, marketing manager.

“There will soon be a restaurant inside one of the skybridges, where people can dine and enjoy the scenic view at the same time,” he said. “The other skybridge houses the gallery, where visitors can see exhibitions of products and artistic works, with changing themes from time to time.”

He also suggested the visitors to come at night, where the bridge is even more breath-taking.

“The structures are lit up with colourful illuminations,” Mohd Nazahar said.

Despite being featured as tourists' attraction for only two months after its opening, the bridge was already considered worthy of receiving an award. It was crowned as the Best New Tourism Icon for 2019 during the 2019 Malaysia Tourism Commission Gold Award event.

The drawbridge is a must-see architecture. Its iconic design has attracted visitors from near and far, and it appears to be attracting more by the day.

Ask those who have had the chance to see it, and they will agree it was a good experience enjoying the bridge up close.



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