

# MKMRS

SEPTEMBER

2022

ISSUE N.12

MAKING SCIENCE MORE ACCESSIBLE TO THE PUBLIC



d Aybes / Greenpeace

## Greenpeace

Dr Aviad Scheinin and PhD candidates Yotam Turiel and Kim Kobo take to the waters as part of a collaboration with Greenpeace on a maiden, deep shore voyage.

## Fish Community Research

Ole JR Sørensen writes about his research - which focuses on how complexity and connectivity affect the fish communities of the rocky reefs.

## COST Action

'SEAWHEAT', a network of researchers focusing on *Ulva* sp., closes its first grant period with a COST (Cooperation in Science and Technology) conference in Spain - the main deliverable for this period.

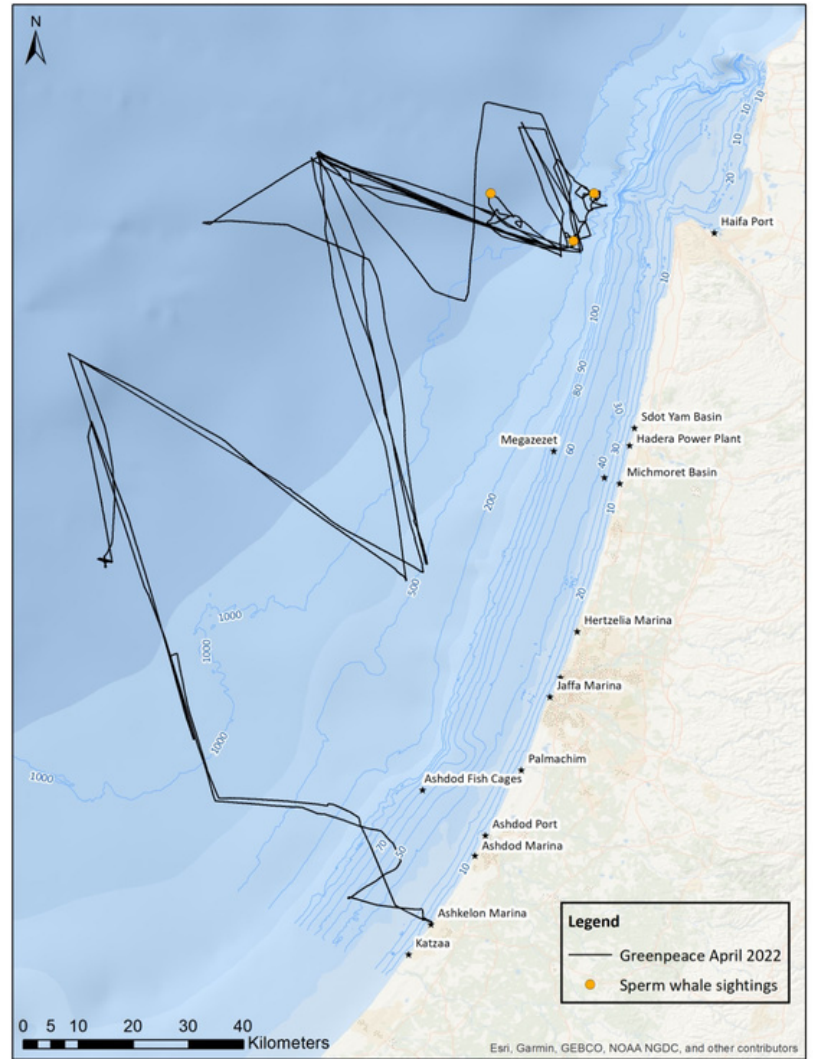
*and more!*

# Apex Lab voyages with Greenpeace

In April 2022, Yotam Tzuriel and Kim Kobo set out with the Greenpeace research team on their research vessel 'Witness' to conduct a first-of-its-kind acoustic survey. This survey examined the presence of marine mammals residing in the deep offshore waters of the State of Israel.

Our track (see map right) included visual observations during the daytime hours and acoustic listening with the help of a dedicated towed hydrophone 24 hours a day.

The hydrophone contains elements capable of both receiving very low frequencies to identify the whales and frequencies much higher than the threshold of human hearing. The latter frequencies identify dolphins that use sound both to communicate and for orientation in space (echolocation).



Map created by Ori Galili

From the acoustic data, it was possible to determine that 4-8 different bowhead whales were present in the area. The unique marks and scars on their tails make it possible to identify the whale to the level of the individual, like a fingerprint in humans. This can later be checked with other research institutes along the Mediterranean Sea to see if this individual has been observed elsewhere.



In light of the survey's success, we set out in May for another survey, this time in the presence of Dr Aviad Scheinin, to survey additional areas and learn how to operate the acoustic system. In this survey, we could hear pods of dolphins and the clicks of porpoises. Still, we were unable to visually identify them. However, whales were also heard off the coast of Haifa near the previous sighting, indicating that the area is attractive during this season.

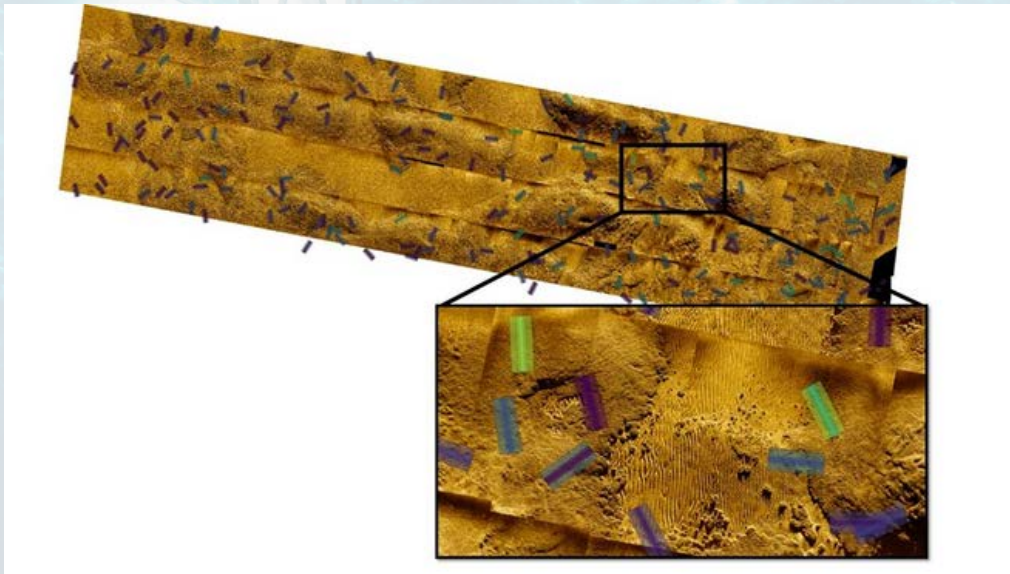


A towed hydrophone system that was identical to the 'Witness' yacht was purchased by the Apex Marine Predator Laboratory of the Morris Kahn Marine Research Station. It will be used by researchers in future surveys to better understand the distribution of marine mammals found in the deep waters of the Israeli Mediterranean coast.



# PHD PROJECT OF OLE JOHANNES R. SØRENSEN

In the emerging field of seascape ecology, researchers are increasing our understanding of the causes and ecological functions of spatial patterns for marine fauna. PhD student Ole Johannes R. Sørensen is currently developing applications for seascape maps produced by Prof. Yizhaq Makovsky at the Applied Marine Exploration Lab. Ole's project is focused on how structural composition (complexity and habitat type) and configuration (connectivity) affect the fish communities of the rocky reefs. Still, the toolbox provided proliferates the possibilities for marine research.



**Figure 1:** Simulated 25 m transects with different buffer sizes can elucidate what scale is the most appropriate surrogate for the fish community. The colour of the transects represents the complexity value calculated from a coupled bathymetry layer.

With the highly collaborative and multidisciplinary approach, the project is paving the way for an exciting new technique that can be applied to the standard underwater visual census. The maps enable us to precisely identify our location underwater, which cannot be done with conventional bathymetry layers. In addition to knowing exactly where we perform our surveys, we can now also identify the surrounding habitat of our study site, which is a significant gap in current seascape ecology research. Preliminary dives done by the MKMRS team have already identified hotspots and habitat associations for fish species, which ultimately will help us better plan strategies for MPAs and coastal management.





# MKMRS STAFF VISIT DOMINICA

## EXPEDITION 3, PROJECT CETI

After some delays with receiving the second research boat, the rigid inflatable boat pictured middle right, several members of MKMRS linked to Project CETI travelled to Dominica for a month-long expedition. COO Dan Tchernov, Coordinator Leigh Livne, and PhD candidate Yaly Mevorach assisted with tracking the sperm whales by listening to their communication with an omnidirectional hydrophone (an Aquarian H1a). After determining if there are whales within a 5-mile radius, they plug the omnidirectional hydrophone into an improvised directional to better pinpoint their location. Then, it's all eyes on the water to watch for blows. As sperm whales come to the surface to breathe, play, and rest, they are silent for these last 10-15 minutes.



Communicating requires energy, and conserving this aspect at the end of the dive is natural (we humans also like to pause in silence after a big meal, right?).

The biology team is responsible for tracking the whales daily to assist the Harvard Microrobotics team approach and attempt to deploy their science tags from their 'drop drone' and 'touchdown' drone. The tethered hydrophone arrays will be launched by September.

### Photos left:

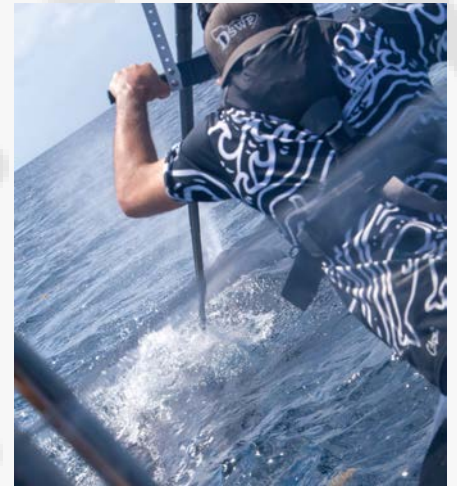
- Skipper Dr Yaniv Aluma brings in the jib of CETI 1 (pictured bottom left, a Lagoon 40' catamaran)

### Photos right, top to bottom:

- Yaly Mevorach reads out the GPS after listening in
- Dr Shane Gero makes a tag attempt from the RIB
- A researcher releases the 'drop drone'
- CETI 2, a RIB, makes her grand appearance
- The flag of Dominica on the stern of CETI 1
- A whale making a deep dive



Photo credits: Leigh Livne





# **STREPTOCOCCUS AGALACTIAE DETECTED IN A STRANDED DOLPHIN - A FIRST FOR MKMRS MARINE PATHOLOGY LAB**

Several researchers within two of the MKMRS laboratories (Pathology and Apex Predators) were involved in isolating and characterizing this disease, Streptococcosis, in a stranded male dolphin found in September 2020. This is significant work, as the common dolphin (*Delphinus delphis*) is categorized as 'Endangered' on the IUCN Mediterranean Red List. Although the dolphin was a fresh specimen, there were no apparent signs of human-related cause of death (e.g. entanglement in fishing gear). However, *Streptococcus agalactiae* was detected in the urinal fluid, lungs, and fluid around the heart (pericardial fluid, Fig. 2).

Notably, Dr Danny Morick also isolated and characterized this isolate in another apex predator, the sandbar shark, in a paper published in 2020.

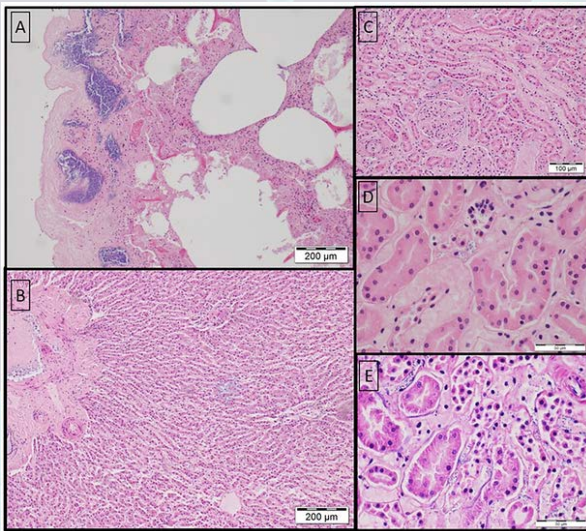


Figure 2 (direct from [publication](#))

*Streptococcus agalactiae* in lungs, liver, and kidney of a common dolphin. See paper for full figure caption and explanation.

## **FROM FINE-SCALE TO GLOBAL SCALE, DR MORICK COLLABORATES TO REVIEW SHARK STRANDINGS AROUND THE WORLD**

A long-standing collaboration with Dr Natascha Wosnick of the Universidade Federal do Paraná, Brasil, has produced a global review of each shark stranding recorded since 1880. From 3,150 reports on 89 species, the review noted that more females are recorded stranded than males, but that overall the extent of reporting is less than other charismatic megafauna, such as marine mammals.

Thus, rescue and rehabilitation initiatives must be of national priority for coastal countries. Strandings are a unique opportunity to engage with the public and boost interest in conserving these critical species. Moreover, a quick response to these events benefits public health, as disease transmission can occur. The publication advocates establishing a global, open-access database of shark strandings to lessen the barriers to sharing information and establishing patterns in these events.



# AND NOW TO SPERM WHALES IN OUR SEA... A WHALE NAMED 'KIM'

Kim Kobo (pictured right) is a current MSc candidate; her thesis on the mother-calf relationship in the coastal dolphins is supervised by Dr Aviad Scheinin and Prof Dan Tchernov. After Kim spotted the whale and captured its fluke, researchers at MKMRS could contact their network in Greece, Turkey, and Cyprus to determine if the whale had ever been documented in other waters. As she was the one to spot and record the whale, which was swimming in waters 15 km offshore Haifa Bay, she named the undocumented sperm whale (eponymous whale pictured to below). The scars and edges of the fluke act as identifying markers in 'FlukeBook' - an



Credit: Alad Aibes



open-access database for photo ID of whales. "It's a nice feeling," Kobo said. "It's especially exciting that I was part of this study. Most of our lab members have dolphins named after them... But I had the honor of having a sperm whale taking my name."

## MAKING ULVA THE 'WHEAT OF THE SEA'

In mid-September, Action Chair Muki Shpigel and Grant Manager Leigh Livne will represent the University of Haifa over 3 days in Cadiz, Spain. [The full conference programme and details may be found at this link.](#) They have invited 70 guests to the hybrid conference, covering topics related to the Action's 6 Working Groups:

- Ulva biology
- Aquaculture
- Food, Feed and Beyond
- Bioactive Materials
- Ecosystem Services
- Social, Legal and Regulatory Aspects

**Want to hear more?** Reach out to [seawheat@univ.haifa.ac.il](mailto:seawheat@univ.haifa.ac.il)





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