SEPT 2019 VOL. 5

UNIVERSITY OF HAIFA - DEPT OF MARINE BIOLOGY

# MORRIS KAHN MARINE RESEARCH STATION

## A NOTE FROM PROFESSOR TCHERNOV...

*New positions and a new year...*

As my time ends as the Vice President of Development and External Relations at the University of Haifa, I'm ready to spend more time at the MKMRS, and engage with the excellent scientific researchers and monitoring. I will take on the position of chair of MERCI, the Mediterranean Sea Research Centre in Israel this autumn. *Read more for our results, grants, and publications...*

IN THIS ISSUE

# COURSES & CONFERENCES

The dive center hosted its first annual AAUS scientific diving course, which was led by Dr Beverly Goodman and Dr Tali Mass along with the station dive team, and under the supervision of the Diving Safety Officer Eran Rozen. Its purpose was to teach students from The Leon H. Charney School of Marine Sciences the essential skills needed for safe and professional underwater scientific work. Dr Tali Mass held an advanced research methods course (part A) in May as well.  Most recently, the station hosted Professor Stephen Kajiura from Florida Atlantic University to give a week-long course on Elasmobranch ecology.

A student in an AAUS rescue diver course

Professor Stephen Kajiura with a Stingray's eye lens

Student's practice photo-quadrat survey technique in AAUS course

# Course on “How the Eastern Mediterranean works”

From September 8th-12th, **Professor Michael Krom** organized a university course attended by students and staff from the University of Haifa, Michmoret, and the IUI. The course examined some of the unique properties of the Eastern Mediterranean Sea, and was taught by Professor Krom (Morris Kahn Marine Research Station), Dr Yoav Lehahn and Dr Daniel Sher (Leon H. Charney School of Marine Sciences), Dr Ayah Lazar (National Institute of Oceanography) and included two distinguished foreign experts, Professor Frede Thingstad (University of Bergen) and Dr Stella Psarra (Heraklion Centre for Marine Research). Each day there was an introductory session on the topic of the day: Physical Oceanography (Day 1), Nutrient Cycling (Day 2), Primary Productivity (Day 3), Microbiology (Day 4), and Biogeochemical Modeling (Day 5). The students then presented key papers on the daily topic and, after a session on data handling, there was an open lecture on the latest research given by the speaker of the day. The course was a great success, combining the latest teaching on the subject, with lively discussions involving the academics and the students. In the words of one of the students who attended the course, “I think the course schedule worked very well. Both the order of main speakers of each day, which allowed progression of the knowledge with each day relating to the days before, and with Frede Thingstad combining it all to models in the end. … I really think this course made many of the different fields of marine science combine to create a lively discussion in a common language.“ It is hoped that this will be the first in a series of courses involving scientists from MKMRS which will bring our special understanding of our local sea to students and researchers in Israel.

Professor Michael Krom (L), Dr Psarra (M), and Professor Thingstad (R)

# MKMRS diving the Triangle

*Hagai Nativ*

And our journey continues… At the end of July, a group of Close-Circuit-Rebreather (CCR) divers from our station flew all the way to the isolated archipelago of Bermuda for a two-week expedition. The purpose was to aid and support Dr Tali Mass from the Leon H. Charney School of Marine Sciences, University of Haifa, as she conducts the second phase of her co-research with Dr. Goodbody-Gringley from the Bermuda Institute of Ocean Sciences (BIOS). This was the first time our dive facility, under the supervision of Eran Rozen, our Dive Safety Officer (DSO), performed a dive operation out of Israel and in a such a remote location. The high standards we employ during our dives in Israel prepared us for this complicated mission.



We packed only four CCR systems - only the equipment we needed and nothing more to accomplish the mission. The dive profiles were 15 m - 45 m depth and our tasks included: fluorescence photography, colonizing corals on specific sites, and some lab work that was required on dry land. The Bermuda expedition was funded by the BIOS Grant-in-Aid and BSF. The Mass-Goodbody collaboration focuses on the potential of mesophotic coral ecosystems (MCEs; 30–150 m depth) which serve as a refuge for corals in the future, as shallow water corals continue to decline due to climate change and ocean acidification.

# Congratulations, Prof. Shpigel!

## For winning a Ministry of Agriculture and Rural Development Grant!

The marine gastropod (*Hexaplex trunculus*, Mureidae) has been a major fishery in the world, and in the Mediterranean Sea in particular. This mollusc exhibits a dual economic potential as it is prized for its high quality meat and - like in the ancient cultures of the Levant Basin - it is an important source of a purple dye that, once exposed to light, will turn indigo blue (TCHELET). The industry permeates the Jewish tradition, as the dye produced from the snail was used to dye precious fabrics, and interwoven into the 'tallit' (prayer shawl). Today, the demand in the global market is still there for natural dyes in the textile industry. In Judaism, there remains a niche market to renew the practice of dyeing tallitot in Israel and in Jewish communities around the world.

*H. trunculus* used to be very common along the coast of Israel. From observations made in recent years in the eastern Mediterranean Sea, the species is now considered rare. The reasons for its disappearance have not been investigated to this day. Now, this snail appears to be under threat of extinction and has been declared a protected species. One way to prevent its extinction and, at the same time, revive an ancient industry is to produce tchelet dye through aquaculture.

# Publications


- **Meron D***., Maor-Landaw K*., Eyal G., Banin E., Loya Y. and Levy O. (2019) The algal symbiont effect on heat stress susceptibility in the scleractinian coral *Euphyllia paradivisa*. Microorganisms. 7, 256; doi:10.3390/microorganisms7080256
- Thompson, J., Poulton, S.W., Guilbaud, R., Doyle, K.A., Reid, S. and Krom, M.D., 2019. Development of a modified SEDEX phosphorus speciation method for ancient rocks and modern iron-rich sediments. Chemical Geology, 524, pp.383-393.
- Guy Shkury, Joel Bud, **Yotam Zuriel, Aviad Scheinin**, and Roee Diamant. 2019. "Robust Automatic Detector And Feature Extractor For Dolphin Whistles", IEEE Oceans, Marseille France
- Gutner-Hoch, E., Martins, R., Maia, F., Oliveira, T., Shpigel, M., Weis, M., Tedim, J. and Benayahu, Y., 2019. Toxicity of engineered micro-and nanomaterials with antifouling properties to the brine shrimp *Artemia salina* and embryonic stages of the sea urchin *Paracentrotus lividus*. Environmental Pollution, 251, pp.530-537.
- **Shamir, Z.Z.,** Shamir, S.Z., Becker, N., **Scheinin, A. and Tchernov, D**., 2019. Evidence of the impacts of emerging shark tourism in the Mediterranean. Ocean & Coastal Management, 178, p.104847.

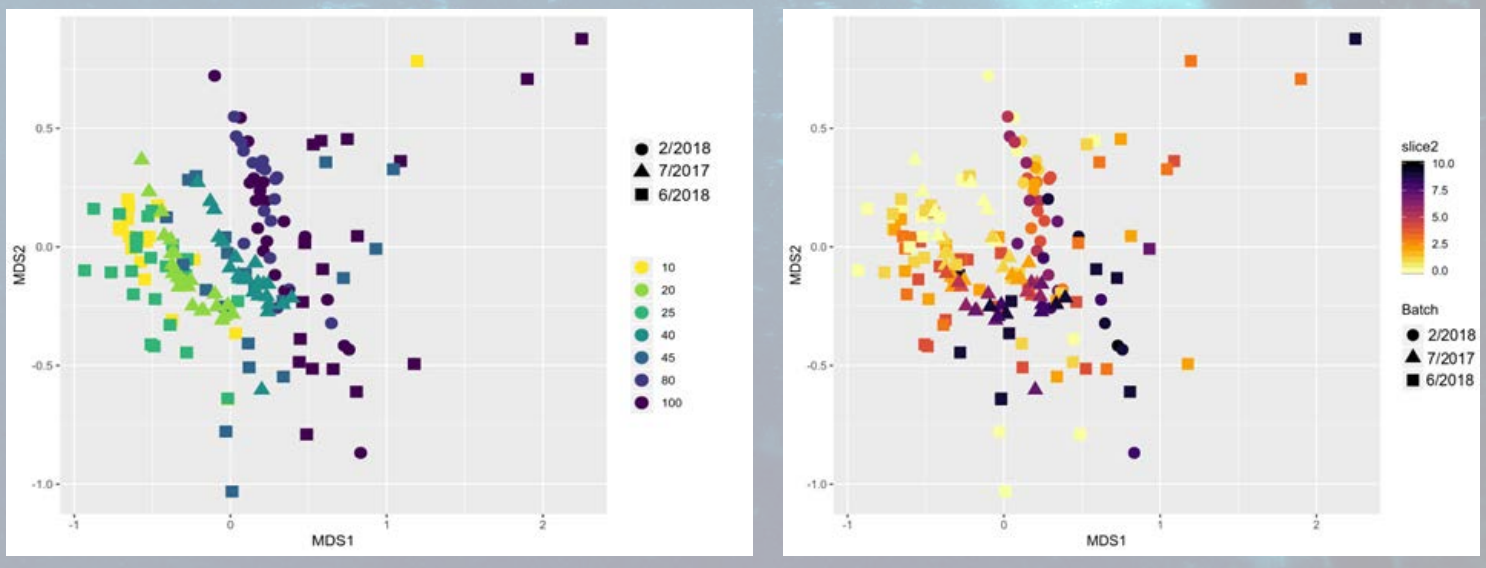

# Drone Survey of Jellyfish

To better understand the biomass of jellyfish in our part of the Mediterranean, Dr Aviad Scheinin and our staff conducted a number of surveys based on observations in July 2019 (see flight path on right). The systematic survey covered 32 km-2 and took 40 pictures. The photographs supplemented the video footage as well. In addition, the measurements for diameter and weight were conducted to convert the jellyfish abundance into biomass data later. Full results to come in the following newsletter!


# Results since March

**Sharks:** We have tagged 50 sharks over the 4 seasons, proving that the desalination plant is a hotspot of activity (Bigal et al. in prep.). The sharks have also shown fidelity to this site, as more than 10 dusky and sandbar sharks returned to these waters from the last season. **Both** species changed their behavior in the presence of divers. The sandbar sharks (which were 81.6% of the sharks present) fled quickly from the divers, to over three times their body length (Martin, 2007). The dusky sharks (18.4% of the sharks present) also moved away, but more slowly. In addition, we tagged our first male dusky shark (previously the males were all sandbar).

**Microbiome**: Sampling near the newest gas rig in Israel, near Sdot Yam, has proven to be crucial baseline data. The preliminary results showed significant differences in microbiota between water depth (10-100 m) and core slices depth (0-10 cm) in all communities of bacteria (Figure below), archaea and eukaryotes. In addition, changes in abiotic parameters (grain size and % TOC) were measured between depth sites and may explain some of these results.




Results of 3 seasons of sampling bacterial communities in the sediment. Left: Distribution according to water depth (10-100m). Right: Distribution according to core depth (0-10cm)

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# Proposed MPA in Evtach expanded based on MKMRS and NPA collaboration!


Perhaps the biggest, most recent news to come from our station is regarding the expansion of a designated Marine Protected Area of Evtach reserve. Due to our continuous collaboration and monitoring efforts, the Israel Nature and Parks Authority have extended the proposed MPA further north, based on the rocky reef biodiversity surveys we have conducted and openly shared with them since 2016.

This is a great example of how long-term marine research can inform conservation efforts along our impacted shores, and we thank the NPA for their continued support!

*all photos and background photos from Hagai Nativ

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