MORRIS KAHN March 2019MARINE Vol 4 RESEARCH **STATION** Quarterly Newsletter Inside the Issue

SEASON 8

Current work at the station, and signature results since the last newsletter are discussed on p.02-3

VISITING SPEAKERS

Prof. Paul Falkowski will visit our station in June after Shavuot, to give a keynote speech - more news on the one-day seminar on p. 04

COURSES @ MKMRS

An AAUS diving course, led by Dr Beverly Goodman and Dr Tali Mass, as well as a weeklong course by Florida Atlantic University on Elasmobranch Ecology on p.04

MKMRS TAGGING MEDIA STORM

Media Manager, Hagai Nativ

Hagai has made a huge effort (a *newsworthy* bid if you may) to put MKMRS activities on the media map all around the world! p. 05





PLUS PUBLICATIONS AND MORE!

MAJOR RESULTS

Marine Pathogens

How prevalent are infectious diseases in the marine environment? The lab has published highly important results (see publication on pg. 6). The phylogenetic tree to the right shows that the nervous necrosis virus, an important fish pathogen worldwide, is present in wild fish populations, and belongs to one clade (evolving from a common ancestor). Our researchers also noted that farmed sea bream in sea cages are affected by the virus, suggesting spontaneous transmission from wild to caged fish.

16 B033/N N. randalli 16 B118/S S. lessepsianus 16 B03/N N. randalli 16 B03/N N. randalli 16 B20 N S. lessepsianus 17 B166/S S. aurta 16 B210/N S. lessepsianus 16 B210/N N. randalli 16 B112/S S. lessepsianus 16 B217/N N. harbatus 16 B217/N M. barbatus 16 B217/N M. barbatus 16 B217/N M. barbatus 16 B217/N N. randalli 16 B032/N N. randalli 16 B11/S L. mormyrus 16 B020/N N. randalli 16 B107/S N. randalli 16 B107/S N. randalli 16 B107/S N. randalli 16 B107/N S. lessepsianus 16 B030/N N. randalli 16 B107/N S. lessepsianus 16 B035/N N. randalli 16 B105/N S. lessepsianus



Marine Geochemistry

We found that in winter the system is phosphoruslimited, while in summer the remaining nitrogen is depleted and drives the system towards nitrogen limitation. The changing nutrient limitation conditions can alter phytoplankton communities and requires further investigation. An elemental understanding of the system serves as the groundwork for additional research in the area to formulate science-based conservation codes.

Microbiome

In all communities (bacterial, archaea, and eukaryote), there were significant divisions according to water depth. The main bacterial groups are: Gammaproteobacteria, Deltaproteobacteria, Bacteroidetes, Planctomycetes and Chloroflexi. These preliminary results may indicate the sensitivity of the microbial communities to differing environmental conditions (water depth, grain sizes and %TOC, among other environmental parameters). The significance of these differences and changes will continue to be studied in order to understand the sedimentary environmental processes.

Top Predator Team



Prof. Barbara Block Charles and Elizabeth Prothro Professor in Marine Sciences

The tagging team is gearing up for the short-but-sweet season of bluefin tuna along the shores of Israel! Robert Schallert from Prof. Barbara Block's team (Hopkins Marine Station) will be joining us again for more training - we hope to tag 2-3 more tuna and further build our ties with the local fishermen!



Tal Elmialach finished her MSc degree (titled 'Initial Characterization of the Bluefin Tuna in the Easternmost Mediterranean'), and has moved on to the Israeli Nature and Parks Authority and Ecoocean. She is leading the education and outreach initiative at the Hadera Power Station, where we have observed and tagged 46 sharks over 4 seasons. We hope the public will learn more about these charismatic megafauna, and appreciate their space!



We are excited to announce that Prof. Paul Falkowski, the Director of the Rutgers Energy Institute, will be coming to our station in June. He will be the keynote speaker for our seminar, 'Food Web in the eastern Mediterranean Sea under Climate Change'. Prof. Falkowski was the supervisor of our own Prof. Dan Tchernov, and his research interests are focused on three areas - origins of life, how electron transfer reactions are mediated, and how organisms transform the geochemistry of Earth. He was elected to the National Academy of Sciences for his research on the global carbon cycle. We also will host one more researcher to head the second session of the one-day seminar (details TBA).



Courses at the Station

Drs Beverly Goodman and Tali Mass are spearheading a 2-week AAUS diving course in May with the MKMRS diving centre and station. The students will receive the 'basic scientific diver' qualification within the AAUS system (certified to do scientific work to 12 m). The primary training will give the students the ability to perform elementary scientific field tasks.

The station will also host a week-long elasmobranch (sharks, rays, and skates) course, led by Florida Atlantic University's Professor Stephen Kajiura. The course is fully booked with 20 students, and will be a combination of lecture, student presentations, discussions, and lab dissections. We look forward to the visit in July!



MKMRS in the Media

Earth Touch

a

Over the past couple of months, our media manager Hagai Nativ really pushed to put MKMRS in the spotlight around the globe. His photographs and our achievements with the Hadera shark tagging project are awe-inspiring! Here are the front pages from all the newspapers that highlighted our story in 34 countries around the world. Each picture is a link to the publication.

EON H. CHARNEY

GNN

NEWSNETWORK

Aol.

The Washington Post





New shark migration to Israel opens rare research window

Dozens of sharks have begun congregating off the coast of Hadera each inter, Israeli scientists are trying to find out why, and how to protect them.

THE TIMES OF ISRAEL

Recent Publications

- Barash, A., Pickholtz, R., Nativ, H., Malamud, S., Scheinin, A. and Tchernov, D., 2018. Seasonal arrival and feeding of injured coastal sharks at fish farms in the Eastern Mediterranean. Journal of the Black Sea/Mediterranean Environment, 24(1).
- Diamant, R., Bigal, E., Pinhasi, A. and Scheinin, A., 2018. Estimation of Shark's biomass through active acoustics. The Journal of the Acoustical Society of America, 144(3), pp.1912-1912.

Berzak, R., Scheinin, A., Davidovich, N., Regev, Y., Diga, R., Tchernov, D. and Morick, D., 2019. Prevalence of nervous necrosis virus (NNV) and Streptococcus species in wild marine fish and crustaceans from the Levantine Basin, Mediterranean Sea. Diseases of Aquatic Organisms, 133(1), pp 7-17.

- Diamant, R., Kipnis, D., Bigal, E., Scheinin, A., Tchernov, D. and Pinhasi, A., 2019. An Active Acoustic Track-Before-Detect Approach for Finding Underwater Mobile Targets. IEEE Journal of Selected Topics in Signal Processing.
- Kroeger, L.A., Tsemel, A., Tchernov, D., and Ayalon, O., 2019. A theoretical approach concerning nutrient emissions to inform monitoring and management of mariculture farms. J Aquat Res Mar Sci 2019: 125-133
- Yeruham, E., Abelson, A., Rilov, G., Ezra, D.B. and Shpigel, M., 2019. Energy budget of cultured Paracentrotus lividus under different temperatures. Aquaculture, 501, pp.7-13.
- Xiong, Y., Guilbaud, R., Peacock, C.L., Cox, R.P., Canfield, D.E., Krom, M.D. and Poulton, S.W., 2019. Phosphorus cycling in Lake Cadagno, Switzerland: A low sulfate euxinic ocean analogue. Geochimica et Cosmochimica Acta.

Yu, D., Chen, N., Krom, M.D., Lin, J., Cheng, P., Yu, F., Guo, W., Hong, H. and Gao, X., Understanding how estuarine hydrology controls ammonium and other inorganic nitrogen concentrations and fluxes through the subtropical Jiulong River Estuary, SE China under baseflow and flood-affected conditions. Biogeochemistry, pp.1-24.

Thanks to the incredible generosity of our donors: Kahn Foundation The Crown Foundation Russell Jacobs The J. Isaacs Charitable Trust Mr Peter Kadas The Helmsley Charitable Trust

Den Tchung

Prof. Dan Tchernov Department of Marine Biology Leon H. Charney School of Marine Sciences University of Haifa Med-Iter@haifa.ac.il | sdotyam.scicoordinator@gmail.com