

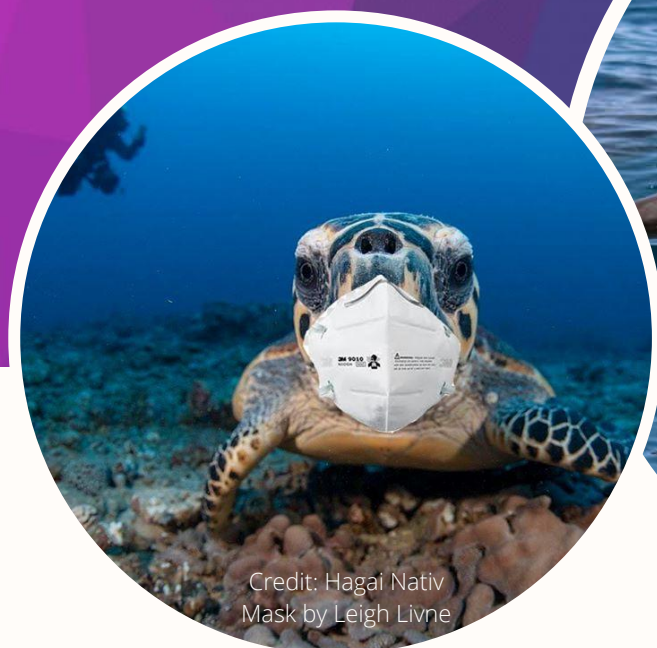
JULY 2020

# MORRIS KAHN MARINE RESEARCH STATION

Latest news from the deep blue of Israel

## WHAT THIS ISSUE CONTAINS:

- Tune in to *thynnus!*
- 3D coral photogrammetry in Eilat
- Corona, corona, everywhere...
- Hof HaSharon - our new monitoring site
- New publications since September 2019



Credit: Hagai Nativ  
Mask by Leigh Livne



Credit: Ori Galili

## DIVING FOR A CURE

It took a worldwide pandemic to halt our station activities! We were high and dry on-land for most of April and May, but were able to push on and catch up with analyses and publications. We hosted and presented in **7** Zoom meetings, and a new wave will continue into the summer, as they are quite popular! Read on for more news from our mid-2020 activities, including the most recent damage assessment of the reef in Eilat from February, finishing up the tuna season, new publications, and more!

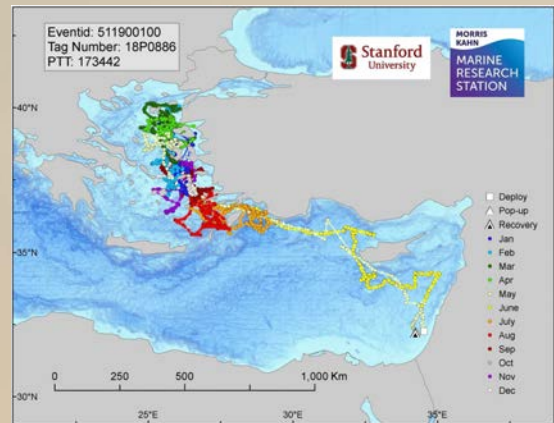
*Photo left:* Although this photo is light-hearted, PPE has become another source of pollution to our seas and oceans. *Photo right:* MSc student Ori Galili caught magic in her lens during a routine dolphin survey last month.

# Thunn-ing in after 1 year!

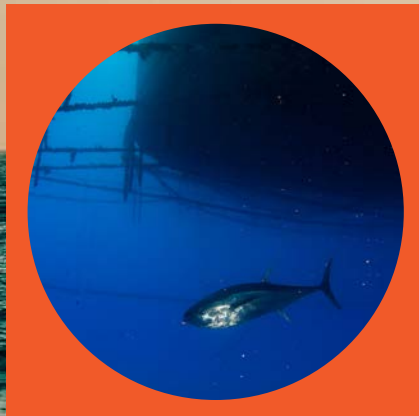
MKMRS hit a milestone in the springtime - we retrieved a tuna tag which popped up after **365 days** of travelling with its owner. To the right is a partial screenshot of the data after downloading and correcting for anomalies - this data is part of a long-standing and essential collaboration with Prof. Barbara Block of Hopkins Marine Station (Stanford University), and we are ever-grateful for her support.

This is a huge first - it is an initial insight into the life of a Bluefin tuna (*Thunnus thynnus*) in the Eastern Mediterranean Sea. Needless to say, it was a fantastic start to the 4th tuna tagging season! Although the tuna season finished mid-June this year, it and was also uncharacteristically *late* in starting.

Dr Aviad Scheinin and PhD student Eyal Bigal sampled 15 tunas (up to 320 kg!) but no tags were inserted this year. This year, MSc students Goni Bergman and Mr Niv Magali joined on the boat to assist and collect data for his microbiome of apex predators research.



Hagai Nativ



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**MKMRS IS NOW FOLLOWING THE PHYSICAL ROUTES OF THE TUNAS, ESTIMATING TUNA BIOMASS WITHIN OUR SEA, INVESTIGATING THE MICROBIOME OF THE SHARKS AND DETERMINING DIET PREFERENCES -**

**WE CAN DECIPHER THE HEALTH AND STATUS OF THE POPULATION FROM TAKING FINCLIPS, MICROBIOME, AND STOMACH SAMPLES OF EACH TUNA.**

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# Photogrammetry and new frontiers in coral reef ecology

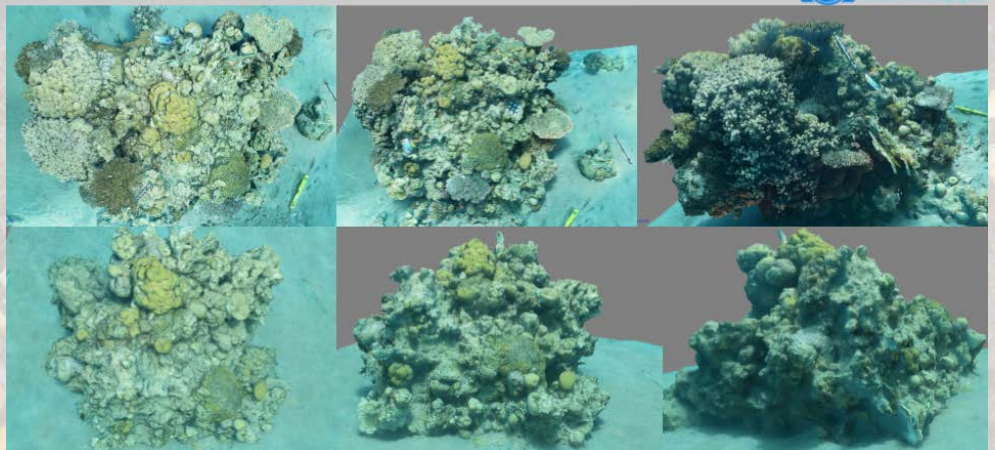
PhD student Matan Yuval is *quite* busy these days. He is the newest member of our technical diving crew, and is expanding upon his MSc research (and an older technique) of stitching many photos of a static object (corals, in this case) to create a 3D models of the system. He is supervised by Dr Tali Treibitz of the Marine Imaging Lab, and Prof Tchernov of the Dept. of Marine Biology (both labs in the Leon H. Charney School of Marine Sciences, University of Haifa).

This technique was first used in aerial photography, to create maps from images taken from a plane. We use the technique to produce a 3D simulations of our sites in the Mediterranean sea and receive the complexity of the substrate for every site and site so that we can compare it with the amount of fish and determine the community's complexity.



**Matan in action during a survey; he will produce a 3D model and photomosaic of each survey conducted, with sub-cm resolution of the benthos!**

A Coral-reef in Eilat before (top) and after (bottom) an extreme weather event 



*Click on the picture above for a video tour!*

In February 2020, one of the largest storms on record decimated the reef in Eilat. Matan wished to conduct a before-after impact survey of the area. He, alongside MKMRS' Stephane Martinez, spent a week in Eilat re-visiting survey sites, which were entirely unrecognisable.

The objective of the sampling was to investigate community interactions to see the storm's effect along depth gradient and by morphotype of coral. Let's hope we are not graced with another storm of this calibre in the next decade!

# Corona

## IN THE SEA?

BY DR Yael  
LAMPERT

*Drowned under the noise of human impact of Covid-19, research on other hosts of this pathogenic virus, and prevalence, has been overlooked. Our Dr Lampert discusses why researching the virus' potential in hosts is necessary.*

The survival of the COVID-19 virus in the marine environment is still unclear. Coronaviridae is a family of RNA viruses which infects amphibians, birds and mammals. It belongs to a group of zoonotic viruses (viruses which may be transferred from animals to human beings), and it is assumed by researchers that COVID-19 was passed from bats directly or indirectly by through consuming uncooked animals, to the Chinese population in their markets. In the past, there have been published reports about its prevalence in bivalves. Bivalves are known as filter organisms which accumulate bacteria and viruses in their body. In a similar way, partially cooked or uncooked bivalves may contain the corona virus and may infect the consumers. This prescient research is currently being formulated for a grant by researchers at MKMRS.

### RESEARCH LETTERS

#### **Detection and Characterization of New Coronavirus in Bottlenose Dolphin, United States, 2019**

Leyi Wang, Carol Maddox, Karen Terio, Saraswathi Lanka, Richard Fredrickson, Brittany Novick, Celeste Parry, Abby McClain, Kyle Ross

Author affiliations: University of Illinois, Urbana, Illinois, USA (L. Wang, S. Lanka, R. Fredrickson); University of Illinois College of Veterinary Medicine, Urbana (C. Maddox); University of Illinois College of Veterinary Medicine, Brookfield, Illinois, USA (K. Terio); National Marine Mammal Foundation, San Diego, California, USA (B. Novick, C. Parry, A. McClain); Naval Information Warfare Center Pacific, San Diego (K. Ross)

DOI: <https://doi.org/10.320/aid2607.200093>

In this study to the left, the US Navy Marine Mammal Programme took in four Atlantic bottlenose dolphins after witnessing the onset of an illness. Using faecal samples and polymerase-chain-reaction (PCR) method, a new strain of coronavirus was detected in all 4 individuals.

Using Next-Generation sequencing of these 4 genomes and phylogenetic analyses, the researchers concluded that these viruses are closely related to the Hong Kong bottlenose dolphin coronavirus, and the Beluga whale strain. These are not related to the Sars-Covid 19 that is afflicting the human population - but it goes to show that scientists are constantly at new frontiers and that bridging the science-policy divide is ever-more crucial in today's globalised world.

*A relevant, recent publication in 2020 (not conducted by our researchers)*

**MKMRS**

# **HOF HASHARON**

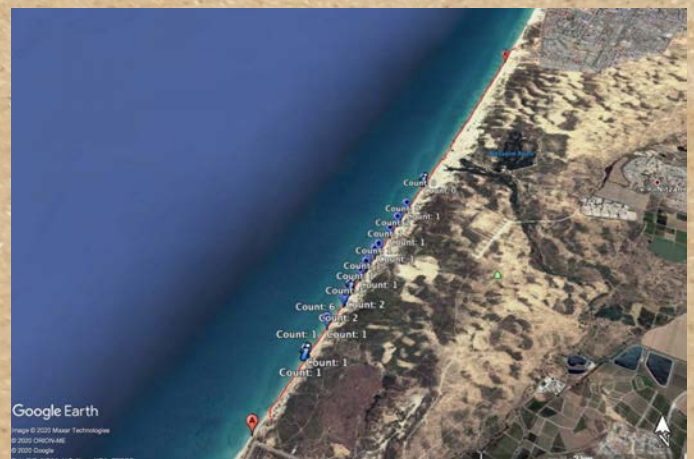
## **NEW SURVEY SITE**

**AN INITIATIVE WITH ISEES TO DEVELOP  
A THREATS-BASED MONITORING  
APPROACH FOR UNEXPLORED MARINE  
AREAS**

**As it is known, MKMRS has routinely sampled various sites along the Israeli coastal shelf since 2016, and we received funding this year to extend this goal to a new site, the yet-unexplored Hof HaSharon (HH) site. The objective is to survey according to the most prescient taxa indicators – offshore rocky reef biodiversity (algae, fish, invertebrates), and coastal apex predators (sharks and dolphins in HH, and guitarfish in HH and Evtach). These baseline surveys will form the basis of a robust, replicable sampling design for long-term monitoring purposes of future sites.**

**Corona put a dent in the initiation of the project, but within 3 months of starting our dive extraordinaires Dr Shai Einbinder and Stephane Martinez have placed a C-POD receiver (Cetacean Acoustic Hydrophone) and 1 shark acoustic receiver (to detect tagged sharks' presence) at the Hof Hasharon site, at 30 m depth. They conjoined this deployment with a pilot survey of algae and invertebrates, although the visibility was too low (< 5 m) to properly survey the fish populations. As the monitoring season is now over, they will pick up these surveys in the coming season.**

**Guitarfish visual surveys will take place along the shorelines of Evtach and Hof HaSharon over the 2-year period. In relation to this project so far, visual surveys have been conducted in Evtach (Figure 1) and Hof Hasharon. In Evtach, we have surveyed three times since March 2020. There were no observations from the first survey, but 10 individuals were reported on April 22, 2020, all between 40-50 cm in length. In the third survey (May 22, 2020), 36 individuals were observed of the same length as in the previous survey. In Hof HaSharon, the research (Mr Barak Azrieli) has also sampled three times since February 2020 (with no surveys in March due to Covid-19). So far there is no indication of guitarfish present at the Hof Hasharon site.**



*Individuals observed in Evtach to date, by Mr Barak Azrieli*

# Publications

## February - July 2020

- Casari, P., Lampe, L., **Martinez, S.**, and Diamant, R., 2020. ThreatDetect: An Autonomous Platform to secure Marine Infrastructures. In *Advanced Technologies for Security Applications* (pp. 271-281). Springer, Dordrecht.
- Chang, Z., **Neori, A.**, He, Y., Li, J., Qiao, L., Preston, S., Liu, P., and Li, J., 2020. Development and current state of seawater shrimp farming, with an emphasis on integrated multi-trophic pond aquaculture farms, in China – a review. *Reviews in Aquaculture*, 1–15. doi: 10.1111/raq.12457
- **Shpigel, M.** and Erez, J., 2020. Effect of diets and light regimes on calcification and somatic growth of the sea urchin *Tripneustes gratilla elatensis*. *Aquaculture*, p.735547. <https://doi.org/10.1016/j.aquaculture.2020.735547>
- **Livne L.**, Grossowicz M, **Tchernov D** and Ayalon O (2020) Predicting Impacts of Offshore Monoculture Farm Expansion in Ultra-Oligotrophic Waters of the Levantine Basin. *Front. Mar. Sci.* 7:556. doi: 10.3389/fmars.2020.00556
- **Neori, A.**, Bronfman, Y., van Rijn, J., Guttman, L., Krupnik, N., **Shpigel, M.**, Samocho, T.M., Davis, D.A., Qiu, X., Abelin, P. and Israel, Á. 2020. The suitability of *Ulva fasciata*, *Ulva compressa*, and *Hypnea musciformis* for production in an outdoor spray cultivation system, with respect to biomass yield and protein content. *Journal of Applied Phycology*.
- **Regev, Y.**, Davidovich, N., **Berzak, R.**, Lau, S.C.K., **Scheinin, A.P.**, **Tchernov, D.**, and **Morick, D.** 2020. Molecular Identification and Characterization of *Vibrio* Species and *Mycobacterium* Species in Wild and Cultured Marine Fish from the Eastern Mediterranean Sea. *Microorganisms* 2020, 8, 863; doi:10.3390/microorganisms806086
- **Lampert, Y.**, **Berzak, R.**, Davidovich, N., **Diamant, A.**, Stern, N., **Scheinin, A.P.**, **Tchernov, D.** and **Morick, D.**, 2020. Indigenous versus Lessepsian Hosts: Nervous Necrosis Virus (NNV) in Eastern Mediterranean Sea Fish. *Viruses*, 12(4), p.430.
- **Meron, D.**, Davidovich, N., Ofek-Lalzar, M., Berzak, R., **Scheinin, A.**, **Regev, Y.**, **Diga, R.**, **Tchernov, D.** and **Morick, D.**, 2020. Specific pathogens and microbial abundance within liver and kidney tissues of wild marine fish from the Eastern Mediterranean Sea. *Microbial Biotechnology*
- Israel, A., Golberg, A., and **Neori, A.** (2020). The seaweed resources of Israel in the Eastern Mediterranean Sea. *Botanica Marina*, 63(1), 85-95.