EUROPEAN UNION OF AQUARIUM CURATORS CONFERENCE 2025

CONFERENCE BOOKLET

EUROPEAN UNION OF AQUARIUM CURATORS

EUAC 2025 ISTANBUL

istanbul aquarium
The National Aquarium of Türkiye

EUROPEAN UNION OF AQUARIUM CURATORS CONFERENCE 2025
OCTOBER 6 - 10, 2025
Crowne Plaza İstanbul Florya

EUAC 2025 CONFERENCE PROGRAMME

	MONDAY 6/10	TUESDAY 7/10	WEDNESDAY 8/10	THURSDAY 9/10	FRIDAY 10/10	SATURDAY 11/10
08:00		REGISTRATION				
08:30		OPENING (MAX JANSE)	EUAC STRATEGY WORKSHOP (CLOSED FOR MEMBERS ONLY)	KEYNOTE SPEAKER (TBD)		
09:00		OPENING ISTANBUL (DILEK CAPANOGLU AND MORE NAMES TBD)		DOMINIQUE MALLEVOY	CORAL TAG	
09:20				ANDREI TELEGIN	ELISA GUELZOW	
09:40				ANTON WEISSENBACHER	BEN DAUGHTRY	
10:00	EGGSPEDITION WORKSHOP	KEYNOTE SPEAKER BARAN YOĞURTÇUOĞLU (KILLIFISHES)		ANA FERREIRA	TADAS POŠKYS	
10:20				DANIEL ABED-NAVANDI & TONI WEISSENBACHER	SABINE WIRTZ	
10:40		COFFEE BREAK		COFFEE BREAK		
11:00		PROJECT OCEANIC WHITETIP UPDATE	KEYNOTE SPEAKER UGUR CAGLAR (ISTANBUL AQUARIUM)	ALEX HUIBERSE	FRANK YOUNG	
11:20		TBD		DOMINIQUE BARTHELEMY	JOÃO CORREIA	
11:40		TBD	JELLYFISH TAG	MATHIAS KÄHLIG	ROD FINDLEY	
12:00		LUNCH		LUNCH		DARICA ZOO & EMAAR SKY VIEW VISIT, CACA STREET FOOD
12:20						
12:40						
13:00		CHRIS BROWN	FRESHWATER TELEOST TAG	EUAC GENERAL ASSEMBLY (CLOSED)	END OF OFFICIAL CONFERENCE	
13:20		BETH FIRCHAU				
13:40		PAUL COX	MARINE TELEOST TAG			
14:00	EUAC COMMITTEE MEETING	CARLOS TAURÁ				
14:20	SUPPORTING MEMBER PITCHES AND WORKSHOPS (AAT, FLYING SHARKS, FAIRWAY, IMMOTION)	ALEX CLIFFE	ELASMOBRANCH TAG			
14:40		ANA FERREIRA				
15:00		COFFEE BREAK		COFFEE BREAK		
15:20		MANJA ROGELJA	NATHALIE GAMAIN	JENS BOHN		
15:40		NICOLE KUBE	JOÃO CORREIA	MARKÉTA REJLKOVÁ		
16:00		ASPASIA STERIOTI	STEFAN INSELMANN	JOÃO CORREIA		
16:20		CHRYSA DOXA	ARIANNA SCHIONA	HUGO BATISTA		
16:40		CLOSING		CLOSING		
17:00	CITY TOUR ISTANBUL	CLOSED TAG CHAIRS MEETING	TRANSFER			
17:20						
17:40						
18:00		TRANSFER	HAGIA SOPHIA VISIT			
19:00	ICEBREAKER	BOSPHORUS BOAT TOUR INCLUDING DINNER	HISTORIC CISTERN INLUDING DINNER	GALA DINNER		
00:00						

TAG MANAGEMENT CONSERVATION EDUCATION AQUARIUM / EXHIBITS RESEARCH VETERINARY
HUSBANDRY TECHNIQUES CONFERENCE SOCIAL EVENTS PACKAGE D SOCIALE PACKAGE WORKHOP

MONDAY 6th of October 2025

BEGIN TIME	END TIME	NAME OF PRESENTER	INSTITUTION	TITLE OF PRESENTATION
08:30	09:00			
09:00	09:20			
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10:00	10:20	EGGSPEDITION WORKSHOP		
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14:00	14:20			THE CITY TOUR TO ISTANBUL AS PART OF SOCIAL PACKAGE D
14:20	14:40			
14:40	15:00			
15:00	15:20	FLYING SHARKS - FLYING SHARKS TRANSPORT UNIT, ACTUALLY MOBILE STATION MEETING ROOM 102 (ALL LOWER LOUNGE)		
15:20	15:40	FAIRWAY - UNDERWATER SCRUBBERS - WIRELESS, COUNTER-ROTATING, SELF-SUCTIONING MEETING ROOM 103		
15:40	16:00	AAT - INSPECTION OF ACRYLIC AQUARIUM VIEWING WINDOWS TO MITIGATE FAILURE RISKS MEETING ROOM 105		
16:00	16:20			
16:20	16:40			
16:40	17:00			
17:00	17:20			
17:20	17:40			
17:40	18:00			
18:00	19:00			
19:00		ICEBREAKER		
00:00				

TUESDAY 7th of October 2025

BEGIN TIME	END TIME	NAME OF PRESENTER	INSTITUTION	TITLE OF PRESENTATION
08:30	09:00	MAX JANSE	EUAC	OPENING
09:00	09:20	DILEK CAPANOGLU	ISTANBUL AQUARIUM	
09:20	09:40	PAŞA ENVER BAYSA	DEPUTY GENERAL DIRECTOR OF NATURE CONSERVATION AND NATIONAL PARKS OF TÜRKIYE MINISTRY OF AGRICULTURE AND FORESTRY	OPENING
09:40	10:00	HÜSEYIN KESKIN	ISTANBUL DIRECTORATE OF CULTURE AND TOURISM MINISTRY OF CULTURE AND TOURISM	
10:00	10:20	BARAN YOĞURTÇUOĞLU	HACETTEPE UNIVERSITY	CURRENT CONSERVATION STATUS AND FUTURE PRIORITIES OF TURKISH KILLIFISH SPECIES
10:20	10:40			
10:40	11:00		COFFEE	
11:00	11:20	PAUL COX	SHARK TRUST	PROJECT OCEANIC WHITETIP UPDATE
11:20	11:40		EAZA WETLANDS FOR LIFE	
11:40	12:00		TBD	
12:00	12:20			
12:20	12:40		LUNCH	
12:40	13:00			
13:00	13:20	CHRIS BROWN	SEA LIFE	WHAT CAN A SEAHORSE TEACH US ABOUT COEXISTENCE?
13:20	13:40	BETH FIRCHAU	ASSOCIATION OF ZOOS AND AQUARIUMS	FLORIDA CORAL RESCUE: PUBLIC AQUARIUMS CREATING CONSERVATION IMPACT TOGETHER
13:40	14:00	PAUL COX	SHARK TRUST	SAVING SHARKS IN THE MEDITERRANEAN
14:00	14:20	CARLOS TAURÁ	OCEANOGRAFIC OF VALENCIA	RHINA ANCYLOSTOMUS TRANSPORT: EX SITU CONSERVATION.
14:20	14:40	ALEX CLIFFE	ZOOLOGICAL SOCIETY OF LONDON	CONSERVATION ASSESSMENT OF A THREATENED PUPFISH SPECIES FLOCK FROM "LAGUNA DE CHICHANCANAB", MEXICO.
14:40	15:00	ANA FERREIRA	OCEANÁRIO DE LISBOA	FROM WELFARE ASSESSMENT TO SCIENTIFIC INSIGHT: LINKING PRACTICE AND RESEARCH.
15:00	15:20		COFFEE	
15:20	15:40	MANJA ROGELJA	AQUARIUM PIRAN, UNIVERSITY OF PRIMORSKA	EXPLORING THE BEHAVIOURAL PATTERNS OF THE PACIFIC OYSTER (MAGALLANA GIGAS) THROUGH BIO-SENSOR TECHNOLOGY
15:40	16:00	NICOLE KUBE	GERMAN OCEAN MUSEUM	GENETIC POPULATION MANAGEMENT WITHIN THE SMOOTH HOUND SHARK (MUSTELUS SPEC.) BREEDING PROGRAM – FINDINGS AND NEW APPROACHES
16:00	16:20	ASPASIA STERIOTI	CRETAQUARIUM, HELLENIC CENTER FOR MARINE RESEARCH	MANAGEMENT OF GAS SUPERSATURATION AND ASSOCIATED DERMAL LESION IN CARCHARHINUS PLUMBEUS AT CRETAQUARIUM (CRETE, GREECE)
16:20	16:40	CHRYSA DOXA	CRETAQUARIUM, HELLENIC CENTER FOR MARINE RESEARCH	COMBATING CRYPTOCARYON IRRITANS IN A 400 M³ MARINE DISPLAY: OUTCOMES OF A MULTI-MODAL TREATMENT PROTOCOL
16:40	17:00		CLOSING	
17:00	17:20			
17:20	17:40	CLOSED TAG-CHAIRS MEETING		
17:40	18:00			
18:00	19:00	SOCIAL PACKAGE D - TRANSFER		
19:00		SOCIAL PACKAGE D - BOSPHORUS BOAT TOUR INCLUDING DINNER		
00:00				

WEDNESDAY 8th of October 2025

BEGIN TIME	END TIME	NAME OF PRESENTER	INSTITUTION	TITLE OF PRESENTATION
08:30	09:00			
09:00	09:20			
09:20	09:40	EUAC STRATEGY WORKSHOP (CLOSED)		
09:40	10:00			
10:00	10:20			
10:20	10:40			
10:40	11:00		COFFEE	
11:00	11:20	UGUR CAGLAR	ISTANBUL AQUARIUM	ISTANBUL AQUARIUM: ADVANCING CONSERVATION, RESCUE, EDUCATION FOR SUSTAINABILITY
11:40	12:00		JELLYFISH TAG	
12:00	12:20			
12:20	12:40		LUNCH	
12:40	13:00			
13:00	13:20			
13:20	13:40		FRESHWATER TELEOST TAG	
13:40	14:00			
14:00	14:20		MARINE TELEOST TAG	
14:20	14:40			
14:40	15:00		ELASMOBRANCH TAG	
15:00	15:20		COFFEE	
15:20	15:40	NATHALIE GAMAIN	EILAHTAN	WHICH CHALLENGES AHEAD FOR THE PUBLIC AQUARIUMS COMMUNITY
15:40	16:00	JOÃO CORREIA	FLYING SHARKS	POLSKA MADNESS 2024 :: A VERY LONG TRANSPORT, WITH VERY HEAVY HEADACHES
16:00	16:20	STEFAN INSELMANN	AQUA-SANDER	IN-SITU TRIALS WITH A NEW DENITRIFICATION SYSTEM IN A COLD-WATER MARINE MAMMAL POOL AT HAGENBECK'S TIERPARK, HAMBURG
16:20	16:40	ARIANNA SCHIONA	AQUARIUM-MUSEUM UNIVERSITAIRE DE LIÉGE	FILTRATION SYSTEM AT THE AQUARIUM-MUSEUM, A HERITAGE FROM 1962
16:40	17:00		CLOSING	
17:00	17:20			
17:20	17:40	SOCIAL PACKAGE D TRANSFER		
17:40	18:00			
18:00	19:00	SOCIAL PACKAGE D HAGIA SOPHIA VISIT		
19:00		SOCIAL PACKAGE D HISTORIC CISTERN - INLUDING DINNER		
00:00				

THURSDAY 9th of October 2025

BEGIN TIME	END TIME	NAME OF PRESENTER	INSTITUTION	TITLE OF PRESENTATION
08:30	09:00	KEYNOTE SPEAKER (TBD)		
09:00	09:20	DOMINIQUE MALLEVOY	NAUSICAA	TROPICAL GETAWAY, A NEW EXHIBITION TO EXPLORE THE HEART OF MANGROVE FORESTS AND THE BEAUTY OF CORAL REEFS.
09:20	09:40	ANDREI TELEGIN	PRIMORSKY AQUARIUM	APPLYING ELEMENTS OF BROWN SEAWEEDS AQUACULTURE TECHNIQUES TO ENHANCE THE KELP FOREST TANK AT PRIMORSKY AQUARIUM
09:40	10:00	ANTON WEISSENBACHER	SCHÖNBRUNNER TIERGARTEN GESMBH	LONG-TERM EX-SITU BREEDING OF ENDANGERED FRESHWATER FISH IN THE NEW FACILITY AT VIENNA ZOO
10:00	10:20	ANA FERREIRA	OCEANÁRIO DE LISBOA	BRIDGING EX SITU AND IN SITU MONITORING: PHOTOGRAMMETRY APPLICATIONS FOR MARINE SPECIES CONSERVATION.
10:20	10:40	DANIEL ABED-NAVANDI & TONI WEISSENBACHER	HAUS-DES-MEERES & TIERGARTEN SCHÖNBRUNN WIEN	EXTINCT IN OUR AQUARIA
10:40	11:00		COFFEE	
11:00	11:20	ALEX HUIBERSE	ARTIS AMSTERDAM ROYAL ZOO	STARTING UP THE ARTIS AQUARIUM
11:20	11:40	DOMINIQUE BARTHELEMY	OCEANOPOLIS	OCEANOPOLIS METAMORPHOSIS PROJECT, AN IMPRESSIVE TECHNICAL CHALLENGE
11:40	12:00	TORBEN KREBS	KÄHLIG ANTRIEBSTECHNIK GMBH	KNOWING YOUR AQUARIUM'S MICROBIOME – MONITORING AS A KEY TO ANIMAL HEALTH AND SYSTEM STABILITY
12:00	12:20			
12:20	12:40		LUNCH	
12:40	13:00			
13:00	13:20			
13:20	13:40			
13:40	14:00	EUAC GENERAL ASSEMBLY (CLOSED)		
14:00	14:20			
14:20	14:40			
14:40	15:00			
15:00	15:20		COFFEE	
15:20	15:40	JENS BOHN	ZOOLOGISCHER GARTEN ROSTOCK	A BRIEF INTRODUCTION TO ROSTOCK ZOO FROM AN AQUARISTS PERSPECTIVE
15:40	16:00	MARKÉTA BEJLKOVÁ	OSTRAVA ZOO	WHERE IS OUR NICHE AT OSTRAVA ZOO?
16:00	16:20	JOÃO CORREIA	FLYING SHARKS	MOROCCAN MADNESS X ¾, THE BEGINNING OF A BEAUTIFUL FRIENDSHIP
16:20	16:40	HUGO BATISTA	OCEANÁRIO DE LISBOA	LONG-TERM MAINTENANCE OF THE WORLD'S LARGEST NATURE AQUARIUM AT OCEANÁRIO DE LISBOA: CHALLENGES OVER 10 YEARS
16:40	17:00		CLOSING	
17:00	17:20			
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17:40	18:00			
18:00	19:00			
19:00		GALA DINNER		
00:00				

FRIDAY 10th of October 2025

BEGIN TIME	END TIME	NAME OF PRESENTER	INSTITUTION	TITLE OF PRESENTATION
09:00	09:20	CORAL TAG		
09:20	09:40	ROD FINDLEY	IMMOTION VR	EDUCATIONAL TECHNOLOGY'S ROLE IN THE FUTURE OF AQUARIUMS: OPPORTUNITY OR EXISTENTIAL THREAT?
09:40	10:00	JOÃO CORREIA	FLYING SHARKS	REAL-TIME INTERACTING WITH THE PUBLIC, BOTH PRESENT AND REMOTE
10:00	10:20	ELISA GUELZOW	TROPEN-AQUARIUM TIERPARK HAGENBECK GGMBH	MAKE RAY'S BREEDING (IM)POSSIBLE
10:20	10:40	BEN DAUGHTRY	DYNASTY MARINE ASSOCIATES INC	SHARKS ON A PLANE
10:40	11:00		COFFEE	
11:00	11:20	TADAS POŠKYS	LITHUANIAN SEA MUSEUM	ADAPTING TO CHANGE: THE BELUGA STURGEON'S (HUSO HUSO) RESPONSE TO NEW ENVIRONMENTAL AND FEEDING CHALLENGES
11:20	11:40	SABINE WIRTZ	AQUATIS AQUARIUM VIVARIUM	TRAFFICKING OF EUROPEAN EELS ANGUILLA ANGUILLA AND AN EXAMPLE FOR HOUSING CONFISCATED ANIMALS
11:40	12:00	FRANK YOUNG	DYNASTY MARINE ASSOCIATES, INC	WHY YOU WANT CHEMICALLY TREATED FISH - THE USE OF CHEMICALS FROM POINT OF CAPTURE TO DISPLAY
12:00	12:20			
12:20	12:40	LUNCH		
12:40	13:00			
13:00	13:20			

SATURDAY 11th of October 2025

BEGIN TIME	END TIME	
08:30	09:00	
09:00	09:20	
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12:40	13:00	SOCIAL PACKAGE D DARICA ZOO & EMAAR SKY VIEW VISIT, CACA STREET FOOD
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KEYNOTE SPEAKERS

Name: **Baran Yoğurtçuoğlu**

Institution: **Hacettepe University**

Email: yokbaran@gmail.com

Title of Abstract:

Current conservation status and future priorities of Turkish killifish species

Killifishes of the family Aphaniidae represent one of the most ecologically and evolutionarily significant freshwater fish groups in West Asia. A considerable number of species are characterised by their high degree of endemism, adaptation to isolated spring and lake systems, and display of distinct colours and behaviour, which makes them highly popular in the ornamental aquarium trade. Türkiye, as part of West Asia, is home to one of the richest species diversity of aphaniids, rendering it a critical region for the conservation of this unique lineage of fish.

This study presents the most up-to-date IUCN Red List assessment of Turkish aphaniid killifishes, including 20 extant and 1 extinct species across the genera Anatolichthys, Aphanius, Kosswigichthys, and Paraphanius. Eleven of these species were assessed for the first time, while the rest were re-evaluated after more than 12 years. The findings are highly concerning: 66% of the species are now classified as threatened (Critically Endangered, Endangered, or Vulnerable), and one species (*Anatolichthys splendens*) is already extinct in the wild. The major drivers of decline are habitat degradation due to water abstraction, climate change, pollution, and competition from invasive non-native species, particularly Gambusia holbrooki.

Local endemic species are at serious risk due to increasing pressure on critical habitats, including Lake Burdur, Acıgöl, Salda and several Central Anatolian spring systems. These conditions call for targeted conservation efforts in Türkiye, including habitat protection and restoration, invasive species management, ex situ conservation programs, and research into the life history and ecology of threatened species. In this context, aquarist communities, public aquaria, and zoo-based breeding programs can play in supporting conservation through responsible ex situ initiatives and public engagement. As part of this effort, a successful programme aimed at saving Turkey's most threatened killifishes, which has been carried out in collaboration with the Zoological Society of London and Istanbul Aquarium, will be mentioned. Overall, this assessment provides a cautionary perspective and establishes a basis for collaborative efforts to conserve one of the most vulnerable freshwater fish groups in the West Palearctic region.

Name: **Ugur Caglar**

Institution: **Istanbul Aquarium**

Email: ucaglar@istanbulakvaryum.com

Title of Presentation:

Istanbul Aquarium: Advancing Conservation, Rescue, Education for Sustainability

As Türkiye's National Aquarium, we welcome over one million visitors annually, offering people of all ages unforgettable experiences that foster a deeper connection with aquatic and terrestrial life. Through interactive exhibits, detailed storytelling, and visually captivating habitats, we provide visitors with the opportunity to explore the beauty and complexity of marine ecosystems. Our goal is to inspire curiosity, promote conservation awareness, and encourage responsible stewardship of nature.

Our conservation efforts focus on protecting endangered species, supporting viable breeding programs, and raising public awareness to ensure the long-term sustainability of marine life. As part of these initiatives, we collaborate with international organizations, research institutions, and government agencies to develop effective preservation strategies. Additionally, we conduct public outreach programs to educate people about biodiversity, climate change, and the importance of maintaining ecological balance. We consider school groups an essential part of this process, offering educational programs that emphasize the necessity of marine ecosystem conservation.

Beyond conservation, we are actively engaged in marine rescue and rehabilitation. As a sea turtle rehabilitation center and a member of the Türkiye Sea Turtle Science Commission, we work closely with the relevant ministry and a scientific board composed of leading academics from various universities across Türkiye. Our efforts include rescuing injured marine animals, overseeing quarantine procedures, and facilitating their return to the wild. These rehabilitation efforts extend beyond turtles and encompass various marine species affected by environmental hazards. By working alongside experts, we continuously improve rescue protocols and play an active role in the process.

At Istanbul Aquarium, we are committed to preserving aquatic ecosystems and ensuring their sustainability for future generations.

SPEAKERS

Names of All Authors: **Alex Cliffe & Brian Zimmerman**

Institution: **Zoological Society of London & Bristol Zoological Society**

Email: bzimmerman@bzsociety.org.uk, alex.cliffe@zsl.org

Title of Presentation:
Conservation assessment of a threatened pupfish species flock from "Laguna de Chichancanab", Mexico.

Lake Chichancanab is located in the Yucatan Peninsula. One of its most outstanding features, is a fish species flock composed of seven morphologically distinct species, thought to have diverged as recently as 8,000 years ago.

After the introduction of tilapia, all the species were considered threatened or extinct, but population assessments were made in the same portion of the lake, and questions remain on their status.

Due to the threats, Chichancanab was declared a Ramsar site in 2004, however no management plan was produced, nor actions implemented towards the protection of the threatened species.

Chichancanab has not benefited by state tourism development is still underdeveloped, it has the first place in poverty, and despite some support by Federal and State Agencies, it has not made an economic impact on the people, leading to discontent towards the conservation policies in the area, increasing the risk to the biodiversity of the lake.

This provides an opportunity for positive change, via participatory planning with the local community establishing a sustainable management strategy for Chichancanab, with the aim of benefiting the species, and the communities. An evaluation of the conservation status of each species and the identification of major threats must be carried out.

Name: **Alex Huiberse**

Institution: **Artis Amsterdam Royal Zoo**

Email: a.huiberse@artis.nl

Title of Presentation:
Starting up the Artis Aquarium

In June this year we got back our beautiful restored Aquarium after 3 years of construction and renovation. Most decoration has been made in the existing tanks and now it is time to add the additional aquaria, start up all the LSS and create a good environment for the aquatic life. How did this process went and what did we learn about this. Within this presentation I would like to give a short review of the renovation but focus more on the process after the building was ready to use again. Besides everything that is going on in the main aquarium we have also build a temporary quarantine section and a holding place for all the new fish. The whole process of planning all these transports is a major operation and beside this we also need to enlarge the team of aquarists.

Besides the aquaria also an museum will be made during the last half year before the grant re-opening. This process has been started two and half year ago and we a now in the production phase. Telling the story about the connection between water, animals and humans is the main message defied in 10 themes/storylines.

A short look into our kitchen and hopefully some good discussion afterwards during the breaks.

Names: **Ana Ferreira, Ana Filipa Sobral, Tiago Reis, Núria Baylina**

Institution: **Oceanário de Lisboa**

Email: aflsobral@gmail.com, treis@oceanario.pt, nbaylina@oceanario.pt, anaferreira@oceanario.pt

Title of Presentation: Bridging Ex Situ and In Situ Monitoring: Photogrammetry Applications for Marine Species Conservation.

Accurate biometric data are essential for understanding the biology of marine species and for shaping effective conservation strategies, particularly for elasmobranchs and other vulnerable taxa. Oceanário de Lisboa has adopted stereo-video photogrammetry (stereo-DOV) as a non-invasive, precise, and scalable technique to collect morphometric data in both controlled (ex situ) environments and natural (in situ) settings. While this technique is extensively applied in the wild, it remains underutilised or unreported in aquariums.

In the aquarium, a low-cost, home-built stereo-DOV system facilitated minimally invasive biometric pilot surveys of 47 species (teleosts and elasmobranchs), totalling over 100 individual measurements in a single day. Comparison with physical measurements revealed minimal discrepancies (1. 3–5. 5.5%), demonstrating the technique's accuracy and value for husbandry, welfare monitoring, and long-term conservation planning. The transition to official equipment reduced errors to 1%. Species biometrics are now accessed with minimal stress, and new insights into the growth of collected or bred marine species are being investigated.

Field campaigns expanded the application of photogrammetry to critical marine habitats. In the Azores, during the 2024 Manta Conservation Experience, 32 *Mobula tarapacana* were measured and photographed, with eight individuals matched to a decade-long Photo-ID database. Several pregnant females were identified, adding valuable data on reproductive status and supporting regional conservation initiatives. During the Gorringe Bank 2024 expedition, stereo-DOV systems facilitated the identification and measurement of 33 fish species at shallow depths (0–45 m). Among them, a notable aggregation of Torpedo marmorata was recorded—28 pregnant females exhibiting stacking behaviour not previously reported in the Eastern Atlantic. Measurements (mean TL = 587 mm, DW = 382 mm) and age estimations (10–30 + years) highlighted the site's potential importance as a reproductive habitat. These findings underscore the method's capacity to document novel biological patterns and contribute to species assessments.

Stereo-photogrammetry offers substantial benefits over traditional methods: reduced animal stress, decreased field effort, and the creation of reusable image data. Despite initial equipment costs, this approach proves cost-effective in the long term, particularly in settings where animal welfare and data integrity are paramount.

Oceanário de Lisboa's use of stereo-DOV exemplifies how public aquaria can lead innovative research that bridges ex situ and in situ conservation. The technique enhances our ability to gather robust, high-resolution data across settings, informing species management, enriching global databases, and ultimately contributing to the conservation of marine biodiversity.

Names: **Ana Ferreira, Hugo Batista, Núria Baylina**

Institution: **Oceanário de Lisboa**

Email: hbatista@oceanario.pt, nbaylina@oceanario.pt, anaferreira@oceanario.pt

Title of Presentation: From Welfare Assessment to Scientific Insight: Linking Practice and Research.

Ensuring the welfare of marine species in public aquariums is fundamental to ethical husbandry and meaningful public engagement. At Oceanário de Lisboa, a multidisciplinary team of aquarists, curators, veterinarians, and life support specialists implemented a structured, science-based protocol for welfare assessment across diverse exhibits. These evaluations combine behavioural observations, clinical assessments, and environmental parameters, forming the basis for tailored management strategies. A central element in this process is the Welfare Index (WIndex), an internal framework developed to quantify and visualise welfare needs across exhibits. The WIndex synthesises biological, behavioural, and environmental indicators into a composite score, allowing for standardised comparisons over time and between enclosures. This structured approach ensures timely identification of welfare concerns and supports evidence-based decision-making. It serves as a critical tool for identifying priorities, planning interventions, and communicating welfare status internally across teams. Actions derived from these assessments include habitat enrichment, nutritional optimisation, and system modifications. Crucially, the implementation and outcomes of each intervention are tracked through regular follow-up meetings, continuous staff training, and rigorous record-keeping. This iterative process facilitates continuous improvement and responsiveness to species-specific needs.

Beyond operational outcomes, these welfare evaluations also drive scientific research. Several investigative projects have emerged directly from assessment findings. These include the development of a body condition index score for Mobula hypostoma, a longitudinal time budget analysis of sea otters to evaluate behavioural consistency, and a study on Port Jackson sharks' behavioural responses to feeding schedules. Additionally, space use analysis in garden eels is being investigated to search for potential links to reproductive behaviour, and the installation of an additional current pump in a coldwater exhibit was found to influence activity patterns in North Pacific species.

These applied research efforts, underpinned by systematic welfare assessments, have yielded peer-reviewed publications and internal technical reports, enhancing Oceanário de Lisboa's contribution to marine science and animal welfare.

This presentation will detail the methodology of our welfare evaluations, demonstrate the structure and utility of the WIndex, and provide case studies that exemplify the synergy between welfare monitoring and applied research. By sharing our experience, we aim to reinforce the role of public aquariums as institutions where animal welfare and scientific inquiry coexist, promoting best practices for the care and understanding of marine life.

Names: **Andrei Telegin, Anatolii Sokolov, Viktoriya Dianova, Natalia Puchkova**

Institution: **Primorsky Aquarium**
(Far Eastern Branch of the Russian Academy of Sciences)

Email: telegin_av@primocean.ru; telejin@ya.ru

Title of Presentation:
Applying elements of brown seaweeds aquaculture techniques to enhance the kelp forest tank at Primorsky Aquarium

Primorsky Aquarium is located in Vladivostok on the coast of the Sea of Japan. The total water volume is 24,000 m³. The exhibition aquariums (excluding the Dolphinarium) contain 8,500 m³, while the Scientific and Adaptation Complex holds 1,500 m³.

One of the most important areas for us is showcasing the marine ecosystems of the Russian Far East. The centerpiece here is the Kelp Forest Tank (measuring 12.2 m long, 5.2 m wide, with a water depth of 6.9 m and volume of 420 m³). It has three main acrylic panels (7.1×7.9 m, 2.3×3.3 m, 2.6×2.2 m) and an open-top section for viewing. Water temperature is maintained at 11–13°C. This aquarium was specifically designed to maintain live giant kelp, equipped with powerful artificial lighting and Solatube750 DC systems that transmit natural sunlight from the building's roof.

Additionally, our Quarantine Facility contains a specialized tank for working with large algae species (12.45 m long, 5.65 m wide, 3.20 m water depth, 225 m³ volume).

The only Russian species of giant kelp is *Eualaria fistulosa*, which can reach 25 m in length. However, we have been unable to obtain this species from the wild, as it grows in very remote areas.

For the initial Kelp Forest exhibit, we used artificial replicas of *E. fistulosa*, *Macrocystis pyrifera*, *and Nereocystis luetkeana*. While these were high-quality reproductions, they couldn't match the appearance of live plants. Furthermore, the artificial Eualaria would twist and cluster against the end wall due to water currents, which compromised the visual appeal of this tall, narrow aquarium.

Our goal was to improve the exhibit design to better demonstrate how kelp forests function in nature, interacting with water currents and sunlight. We experimented with planting various live macroalgal species on the bottom and artificial rocks, but the exhibit lacked vertical elements in the water column.

After evaluating several options, in addition to the existing giant artificial algae, we implemented an aquaculture-style solution using vertical hanging ropes with buoys, to which live brown algae *Saccharina japonica and S. cichorioides* were attached. Their thalli, growing up to 2 meters long, create an impressive display as they sway in the currents. This has significantly improved the exhibit's appearance while introducing visitors to sustainable aquaculture techniques.

We consider this solution very successful and plan to continue developing macroalgae cultivation techniques for our aquarium systems.

The work was partially performed at the Primorsky Aquarium Shared Equipment Facility of the Zhirmunsky National Scientific Center of Marine Biology, Far Eastern Branch, Russian Academy of Sciences (NSCMB FEB RAS)

Name: **Anton Weissenbacher**

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Title of Presentation:
Long-term ex-situ breeding of endangered freshwater fish in the new facility at Vienna Zoo

We have built a new breeding facility at Vienna Zoo for the long-term breeding of endangered freshwater fish. For many years we have been managing different species with different requirements and would like to present our experiences and the resulting challenges with some selected species.

In the new facility, technical possibilities have been realized to adapt abiotic parameters better and faster to the ecological requirements of the species kept. In this way, we want to build up fitter populations with higher reproduction rates in the long term. The genetic diversity of the populations kept and the different strategies for selected species will be discussed.

Name: **Arianna Schiona**

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Title of Presentation:
Filtration System at the Aquarium-Museum, a heritage from 1962

The Aquarium at the University of Liège was created as part of the post-war modernization of the Institute of Zoology, led by Marcel Dubuisson—then Chair of Zoology and Rector of the University. Inaugurated in 1962, the Aquarium responded to a growing scientific interest in ichthyology, hydrobiology, marine biology, and oceanography. It was designed to support research and education while also being accessible to the public, especially school.

The Aquarium was built beneath the new amphitheater of the Institute and equipped with a complex system to circulate, purify, oxygenate, and regulate the temperature of water for 27 display tanks, as well as several hidden experimental and reserve tanks. Central to this system were gravity filters—technology commonly used in aquariums and pools during the 1960s and 1970s.

Although still functional today, these gravity filters have largely been replaced elsewhere by more efficient modern systems since the 1990s, due to limitations in filtration performance and energy efficiency.

Our current project aims to upgrade the filtration systems across the Aquarium-Museum's four sections by introducing mechanical filtration, biological filtration, a protein skimmer, and UV sterilization.

So far, we have removed the original substrate from one gravity filter and installed a mechanical sock filtration system. This single intervention has already led to a 66% reduction in ammonia levels—from 0.27 mg/L to 0.09 mg/L.

This modernization is essential for improving water quality and, consequently, the health and well-being of the animals in our care, while upholding the educational and scientific mission of the institution.

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Title of Presentation:
Management of gas supersaturation and the associated dermal lesion in Carcharhinus plumbeus at Cretaquarium (Crete, Greece)

On April 15, 2023, a sudden increase in gas supersaturation occurred in a 600 m^3 capacity tank, causing significant stress to the fish, particularly a pair of *Carcharhinus plumbeus* (male and female). The sharks exhibited hyperactivity and signs of distress. Immediate measures were taken to mitigate this emergency situation, although the issue was not fully resolved. A gas saturation measurement on April 24, 2023 (10 days later) revealed dissolved gas pressure levels of 135 mmHg at 3 m depth, indicating severe supersaturation. On the same day, a dermal ulcer at the end of the first dorsal fin was observed on the male *C. plumbeus*, which rapidly expanded within 24 hours.

To reduce the gas supersaturation, the water renewal rate was increased from 3% to 5% per hour, and air diffusers (aeration stones) were installed around the tank perimeter. These interventions led to a gradual decrease in saturation to approximately 70 mmHg. On May 12, 2023, inspection of the system revealed several corroded screws in key vanes; their replacement successfully resolved the underlying cause of supersaturation.

The management of the dermal ulcer involved administering Enrofloxacin (200 mg/feeding) via food for 10 consecutive days. From the 6th day onward, and for a total of 25 days, the diet was supplemented with Akwavit Shark and Ocuvit Premium (containing zinc). Significant improvement of the ulcer was observed by May 25, 2023, and by July 8, 2023, the lesion had almost completely healed.

This case highlights the importance of continuous monitoring of physical and chemical parameters in aquarium tanks and prompt response to stress-related incidents and secondary pathologies in sensitive species like sharks.

Names: **Ben Daughtry, Lyle Squire1**

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Title of Abstract:
Sharks on a Plane

A single incident involving live aquatic animal transport could result in the rejection of all future movement of aquatic shipping containers on aircraft; or worse catastrophic loss of live. Safe, effective transport equipment and methodologies are essential not only to the welfare of the animals involved, but also to the aquarium industry's ability to move animals by air.

The containers and packaging used must be airline approved and satisfy the International Air Transport Association's (IATA) Live Animal Regulations (LAR). To comply with these regulations, the containers used, must undergo rigorous testing and may need also satisfy individual countries'Civil Aviation Safety Authorities. These regulatory authorities are responsible for passenger and aircraft safety. The mechanics and detail ensuring all cargo does not create or add risk to any flight, is seldom considered by an aquarium getting ready to receive a big shipment from thousands of kilometres and days away.

Understanding the regulations and methodologies, and how they've been developed, helps us appreciate the diligence we must exercise to assure safe and successful shipments and are vital to the future of air transport of aquatic wildlife.

Name: **Beth Firchau**

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Title of Presentation:
Florida Coral Rescue: Public Aquariums Creating Conservation Impact Together

In 2018, at the invitation of State of Florida and United States government agencies, the Association of Zoos and Aquariums mounted a first-of-its-kind, multi-species rescue to preserve critical coral diversity of the Florida Reef Tract, also known as Florida's Coral Reef. The rescue of thousands of corals was made possible by the collaboration of the Florida Fish and Wildlife Conservation Commission (FWC), National Oceanographic and Atmospheric Administration- Fisheries (NOAA Fisheries), the Fish and Wildlife Foundation of Florida (FWFF), and AZA accredited facilities across United States. In 2025, The Florida Coral Rescue Project (FRTRP), under the oversight of the AZA SAFE (Saving Animals From Extinction) Coral Program, will be six years old.

Mobilizing facilities and coral care specialists to provide homes for thousands of corals removed from the reef as part of a planned relocation effort, was only the beginning. The initial effort had its foundations in the decades of coral conservation efforts independently and collaboratively pursued by AZA members. From that foundation, FRTRP has become a game changer for coral reef restoration efforts in the United States and beyond. The FRTRP, an international network of coral care facilities has prioritized advancing coral science with an eye to long term banking of coral populations, fortifying collaborative approaches to reef conservation, building capacity to meet current and future environmental disturbance response, and creating a production pipeline to send offspring of rescued corals back to the reef in planned restoration efforts. Over the last six years, the collaboration to save an entire reef ecosystem has made significant conservation impact and this impact will be explored.

The Florida coral rescue effort is evolving to build the reef's future and so too, is the FRTRP. Much of the work being planned and executed requires the skills sets, resources and professional experience of professional aquarium facilities and animal care teams. Sustaining the effort and sharing what has been learned with others will be essential. In the future, collaboration will remain our foundation and significant conservation stewardship impact, our outcome.

Name: **Carlos Taurá**

Institution: **Oceanografic Of Valencia**

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Title of Presentation:
Rhina ancylostomus transport: Ex situ Conservation.

In October 2023, Churaumi Aquarium got eleven *Rhina ancylostomus* captive born pups (6.5.0).

The proposal was transferring 6 pups (3.3.0) to Oceanogràfic of Valencia to help increase the number of individuals and participating institutions in Europe. The objectives were to study the species' development in different environments and to support future captive breeding efforts.

Rhina ancylostomus is listed under CITES Appendix II (Annex B in the EU) and is classified as Critically Endangered (CR) by the IUCN Red List.

Transporting these animals from Japan to Europe posed significant challenge, not only in terms of regulatory paperwork but also due to the logistical and financial complexities involved.

The operation began in April 2024 with the initiation of CITES permit applications and concluded in March 2025, following the final transfer between Oceanogràfic Valencia and Burgers' Zoo.

Ultimately, five individuals (3.2.0) were successfully transported to their new institutions, even though, unfortunately, one female (0.1.0) was lost during this highly complex process.

This presentation aims to illustrate the numerous challenges involved in international wildlife transport and conservation collaborations.

Name: **Chris Brown**

Institution: **SEA LIFE**

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Title of Presentation:
What can a seahorse teach us about coexistence?

The spiny or short-snouted seahorse (*Hippocampus guttulatus*), is typically found around shallow coastal waters often associated with seagrass beds. This connection with coastal ecosystems make it vulnerable to human impacts, including coastal development, overfishing (e.g. bycatch), pollution and habitat degradation. SEA LIFE centres in the UK have joined forces to delve further into these mystical species, native to the English coastline. Working primarily in Dorset, the team regularly monitors populations of seahorses, using images to recognise individuals over time. We currently have recorded over 200 wild seahorse observations. We work with the Seahorse Trust along with universities, government bodies and other non-profits, to uncover more information about the species so they can be better managed and conserved in the wild. Over 3 years of monitoring populations we have seen many examples of how humans and seahorses coexist in locations. The presentation will follow some key stories to highlight some of these interactions. From what happens when a member of the public finds a washed-up seahorse and how it can contribute to our knowledge, to how the research we carry out can help inform coastal development for the future. These examples show that interactions can lead to challenges and conflict but can also provide an opportunity for us to learn more and even inspire.

What can a seahorse teach us?

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Title of Presentation: Combating Cryptocaryon irritans in a 400 m³ Marine Display: Outcomes of a Multi-Modal Treatment Protocol

An outbreak of *Cryptocaryon irritans*, the protozoan parasite responsible for marine white spot disease, occurred in a 400 m³ display tank at Cretaquarium (pH 7,7 ± 0.1, 19 ± 1 oC), the largest public aquarium of Greece. The tank housed 166 fish from 18 teleost fish species and serves as a key exhibit within the facility. This outbreak posed a serious threat to fish health and survival, necessitating the implementation of a five-week, multi-modal treatment protocol aimed at containing the infection and minimizing losses.

Copper sulfate (CuSO4) was dissolved in the water column at a concentration of 1.5 ppm every other day, maintaining effective concentration throughout the treatment period. The water renewal rate increased from 1.2% to 2% per hour to enhance parasite removal and reduce environmental load. Hydroxychloroquine sulfate was incorporated in the feed at a concentration of 50 mg/kg of biomass and administered to the fishonce per week to provide systemic antiparasitic support.

The parasite detachment from the body of the fishes caused visible epithelial lesions. To prevent secondary bacterial infections and promote wound healing, an additional treatment was administered from day 12 to day 22. During this period, fish were fed daily with oxytetracycline (OTC) at 100 mg/kg of biomass, combined with vitamin C at 10 mg/kg.

During the first eight days, seven fish died, all with clinical signs of C. irritans infection. Two more mortalities occurred on days 14 and 16. Those individuals had severe epithelial damage likely caused by the detachment of mature trophonts, however no parasites were detected upon parasitological examination. No further losses were recorded after day 16, and the remaining population gradually returned to normal behavior and appearance.

This case demonstrates the effectiveness of an integrated therapeutic strategy in a large-scale marine system. The combination of copper sulfate, targeted medicated feeding, and increased water renewal successfully controlled the outbreak. These findings provide a practical reference for managing C. irritans infections in public aquaria and improving fish health and welfare protocols.

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Title of Presentation:
Extinct in our aquaria

Not in our aquaria due to different reasons:

mostly legistic ones (CITES), veterinarian reasons, transport restrictions, monetary constraints, fashions, but also due to differentiated perception of keeping animals in human care.

“Dogs, cats vs. cows, sheep, goat vs. Dolphin and Octopus”

Marine Iguana (*Amblyrhynchus cristatus*)

Nautilus sp. (*mostly pompilius*)

Lachnolaimus maximus

Cheilinus undulatus

Macrocheira kaempferi

Paralomis histrix

Tursiops

Beluga

Orcinus

Octopus……?

Anomalops

Monocentris

The list of marine animals in human care is rapidly changing, with new species being added and others disappearing from our care.

This article presents a long list of species that are no longer kept, discusses the many reasons why, and encourages us, a group of dedicated professionals, to continue trying to keep selected species in the long term with the ultimate aim of breeding them.

Names: **Dominique Barthelemy and Cyril Roguet**

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Title of Abstract:
Oceanopolis Metamorphosis.Project. An impressive technical challenge

Océanopolis, situated in Brest, France, first opened its doors on June 21, 1990 with the Brittany Pavilion. It later expanded in 2000 with the addition of the Polar and Tropical Pavilions, and in 2012 with the Otters path. The park now features approximately 9,000 m² of exhibition space and holds over 4 million liters of seawater, including 1 million liters in its iconic shark tank. Home to around 1,000 marine species and nearly 10,000 individual animals, Océanopolis offers 77 aquariums that replicate the ecosystems of Brittany, the tropics, and polar regions. As a major center for marine education and research, it also hosts engaging workshops, conferences, and educational programs for thousands of students each year.

In partnership with CLEAR REEF, international actor in Design, project Management and operation of Oceanariums and Conservation marine centers, Océanopolis has embarked on a bold transformation project named “METAMORPHOSE”—a complete renovation initiative that began in 2018 with planning and has since entered its construction phase.

This presentation will delve into the wide range of challenges encountered throughout the ambitious METAMORPHOSE project—from the initial design and planning phases to the complexities of on-site construction. The team has had to navigate logistical constraints, technical hurdles, budgetary pressures, and the need for seamless coordination among multiple stakeholders. One of the most demanding aspects of the project has been maintaining public access to Océanopolis as much as possible during construction, ensuring that visitors can still engage with the exhibits and marine life, while guaranteeing safety and minimizing disruption.

Drawing from real-world experience, the presenters will offer practical lessons and strategic insights on managing such a transformative renovation within a functioning public facility. They will highlight the critical “do’s and don’ts” that emerged during the process—such as the importance of phased scheduling, transparent communication with the public, adaptability in design, and contingency planning. The session aims to provide valuable takeaways for anyone involved in large-scale Oceanarium renovations

Names: **Dominique Mallevoy, Florence Blond, Aurélie Martin, Christophe Sirugue, Christine Causse, Dorothée Descamps, Jérémy Gobé, Caroline Bonpain**

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Title of Presentation:
Tropical Getaway, a new exhibition to explore the heart of mangrove forests and the beauty of coral reefs.

Opened in 1998 and visited by more than 15 million visitors, the “Tropical lagoon” exhibition, in the “Mankind and shores” route, needed a full renovation.

After almost 3 years of construction (complete renovation of tanks, new scenography, restaurant) and many challenges, our new exhibition invites participants to immerse themselves in the richness of tropical ecosystems, discovering the spectacular diversity of coral reefs and mangroves. Through a sensory and immersive journey, they will become aware of beauty, but also the importance for mankind and the vulnerability of these ecosystems in the face of human pressures and climate change.

Through several tropical aquariums, Nausicaa shows the biodiversity of the different areas: mangroves, lagoon, reef flats and channels.

The tour ends in the “Action Corail” laboratory, a place of hope and innovation, where concrete actions to restore and preserve these fragile environments are presented: the world coral conservatory, Caroline BONPAIN’s CRIOBE thesis, the Coral Resilience project, coral reef restoration projects, and a participatory fund-raising scheme called “mission corail”, to encourage everyone to become involved in protecting these natural treasures.

A new tropical-inspired restaurant, “la table d’Ephelia”, with a magnificent view of the lagoon enables us to diversify our catering offer, with a bistronomy menu.

This new space, eagerly awaited by the public, will open its doors in summer 2025. The complexity of the site, the uncertainties and the ongoing adaptations were a real challenge, but the feedback from visitors is the mark of success for this major renovation of the center.

Name: **Elisa Guelzow**

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Title of Presentation:
Make ray’s breeding (im)possible

The Tropen-Aquarium of Tierpark Hagenbeck in Germany, opened in 2007, inhabits around 200 species of freshwater, brackish, and marine fish, alongside numerous reptiles, amphibians, birds, and mammals. Thanks to the support of the zoological community, our knowledge of breeding various species continues to grow - though challenges persist.

The Southern Stingray (*Hypanus americanus*), with a European population of 78 individuals across 15 institutions (ZIMS Species Holdings, 30.05.2025), is a common inhabitant of public aquariums. In 2024, the Tropen-Aquarium maintained a group of 16 individuals but faced increasing difficulties in rehoming surplus animals. Although ovarian cysts have been reported in females following long-term separation from males, it was necessary to suspend breeding temporarily. This presentation will explain the use of hormonal intervention as a management option.

The spotted eagle ray (Aetobatus ocellatus), known for its impressive wingspan, is represented at the Tropen-Aquarium by 2.2 individuals. While cohabiting with four reef sharks, breeding has proven difficult due to predation risks. The 11-year-old female, now exceeding about 1.5 m in wingspan, displayed frequent mating behavior with both males. Lacking a well suited off-exhibit tank for gestation, the aquarium keepers developed an in-tank separation within the existing shark exhibit. This talk will detail the design and implementation of this enclosure solution for separation of larger fish.

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Title of Presentation:
Why You WANT Chemically Treated Fish - The use of Chemicals from Point of Capture to Display

Catch phrases created by clever marketing campaigns or other influential sources are widely distributed at a faster pace than ever with the increasing availability of social media platforms. Some are based in fact, but some may be misleading. To the laymen "Chemical Free Fish" may seem like a good thing…

However, the use of chemicals is intrinsic to Best Practices for marine life care from the point of capture through initial acclimation and quarantine. The point of capture also includes the capture process itself, so why shouldn't the proper chemicals be used then as well?

The Florida Marine Life Fishery commonly uses 2% Quinaldine solution as an anesthetic to reduce stress and capture abrasion during the collection process. While quinaldine is sometimes used just prior to collection, the most common application is for slightly anesthetizing after the capture has already occurred. With the proper use, quinaldine collected marine life leads to a reduced need for antibiotics or other prophylactic treatments post capture.

A holistic approach to treatment plans for marine life should start at the point of capture. Not all chemicals are good and not all are bad and consideration should be given to combinations of multiple chemicals and how they might inhibit or exacerbate their efficacy. Understanding the proper chemicals to use increases survivability and health for marine organisms in human care from capture to the end of their natural life.

The chemicals used from point of capture are just as important as traceability from point of capture so they should be investigated and understood concurrently.

Names: **Hugo Batista, Tiago Reis, Maria João Silva, Núria Baylina**

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Title of Presentation:
Long-Term Maintenance of the World's Largest Nature Aquarium at Oceanário de Lisboa: Challenges Over 10 Years

The Oceanário de Lisboa's Nature Aquarium, which is part of the "Forests Underwater" exhibition at the Oceanário de Lisboa was created by renowned aquascaping master Takashi Amano. Over the past decade, maintaining this iconic exhibit has posed numerous challenges, demanding a seamless integration of technical expertise, biological knowledge, and innovative solutions.

Key challenges in sustaining the exhibit included maintaining consistent water quality in such a vast system. This required regular monitoring of water parameters, and precise adjustments to promote the well-being of the existing plants and animals. The vitality of aquatic plants, essential to the aquarium's design, necessitated meticulous management of lighting, CO_2 levels, and nutrient dosing, alongside routine pruning to uphold the aesthetic vision set by Mr. Amano.

Algae control emerged as another significant challenge, requiring a delicate balance of light, nutrients, and biotic factors to prevent outbreaks.

This 10-year journey not only highlighted the intricate complexities of managing a large-scale Nature Aquarium but also emphasized its importance in fostering public awareness of the importance of aquatic ecosystems. The knowledge and experience gained offer a valuable benchmark for future projects, uniting artistry, technology, and conservation in a living masterpiece

Name: **Jens Bohn**

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Title of Presentation:
A brief introduction to Rostock Zoo from an aquarists perspective

The aim of this presentation is, to give a short introduction on the history and development of the current freshwater and marine displays in Rostock Zoo. Some of the highlights.are presented in more detail. Finally, future plans in the field of aquaristics at Rostock Zoo are briefly discussed.

Established as a wildlife and dendrological garden in 1899, Rostock Zoo has developed over time into the biggest zoo on the German Baltic Sea coast, with currently some 500.000 visitors per year.

The only fish species displayed until the old zoo school building was converted into an aquarium in 1987 were goldfish in a pond. In this aquarium house, which has remained almost unchanged to this day, alongside tropical freshwater fish also tropical amphibian and reptile species are exhibited. It is home to the world's only enclosure displaying Socotra freshwater crabs (*Socotrapotamon socotrensis*).

First seawater tanks, such as the then largest jellyfish kreisel in Germany or the coral reef tank, are important parts of the exhibition concept of the "Darwineum", which opened in 2012. The topic, this house is devoted to is evolution and it combines a museum exhibition with a zoological collection. This was the starting point of the successful breeding and keeping of jellyfish at Rostock Zoo (currently more than 20 species).

Finally, an area called "Marine Worlds" was established alongside facilities for polar bears and penguins as part of the new "Polarium" in 2018. In addition to jellyfish, this exhibition presents various tropical and cold-water habitats of the Indo-Pacific area as a link between the Arctic and Antarctic.

Perspective: an animal house to replace the aging aquarium in addition to the pygmy hippopotamus house is in the planning phase.

Names: **Patricia Campos, João Correia, Rui Guedes, Nuno Rodrigues, Zé Pedro Marques, Inês Gaspar, Miguel Antunes, Ivan Beltran**

Institution: **All Flying Sharks except... Canary Aquatic Live Animals**

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Title of Presentation: Moroccan Madness x 4, the beginning of a beautiful friendship

In 2023 we received a monumental order from Clear Reef, which was building the Al Hoceima Aquarium in Morocco. Immediately we feared the fact that this is a non-European Union destination, which typically means a heavier administrative load and considerably longer times of waiting at customs. We were not mistaken about these aspects, because each of the first 3 transports conducted this far involved customs brokers from Lisbon (Portugal), Algeciras (Spain) and Tangiers (Morocco).

The 4th transport included a vast number of animals from the Canary Islands, which were obtained through a mutually profitable partnership with Canary Aquatic Live Animals. The Canary Islands are considered a "non-E.U." territory from a fiscal perspective, which mandated additional paperwork and customs brokers both in Las Palmas and Cádiz.

During all four transports all animals were delivered safely, despite their high numbers: 853 in June 2024, 906 in September 2024, 329 in December 2024, and 849 in June 2025, totaling over 2.900 animals. This included mostly regular species, such as Scomber scombrus and many others, but also some unusual species, like Sardina pilchardus and Squalus megalops. The collection process of sardines on board commercial purse seiners is illustrated, including a specific protocol devised to hold them, which was based on medicated pellet food and extremely stable water quality.

While the first three transports (which included two trucks in the first one) involved refrigerated trucks and our 220 Volts traditional filtration powered by an inverter and consisting of protein skimming and mechanical filters, the 4th transport saw the maiden voyage of our "Mobile Station", an half million euros EEA Grants Project that now constitutes the most modern fish moving apparatus in the world.

With autonomous filtration powered by its generator, each of the four tanks is equipped with a protein skimmer, ultra-violet disinfection, 50 to 200 micra mesh bags (both gravitational and pressurized) and pressurized activated carbon. This unit also includes both white and red lighting, autonomous probes that automatically measure temperature, oxygen and pH, and a fully integrated electric board that allows for remote access and adjustments from a supporting vehicle. These are but a few of the countless details that are included in the features of this impressive equipment, which includes adaptable water intakes that are adjusted to the nature of the animals moved per tank, amongst multiple other aspects that will be presented.

Names: **João Correia, Rui Guedes, Nuno Rodrigues, Zé Pedro Marques, Inês Gaspar, Miguel Antunes, Ivan Beltran**

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Title of Presentation:
Polska Madness 2024 :: A very long transport, with very heavy headaches

At the end of 2023 the Gdynia Aquarium (Poland), placed a rather large order that included small sharks, skates, multiple sizes of teleosts, and quite a few invertebrate species as well. These were to be delivered at the end of March 2024, for the opening of a new exhibit. Immediately one problem aroused, which was the fact that schooling fish, such as Scomber scombrus and Trachurus trachurus can only be collected with the assistance of a set-net targeting bluefin tuna in the south of Portugal, which doesn't start operating until April.

This presentation therefore focuses on such multiple challenges that had to be overcome to ensure that all the animals were delivered on time. These challenges included the fact that some fish were larger than expected, which had a dire impact on oxygen consumption and required collaboration from multiple institutions, along the way, to lend life-saving oxygen cylinders. These problems also included shifting the route of a 4.000 kilometers transport halfway, with all the necessary adjustments in flights and other logistics, not to mention the fact that the team's vehicle, with 830.000 km under its hood, broke down in France. Additional challenges included a severe storm that delayed the arrival of a lot of fish which were transported from the Canary Islands.

All solutions adopted to a myriad of problems are presented and discussed.

This presentation also includes some details on a bonus "4 in 1" operation that included one single van rental that did four jobs over ten days. These were (1) moving captive-bred bluefin tuna (*Thunnus thynnus*) from Mazarrón (Spain) to Hirtshals (Denmark); (2) moving captive-bred *Galeorhinus galeus* from Hirtshals to Vienna (Austria); (3) moving wild caught *Gadus morhua*, *Triglophorus lastoviza and Merlangius merlangus* from Hirtshals to Ílhavo (Portugal); and (4) finally moving captive bred Salmo salar parr from Galway (Ireland) to Vila Real (Portugal).

While these 4 transports resulted in a resounding success, they faced multiple technical challenges, including the fact that the van's engine was not powerful enough to feed the 12 Volts inverter that powered the 220 Volts filtration. All problems and solutions are presented and discussed, which included bypassing a safety fuse that was cutting down the van's power. Safety issues are also introduced, since two consecutive traffic tickets in Oberhausen showed us that the van's weight was 5.153 kg, which is vastly above the legal limit of 3.500 kg. Ooops.

Name: **João Correia**

Institution: **Flying Sharks**

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Title of Presentation:
Real-time interacting with the public, both present and remote

There was a time when public aquaria's interaction with their public consisted of (1) displaying interpretation panels containing technical information on the exhibits, (2) offering live commentary from guides and/or volunteers and providing real-time information and answers to questions. Modern technology, however, allows for a (much) wider range of interactive formats, including… the mobile phone.

This little machine revolutionized the world in the new Millennium and offers far more functions than a simple phone-call, including a 24/7 high-speed connection to the world wide web, something that nearly 100% of all phones are equipped with.

Through intuitive QR codes, zoological institutions can now offer endless amounts of information easily accessible through individual phones, but we propose to take that one step further, by offering interactive – educational – games, which audiences may engage with at the aquarium, or at home, with each other.

Our presentation will offer practical examples of such capabilities, by having conference attendees playing educational games – in real-time – with each other and competing to save the world's oceans! We can only hope that competition doesn't drive tempers to run too high, and we will ensure that the atmosphere in the room will remain fun, light, and – above all – profusely entertained!

Names: **Manja Rogelja, Aljoša Gračner, Luka Frelih, Luka Murovec, Marko Vivoda**

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Title of Presentation:
Exploring the behavioural patterns of the Pacific oyster (*Magallana gigas*) through bio-sensor technology

Understanding the well-being and behavioural deviations of animals in aquarium settings is essential for responsible care, research, and welfare standards. While attention often centres on fish and other charismatic species, invertebrates, particularly molluscs, remain largely overlooked, despite their ecological significance and sensitivity to environmental change.

The project Beneath the Mirror Waves seeks to uncover the subtle behavioural language of oysters through the use of bio-sensor technology known as molluSCAN-eye®. The study was focused on a group of sixteen Pacific oysters (*Magallana gigas*), which served as "living sensors." Their micro-movements, especially the rhythmic opening and closing of their shells, were continuously monitored using custom-designed micro-sensors installed directly on the shell surface.

Conducted in a controlled aquarium environment, the study examined how oyster behaviour was influenced by various factors, including light fluctuations, feeding times, water quality, the presence of other aquatic organisms and human activity within the exhibition space. By linking behavioural data to specific events, such as school visits, guided tours, or individual observers, the project revealed how aquarium activities influence oyster behaviour and provided real-time insights into their sensitivity to environmental changes.

The collected data was further interpreted through an interdisciplinary lens and transformed into an interactive audio-visual sculpture. This installation translates biological responses into a dynamic, tactile experience, allowing visitors to perceive the invisible rhythms of oyster behaviour. The sculpture not only visualises the oysters' interaction with their surroundings, but also prompts reflection on the often-overlooked complexity and responsiveness of invertebrate life.

Project Beneath the Mirror Waves thus highlights the potential of integrating bio-sensor technology into aquarium research and exhibition practices. It invites us to reconsider the role of molluscs as sentient participants in their environments and offers innovative pathways for public engagement, welfare monitoring, and interdisciplinary collaboration.

Name: **Markéta Rejlková**

Institution: **Ostrava Zoo**

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Title of Presentation:
Where is our niche at Ostrava Zoo?

Ostrava Zoo is a city zoo with extensive forest grounds. About 600,000 visitors come here every year mainly looking for entertainment and attractive large animals. We do not have a dedicated aquarium house, aquariums are components of various geographically specialized exhibits. They mostly fill niches alongside mammals or reptiles, even if they are dominant in space. There are a total of 25 aquariums or indoor ponds inhabited by fish or aquatic invertebrates in the exhibit area. Because these are sometimes mixed exhibits or have a narrow geographical scope, the selection of species is restricted and the primary purpose of these tanks is to demonstrate a specific environment, or to educate.

But we also have 128 tanks behind the scenes and we focus on a different aspect of our work there - breeding, species conservation, advancement in husbandry. There is also a bit of play and learning involved. Maintaining a motivated and developing team – of three keepers - is a challenge, as is contributing meaningfully within the European community of zoos and aquariums and on a global scale, too. Ostrava Zoo's focus on conservation is very strong and is key to our decision-making on species selection. But also our capacity, skills, experience, personal affections, ... all of this needs to be confronted with the vast number of species that need our attention. We are still fine-tuning our collection, but it is becoming clear that our strength – and therefore the niche that we can help fill – is in smaller freshwater species. But will the bet on the almost laboratory work pay off in the long term? Can we retain the great keepers who are essential?

Names: **T. Krebs[1], M. Adamek[2], V. Jung-Schroers[2] and M. Kählig[1]**

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Title of Presentation:
Knowing Your Aquarium's Microbiome – Monitoring as a Key to Animal Health and System Stability

The microbiome plays a crucial role in maintaining the health and ecological balance of aquatic systems, particularly in controlled environments where fish are kept under human care. Recent advances in microbial research and molecular techniques have deepened our understanding of the diverse and dynamic microbial communities present in recirculating aquaculture systems (RAS), aquaria and other closed aquatic environments. This presentation highlights the importance of regular microbiome monitoring as a vital management tool for ensuring water quality, preventing disease and promoting the overall welfare of fish.

We will introduce a newly developed test kit designed for the practical and reliable assessment of microbiomes in fish-keeping systems. By analysing bacterial community diversity, the kit enables the early detection of imbalances and facilitates informed intervention. Case studies will demonstrate the application of the test kit in various settings and highlight the benefits of routine microbiome monitoring for both private aquarists and institutional facilities.

Beyond its operational value, microbiome monitoring has significant potential for research and conservation. Standardising protocols and sharing microbial data across institutions could foster collaborative learning and innovation. Integrating microbiome analysis into regular husbandry routines allows the aquatic community to adopt a more preventive, evidence-based approach to managing fish health.

This presentation advocates the wider adoption of microbiome-based diagnostics and outlines practical steps towards implementation in private and professional fish-keeping environments.

Name: **Nathalie Gamain**

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Title of Presentation:
Which challenges ahead for the Public Aquariums Community

The EU agenda provides a great framework for the aquarium community in Europe to run their activities. We can easily think about the importance of conservation, education, and research in tackling the protection of biodiversity, safeguarding the health and welfare of animals being exhibited and/ or cared in the wild… or adopting the highest standards when running daily operations. This presentation aims at presenting the challenges public aquariums in Europe should consider while running their core activities, more particularly by addressing the various topics on the EU agenda; as well as highlighting the important role all stakeholders, including the public aquariums community, have while shaping and refining this agenda- in a time at which certain parties call for an end of aquariums activities.

Name: **Nicole Kube**

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Title of Presentation:
Genetic population management within the Smooth hound shark (*Mustelus spec.*) breeding program – findings and new approaches

Population management of existing shark and ray aquarium populations are sometimes difficult to handle. Genders can be distinguished very well in elasmobranchs, however with more than one breeding pair, the genetic disposition of different litters of pups may cause undetected relationships and lead to a diluted gene pool. Including genetic sampling can help to improve this matter.

In the case of European Smoothhound sharks (*Mustelus spec.*) it started with a genetic investigation of the European aquarium population to distinguish two separate species held in human care, as it seemed that there might be some misidentification of the species. An alternative sampling method was tested to collect as many genetic samples as possible within the European aquarium community. The results and follow-up decisions will be presented.

According to that, offspring in certain institutions were tested for parenthood to ensure a better genetic distribution of animals within the European community. It also includes the decision making of the rehousing of the complete Mustelus asterias stock of Berlin Sea Life Centre before closing down in January 2025.

The aim of the presentation is to show the advantages of genetic sampling to ensure a sustainable future population management of the Mustelus programme and opportunities for other breeding populations.

Names: **Hettie Brown, Ali Hood, Alex Bartoli, Paul Cox**

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Title of abstract:
Saving Sharks in the Mediterranean

The Mediterranean Sea is a hotspot of extinction risk for sharks and rays. A complex body of water home to nearly 80 species of shark and ray, of which at least 53% are at risk of extinction. Surrounded by 22 different countries across 3 continents, and home to over 77,000 small boats, the Mediterranean Sea is subject to a broad range of diverse fisheries pressures.

The Shark Trust's Mediterranean programme, one of the major strands of Trust work, brings together a range of actions aiming to prevent species extinctions and improve the conservation status of sharks and rays in the Mediterranean.

From engagement with the General Fisheries Council of the Mediterranean (GFCM) and national governments to ensure delivery of commitments, to partnership with local partners to enable on the ground implementation of conservation measures. From development and delivery of sub-regional action plans for angel sharks to a broad communication effort to engage fishers and communities across the region. It's an ambitious effort, requiring patience, diplomacy and a genuine ability to see things from all perspectives.

This talk will introduce the programme, the people involved in the effort and discuss how shark conservation – all conservation – is as much about people as the animals and habitats that we set out to protect.

Name: **Rod Findley**

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Title of Presentation:
Educational Technology's Role in the Future of Aquariums: Opportunity or Existential Threat?

As aquariums grapple with the accelerating pace of technological change, a critical question emerges: is educational technology a threat to the traditional aquarium model—or a powerful tool for advancing its mission? This presentation explores the role of emerging technologies like virtual reality (VR), augmented reality (AR), and AI-driven personalization in enhancing—not replacing—the real-world, sensory-rich experiences that define aquariums.

How do we ensure that digital enhancements support the core mission of education and conservation?

This session proposes a middle ground: a future in which technology is not the experience, but a scaffold for meaning-making. Through three key categories—immersive, overlay, and personalized technologies—we explore how aquariums can thoughtfully integrate digital tools to elevate the guest experience.

We'll examine real-world case studies from aquariums around the world with slides and video clips (Shedd Aquarium, Shark Reef Aquarium, Oceanogràfic Valencia to name a few) and will explore emerging neuroscience on immersive learning, which suggests that immersive technology activates memory and empathy centers in the brain more effectively than passive media. Overlay technologies, such as AR offer opportunities to add contextual depth and interactivity to exhibits—without sacrificing the power of real-life encounters. Finally, personalized AI-driven systems offer scalable interpretation tools, adaptive content, and inclusive accessibility for multilingual and neurodiverse guests.

This presentation makes the case that technology is not a threat to aquariums, but a catalyst—if implemented with intentionality and alignment with institutional values. We will provide a framework for evaluating and deploying digital tools in service of mission-driven outcomes, not just novelty or spectacle.

Key Takeaways for Attendees:
• Understand the strengths and limitations of emerging educational technologies in aquarium settings.
• Learn how to design immersive and personalized digital layers that reinforce, rather than compete with, animal exhibits.
• Explore strategies for mission-aligned implementation that maximizes impact without compromising authenticity.

Names: **Sabine Wirtz, Michel Ansermet and Mickael Stazio**

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Title of Presentation:
Trafficking of European Eels (*Anguilla Anguilla*) and an example for housing confiscated animals

Since ancient times, juvenile European eels (*Anguilla anguilla*) arriving in European coastal estuaries from their long journey from the Sargasso Sea have been a valuable nutrition source. In recent decades, these so-called glass eels have increasingly been collected en masse for (now illegal) trade.

Eel populations are now severely depleted and populations have declined by approximately 95% since the 1980s, primarily due to habitat loss, overfishing, and illegal trafficking.

We will present a review of the trade with this fish and the measurements in force on a European level. We will present an example from 2019, where 130'000 eels were confiscated at Geneva airport and temporarily taken into care by Aquatis. What challenges and problems need to be addressed before the seized animals can find their place.

Name: **Stefan Inselmann/ Dr. Guido Westhoff**

Institution: **Aqua-Sander, Hagenbecks Tierpark**

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Title of Presentation:

In-situ trials with a new denitrification system in a cold-water marine mammal pool at Hagenbeck's Tierpark, Hamburg

The open-air walrus pool at Hamburg Zoo with a volume of 1600m³ has seen an accumulation of nitrate over years resulting in excessive filamentous algae growth and other problems. In order to reduce the nitrate levels without large water changes it has been agreed to install and test a new heterotrophic denitrification system which had been tested before at a much smaller scale and at constantly high temperatures only. Over a period of 2,5 years a chemically proven denitrification method with acetic acid as carbon source has been tested in-situ in the system with an initially high nitrate concentration of about 350mg/L in a newly designed reactor vessel with permanent internal circulation and a periodical high-flow pump activity in order to avoid moving-bed biomedia clogging and subsequent and inevital mechanical labour. Carbon source dosing has been implemented as on-demand based on medium temperature, bacteria population size and resulting activity. Especial emphasis has been given to operational stability, easy handling and lowest possible maintenance requirements. Technical challenges and solutions as well as biochemical performance results will be presented. The nitrate concentration had been reduced to around 80mg/L at the end of the test period with a low though of some 600L/h only but a removal rate of >99%.

Names: **Saulius Karalius; Tadas Poškys**

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Title of Presentation:

Adapting to Change: The Beluga Sturgeon's (Huso huso) Response to New Environmental and Feeding Challenges

The Lithuanian Sea Museum boasts a remarkable track record in raising beluga sturgeons (*Huso huso*). Today, our aquarium is home to 13 magnificent beluga sturgeons, with our largest resident tipping the scales at an impressive 300 kg and stretching a majestic 2.5 meters in length. With over two decades of hands-on experience, we've discovered that these fascinating fish are surprisingly low-maintenance and incredibly resilient to diseases—remarkably, we've had no disease outbreaks throughout their entire care period.

Yet, our journey hasn't been without its challenges. Ensuring these gentle giants live in a stress-free, emotionally enriching environment has been a primary focus. The extensive reconstruction we completed in 2017 revolutionized their habitat. We introduced an awe-inspiring 18-meter acrylic tunnel, enhanced the landscape with rocks and decorative elements, upgraded our filtration system, and implemented a dynamic current system. These enhancements aimed to create an ideal home for our belugas.

However, we soon encountered significant hurdles in feeding them. Competition among the sturgeons made it difficult to guarantee each fish received adequate nourishment. Additionally, food often got trapped behind the aquarium's structures, complicating retrieval and causing injuries when the sturgeons attempted to feed.

Seasonal changes brought another layer of complexity. During spring and autumn, the sturgeons' behavior shifted—they became less interested in food, more restless, and more prone to injuries, likely due to their natural spawning migration instincts.

To tackle these issues head-on, we made a pivotal decision: personalized underwater feeding. This approach, combined with enriching their environment with new elements like brushes, ropes, and pulsing water currents, has been a game-changer.

We are excited to share our journey and the innovative solutions we've developed to overcome these challenges. Join us in exploring the fascinating world of beluga sturgeons and discover the dedication and ingenuity that ensure their well-being.

WORKSHOPS

Flying Shark:

Flying Sharks Transport Unit, actually Mobile Station

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collections consulting
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Underwater Scrubbers - Wireless, Counter-Rotating, Self-Suctioning

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AAT - Inspection of acrylic aquarium viewing windows to mitigate failure risks

Topics:

- Reaction of acrylic windows to permanent water pressure
- Design criteria & FEA analysis
- Inspection methods to investigate the status of acrylic windows
- Surveillance of changes and repair to minimize risks and prolonged service life time.

AAT ADVANCED AQUARIUM TECHNOLOGIES

POSTERS

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Title of abstract:

Researching breeding and rearing methods for saving Pinna nobilis from extinction

Mass mortalities caused by Haplosporidium pinnae over the past decade have rendered the noble pen shell (*Pinna nobilis*), the largest endemic bivalve in the Mediterranean Sea, critically endangered. Conservation efforts focus on collecting juveniles and developing breeding and larval rearing techniques. Aquarium Pula began P. nobilis protection activities in 2019 and, since 2020, is the only government-authorized institution in Croatia for ex-situ conservation of this species.

A new facility dedicated to spawning of adult P. nobilis individuals maintained ex-situ, as well as for breeding attempts and larval rearing was established and equipped in Aquarium Pula with support from the national government. This facility includes ten 350 L tanks for long-term maintenance of adult pinna, three 1300 L tanks connected to the mechanical and UV filtration units for the preparation of pathogen free sea water, one 350 L tank with the gamete collector and two 500 L tanks for larval rearing.

In collaboration with IMEDMAR (Spain), within the LIFE Pinnarca project, we developed brood-stock management protocols for feeding and temperature control as well as initial protocols for gonadal maturation, spawning and larval rearing. Adult specimens were collected from the Venice Lagoon in 2024 (n=10) and 2025 (n=5) for breeding purposes. To support their survival and potential spawning, new facilities for large-scale cultivation of phytoplankton (Isochrysis galbana, Tetraselmis suecica, Phaeodactylum tricornutum, Nannochloropsis oculata, Rhodomonas salina, Chaetoceros calcitrans, Tisochrysis lutea) and zooplankton (Artemia salina, Brachionus plicatilis and Parvocalanus crassirostris) were established. The first two spawning attempts were conducted in September 2024 by simulating natural spawning. In both experiments we observed self-fertilization, resulting in fertilized gametes developing into free-swimming early trochophore larvae, in line with observations from other Mediterranean institutions. No larvae survived to settling faze. The experiments helped to identify several key difficulties in our approach for which we made changes in the spawning and breeding protocol for future attempts. Efforts are ongoing to coordinate spawning protocols across partner institutions and improve larval rearing conditions to enhance survival and development of advanced stages.

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The National Aquarium of Türkiye