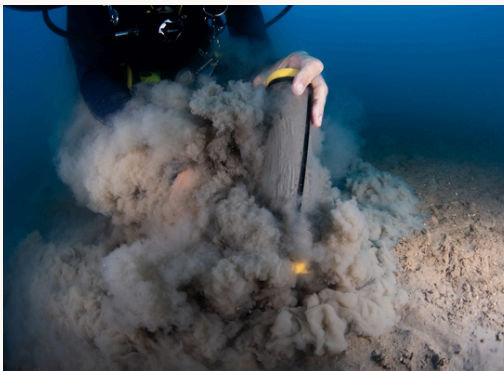


## Hello and welcome to *our Autumn newsletter*

In this issue of our newsletter, we discuss new departments connected to the station, publications accepted, and our activities since the summer.

In the video to the left, Hagai Nativ conducts his final dive as part of a scientific free diver course taught by Tom Peled. This course was held at the Interuniversity Institute for Marine Sciences in Eilat, under AIDA International. At the end, the trainees receive a certificate from the international diving organization AIDA diving instructor certificate.

**New data alert:** please visit our [Database Hub](#) to explore the sea with us



All photos credited to Media Manager Hagai Nativ



## Meet Efrat Kadosh!

We are delighted to welcome Efrat Kadosh as our new Head of Climate Tech! Read below on her past education and future vision with us.

Professor Krom reaches his 200th publication

&

Ole Sørensen gives us an update on his BRUV study



On the first day of Rosh Hashanah, we received exciting news: **Professor Michael Krom's** lab published a paper detailing nutrient dynamics and the potential shifts due to climate change ([Ben-Ezra et al., 2024](#)). This milestone marks his 200th academic publication, including both peer-reviewed articles and book chapters—a rewarding outcome of a long journey in marine science.

A bit of background: Professor Michael Krom is a prominent figure in marine biogeochemistry (and no. 1 researcher in Earth Sciences in Israel), with a career spanning decades and contributions that have shaped our understanding of nutrient cycles in marine ecosystems. His work has been pivotal in understanding how nutrients like nitrogen and phosphorus circulate and impact marine life. Throughout his career, Professor Krom has been passionate about the environmental impacts of climate change on marine systems, investigating how these changes could alter nutrient availability.

This latest publication is a collaborative achievement that builds on years of research, involving dedicated team members who share a commitment to advancing marine science. To mark both the New Year and this career milestone with such news was especially meaningful, and it adds a celebratory touch to a journey driven by passion and perseverance.

[SEE HIS FULL LIST OF PUBLICATIONS OVER HIS CAREER HERE](#)



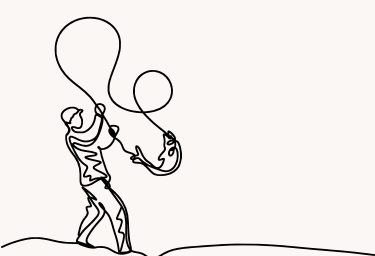
## Batoid season in full 'wing'!

Last week, an impressive survey of rays was conducted between Mikhmoret and Gedor, expertly led by the dedicated Anat Tsemel and her dive buddy, Eli Shemesh. Anat meticulously documents, and photographs the species observed along the deep reef between Gedor and Mikhmoret. The survey is carried out through a challenging 700 m transect, using two GPS-equipped devices to accurately record the survey path and locations of all observed specimens. In addition to spotting a considerable number of *Dayatis* rays, the team encountered several large and striking fish, as well as a recurring visitor—a magnificent cownose ray that seems to frequent the area.

These surveys are crucial for monitoring local marine biodiversity and help us better understand the behavior and distribution of various species in this region. Our thanks go to Anat and Eli Shemesh for their commitment and hard work in bringing these valuable insights to life.

[CLICK HERE TO VIEW THE DATA RELATED TO THIS STUDY](#)





# European Elasmobranch Association 2024



During the Sukkot holiday, 3 of of researchers (Drs Aviad Scheinin, Leigh Livne, and Ms Eynav Cohen) travelled to Thessaloniki, Greece to present their respective research on Israeli shark and guitarfish research at the European Elasmobranch Association (EEA) 2024 Conference.



Organized by iSea, this year's conference theme was "*Stronger Collaboration for Better Conservation*," and it aimed to unite scientists and stakeholders across Europe and the Mediterranean to address shark, ray, and chimaera conservation with a specific emphasis on diversity, equity, and community.



Dr Scheinin presented his work on 9 years of shark tagging, Dr Livne on her dusky shark reproductive study, and Eynav on the guitarfish nursery paper, published this summer in *Frontiers of Marine Science*.

## A noteworthy sighting

Atlantic guitarfish are nearly two meters in length—one of the largest recorded in our surveys. On a recent sighting, we found a guitarfish (almost 2 m) in Bat Yam. As the diver approached, the guitarfish burrowed in the sand, temporarily losing his remora partner in the process! This underscores their close dependency these species develop within their shared habitats. To the right, an overview of our tagging program at the station.



## We want you!

We are looking to fill various student research positions with the station – [please view the advertisement here](#) and contact the [dannymorick@gmail.com](mailto:dannymorick@gmail.com) for more information

# Announcing two new research grants

In line with our ongoing fundraising efforts, we're excited to share progress on several significant grant applications aimed at supporting groundbreaking marine and aquaculture research. Recently, **our application to fund Precision Aquaculture Infrastructure received approval** from the Israeli Council for Higher Education (aka VATAT). This grant will enable vital investments in state-of-the-art equipment and key personnel hires, setting the stage for impactful developments in sustainable aquaculture.

Over the summer, we also submitted two governmental grant applications, each designed to further proof-of-concept studies in cutting-edge areas. One proposal focuses on leveraging computer vision and AI to monitor fish health, specifically to detect heavy metal pollution. The other centers on micro-algae culturing and advanced content analysis. Both projects reflect our commitment to developing innovative tools for environmental monitoring and sustainability in marine research.

In collaboration with national research institutions, July marked the submission of two large-scale proposals, with joint applications to drive marine monitoring and **land-based aquaculture systems (latter accepted)**. In partnership with Technion and Tel Aviv University, the marine monitoring project would harness AI to track critical changes in marine ecosystems. A second project, submitted with Hebrew University of Jerusalem, Tel Aviv University, and the Volcani Agriculture Institute, focuses on advancing sustainable land aquaculture systems.

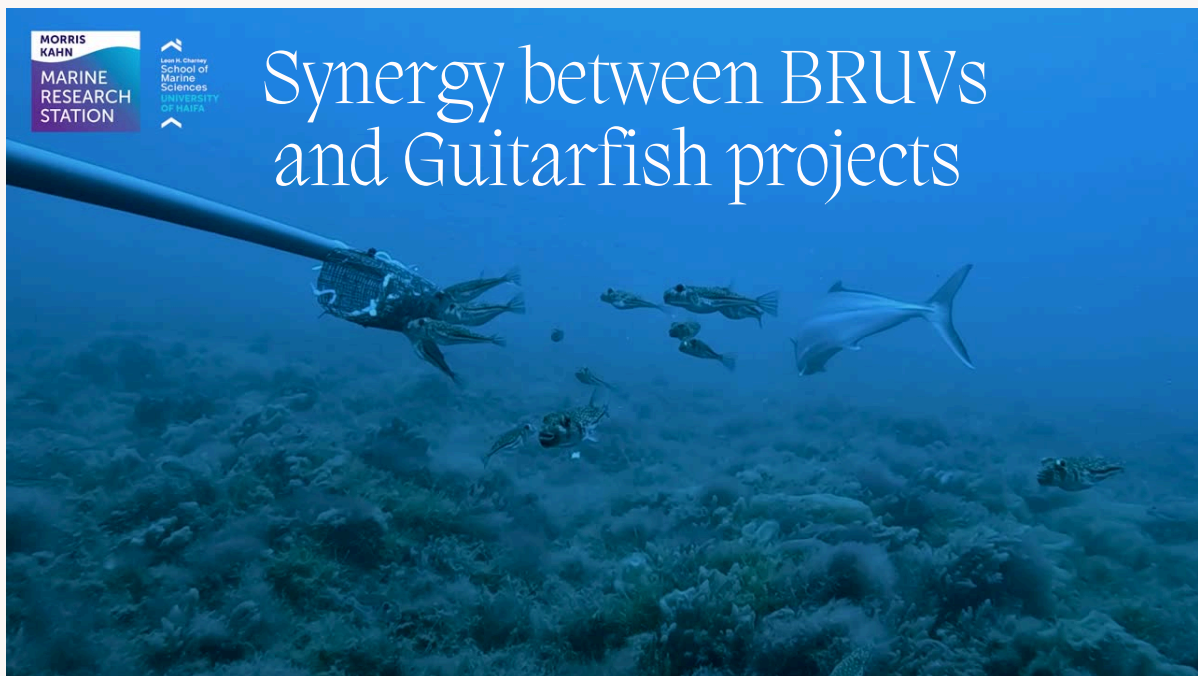
Lastly, in August, we applied to the Jeff Bezos Earth Fund's Grand Challenge, with hopes of securing an initial grant to support innovative ecological initiatives. If selected, we will be eligible for a substantial Phase 2 grant by the end of the year.



Dr Danny Morick and Dr Yaron Bogin led the submissions that were accepted





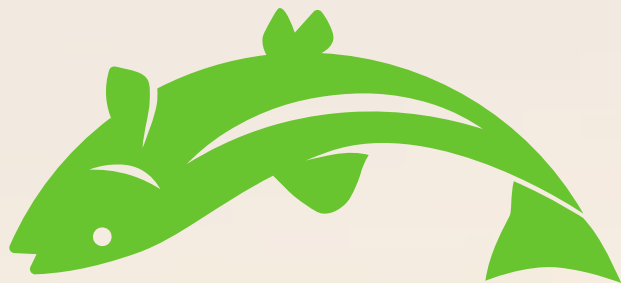


PhD student Ole is using Baited Remote Underwater Video (BRUV) data to model the distribution of fish species, identifying spatial drivers of their assemblages. His work aims to locate biodiversity hotspots, revealing insights into how fish communities relate to their habitats. During this research, Ole's BRUV recorded a guitarfish at 35 meters depth, measuring 80 cm in length. Though brief, the footage is valuable for Eynav, a PhD student in the Apex Marine Predators Lab led by Aviad, who studies genetic connectivity and population structure of *Glaucostegus cemiculus*, a guitarfish species in the eastern Mediterranean.

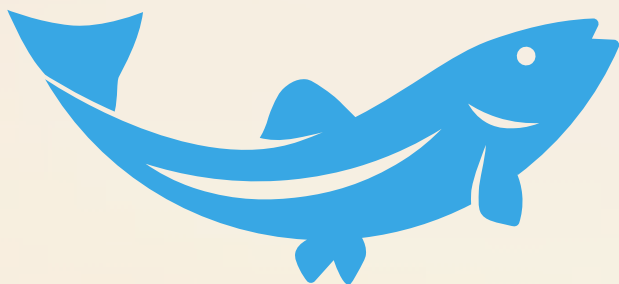
Eynav now leads the station's guitarfish project, initiated in 2017 by Dr Scheinin's lab. Genetic studies in 2019 revealed that coastal nursery grounds host only *G. cemiculus* neonates, while *Rhinobatos rhinobatos*, another guitarfish species, is common in the region's deeper waters. This suggests niche partitioning, allowing the two species to coexist by occupying different habitats.

The sighting of an 80 cm guitarfish highlights potential dispersal during juvenile stages and reflects the station's interdisciplinary research approach. By combining Ole's spatial modeling with Eynav's genetic studies, researchers deepen their understanding of marine ecosystems and enhance conservation efforts.





## Graduate Programme in Blue Technologies & Sustainable Aquaculture



Dr. Danny Morick, Head of Department, is pleased to introduce our new graduate program in Blue Technologies & Sustainable Aquaculture, designed to address 21st-century global challenges. With oceans covering 70% of the Earth's surface, they offer immense but untapped potential. This program emphasizes marine biotechnology and sustainable aquaculture, blending life sciences, engineering, and technology to foster responsible resource management. Students will lead in fields from innovative food production to environmental sustainability, making impactful contributions to our shared, sustainable future.

[SEE THEIR MOST RECENT PAPER ON HEAVY METALS IN GREEN SEA TURTLES](#)



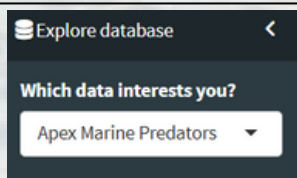
## Welcome, Efrat!

Our new head of Climate Tech, Efrat, brings a strong academic foundation with a B.Sc. in Information Systems from the Technion and an M.Sc. in Business Analytics from Tel-Aviv University. During her impressive 21-year tenure at Intel, she excelled in various roles including data analyst, team leader, and product manager, consistently focusing on data analytics, visualization, algorithms, and AI. As Senior Director of Product at ProteanTecs, she led the company's flagship product – a sophisticated data platform combining analytics UI with advanced algorithms.

A pivotal moment came a year ago when Efrat made a conscious decision to redirect her extensive tech expertise toward what she considers our generation's greatest challenge – climate change. Her passion for the ocean, which she explores through diving and snorkeling, led her to believe that our seas hold the key to combating global warming.

This conviction brought her to us, where she aims to develop innovative products that bridge ocean science and technology to address global climate challenges. Furthering her commitment, Efrat is currently pursuing her second Master's degree at The Leon Charney School of Marine Sciences, University of Haifa, specializing in Blue Biotechnologies and Sustainable Aquaculture.

Efrat is driven by her belief in the power of academia-industry collaboration and is committed to developing solutions that align environmental impact with sustainable business models. Her vision perfectly matches our mission to create meaningful change through innovative marine research and technology.



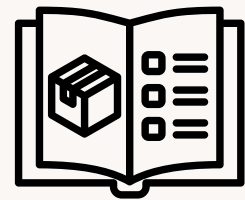
### ACCESS NOW

Don't forget to click the link below to get free, full access to the raw data from all of our studies at the station –



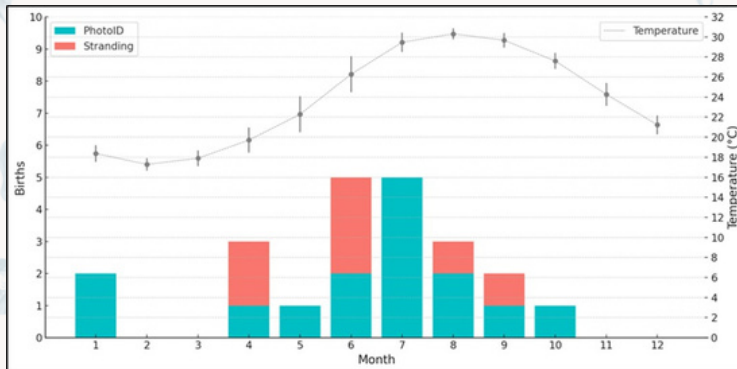


# Kim Kobo presents her MSc research



[click here to view our Photo ID catalogue ^^](#)

Just 2 weeks ago, Kim successfully defended her thesis on reproductive traits and residency patterns of the bottlenose dolphin, supervised by Prof. Dan Tchernov and Dr Aviad Scheinin. This study aimed to assess female bottlenose dolphins'



Birth seasonality based on photo ID (2005 – 2023) and stranding data (1994 – 2022) aligned with mean monthly temperature (dashed line). Whiskers represent standard error.



reproductive traits and residency patterns along the Israeli Mediterranean coast, focusing on the unique environmental and anthropogenic challenges they face in this region. Using data from a long-term photo-identification and stranding monitoring program, the research estimated habitat use and life history traits such as calving rates, birth seasonality, interbirth intervals, weaning age, and survival rates. This study highlights the importance of establishing baseline life history parameters and assessing female reproduction along the Israeli coast to determine the population's viability and implement effective conservation measures. We wish Kim all the best with her new adventures!

Immediately after the EEA 2024 conference in Greece, Aviad and Leigh were back in Jerusalem to present dolphin and shark research, respectively, at the 4th Israeli Conference for Conservation Science From inspiration to implementation. The abstract booklet can be found [here](#)



At the start of October, we participated in a unique workshop led by Prof. Tali Mass from the Department of Marine Biology, with assistance from diving officer Eran Rosen and instructors Ziv Zemah-Shamir and Hagai Nativ. Despite various challenges, including security issues and changing regulations, eight enthusiastic students successfully completed the program. They gained insights into local ecology and biology, monitoring methods, and current research in the Eastern Mediterranean. All students were certified as first-star divers by the Israeli Diving Federation, marking an important step in their diving education.



# PUBLICATIONS

SINCE JUNE 2024

- **Zuriel, E.Y., Martinez, S., Shemesh, E., Galili, O., Tchernov, D., Scheinin, A.P. and Kerem, D., 2024.** Ecological interactions and unique resource partitioning between dolphins in the ultraoligotrophic eastern Mediterranean Sea. *Marine Environmental Research*, p.106817. <https://doi.org/10.1016/j.marenvres.2024.106817>
- **Bigal, E., Livne, L., Zemah-Shamir, Z. et al.** Shark shuffle: segregated co-occurrence of multiple dusky and sandbar lineages at a human-altered habitat in the eastern Mediterranean Sea. *Sci Rep* 14, 19924 (2024). <https://doi.org/10.1038/s41598-024-69460-x>
- **Ben Ezra, T., Blachinsky, A., Gozali, S., Tsemel, A., Fadida, Y., Tchernov, D., Lehahn, Y., Tsagaraki, T. M., Berman-Frank, I., & Krom, M. (2024).** Interannual changes in nutrient and phytoplankton dynamics in the Eastern Mediterranean Sea (EMS) predict the consequences of climate change; results from the Sdot-Yam Time-series station 2018–2022. *Deep-Sea Research Part I: Oceanographic Research Papers*, 213. <https://doi.org/10.1016/j.dsr.2024.104403>
- **Morick, D., Reem, N., Lavy, E., Lemos, L.S., Tchernov, D., Starostinetsky Malonek, T., Wosnick, N., Itay, P., Ivgy, G., Hauser-Davis, R.A. and Levy, Y., 2024.** Trace Elements and High Sulfur Levels In the Blood of Rehabilitated Eastern Mediterranean Sea Green Sea Turtles (*Chelonia Mydas*). Available at SSRN 4884398. <https://doi.org/10.1016/j.scitotenv.2024.176788>
- **Shemesh, T., Levy, S., Einbinder, A., Kolsky, I., Bellworthy, J. and Mass, T., 2024.** Climate Change Impacts on Mediterranean Coral *Oculina Patagonica*: Reproductive Resilience and Thermal Performance. doi: 10.20944/preprints202405.1436.v1
- **Neori, A., & Agami, M. (2024).** Low-Income Fish Consumers' Subsidies to the Fish Reduction Industry: The Case of Forage Fish. *World*, 5(3), 769–788. <https://doi.org/10.3390/world5030040>
- **Schwartz, N., Morick, D., Azrieli, B., Scheinin, A., Tchernov, D. and Aroch, I., 2024.** Serum chemistry, thyroxine concentration, and blood cell morphology of wild, young Blackchin Guitarfish *Glaucostegus cemiculus* sampled on the eastern Mediterranean coastline. *Journal of Aquatic Animal Health*. <https://doi.org/10.1002/aah.10228>
- **Ben Ezra, T., Tsemel, A., Suari, Y., Berman-Frank, I., Tchernov, D., Krom, M.D. 2024.** "Determining the Fluxes and Relative Importance of Different External Sources and Sinks of Nitrogen to the Israeli Coastal Shelf, a Potentially Vulnerable Ecosystem" *Water* 16, no. 18: 2585. <https://doi.org/10.3390/w16182585>
- Hofmann, L.C., Strauss, S., **Shpigel, M.**, Guttman, L., Stengel, D.B., Rebours, C., Gjorgovska, N., Turan, G., Balina, K., Zammit, G. and Adams, J.M., 2024. The green seaweed *Ulva*: tomorrow's "wheat of the sea" in foods, feeds, nutrition, and biomaterials. *Critical Reviews in Food Science and Nutrition*, pp.1–36. <https://doi.org/10.1080/10408398.2024.2370489>
- **Zvi-Kedem T, Lalzar M, Sun J, Li J, Tchernov D, Meron D.** Exploring the Microbial Mosaic: Insights into Composition, Diversity, and Environmental Drivers in the Pearl River Estuary Sediments. *Microorganisms*. 2024; 12(7):1273. <https://doi.org/10.3390/microorganisms12071273>
- **Azrieli, B., Cohen, E., Livne, L., Ramon, D., Tsemel, A., Bigal, E., Shemesh, E., Zemah-Shamir, Z., Barash, A., Tchernov, D. and Scheinin, A., 2024.** Characterising a potential nearshore nursery ground for the blackchin guitarfish (*Glaucostegus cemiculus*) in Ma'agan Michael, Israel. *Frontiers in Marine Science*, 11, p.1391752. <https://doi.org/10.3389/fmars.2024.1391752>
- Velasquez, X., Morov, A. R., Astrahan, P., **Tchernov, D., Meron, D., Almeda, R., Rubin-Blum, M., Rahav, E. & Guy-Haim, T. (2024).** Bioconcentration and lethal effects of gas-condensate and crude oil on nearshore copepod assemblages. *Marine Pollution*

