



**Annual Report
2022**

Contents

P. 04

**From
the ICM
to the World**



P. 10

**From
Individuals
to Teams**



P. 16

**From
Challenges
to Research**



P. 22

**From Local
to Global**



P. 26

**From Ideas
to Facts**



P. 32

**From Us
to Society**

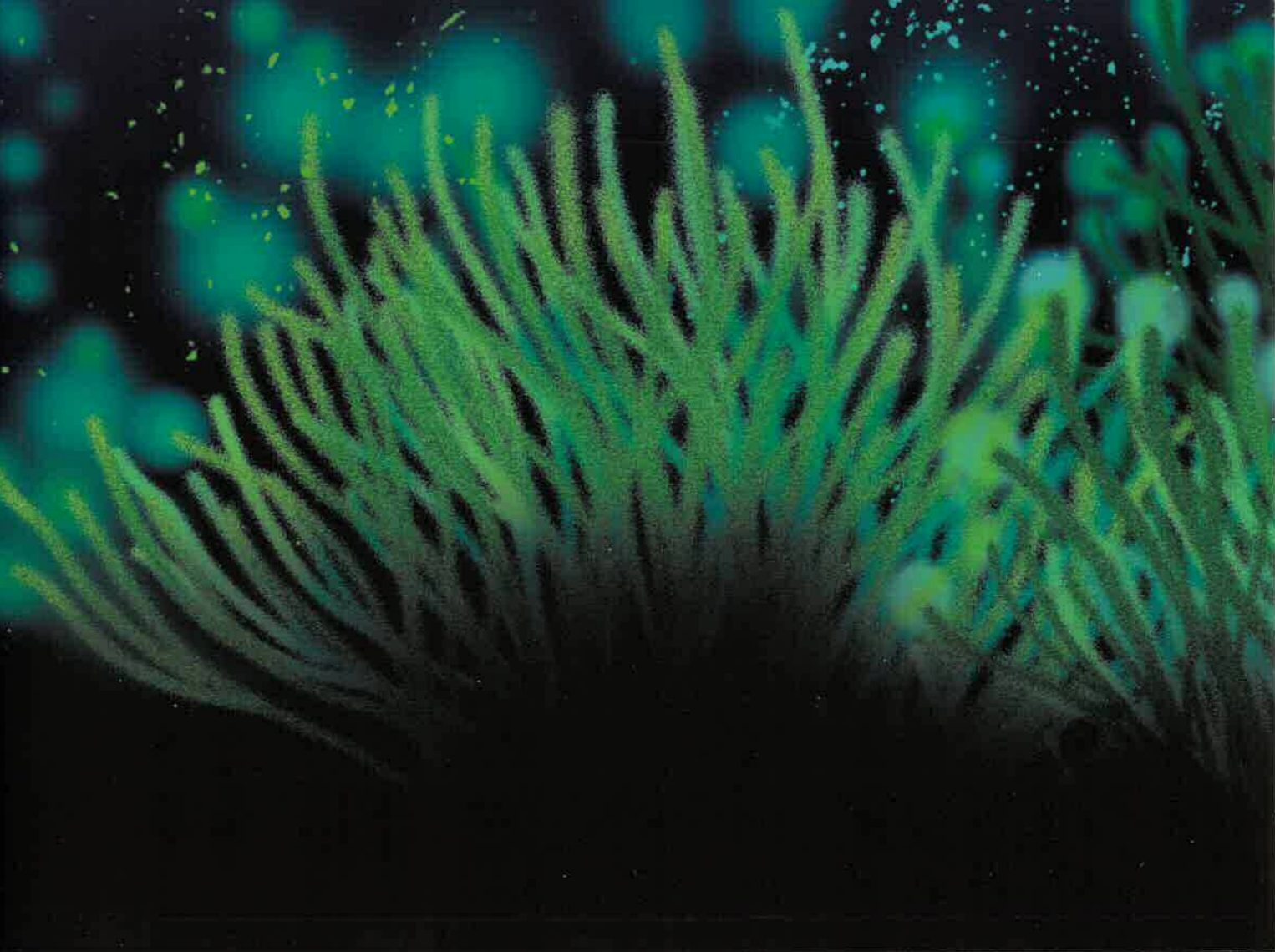


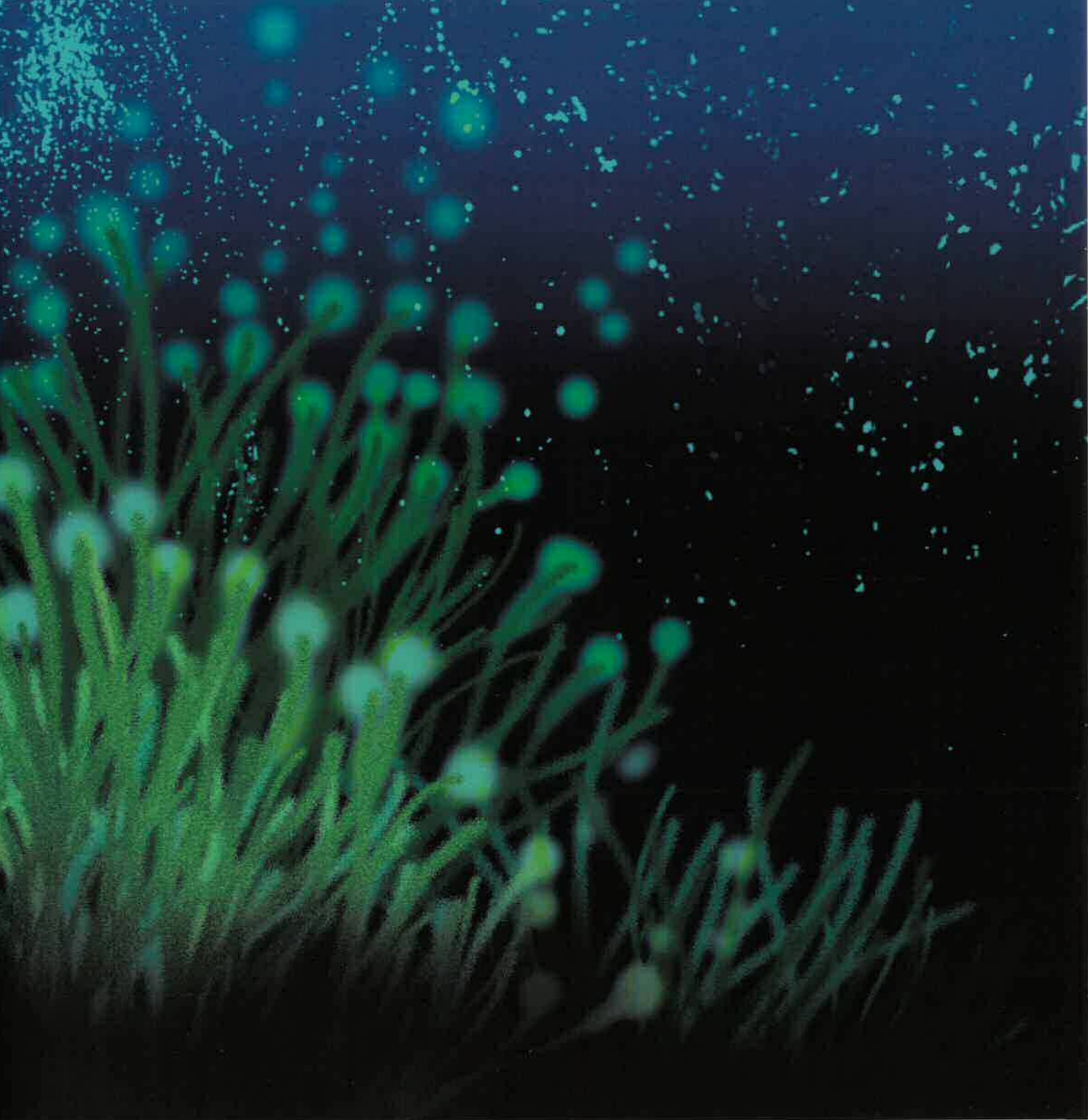
P. 36

**From the
Present to
the Future**



From the ICM to the World





A year of changes

The year 2022 has been a year of changes for the Institut de Ciències del Mar (ICM). **Valentí Sallarès** has replaced as director Josep Lluís Pelegrí, who had headed the Institute for the last four years. Among the milestones reached during this period, it is worth highlighting the achievement, in 2020, of the **Severo Ochoa Excellence Accreditation**, an award of maximum prestige that recognises the ICM as an international reference and which only some thirty research centres in Spain have. In fact, the ICM is the only marine research centre with this distinction.

To better respond to the Institute's mission to pursue an excellent research that incorporates social commitment, this leadership change has been followed by a **restructuring of the centre's organisational chart**, which now has a **Deputy Direction for Scientific Strategy** that includes an **Associated Deputy Direction for Scientific-Technical Services**, and a new **Deputy Direction for Knowledge Transfer**.

The latest includes an **Associated Deputy Direction for Internationalisation and Science Diplomacy**, and an **Associated Deputy Direction for Marine Science Literacy**, which together seek to promote a transition towards a more sustainable socio-economic system capable of improving the well-being of society and the planet.

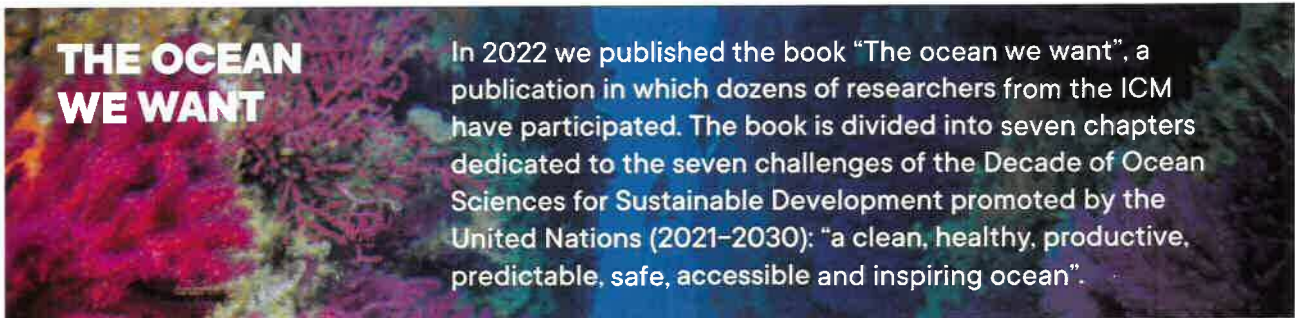
All in all, the new management will ensure that the ICM continues to be an excellent research centre committed to the conservation and sustainable use of marine life and ecosystems, the mitigation of the impacts arising from natural hazards and anthropogenic activity, and the study of the ocean's role in climate regulation.

Highlights



CARING FOR THE ICM COMMUNITY

We are committed to the wellbeing of our staff through the launch of the 'ICM Cares' programme, promoted by the Research Support Office, and through other initiatives such as the MARINA mentoring programme, the talent attraction programme, the institutional welcome sessions for new recruits and the ICM's training and emotional wellbeing plan.



THE OCEAN WE WANT

In 2022 we published the book "The ocean we want", a publication in which dozens of researchers from the ICM have participated. The book is divided into seven chapters dedicated to the seven challenges of the Decade of Ocean Sciences for Sustainable Development promoted by the United Nations (2021–2030): "a clean, healthy, productive, predictable, safe, accessible and inspiring ocean".



THE YEAR OF CITIZEN SCIENCE

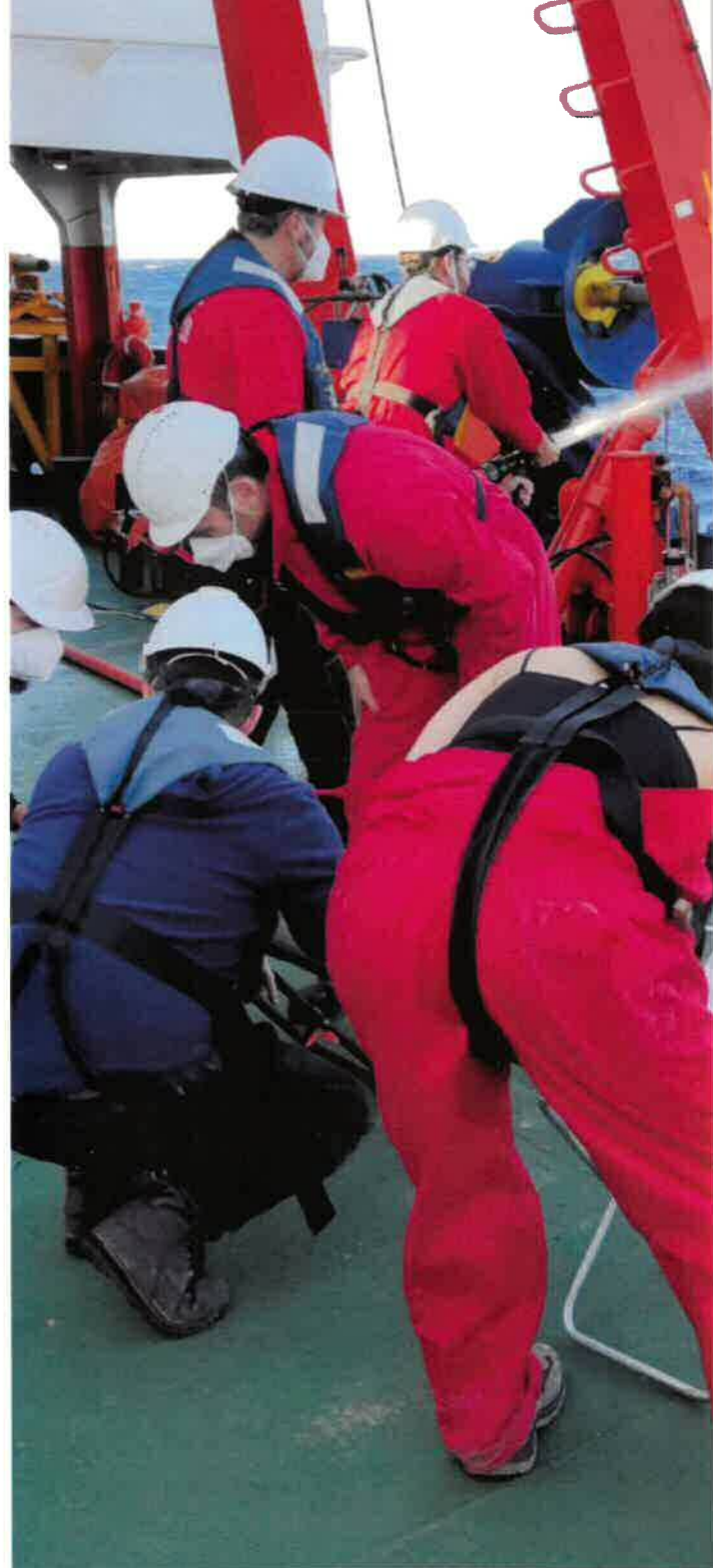
The Institute's longest-running citizen science platform, 'Observadores del Mar', celebrated its tenth anniversary, while ANERIS, another initiative coordinated by the ICM, was launched at the European level. It is also worth mentioning the launch of the ECS and GUARDEN projects in which we play an important role.

Excellence

One year more we have continued to attract talent, especially at the international level, and to generate an increasing number of high-impact publications.

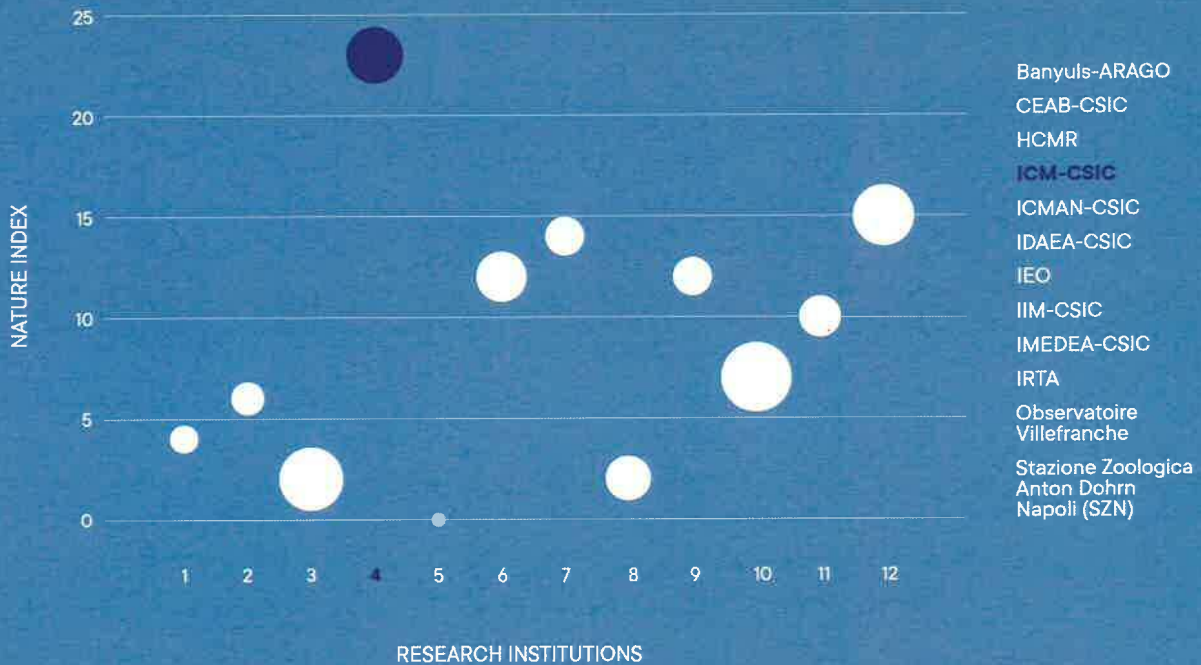
During 2022 we have maintained the quality of our studies and we continue to be the marine research centre with the highest **Nature Index** at the national and Mediterranean level.

In addition, **Stanford University** has included 13 in-house scientists in its annual ranking of the most influential scientists, which lists the names of the 2% most cited research professionals in the world.



Nature Index

From December 1st 2021 to November 30th 2022



Nature Index: A ranking that focuses on articles published in a small selection of 82 scientific journals selected by an independent scientific committee according to their prestige. The size of the circles is proportional to the number of employees.

From Individuals to Teams





Staff



One of the most important milestones of this year has been the incorporation of an unprecedented number of permanent scientific staff. In this regard, the ICM now includes **eight full scientists, two research professors and one additional research scientist**. Moreover, nine researchers have been promoted to a higher level.

We have also remained committed to attracting young talent, promising new researchers who will lead our research in the future. In total, during 2022, **11 doctoral students and 20 postdoctoral researchers** have been incorporated from competitive public calls as demanding as the Ramon y Cajal, Marie Skłodowska Curie Postdoctoral Fellowships, Juan de la Cierva, or Beatriu de Pinós grants. We have also “supervised numerous” doctoral theses and final degree and master’s degree projects.

2022

314

TOTAL



WOMEN



MEN

Categories

	Total	Female	Male
Senior Researchers	75	25	50
Postdoc-oral Researchers	50	28	22
PhD Students	48	27	21
Technical Staff	101	75	26
Admin & Support Staff	40	24	16

Training

Within the framework of the **'ICM Cares'** programme, the centre offers its staff training and mentoring programmes to contribute to their professional development and to their critical and independent thinking.

During 2022, the **MARINA mentoring programme** has been launched, with 14 pairs of mentor-mentees. The ICM Cares training programme offered 18 courses attended by 130 people.

We have also continued to hold the traditional **"Friday Talks"**, weekly conferences in which the latest developments in marine sciences are shared. These talks are live streamed and available on our **YouTube channel**.

"Friday Talks"

30

TALKS

50%

Men

50%

Women



"Ciutat de Barcelona" 2022 Award

**Carmen García-Comas
& Pedro Cermeño**

For their work on the development of a diversification model that explains how marine biodiversity has evolved over the last 500 million years.

Equality

The Equality Task Force has implemented the **ICM Gender Equality Plan**, a document approved in 2021 that aims to advance in the achievement of effective equality between women and men. The Plan includes several actions aimed at promoting the participation, recognition and research initiatives of women at the ICM.



Among the actions implemented this year, the following stand out: the creation of an Assistant Deputy Directorate for Equality; a gender-equal management team; the publication of a specific **Guide for Inclusive Communication** for the centre; the presentation of the **Protocol for the Prevention and Detection of Cases of Sexual Harassment and Harassment for Reasons of Sex** at the ICM and the appointment of the persons of reference who will deal with these cases; as well as an institutional declaration of zero tolerance towards gender-based violence and violence for reasons of sex.

Finally, the implementation of **good practices** has continued, such as the establishment of criteria to ensure that the allocation of funds from internal calls for proposals is gender-sensitive.



Guide for Inclusive Communication

a document that aims to promote the use of terms and expressions free of sexism, overcoming the non-inclusive use of language that makes women invisible and discriminates against them.

Protocol for the Prevention and Detection of Sexual Harassment and Harassment for Reasons of Sex.

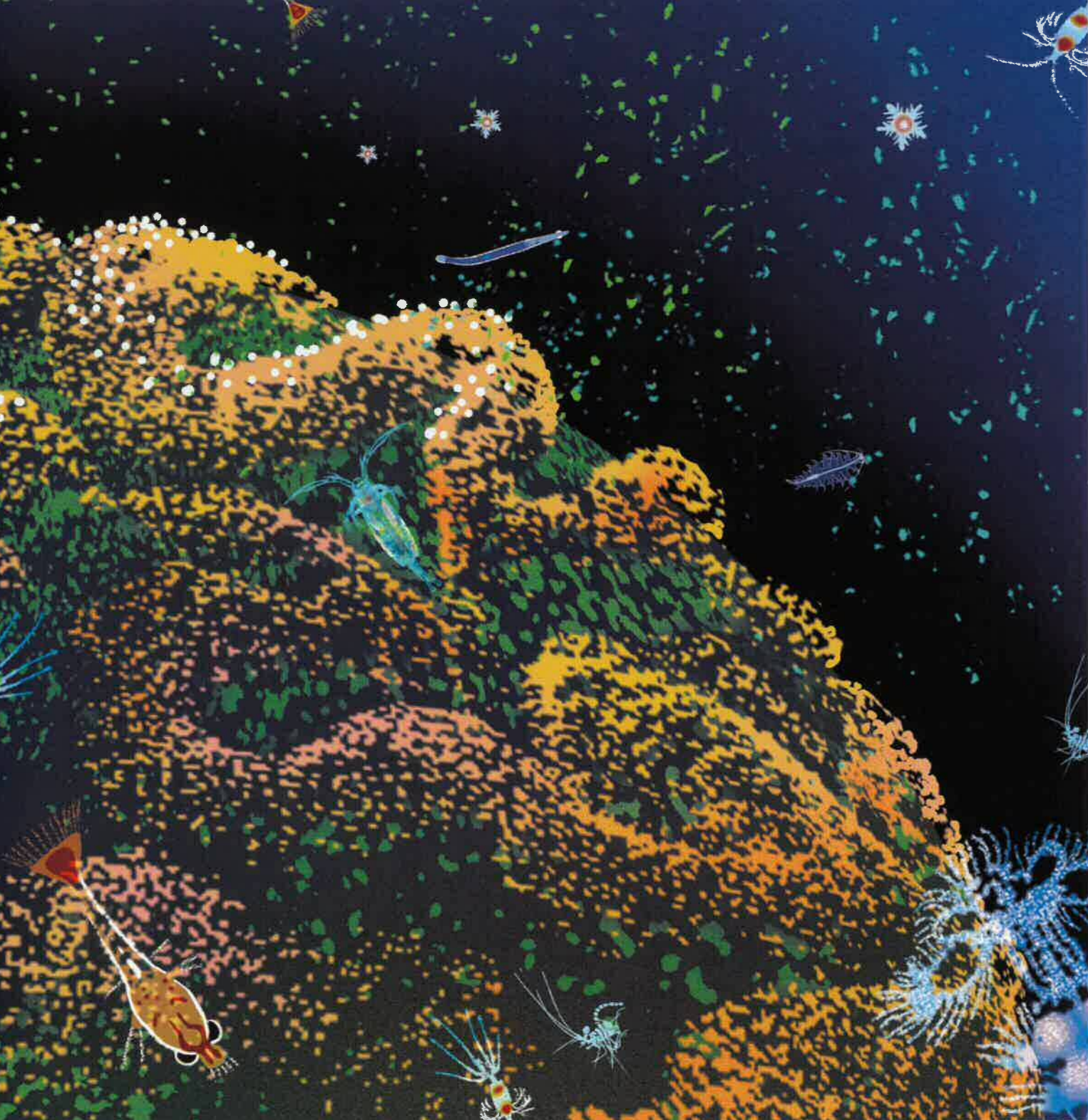
A tool for preventing, detecting and sanctioning any manifestation of sexual harassment or harassment based on sex that takes place in the centre. It establishes reference persons who have the role of informing, advising and accompanying in these cases.

In order to celebrate the 'Women and Girls in Science Day', two murals were painted in collaboration with students of several schools in La Barceloneta that pay tribute to Marta Estrada, Pepita Castellví, Ángeles Alvariño, Lynn Margulis, Sylvia Earle and Rachel Carson, women who have made significant contributions in the field of marine and environmental sciences. The work is based on the illustrations from the exhibition "dONes: motor de la recerca científica i ambiental".



From Challenges to Research





Publications

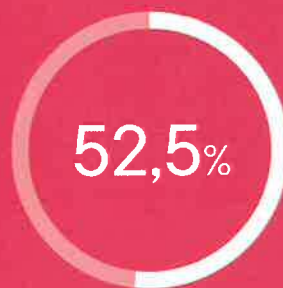
We have continued to increase the number of publications following the trend of previous years and have maintained their impact index. Likewise, the percentage of women leading the authorship of research has risen to 41%, getting closer to the gender parity.

309

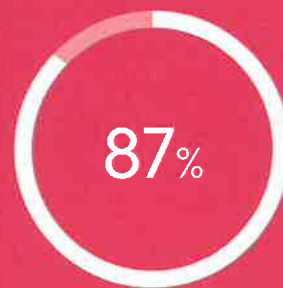
PAPERS

21

Papers in journals with an impact factor over 15



1ST DECILE



1ST QUARTILE

Open Access

94%

Publications in Open Access

Ratio First Author

41%

Women

59%

Men

Selected publications

Multidisciplinarity is one of the keys to the ICM's excellent results. In this sense, the centre has experts in most areas of marine research that allow it to carry out cutting-edge research.

Earth's environmental stability enabled the explosion of marine biodiversity

The study presents a diversification model that reconstructs the history of marine species diversity from the Cambrian, some 540 million years ago, to the present. The results suggest that today's marine biodiversity is a consequence of long periods of environmental stability that allowed the development of biodiversity hotspots, i.e. regions with a large number of species.

P. Cermeño et al. (2022) Nature;
<https://doi.org/10.1038/s41586-022-04932-6>

Plate boundary activation between Africa and the Iberian Peninsula could cause large tsunamis

The work defines for the first time the complex geometry of this active fault system and assesses its potential capacity to produce large earthquakes that, in turn, could trigger devastating tsunamis along the westernmost Mediterranean coast. Due to a lack of data, previously available studies underestimated the seismic and tsunami risk of the fault system that forms the plate boundary in this area.

L. Gómez de la Peña et al. (2022)
Nature Communications;
<https://doi.org/10.1038/s41467-022-31895-z>



Marine heatwaves cause recurrent mass mortality events in the Mediterranean Sea

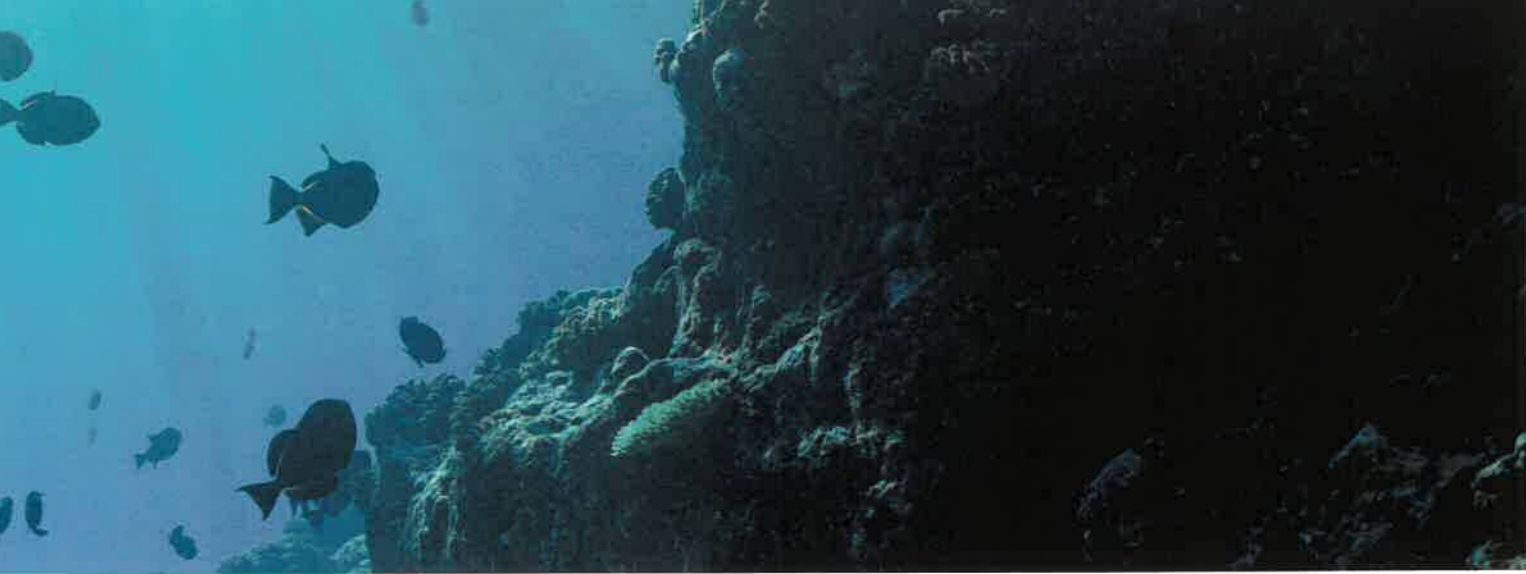
The study proves that, between 2015 and 2019, these events affected the entire Mediterranean basin, including populations of more than 50 species. The impacts of mortalities were observed between the surface and 45 m depth, where the recorded marine heat waves were exceptional, affecting more than 90% of the Mediterranean.

J. Garrabou et al. (2022) Global Change Biology;
<https://doi.org/10.1111/gcb.16301>

Changes and stability in the evolutionary history of sexual systems in fishes

This work reveals that the ancestral sexual system of fishes was separate sexes and not hermaphroditism, as had been proposed. This is the most comprehensive study ever conducted on the evolution of sexual systems in animals, with more than 4,600 species of fish from all the world's seas analysed.

S. Pla et al. (2022) Nature Communications;
<https://doi.org/10.1038/s41467-022-30419-z>



Offshore wind farms should be moved away from protected areas in the Mediterranean Sea

This is the main conclusion of a study with the participation of the ICM that takes as a case study the mega offshore wind farm planned in the area of Cap de Creus and the Gulf of Roses, where eight marine protected areas converge. The study warns of the “serious impacts” that these facilities could have on marine biodiversity, the landscape, fishing and tourism.

J. Lloret et al. (2022) Science of the total environment;

<https://doi.org/10.1016/j.scitotenv.2022.153803>

Global warming accelerates the water cycle leading to significant climatic consequences

According to the study, this could lead to a destabilisation of the global climate system, an intensification of storms in specific areas and an acceleration of the ice melting at the poles. One of the causes could be the increased evaporation of water from the seas and oceans as a result of rising temperatures, which leads to more water circulating in the atmosphere in the form of vapour, 90% of which will end up precipitating back into the sea.

E. Olmedo et al. (2022) Scientific Reports;

<https://doi.org/10.1038/s41598-022-10265-1>



A33



From Local to Global

Oceanographic and coastal campaigns

In 2022, our campaigns have been fully reactivated to deepen our understanding of the ocean conservation status and contributing to the improvement of its health and the management of the resources it provides.

In total, our colleagues have spent 698 working days embarked on 17 oceanographic campaigns and 878 days embarked on coastal campaigns.

1.576

WORKING DAYS AT SEA



International projection

The creation of the associated Deputy Directorate of Internationalisation and Science Diplomacy has boosted relations between the ICM and other institutions, especially at the international level, which has contributed to the projection of the centre at a global level.

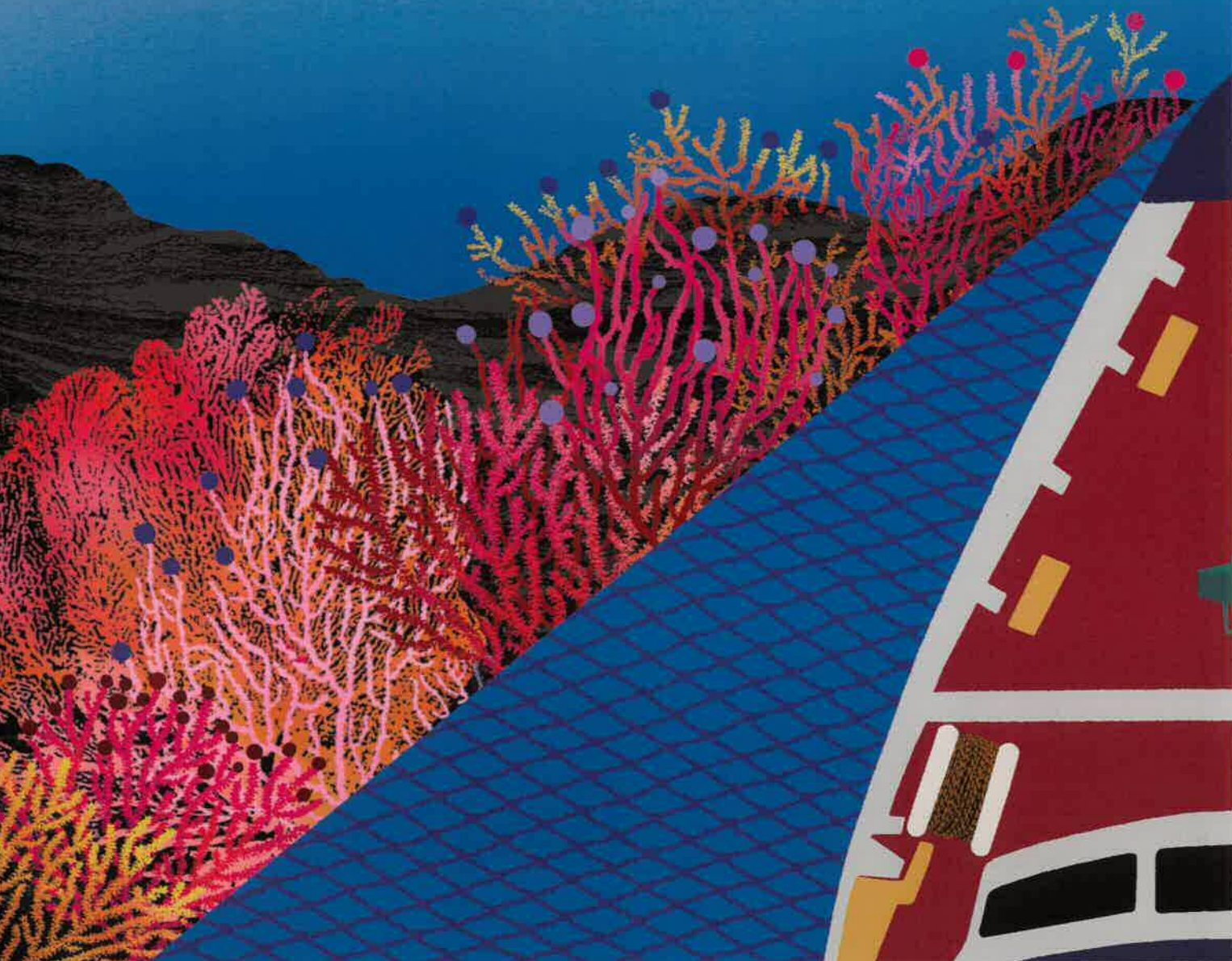
TransOcean

The ICM coordinates this permanent working group of the EuroMarine network, the main association of marine centres in Europe. It is made up of representatives from 13 European marine research centres, including the CSIC, and focuses on the network's oceanic and transoceanic programmes that for some reason are considered cross-cutting and transformative.

UN Ocean Conference 2022

The ICM participated in the UN Lisbon 2022 Conference to foster a new chapter of global action to protect the ocean in the framework of the Ocean Decade. More than 7,000 people from 150 countries attended the meeting with the aim of finding innovative solutions for a more sustainable management of the blue planet.

From Ideas to Facts





Boosting transfer

During 2022 we kept on prioritising transfer and collaborations with different actors and sectors related to marine research. In this sense, co-governance actions have been carried out with the public, different companies and administrations with the aim of valuing and exploiting the results of our research and contributing to improving the ocean's well-being and, ultimately, that of the planet.

Creation of the Knowledge Transfer Committee

A consultative body coordinated by the Transfer centre's Deputy Directorate, which includes the assistant deputy directorates for Marine Science Literacy and Internationalisation. This committee is responsible for taking decisions, coordinating, monitoring and promoting the transfer of knowledge to the centre.

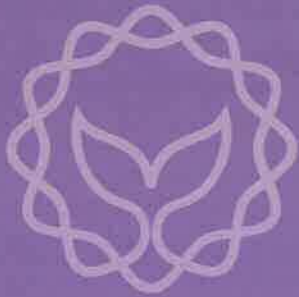
Promotion of the SOMMA impact and narrative group

Working group with other centres of excellence to reflect on the evaluation of research and define new transfer indicators that reflect the social impact.

Two patents

Two patents related to the field of cosmetics and pharmacology have been designed in collaboration with the company ISDIN to develop first aid protocols based on scientific evidence in cnidarians.

Flagship projects



ANERIS

Proposes to implement the new concept of “Operational Marine Biology” to provide systematic measures for long-term monitoring of ocean and coastal life.



PREP4BLUE

Will lay the foundation for co-creating and co-implementing the research and innovation needed to achieve the Horizon Europe Mission “Restore our Oceans and Waters by 2030”. The ICM is involved in a number of tasks, and is also coordinating the “Supporting networks involving citizens” task.



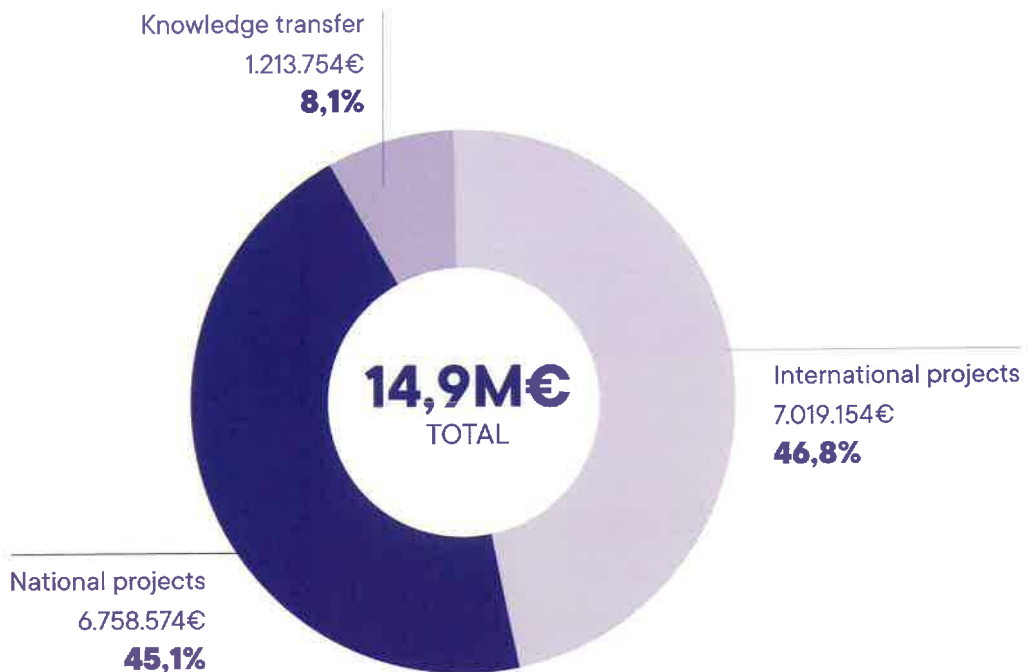
PTI OCEAN+

This Interdisciplinary Thematic Platform (PTI, for its acronym in Spanish), investigates the ocean’s response to climate change. Its goals are aligned with Sustainable Development Goals 13 - “Climate Action” - and 14 - “Marine Life” - of the UN 2030 Agenda for Sustainable Development.

Total value of the projects awarded in 2022

In terms of external funding, in 2022 we have achieved exceptional results. We managed to raise almost €15 million in competitive funds, exceeding the 2021 figure by €3 million.

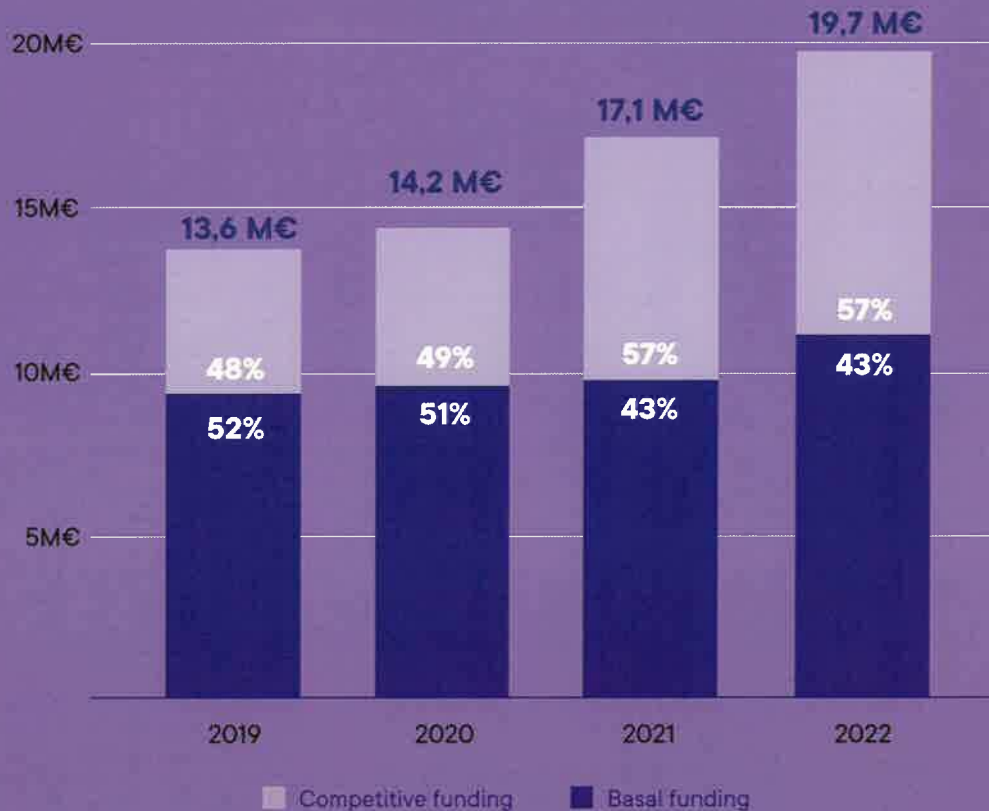
Of this €14 million, half came from international competitive funding sources, with special relevance to our participation in the Horizon Europe programme.



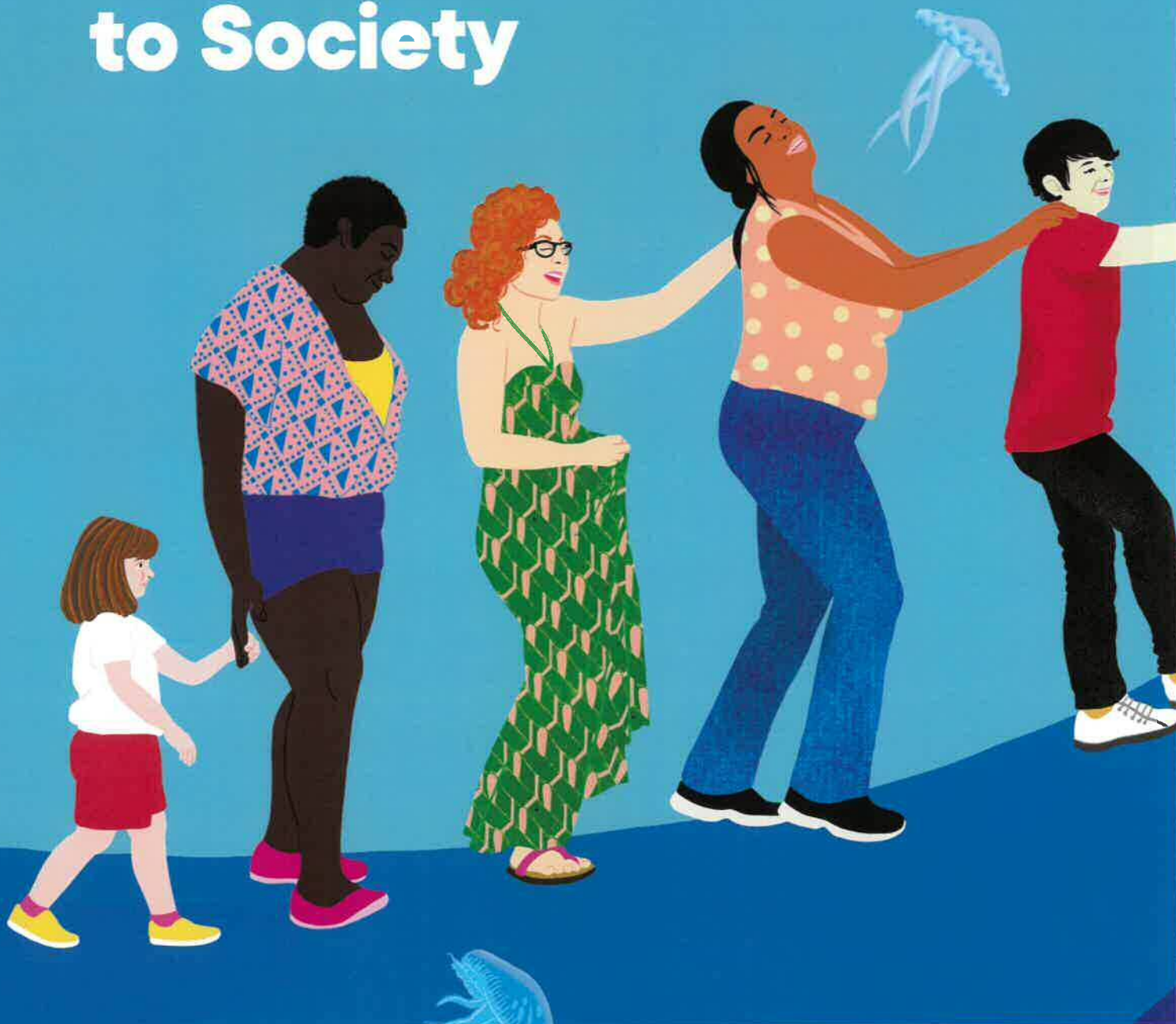
Our economic capacity grows

Year after year we are increasing our income. In 2022, around 60% comes from external and competitive funds.

This graph shows the origin of the income received in 2022. Competitive funding comes from competitive projects, industry contracts and private funding. Basal funding is non-competitive funding received from CSIC.



From Us to Society





We promote ocean literacy to involve society in caring for the ocean

At the ICM we understand ocean literacy as part of our social commitment. For this reason, the **Marine Science Literacy task force** has now an associated deputy-director through which we aim to promote public knowledge and appreciation of the ocean.



Outreach:

In terms of outreach activities, the production of the documentary **“Relats del Canvi Global. Capítol I: Delta de l'Ebre”**, a piece on how the inhabitants of the Ebro Delta have adapted to the changes caused by the climate crisis in recent decades.



Education:

On 8 June (World Ocean Day), more than 250 pupils walked through the streets of the Barceloneta neighbourhood, transformed for a day into sea currents to celebrate the **“Ocean Barceloneta Gymkhana”**. In addition, the **PlànctON** project has generated an interactive website and various educational resources to deepen the knowledge of the invisible world of marine microorganisms.



Citizen science:

The ICM's longest-running citizen science platform, **Observadores del Mar**, celebrated its tenth anniversary and consolidated as a reference platform with the support of CSIC marine research centers

The **“Biomarató-Platges amb vida”** has expanded throughout Europe and the Barcelona City Council has been able to add a layer of fish to its **Biodiversity Atlas** thanks to the data provided by **MINKA** citizen science platform.

Communication

This year we remained very present in the media and on social networks, where we already have more than 16,000 followers, 43% more than in 2021.

Highlighted media appearances:

“Where Dalí once painted the Sea, wind turbines are set to rise”

The New York Times

Piece that talks about the impacts on marine biodiversity, landscape, fishing and tourism that the installation of large offshore wind farms in protected areas of the Mediterranean could have.

“Els 6.000 quilòmetres de viatge d’una ampolla de vidre a la deriva emmig de l’Atlàntic”

Cadena SER

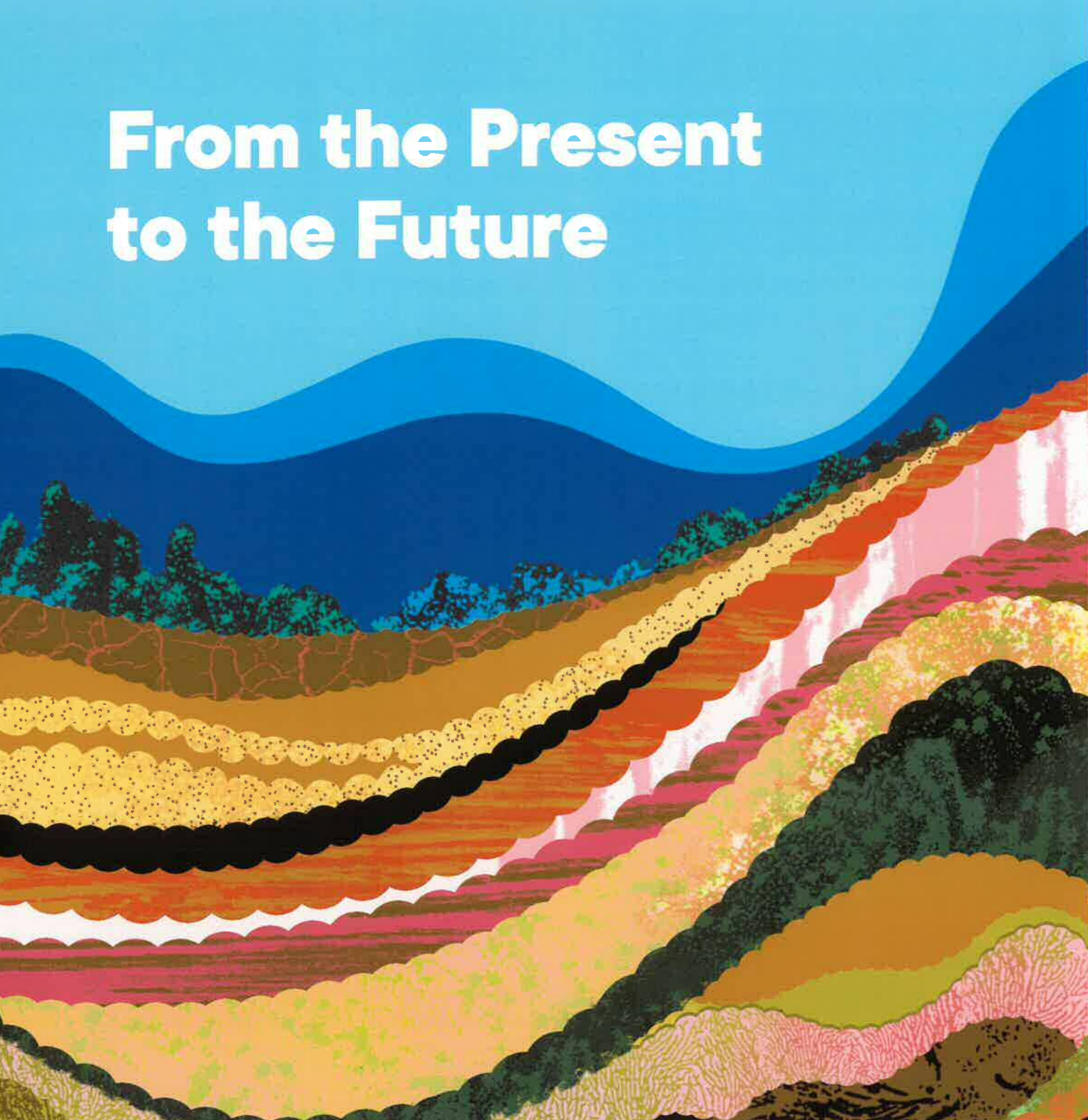
Report on the story of a 10-year-old boy from Kentucky (USA) who found a glass bottle on a beach with a letter that our researchers had thrown months earlier while on campaign.

“El corall del mar Mediterrani s’està morint a causa de les onades de calor submarines cada cop més freqüents”

TV3

Work on the effects of marine heat waves on Mediterranean coral.

From the Present to the Future





We imagine a more sustainable future for the ocean, and we investigate and act to make it happen

The good results achieved in 2022 support the fact that the ICM is a marine research **centre of excellence** with potential to undertake **interdisciplinary research** challenges both locally and globally.

Much of this year's efforts have been devoted to fostering the **transfer of knowledge and technology** generated in the broadest sense. In this regard, we have strengthened our ties with **public administrations**, but also **with private enterprises**, and we kept fostering **science as a culture** to involve society in building the future we want for the ocean.

All these actions aim to give visibility to the Institute's research, and we are convinced that they will help to improve the main indicators of the ICM in terms of **scientific production, social and economic impact, training activities, visibility and talent attraction**.

Looking ahead to 2023, we will continue to promote major research projects that will surely have a strong **impact on society**. These include a **new operational oceanography system** with open data at the service of the entire scientific and management community in the marine field (the operational branch of ICATMAR) and a **new centre for the promotion of marine research** open to the public and the different social sectors linked to the sea (Barcelona Mar de Ciència), among others.

We are also working hard to increase our presence in important initiatives in the business sector, where we play the role of guarantors of sustainability (**Bluewave Foundation**), playing a leading role in what will probably be the most important public event of 2024 on marine issues (the **first conference of the Ocean Decade**, which will take place in Barcelona in April 202





ICM

MIX
Paper
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