

Newsletter

Autumn 2020

The Leon H. Charney School of Marine Sciences

Check out our newly updated website at marsci.haifa.ac.il

GREETINGS FROM HEAD OF SCHOOL



It is usually with excitement and a sense of fresh beginnings that we open a new academic year – returning from summer vacations

or field work, getting ready for our new and continuing students, submitting a new round of proposals for research funding, and enjoying the calm Mediterranean Sea for research cruises before the winter.

Yet, I find it difficult to write enthusiastically as we are still under restrictive lockdowns with the global and local implications of the COVID19 pandemic expanding and threatening our daily and academic lives.

Thus, more than ever, it is important to “always look on the bright side of life” (quoted from Monty Python’s Life of Brian), and highlight some of the last six months of activities at the

Leon H. Charney School of Marine Sciences.

So – I will start with congratulations.

Congratulations to all of our students who have graduated over the summer (11 PhD and 40 MSc and MA) and to our faculty who had to improvise and change the spring semester to on-line classes, to find the way to complete field or work at sea between the daily-changing restrictions, to produce many new publications and to procure funding for exciting research. Congratulations to our newly promoted faculty (details below), to Prof. Sarel Shalev upon your retirement, and to our newest faculty member – Dr. David Freesam - who will be joining the Dept. of Maritime Civilizations this coming semester.

I would also like to especially thank the administrative faculty, headed by Sharon Liper, who have worked extremely hard during this period: switching gears to seamlessly provide



My (IBF) daughters message on a billboard, painted during the first lockdown of the pandemic. Photo: S. Frank.

the academic faculty and our students with the support needed including emergency authorizations to continue doing research, registering new students and helping on-going ones, and ensuring a smooth – on-line – start to the academic year.

I end by wishing one-and-all HEALTH and resilience to the on-going changes and hope that this pandemic will pass and we will return to our pre-corona routines. We miss the interactive work and classes, our international friends and colleagues, and just meeting all together to physically raise a toast for graduations and other happy occasions.

Alan Berman-Frank

NEWS FROM DEPARTMENT HEADS

The Department of Maritime Civilizations

Prof. Ruth Shahack- Gross

The research and teaching activities of the Department of Maritime Civilizations continued during March-August 2020 in light of the Covid19 situation. Teaching during the spring semester rapidly transformed to an online platform while fieldtrips, lab-based and field-based courses were changed in order to accommodate to the frequently changing health-safety regulations. Distant teaching posed a challenge to both lecturers and students, but at the end of the semester we managed to complete almost all teaching that included a masked and social-distanced fieldtrip to Zippori and Yodfat (led by Dr. E. Nantet), the course "Work methods at sea" (led by Ms. Maayan Cohen and Dr. D. Cvikel), and the course "Research cruise" (led by Prof. D. Angel).

The period March-August 2020 brought several important changes. The renovation of the Maritime Workshop of the Recanati Institute – the professional branch that supports the department's teaching and research activities outdoors – was completed during the March-April lockdown. The renovated facilities allow the Department to continue its



International students (cohort of 2019-20) enjoy a kayak tour around the Akko city walls, led by Amir Yurman, in the framework of the maritime workshop of the Recanati Institute for Maritime Studies and the assistance of Aviram Hashmonai from the Akko School of Marine Cadets. Photo: Ruth Zinder.

diverse programs and plans in collaboration with the Recanati Institute (under the direction of Prof. A. Yasur-Landau).

The Department welcomes a new faculty member, Dr. David Friesem, who was recruited through the Haifa Center for Mediterranean History (co-directed by Dr. G. Gambash). Dr. Friesem will establish a laboratory for Mediterranean Environmental Micro-history where he will combine his knowledge in anthropology, archaeology and the natural sciences to advance research of past Mediterranean societies. His joining the Department will also broaden and enrich the Department's teaching curriculum. Additionally, we welcome two new lab managers, Ms. Tania Sokolsky (in the laboratory headed by Prof. A. Yasur-Landau) and Ms. Gal Bermatov-Paz (in the laboratory headed by Prof. R. Shahack-Gross). At the end of this academic year the Department prepares to adjust itself to the retirement of Prof. Sariel

Shalev. We wish great success to all in their future endeavors.

After a halt in lab-based research due to the March-April lockdown, faculty and students returned to the various research projects, yet the ERC-funded project (directed by Dr. N. Marom) continued to conduct fieldwork all along this time and produce important finds. The end of the academic year brought with it a large number of department graduates (23 MAs and 5 PhDs). Special thanks to Amir Yurman from the Recanati Institute who organized a splendid kayak trip around the Akko city walls for the large group of international students at the department that were forced, due to Covid19 closed skies, to stay in Israel during the summer break (see image).

Activities planned for October 2020 include carrying out the practical part of the Department's course "Coastal and Underwater Excavation Field School" (led by profs. A. Yasur-Landau and R. Shahack-Gross) to be conducted simultaneously at

the coastal Early Bronze Age site of Dor South and the underwater Neolithic settlement of Habonim North. These activities provide invaluable hands-on experience for the Department's students of all study tracks and degrees.

Dr. Moses Strauss Department of Marine Geosciences

Dr. Beverly Goodman-Tchernov

Despite the unexpected and rapid changes due to COVID-19, the marine geosciences department carried forward and managed to make a lot of lemonade. Not only did courses continue without interruption, going online nearly overnight, the Departmental seminar also shifted from a primarily local affair to an international event with speakers joining us by zoom from North America and Europe. Attending viewership doubled, prompting us to adopt this format indefinitely through 2020-2021. Many of our faculty participated in the university's virtual public talk series 'On the Mountain' including Dr. Nicolas Waldmann's lecture "Stories about climate change from the past to the age of corona". Dr. Michael Lazar made international news with his publication of a Middle Bronze Age earthquake at Tel Kabri with fellow CSMS professors Yasur-Landau and Shahack-Gross (Lazar et al 2020, PlosOne). We are happy to share that emeritus Prof. Boris Katsnelson was awarded an ISF grant for his study

"Acoustic noise tomography in oceanography of shallow water areas". This study is expected to improve our ability to gain acoustic information about shallow sediment properties. Experimental testing will be carried out in Mediterranean Sea and Lake Kinneret.

The Department of Marine Biology

Dr. Tamar Lotan

Spring 2020 semester was exceptional, as we had to navigate through the challenges of the COVID-19 pandemic. This has been a challenge for everyone involved, students, faculty and staff. Following government and university guidelines, we moved all our classes online, and our students continued with their research analysis at home. Once it was permitted, our students returned to the labs, working in shifts. We had a short period to resume our intensive courses at sea and in the labs and finally, just before the second close-up, we have successfully completed the year's curriculum. Judging from the many accepted and under review papers from the department, the limited research conditions were used thoughtfully. Our faculty and staff are now getting ready to the coming year and I would like to welcome all our new

and continuing students and wish all of us a fruitful, healthy and happy year.

The Hatter Department of Marine Technologies

Prof. Morel Groper

With the help of two of the Department's students, the new Department's website was developed and already launched, please visit:

www.marinetech.haifa.ac.il/



The absorption of Dr. Itzik Klein, an expert in the field of underwater navigation, was accomplished and the construction of his Laboratory, the Autonomous Navigation and Sensors Fusion Lab is well underway. In the Subsea Engineering Lab, our hovering, two men portable AUV "SPARUS II" has undergone major modifications and upgrades as part of our ongoing research on autonomous launch and retrieval of AUVs. As it is basically a new robot it was renamed - ALICE. As part of a novel research in collaboration between the



Picture from a recent scientific diver training course.
Photo: Hagai Nativ.

Marine Imaging Lab, the Subsea Engineering Lab and researchers from the Technion on obstacle avoidance, a new advanced payload is developed combining both visual and acoustic images produced by an in-house developed forward looking camera and a forward looking sonar.

Matan, one of the Department's Ph.D. students submitted a manuscript titled "Repeatable Semantic Reef Mapping Through Photogrammetry and Label-Augmentation" for review in *Methods in Ecology and Evolution*. His 3D mapping efforts were published in *ynet*:

www.ynet.co.il/articles/0,7340,L-5671644,00.html



and he also established a website for shipwreck mapping:

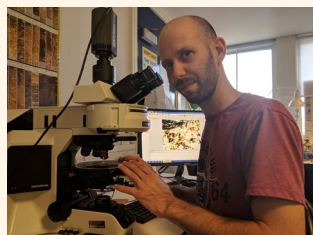
<https://mtnyvl.wixsite.com/shipwreckisrael>



As part of a small team led by researcher from Harvard, the Underwater and Navigation Lab secured funding for a TED project whose goal is to decipher the language of sperm whales by monitoring their codexes over five years across the shores of the Dominica Island. The lab will play a major role in the project providing the acoustic data using three large-scale observatories with onboard data analysis.

WELCOME NEW FACULTY

Dr. David Friesem



The history of human-environment relations is often studied through long-term and large-scale processes, yet it is nevertheless driven by short-term and small-scale interactions between individuals and their immediate environment which are often missing from the archaeological record. Joining the Department of Maritime Civilizations at the Charney School of Marine Sciences and the Haifa Center for Mediterranean History (HCMH) I will establish the Laboratory for Environmental Micro-History, which will integrate archaeology, earth sciences and social anthropology in order to examine the multi-scalar dimension of human-environment relations in the past. Specific areas of my research include: human ecology, technology, social interactions and environmental change with an ultimate goal to reconstruct how the physical, social and perceptual environments intersect as part of the human experience. My current projects in the Eastern Mediterranean focus on the Palaeolithic, the emergence of complex societies and the origins of farming and urban societies.

NICE TO MEET

Dr. Tsvia Gildor



Tsvia Gildor, a mother of three, holds a Ph.D. degree in Biology. Her B.Sc., and M.Sc. degrees were received from the Faculty of Biology at the Technion. Her Ph.D. degree was received at 2007 from the Faculty of Medicine, also at the Technion.

Dr. Gildor is a lab manager in the Dept. of Marine Biology Charney School of Marine Sciences at the University of Haifa. The lab is working on regulation of embryonic development, headed by Dr. Smadar Ben-Tabou De-Leon lab. The main questions of the lab are dealing with the regulation of skeleton formation in sea urchin embryos.

Sea urchin embryos are a valuable model for studying embryogenesis and its regulation, due to its rapid development and optical transparency. The embryonic skeleton begins to form a day after fertilization in sea water and the skeleton is fully formed two days after fertilization. Moreover, it is easy to perform genetic and pharmacological perturbations to sea urchins – they are beautiful :).

Dr. Gildor believes in education and in transferring the

knowledge and environment awareness to the public. This is the driving force for having many guests in the lab, groups or individuals, and for the success of the course "Sea, society, education and leadership" conducted together with Dr. Sher last year.

OUR ALUMNI

Tomer Ketter

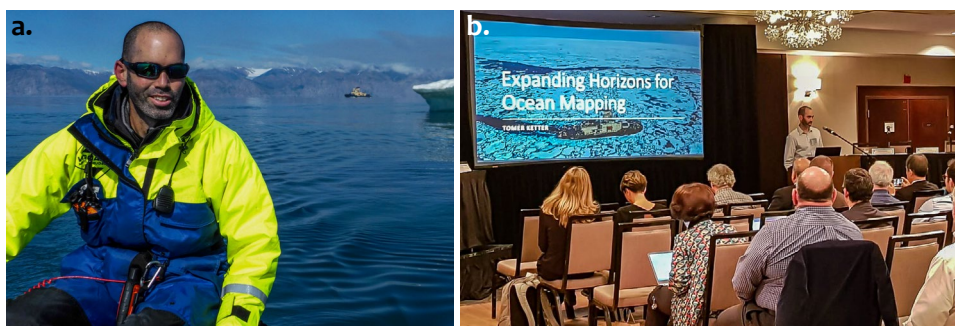
Data analyst at the Center for Coastal and Ocean Mapping (CCOM), University of New Hampshire
M.Sc., Marine Geosciences Department

"After graduating with a B.Sc. in marine science, I had big dreams of research cruises in distant locales, groundbreaking technology and discoveries in the deep sea, and the opportunity to take part in global oceanic exploration. During my M.Sc. studies at the Marine Geosciences Department in Haifa, I accumulated the knowledge and tools to advance step by step in this field. I've realized my dreams — and now I have an appetite for more. In my three years at the department, I learned the scientific foundation I needed, became familiar with absolutely essential computer software, got to know experts who gave me a chance – and I started off on my own path. Today I work at the Center for

Coastal and Oceanic Mapping (CCOM) on a number of projects, the main one being Seabed 2030, which is seeking to complete the mapping of all of the world's oceans in the next decade. I also contribute to the National Science Foundation's Multibeam Advisory Committee, which was established to improve the mapping capacities of the US academic research fleet, composed of more than 20 advanced research vessels. My fellow graduates from my time at the school are close friends and partners in my professional path to this day!"

Tomer Ketter is currently a Sr. Seafloor Data Analyst at the Center for Coastal and Ocean Mapping - Joint Hydrographic Center, at the University of New Hampshire. His main focus is compiling bathymetric sources for The Nippon Foundation GEBCO Seabed 2030 project, while also contributing to

the NSF Multibeam Advisory Committee. Formerly the Hydrographer of the National Oceanographic Institute of Israel, He spent over three years as Chief Surveyor aboard R/V Bat-Galim, after designing and retrofitting her with a full acoustic suite, and leading the mapping of Israel's EEZ. Prior to joining CCOM, Tomer was surface systems specialist for the Ocean Discovery XPRIZE grand prize winners, The GEBCO-Nippon Foundation Alumni Team. He holds a B.Sc in Marine and Environmental Sciences and an M.Sc in Marine Geosciences, as well as a IHO/FIG/ICA Category A Hydrography certification from the GEBCO-NF Ocean mapping program. Tomer has participated in multiple deep-water expeditions in the Pacific and Arctic oceans and has co-founded a 501(c) NPO to promote ocean mapping projects and collaborations.



a. Mapping cruise in the Arctic Ocean aboard the Swedish icebreaker Oden b. Lecture on special collaborations in ocean floor mapping at the GEBCO Symposium (2019).

SPECIAL HIGHLIGHTS

Sea, Society, Education and Leadership

One of the goals of the Charney School of Marine Sciences is to connect the general public to the sea and to marine sciences. Another goal is to provide the school alumni with the expertise and tools to plan and carry out projects, including educational ones. As a way to reach both goals, this year we initiated a course named "sea, society, education and leadership", with the assistance of the University "flag program" and with funding from the national committee for higher education. Students from our school learned

about challenges in education (especially for children from a low socio-economic background) and obtained experience in project management, time and resource planning, and educational skills. The initial plan was to work with 7th grade kids from IRONI GIMEL school, study with them various aspects of human impacts on the sea, and present our mutual work to their peers at school. BUT... then the COVID epidemic came and shuffled the cards. Since we could not meet the kids at school directly, we focused on finding online ways to introduce marine sciences. We built an internet site in Hebrew with lots of information on the sea and on marine sciences presented

TED-like talks on a selected idea in marine sciences, and helped guide the school kids in their final scientific project for the year via ZOOM meetings.

[Window to the sea](#) 

Maybe we won't fix the world, but at least we hope we did our small part to educate the next generation to think about the problems and solutions of responsibly harvesting the sea.



Educational tour at Haifa Beach.
Photo: Tsvia Gildor.

Archaeology of Materials: From the Field to the Laboratory and the Workshop - Studying with the Local Traditional Community

Prof. Sarel Shalev and Dr. Tal Kan-Cipor-Meron

The main goal of this course was to provide students with the basics of researching ancient technologies such as past food-producing technologies and different tools production methods, which are studied in the Archeology Materials Research Laboratory led by Prof. Sarel Shalev and Dr. Tal Kan-Cipor – Meron at the Leon H. Charney School of Marine Sciences. The course introduces

traditional technologies of Israel, from which ancient technologies and what is left of the archaeological finds can be studied. Here students practice researching and documenting traditional crafts with the help of the local community, by instructing pupils in schools to collect information, materials, and tools from their families concerning ancient crafts or by interviewing craftsmen directly. The information, materials, and tools gathered are studied with the students at the University's materials lab using scientific methods in order to shed light on ancient archaeological technologies. All this information and study is returned to the community

through the pupils and students research projects for future use to preserve that local heritage like creation of a local museum and other.



a. Preparing the materials for basket weaving
b. The tools used for basket weaving c. Plants collected for painting the baskets. d. A Druze basket weaver presents her handiwork.

CONGRATULATIONS

Congratulations to our faculty for newly funded grants

Principal investigators	Project name
T. Treibitz	Deep-Learning for Multimodal Sensor Fusion
Y. Makovski	Database and characterization of potential source rocks for gas formation in the Levant Basin
L. Steindler	New Tools for Advancing Model Systems in Aquatic Symbiosis: Establishing marine sponges as models for evolutionary, ecological and mechanistic aspects of animal-bacterial symbiosis
S. Ben Tabou de Leon	Molecular and cellular control of biomineralization in the sea urchin larval skeleton
R. Shahack-Gross	FTIR microspectroscopy: a central tool in micro-geoarchaeological research of human behavior
R. Shahack-Gross	Unraveling adaptive strategies to living by the sea during the early-middle Holocene through the study of resource utilization in the Carmel coast settlements
B. Katznelson	Acoustic noise interferometry in oceanography of shallow water areas
D. Sher	Phytoplankton-bacteria interactions: a hierarchy of mechanisms explored with experiments and models
Y. Makovski	Geo-acoustic characterization of the Levant seafloor
T. Mass	Assessing the mechanisms of molecular and morphological adaptation by corals to extreme environments
R. Diamant, I. Klein	Underwater navigation through deep learning
Y. Makovski	Thin-skinned deformation patterns and controls, and their significance for development of hydrocarbon resources and their geohazard implications
B. Katznelson	Geoacoustics of Levant area: modeling of reverberation
U. Schattner	Mapping the subsurface structure of northern Israel
B. Goodman-Tchernov	Pristine Micropaleontology (or Pristine Sands)
M. Groper, R. Diamant	Inter-wave hunter - smart drifter for detection and characterization of internal waves
R. Diamant	Long range underwater acoustic communication
Y. Makovski	GOMed BIRD consortium-Safe, sustainable, and resilient development of offshore reservoirs and natural gas upgrading through innovative science and technology: Gulf of Mexico - Mediterranean

Congratulations on faculty promotions

Assaf Yasur-Landau - Full Professor

Ruth Shahack-Gross - Full Professor

Smadar Ben-Tabou de Leon - Associate Professor



ECS award to Dr. Or Bialik, former associate researcher at the Department of Marine Geosciences

We are happy to announce that Dr. Or Bialik was the awardee for the International Association of Sedimentologists (IAS) Early Career Researcher award. Or was until recently a research associate at the Charney School of Marine Sciences (Department of Marine Geosciences) under the mentorship of Dr. Nicolas Waldmann and Dr. Yizhaq Makovsky. The IAS is one of the two main professional associations of researchers in the field of sedimentology and sedimentary research, and publishes the two highest ranked journals in the field (*Basin Research* and *Sedimentology*). The IAS awards an Early Career Researcher only once every two years in recognition of substantial contribution in any area of sedimentology.

Or received his Ph.D. from Ben-Gurion University of the Negev (Israel), and has since been a researcher at the Weizmann Institute of Science, Princeton University and the University of Hamburg. Or is currently a Marie Curie research fellow at the University of Malta's Department of Geosciences. His interdisciplinary work includes modern chemical oceanography of the Mediterranean, the evolution and impact of connectivity between the Mediterranean and Indian Ocean, diagenesis of carbonate rocks and reconstruction of past marine environments of the Tethyan realm. Or received this award mostly based on the large amount of successful papers published on his work done at the Charney School of Marine Sciences. Moreover, as part of his position at the University of Haifa, Or was a much valued contributor in several projects, including THEMO monthly cruises and several interdisciplinary projects.

We wish to congratulate Or on receiving this award, one of the most significant early career awards in his field, and are assured we'll hear more of his successes in the future.



Or's working aboard the scientific drilling vessel JOIDES Resolution during IODP expedition 359 to the Maldives. Photo by expedition imaging specialist Timothy Fulton.

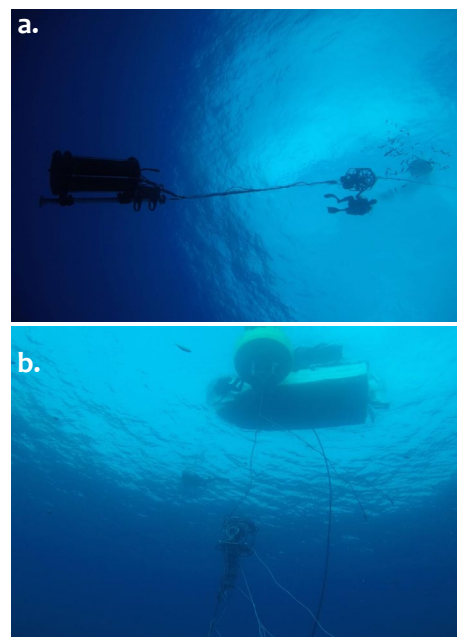
RESEARCH HIGHLIGHTS

How Many Fish are there in the Water?

Dr. Roee Diamant, Head of the Marine Acoustics Lab

The underwater acoustic and navigation laboratory (ANL) is coordinating an H2020 EU grant called SYMBIOSIS under the participation of research institutes and CMEs from Israel, Spain, Italy, and Germany. SYMBIOSIS aims to develop a detection, classification, and biomass estimation of pelagic fish using a multimodal acoustic-optic system. This is a standalone system capable to be deployed

over a buoy like THEMO or from a vessel. The core of the system are state-of-the-art algorithms developed by SYMBIOSIS to perform rough detection of any mobile target in the water by deep learning analysis of active acoustic reflections; probabilistic tracking of the identified target for detection validation; a novel wideband adaptive beam forming solution to localize the target in 3D; multi-spectral characterization of the reflections to identify the type of fish from the acoustic data; detection and segmentation of a fish from optical cameras using deep learning; convolutional network classification to identify



a. Roee Diamant overlooking the full length of the system from 25m depth. Photo: Shai Shalev, Nahshon Ltd. b. Symbiosis system hanging from the shallow THEMO buoy with maintaining vessel. Photo: Roee Diamant.

the type of detected fish in the optical camera; and geometric analysis to evaluate the size of the fish. The data is reported to the surface using underwater acoustic communication, and provides legislation authorities the metrics to answer the basic question: how many fish are there in the water?

During April 2020 to July, 2020, the SYMBIOSIS team has been busy in integrating and testing of the system. Then, two deployments took place: the first was 36 hours in July 2020 from the Shikmona vessel at deep water. The system functioned well and was able to acoustically detect more than 200 signatures of fish from distances up to 500m, two sea turtles we released after rehabilitation (see [video](#) ) , and about 20 fish detected in the optical cameras. Then, in Aug. 2020, we placed SYMBIOSIS under the shallow THEMO buoy, where it

is now deployed and functions well. Evidence for detection are accumulating, and the proof-of-concept is well demonstrated. In the attached pictures, we see the system in the water.

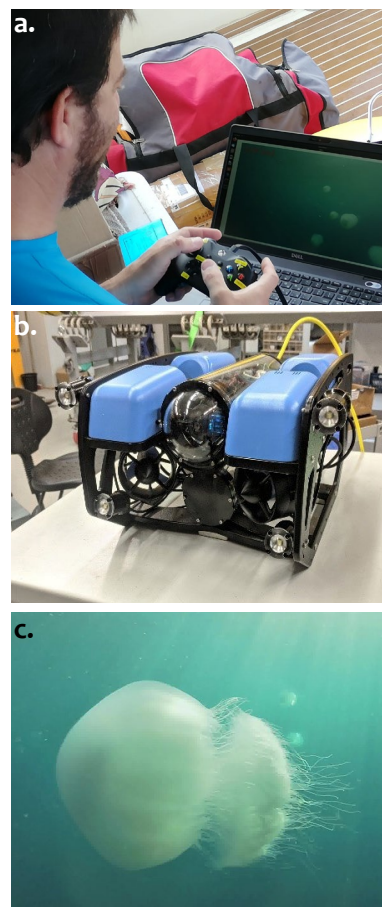
Small ROV First Deployment

Dr. Tali Treibitz, Head of the Marine Imaging Lab

The Viseon Marine Imaging lab bought the blueROV2 (small economical ROV) to serve as a development platform for underwater vision-based robotics. It was upgraded for better maneuver control by installing a higher level control system which allows to have better coupling with image processing algorithms.

In July we joined the Jellyfish project team and deployed the modified ROV for the first time in the ocean. The ROV was used to image the jellyfish in the several depths and also managed to

autonomously track a selected jellyfish.



a. Ohad Inbar, the M.Sc. student in charge of the project navigating the ROV. b. The BlueROV2. c. A jellyfish image acquired by the ROV.

A Survey on Jellyfish Stings along the Israeli Mediterranean coast

Prof. Dror Angel, The Applied Marine Biology and Ecology Research (AMBER)

Jellyfish stings are large-scale phenomena with significant impacts on human health and ecosystem surveys, particularly during bathing season. The nature and severity of stings and the effectiveness of different treatments for them are unknown and understudied for

Israeli jellyfish species. The Angel lab (AMBER), in collaboration with the Israel Poison Information Center in Rambam Hospital, has recently prepared and deployed the first national epidemiological jellyfish sting survey. The survey was prepared on Google Forms and deployed by mainstream and social media to the public. In May 2020, at the beginning of the bathing season, a large jellyfish swarm hit the Israeli coast and in June we released the survey. Thus far 427 respondents logged their

replies. Initial results indicate that sting severity, symptoms and effectiveness of different treatments vary widely across respondents and events, and our recommendations will therefore be multi-faceted, rather than a single overarching treatment.



A moderate reaction to contact with tentacles of the scyphomedusa *Rhopilema nomadica* in July 2020. Photo: D. Angel.

After the Storm; A Reef-Scale Temporal Comparison

M. Yuval, D. Tchernov, T. Treibitz

Reefs are of the richest and most diverse environments on the planet, manifesting in complex biogenic 3D structures. Although much has been studied on the biology of reef sedentary organisms, a cross-scale approach (mms to kms) is needed to depict their distribution dynamics: individuals to communities. During March 2020, a powerful storm hit the city of Eilat, causing extreme

damage to the city's coastline. This storm was the most severe in over five decades and had damaged the city's epic fringing-reef belt.

The amount of ecosystem-change i.e., decrease in structural and biological complexity, is hard to determine using traditional underwater surveying methods. To bridge this gap, we utilized our newly developed protocol for photogrammetric surveys to study the effect of disturbance on the reef's community structure and topographical complexity along vertical and horizontal gradients. Using this

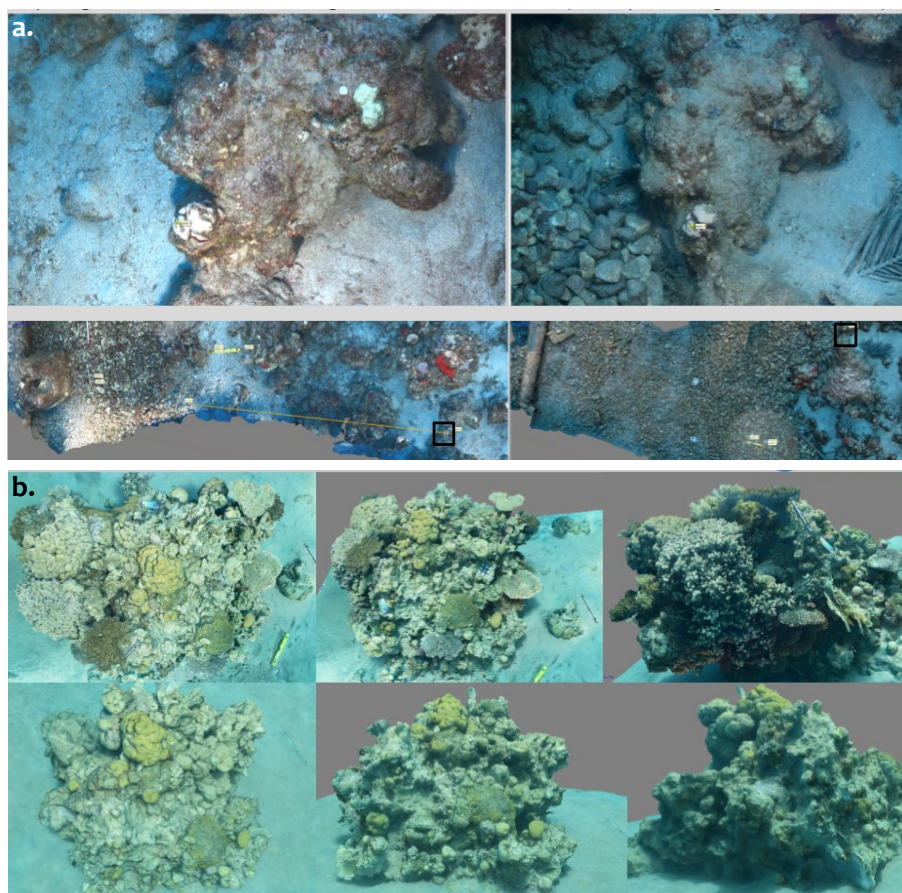
technology we measure the changes in topography, volume, surface-area, percent live-cover, diversity, and other community metrics, of shallow and deep reefs in Eilat. This enables to evaluate the extent of damage imposed on the reef by the storm, and to develop statistical models concerning for example, species\morphotype resistance.

Highlights of a new special issue

Dr. Regina Katsman

A special issue of Geo-Marine Letters, edited by Gerald Dickens and Regina Katsman, was published in July 2020 and includes contributions from the 14th International Conference on Gas in Marine Sediments (GIMS-14) held in Haifa, Israel, on October 14–20, 2018. Haifa was selected (after competing with two strong candidates: Southampton, UK, and Kiel, Germany) inspired by successful presentations of Regina Katsman and Boris Katsnelson from the Department of Marine Geosciences. GIMS-14 was summarized as one of the most successful GIMS conferences and was hosted by the Leon Charney School of Marine Sciences, University of Haifa. The special issue contains 10 contributions highlighting the diversity of topics presented at GIMS-14 and presents thoughts and new ideas related to shallow gas in marine sediments.

[GIMS website](#)



a. Coral-reef at depth 40 m before (left) and after (right) an extreme weather event. top images show the accumulation of gravel and land based debris (close up of the region in the black box). **b.** Coral-reef in Eilat before (top) and after (bottom) an extreme weather event.

Listen to the whales

In Professor Tchernov's most ambitious collaboration to date, he has embarked on a project to develop the first inter-specific communication on Earth with sperm whales alongside long-time collaborator Professor David Gruber (Baruch College, CUNY), Professor Michael Bronstein (Faculty of Engineering, Department of Computing, Imperial College London), and Dr Robert Wood (Wyss Institute for Biologically Inspired Engineering, Harvard University). This team will combine experts on robotics, marine biologists, machine learning experts, data scientists, linguists, and internet pioneers. Together, they will develop invasive robotics to listen to the whales and then combine this data with the long-term sounds database (including behavioural data and social interactions). This collated dataset will be analyzed by a community of scientists who will decode the meanings using learning, natural language processing, data science and linguistics. The findings will be shared with the public and engage the global community and are intended to run for at least 7 years.



Freediver swimming alongside a Sperm Whale (*Physeter macrocephalus*) Photo: Shutterstock.

CONFERENCES & WORKSHOPS

Fish & Ships! Adrift in the Cloud but rafting up for Marine Predator Science

In early August, 50 experts of marine apex predator research met through the Zoom platform to discuss their research on marine apex predators (tuna, sharks, etc.). This large-scale Zoom meeting took place over 8 hours split between 2 days!

Topics discussed ranged from integrating various tagging data, different types of tracking tools, understanding interactions between wild fish populations and fishermen, and obtaining results from the environmental data obtained from satellites.

The objectives of the meeting

were to promote the sharing of the experts' datasets and fostering more collaboration and transparency on their respective research activities, especially with the public. This meta-initiative is planned to be named 'Fish & Ships' and the Morris Kahn Marine Research Station will be closely involved in this leading global project, alongside esteemed academics such as: Professor Barbara

Block, Dr. David Sims, Dr. Francesco Ferretti, non-profit organizations, and representatives of government bodies from all Atlantic realms.

In the meeting, Dr. Aviad Sheinin, head of the Apex Predator

Lab of MKMRS, and Mr Eyal Bigal, doctoral candidate and lab manager, presented our activities in the eastern Mediterranean since they started monitoring in 2015.

We at MKMRS are very proud to be among the invited to this epic Zoom meeting, and to be a part of this future research – here's to smooth sailing with 'Fish N' Ships'!



A zoom capture of the webinar 'Fish N Ships' in August 2020, with PhD candidate Eyal Bigal, and Dr. Aviad Scheinin.