

BIOAQUA'S 2nd HIGH-PERFORMANCE WORKSHOP

MARINE AQUATIC ECOSYSTEMS

1. GENERAL INFORMATION: location, duration, agenda, attendance and networking balance

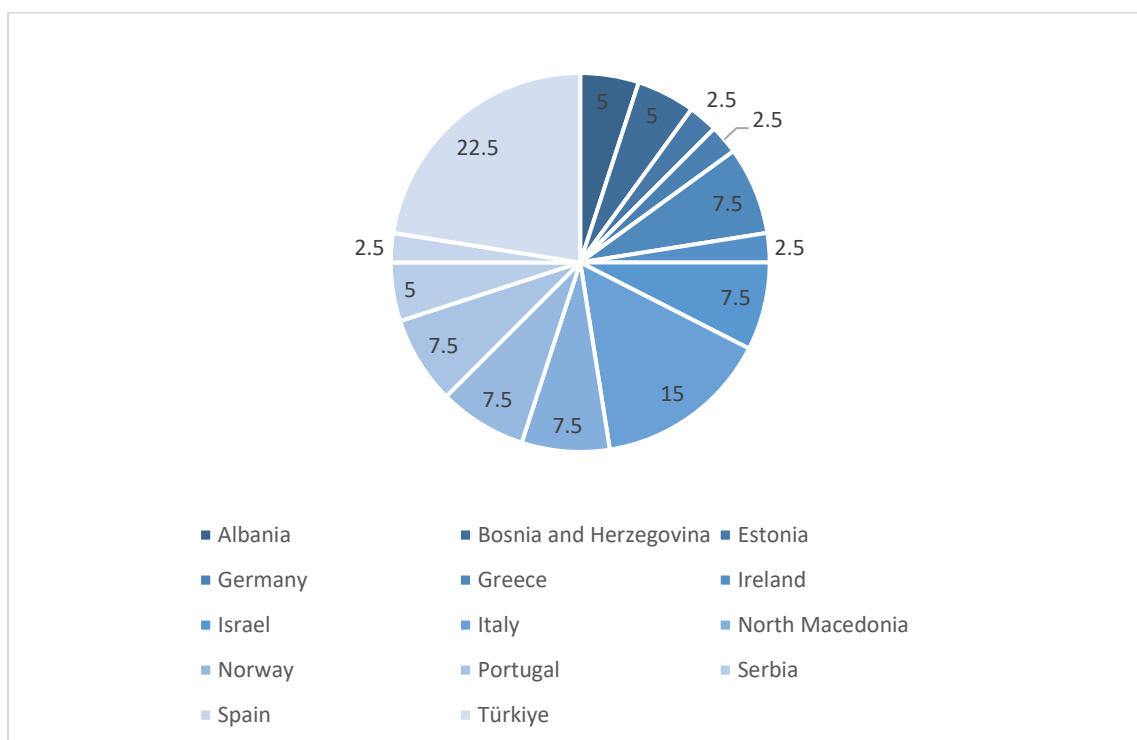
The 2nd High-Performance Workshop of the Action took place on 5th and 6th May 2025 at the Istituto Zooprofilattico Sperimentale delle Venezie (IZSVE), located in the city of Legnaro, Padova (Italy). The Istituto Zooprofilattico Sperimentale delle Venezie (IZSVE) is an Italian public health institute that conducts diagnostic and research activities and provides services in the fields of animal health, food safety and zoonoses. It was founded the 14th June 1929 in Padua and today it is part of the Italian National Health Service, together with nine other similar institutes, each of which covers a specific geographical area of Italy. In 1994, it was appointed as National Reference Centre for the Study and Diagnosis of Fish, Crustacean and Mollusc Pathology by the Italian Ministry of Health and in 1999 as WOAHP Reference Laboratory for Viral Encephalopathy and Retinopathy of Marine Fish. It is a recognized national and international excellence center for the diagnosis of fish, crustacean and mollusks diseases.

With the aim of designing and coordinating the Workshop agenda, a Program Committee was established, formed by Pascoli Francesco (WG1 member) and Toffan Anna (MC and WG 1 member) from the hosting Institute, Orkide Coşkuner-Weber (Action Vice-chair, WG5 member), Dijana Blazekovic (WG 2, 3 and 5 member), Hilal Ay (WG1 leader, WG2 and 3 member) and Eva García Muntión (Action Chair and WG 5 leader). The Program committee was assisted by Anja Breistrand Heskestad, Norwegian Veterinary Institute and Annie Ishebabi from IZSVE.

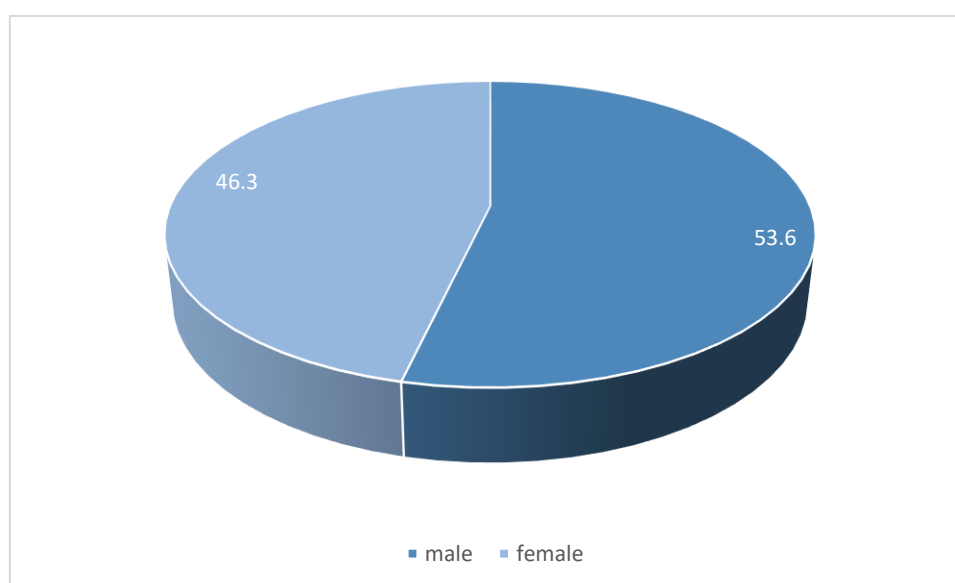
Orkide and Dijana were appointed responsible for launching a call for speakers towards the celebration of the event, supported by Eva. This call was published as a document that collected all presentation requests for the Workshop. The Program Committee reviewed the requests that were used to prepare a draft agenda for the event, ultimately approved by the Management Committee.

54 participants attended the Workshop with 41 present in person and 11 joining online by Teams during the first day. Of the total in presence attendees, 22.5% were from Turkey, followed by 15% from Italy, and 7.5% from Greece, Israel, North Macedonia, Norway and Portugal. Attendees from Albania, Bosnia and Herzegovina, and Serbia accounted for 5% each. The remaining participants hailed from Estonia, Germany, Ireland, and Spain with each contributing 2% to the total and completing the group. Twenty-

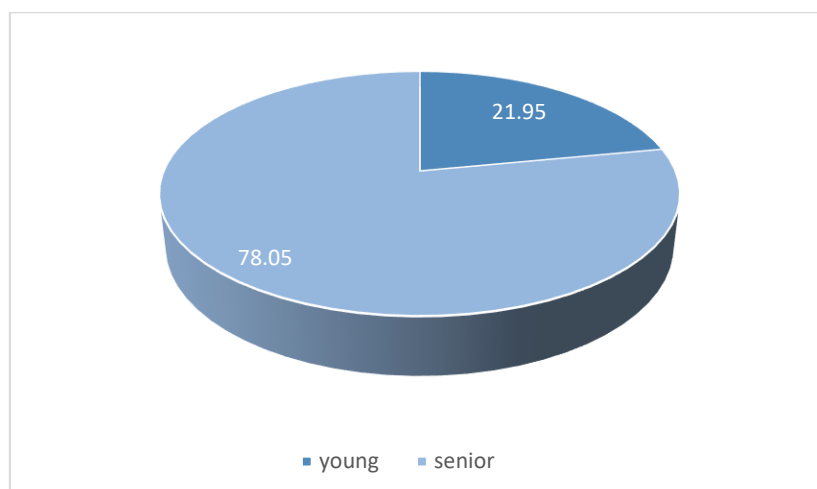
two of the participants (53.6%) were male, and 19 (46.3%) were women. On the other hand, considering the recorded age data, 32 attendees were over 41 years old, accounting for 78% of the total participants, compared to 9 participant defined as “young researcher” and accounting for 21%.



Attendance distribution by countries



Attendance distribution by gender



Attendance distribution by age

Online participant were 11, one male and 11 female. Additional persons who attended the whole workshop were: Dr. Annie Ishebabi (IZSVe administrative staff) and Dr. Amedeo Manfrin (IZSVe fish pathologist) and the COST Science Officer Estelle Emeriau. The final number of persons attending the meeting in presence was then 44.

2. FIRST DAY OF THE WORKSHOP: Monday 5th May 2025

Eva García Muntión, action chair, and Anna Toffan as local organizer conducted the opening ceremony, welcoming all attendees and announcing the agenda for the Workshop. Greeting of the IZSVe management were also brought by Dr Arcangeli Giuseppe, head of the Italian Reference Laboratory for fish, mollusk and crustacean disease hosted by IZSVe. He introduced activities of IZSVe in the aquatic environment underling the important challenges that aquacultures is currently facing due to climate change and pollution. The first speaker was Dr Duncan Colquhoun as “keynote speaker” invited to give a review of lessons learned from the reduction of the antibiotics use in marine aquaculture in Norway. An active discussion about the use of antibiotics in aquaculture followed this inspiring presentation. Then 9 more presentations selected by the Program Committee amongst the proposers during the “call for speakers” previously launched were presented. Speeches were divided according to the topic in three sections (2 during the morning and 1 in the afternoon).

The first block of presentation was chaired by Dr Rajat Nag (WG 3 Leader and member of WG 4) and consisted with two presentations entitled “Marine Aquarium Animal Welfare: Identifying Problems and Implementing Solutions” by Deniz İnnal and “Financial Instruments for Risk Management in Marine Aquaculture under Climate Change Scenarios” by Besa Shahini. The first topic presented was about

ongoing activities in Turkey on welfare monitoring of fish reared in public aquarium. All participants were invited to join some of the activities since the project is still ongoing and it needs more facilities. The second talk was devoted to present the different financial instrument available to support fish farmer and aquaculture enterprises. Blue bonds were explained with practical examples of countries where this instrument was used successfully. An interesting discussion about how to deal with insurance companies followed.

The second block of presentation was chaired by Hilal Ay (WG1 leader, WG2 and 3 member) and consisted of 3 presentation grouped under the topic “Increasing sustainability of marine aquaculture and ecosystems”. One presentation was withdrawn due to the absence of the speaker. Dr Meryem Yeşim Çelik presented the advantages of farming mussels with a talk entitled “Climate-Friendly Food Production with Mussel Farming” and Dr Yusuf Bozkurt introduced “the Role of Cryopreservation in Ex-Situ Conservation of Marine Aquatic Organisms for Sustainable Aquaculture “as an interesting and useful alternative to maintain and store genetic material for valuable fish broodstock.

The third block of presentation was chaired by Anna Toffan (MC and WG 1 member) and grouped all the speeches dealing with fish diseases. Dr. Danny Morick presented the ongoing “Monitoring Fish Bacterial Pathogens of Wild Fish Species From the eastern Mediterranean and the South China Sea” his group is performing with particular result of bacterial population identified by NGS in gills from different fish population (native vs invasive species). Dr. Hilal Ay presented on behalf of Izzet Burcin Saticioglu the results of their analysis on the Mucilage invasion the Marmara Sea faced in the last years with particular emphasis on the role that mucilage can have as zoonotic bacterial carrier. Mucilage is an emerging issue linked to eutrophication and global warming and an increased incidence has been forecasted. Dr. Simona Bartkova presented the principle of functioning of a laboratory assay based on droplet emulsion coupled with fluorescent based label-free (bright field) analysis which allow to effectively study viability, aggregation, and biofilm formation of bacteria with a rapid and user friendly turnover. Practical examples of application were also provided. The methods resulted particularly interesting to the audience with several question on technical aspects and pros and cons of the methods. Finally, Dr Martina Fiabane presented her doctoral research project on the development of small molecules that specifically bind and stabilize DNA G4 structures potentially inhibiting vital processes of bacterial pathogens. The protocol described was successfully applied to two *Pseudomonas aeruginosa* G4-structures and two *Klebsiella pneumoniae* G4-structures, demonstrating excellent results in terms of effectiveness and reliability.

To conclude the day, Dr Francesca Bertolini provided a nice overview of the ongoing COST project EU-LI-PHE COST “Precision Phenotyping in Marine Research: Opportunities from the EU-LI-PHE

Network”. EU-LI-PHE aim to create a Europe-centered multidisciplinary, interconnected and inclusive community of experts that will enhance scientific collaboration, catalyze developments, and transfer livestock phenomics concepts and applications to improve the sustainability and competitiveness of the European livestock production sector. She encouraged all BIOAQUA members to join this COST since all the data already gathered or which are going to be collect actually can be considered parts of the “phenomics” they are looking for. She also promoted the training activities that EU-LI-PHE COST offers.

Finally, Dr Theo Zakaris, from the Greek Scientists Society, anticipated the activity scheduled for the day after describing the online workshop being organized on how to chart sustainability plans. The workshop will happen by the end of May or beginning of June. All the presentation are available in the shared repository of the BIOAQUA project.

BIOAQUA'S 2nd HIGH-PERFORMANCE WORKSHOP	
AGENDA DAY 1: 5th May 2025	
09:00 – 09:30	Welcome
09:30 – 10:30	Keynote presentation: Review and lessons learned from eradication of the use of antibiotic in marine aquaculture in Norway – Duncan Colquhoun, Norwegian Veterinary Institute Online participation from THIS LINK
10:30 – 11:30	Session 1: Improving marine aquaculture and ecosystems - Chaired by: Rajat Nag. Speakers: Online participation from THIS LINK <ul style="list-style-type: none"> 10:30 - Marine Aquarium Animal Welfare: Identifying Problems and Implementing Solutions - Deniz İnnal 11:00 - Financial Instruments for Risk Management in Marine Aquaculture under Climate Change Scenarios - Besa Shahini
11:30 – 12:00	Coffee break
12:00 – 13:30	Session 2: Increasing sustainability of marine aquaculture and ecosystems - Chaired by: Hilal Ay. Speakers: Online participation from THIS LINK <ul style="list-style-type: none"> 12:00 - Climate-Friendly Food Production with Mussel Farming - Meryem Yeşim Çelik 12:30 - The Role of Cryopreservation in Ex-Situ Conservation of Marine Aquatic Organisms for Sustainable Aquaculture - Yusuf Bozkurt 13:00 - Theoretical introduction to charting sustainability plans - Theo Zacharis (preparatory for an interactive webinar in June)
	Lunch break
13:30 – 14:30	Session 3: Pathogens and risks - Chaired by: Anna Toffan. Speakers: Online participation from THIS LINK <ul style="list-style-type: none"> 14:30 - Monitoring Fish Bacterial Pathogens of Wild Fish Species From the eastern Mediterranean and the South China Sea – Danny Morick 15:00 - Mucilage in the Marmara Sea: Microbial Health Risks and Its Impact on Public and Aquatic Animal Health - Izzet Burcin Saticioglu 15:30 - Plastisphere: A Potentially Emerging Driver of Antimicrobial Resistance in Aquaculture? - Simona Bartkova 16:00 - Targeting bacterial G-Quadruplexes for waterborne pathogen control: a synergistic approach with Aquaprox Italia SRL - Martina Fiabane Martina
16:30 – 17:00	Final presentation: EU-LI-PHE COST presentation (“Precision Phenotyping in Marine Research: Opportunities from the EU-LI-PHE Network”) – Francesca Bertolini Online participation from THIS LINK

3. SECOND DAY OF THE WORKSHOP: Tuesday May 6th 2025

The second day of the event was devoted to field visit in the city of Chioggia. Chioggia is located on a small island at the southern entrance to the Venetian Lagoon about 25 kilometers (16 miles) south

of Venice. Chioggia is often called "Little Venice", with a few canals, chief among them the Canale Vena, and the characteristic narrow streets known as calli.

To reach Chioggia a bus was rented and participants were transported after 1 hour of travel to the harbor of Chioggia where a boat was waiting to visit the lagoon. During the visit Dr Amedeo Manfrin, veterinarian, part of the IZSVE staff and native from the city explained the main characteristics of the Venetian lagoon with particular reference to the mussel and clams farming and harvesting. Of note, the famous dam "Mose" was also observed and the functioning of this impressive infrastructure capable to block high tide saving Venezia, Chioggia and the oath coastal city from the damage of the "acqua alta" (literally high water).

Then participants landed and visited the small fisherman village of Pellestrina which is build on a narrow land stripe that divide the lagoon form the Adriatic sea. Here the group had lunch in a local restaurant.

In the afternoon a visit to the wholesale fish marked was performed. The Chioggia Wholesale Fish Market was created in 1960 covering an area of 11.000 square meter including the only two authorized docking sites for the download of the fish for human consumption from the fishing boat. The Chioggia Wholesale Fish Market has become one of the most important Italian and European centers for the storage, sale and processing of fresh fish. Every day within the market complex two auctions are held, one in the morning and one in the afternoon and, thanks to the internal administrative system, sellers and fishermen can immediately collect the selling price. The wholesale market is aimed primarily at traders and small/medium producers, private individuals cannot participate in the auctions.

The visit was introduced by the direct of the market and the senior local veterinary officer working in the site, Dr Patrizia Buratti, who explained to the participants how the markets works, how the veterinary controls take place, how the auction happens and the main structure of the fishing fleet.

Finally, a visit to the 'Giuseppe Olivi' Museum of Adriatic Zoology, located in Palazzo Grassi on the Fondamenta del Canal Vena in Chioggia was performed. The participants were divided in two groups accompanied by two local guides in order to better appreciate the museum collection. In fact, the museum hosts a unique historical collection formed by >300 formalin or ethanol fixed specimens of marine aquatic organisms collected in the Adriatic between the second half of the 19th century and 1943. Notably, on the second floor the museum houses an embalmed specimen of basking shark (*Cetorhinus maximus*), an 8-metre female caught by mistake in 2003 off the coast of Chioggia. The biology of this endangered species was described and deepened.

After the visit to the museum, the group returned to Padova by bus.

During the day, Dr Rajat Nag, recorded short interview form some participant for dissemination purposes.

BIOAQUA'S 1ST HIGH-PERFORMANCE WORKSHOP AGENDA DAY 2: 6th May 2025	
	Pick-up points: Hotel Maritan at 8:00 AM + IZSVE at 8:45 AM
09:00	Bus journey: Guidelines about COST rules and where to find the information – Anja Breistrand
10:00	Arrival at Chioggia
10:30	Visit to Venice lagoon (visit to a mollusc farm at the lagoon tbc)
12:00	Lunch time at “Osteria la Rosa” in Pellestrina
14.15	Chioggia’s fish market (one of the biggest in the Mediterranean)
16:15	Museo di Zoologia Adriatica “Giuseppe Olivi”
18:00	Closure and leaving to return to Padua
	Bus journey: Joint ideas for dissemination and members’ visibility – Eva García

4. ANNEX: links and images

Official Action website: <https://bioaqua-cost.eu/>

Official Workshop video: <https://youtu.be/splTwFAjikQ>



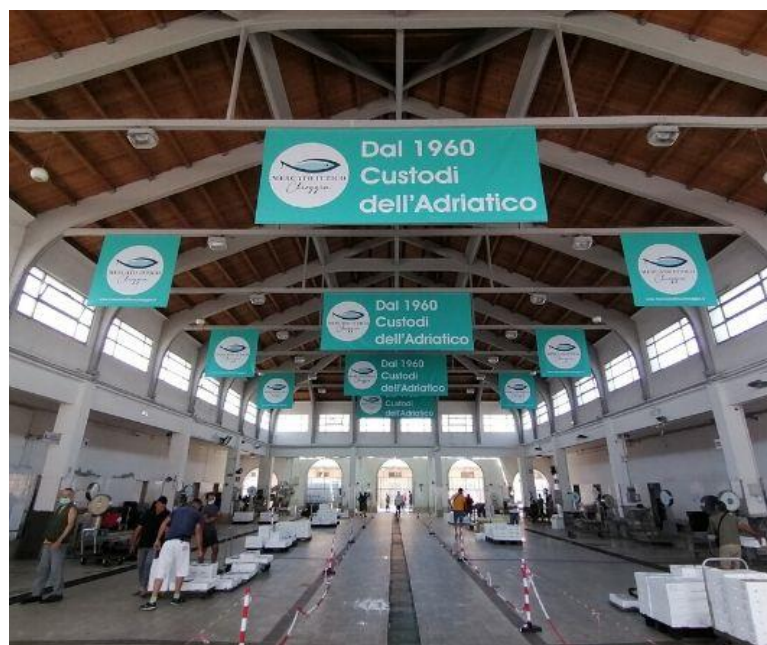
Group photo of 1st day attendees in Legnaro



Group photo of 2nd day attendees in Chioggia



Visit at the Chioggia fish market: initial explanation on how the auctions happens



The Chioggia fish market: overview of the auction pen