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**Obituary**

# From the Mediterranean to Antarctica: The Scientific Journey of Josefina (Pepita) Castellví Piulachs (1935-2026)

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Although the current context is far from ideal, it is easy to forget that, not so long ago, women almost exclusively held technical or administrative assistant positions in scientific laboratories. This was the situation at the Instituto de Investigaciones Pesqueras (Institute of Fisheries Research, IIP), now renamed Institut de Ciències del Mar (Institute of Marine Sciences, ICM), of the Spanish National Research Council (CSIC) in the early 1960s, when Josefina Castellví began her doctoral thesis.

Josefina (Pepita for family and friends) Castellví Piulachs was born in Barcelona on 1 July 1935, less than a year before the Spanish Civil War. Both her father, a medical doctor, and her mother, a housewife, encouraged Pepita and her sister to study and be able to earn a living independently. The two daughters completed their secondary education at the Montserrat Secondary School in Barcelona. When it was time to choose a career, Pepita, who admired her father, began studying Medicine at the University of Barcelona. Soon, however, she switched to Biology, a choice driven by the love for the sea that she had developed as a child during summers spent with her family on the beaches of Castelldefels.

Castellví obtained a bachelor's degree in Biology in 1960, with *Premio Extraordinario* (Extraordinary Graduation Award). At that time, most biologists worked as secondary school teachers. Castellví tried this path but did not like it and went to the newly created IIP to offer her scientific collaboration. There, she was told that this was not a job for women but, undeterred, as she explained in an interview (for example, Castellví, 2017), she resorted to a strategy: she claimed that she only wanted to work on her doctoral thesis, and was admitted. She obtained a fellowship of the CSIC in 1961 and rose in the institutional rank to become a tenured research associate in 1964, a first-class research associate in 1967, a senior Researcher in 1971 and research professor in 1986. In 1984, the president of the CSIC, Enric Trillas, nominated her as the CSIC delegate in Catalonia, a position she left in 1986 to work in Madrid as director of coordination of the CSIC Presidency (1988), coordinator of the Antarctic Programme of the CSIC (1989) and manager of the National Antarctic Programme of the Interministerial Commission of Science and Technology (CICYT) in 1989. Back in Barcelona, she was director of the ICM from 1994 to 1995, deputy director of Research and Development Programmes of the CICYT (1995) and CSIC coordinator for the Mediterranean Marine and Environmental Research Centre (CMIMA) project (1997). Castellví officially retired in 2000 but continued to be linked to the ICM and to actively participate in outreach and research activities, especially in relation to the Antarctic continent.

From the founding of the IIP, Ramon Margalef's scientific leadership promoted an ecological vision of fisheries problems, with an emphasis on studies of food webs. Within this context, Castellví focused on the then little-known field of marine bacteriology. To further her training on the subject, she obtained a French fellowship and spent two years in France, at the Laboratoire Arago of Banyuls-sur-Mer (now the Observatoire Océanologique de Banyuls-sur-Mer), an institution operated by the Faculty of Sciences and Engineering of Sorbonne University (Université Pierre-et-Marie-Curie until 2017) and the French National Centre for Scientific Research. She also visited the Biological Station of Roscoff, on the coast of Brittany. In Banyuls, Castellví worked with Edmond Lagarde, a specialist in bacterial physiology and metabolism, and published a paper (Lagarde and Castellví, 1965) dealing with interactions between bacteria and microalgae. This is currently a very relevant topic that has flourished in the recent decades thanks to the implementation of molecular biology procedures, but in the early 1960s the available techniques were very rudimentary.

In 1964, two more women biologists, Dolors Blasco and Tecla Riera, joined the IIP as graduate students. Another new addition in the same year was Antoni Ballester, a chemist recruited by Ramon Margalef, who had spent the previous years organizing the La Salle Foundation's Oceanographic Laboratory on Margarita Island in Venezuela. Ballester and Castellví subsequently established a strong scientific collaboration that would later be crucial for the development of Spanish research in Antarctica.

In 1965, following earlier studies conducted near Castelló, the IIP started a project to characterize the seasonal cycles of physico-chemical and biological oceanographic variables, including temperature, salinity, major nutrients, chlorophyll concentration and phytoplankton composition, in the coastal waters of Barcelona. The three women scientists of the IIP, Blasco, Castellví and Riera, contributed to various objectives of this project and participated in sample collection, which was carried out from the Stella Maris, a rented fishing vessel that had been adapted. In particular, Castellví studied the seasonal cycle of heterotrophic bacteria (using plate counts) and published studies on the phytoplankton and primary production in the region with Ramon Margalef. Her PhD thesis, Contribution to the biology of *Skeletonema costatum* (Grev.) Cleve, supervised initially by Francisco García del Cid (director of the IIP) and, after his death in October 1965, by Ramon Parés, Professor of Microbiology at the University of Barcelona, was presented in 1969.

In 1971, the research vessel *Cornide de Saavedra* came into service. Together with funding provided under the Second Development Plan to investigate the NW African upwelling area, where Spain maintained a large fishing fleet, this vessel provided a significant boost to oceanographic research at the IIP and fostered Spain's contribution to the international programme Co-operative Investigation of the Northern Part of the Eastern Central Atlantic (CINECA) within the framework of the International Decade of Ocean Exploration (IDOE, 1971–1980). Castellví studied heterotrophic processes in a number of expeditions to this upwelling area, including the French CINECA-Charcot I expedition (January–

February 1971), and the Spanish cruises Sahara II (1971) and several of the ATLOR series (1972–1975) on board the RV *Cornide de Saavedra*. In 1978, Castellví received an invitation to instruct a course on marine bacteriology in Cumaná, Venezuela; she spent three months there and, in addition to teaching, carried out research in a coastal lagoon and led an oceanographic cruise to study biogeochemical aspects of the bacteriology of the Cariaco Trench.

During the 1970s and early 1980s, Castellví coordinated various projects on subjects such as bivalve depuration, bacteriology of waste waters and biogas production from municipal solid waste. With Antoni Ballester, she worked on a biokinetic study of vanadium and nickel uptake by marine organisms ranging from bacteria to fish and contributed to the biogeochemical aspects of a large project devoted to the oceanographic study of the Spanish continental shelf. In 1984, she was appointed as the CSIC delegate in Catalonia. From this position, she restructured the management of various departments within the Delegation and introduced innovative initiatives, including a scientific bookshop largely devoted to publications of the CSIC and other official institutions, which were not generally known for the excellence of their distribution networks. In the same year, an invitation to join an Argentine Antarctic cruise would represent a turning point in Castellví's scientific career.

## 1. PEPITA CASTELLVÍ AND SPANISH RESEARCH IN ANTARCTICA

In 1966, Antoni Ballester participated in a Belgian-Dutch expedition to Antarctica aboard the ship *Magga Dan*, which included a visit to the Belgian Roi Baudouin Base in Queen Maud Land.

After his return, impressed by the scientific opportunities in Antarctica, Ballester unsuccessfully attempted to persuade the Spanish authorities to fund research there. Eventually, he received an invitation from Rufino Comes, a colleague at the Argentine Antarctic Institute, to participate with a small research team in the 1984–1985 austral summer cruise of the icebreaker ARA *Almirante Irízar*. The main mission of this ship was to transport personnel and supplies to the Argentine Antarctic bases, but it also carried scientists from Argentina and other countries, who used the expedition as an opportunity to conduct research projects. Ballester's group consisted of Josefina Castellví, the writer Charo Nogueira and myself, from Spain, and two Argentine chemists, René Massol and Jorge Zavatti, who had spent time collaborating with Ballester at the IIP. A few months later, in June–July 1985, on the occasion of the First Spanish Symposium on Antarctic Studies, which took place in Palma de Mallorca, Castellví and other colleagues presented scientific results from the *Almirante Irízar* cruise. Castellví was fascinated by the "personality" of Antarctica, and after this first experience she often said that her life was divided into two parts: before and after going to Antarctica (Interview by Elcacho, 2007). She wrote "We can only approximate the reality of the White Continent if we consider it the highest, brightest, coldest, driest, and most beautiful on Earth" (Castellví, 1996, my translation).

The Spanish authorities continued to show no interest in Antarctic research but, thanks to his scientific connections, in late 1986 Antoni Ballester was invited by Professor Stanisław Rakusa-Suszczewski to join the Biomass III cruise on the Polish vessel *Profesor Siedlecki*, together with Josefina Castellví and two researchers from the IIP, Agustí Julià and Joan Rovira. The team spent time at the Henryk Arctowski Polish Antarctic Station on King George Island and boarded the Polish vessel *Koral* to visit and establish a camp—the first Spanish Antarctic camp—on the then-desolate Livingston Island, with the goal of exploring the possibility of setting up a Spanish scientific base there. Shortly after this cruise, announcements of an imminent renewal of the Antarctic Treaty finally sparked the interest of the Spanish administration. Spain had acceded to the Treaty in 1982 but was not a consultative party and therefore lacked voting rights. To achieve this status, it was necessary to undertake significant scientific activities in Antarctica, such as maintaining a research base. The Ministry of Foreign Affairs contacted the CSIC; its president, Enric Trillas, who in 1987 had appointed Pepita Castellví as director of coordination of the Presidency, asked Ballester to address this issue. Thus, as Castellví wrote (Castellví, 2007), what had not been done in 20 years had to be completed in three months. Weeks of frantic activity followed. The materials and the Spanish team—composed of Ballester, Castellví and seven other scientists and technicians—were transported to Livingston Island by the Polish ship *Garnulzewski*.

The prefabricated modules were installed with the assistance of the Polish colleagues, and by March 1988 the team had returned to Spain after successfully commissioning the Spanish Antarctic Base, which was named after Juan Carlos I. Unfortunately, Ballester had little time to enjoy this success. In May of that year, during a trip to Poland to prepare a new expedition for the following austral summer, he suffered a stroke that forced him to retire from professional activity. Several months later, in September 1988, at the Antarctic Treaty meeting in Paris, Spain was admitted as a consultative party, although economic and administrative uncertainties persisted. Eventually, the CICYT decided to establish an Antarctic Research Programme and appointed Castellví to lead it. She accepted the challenge and, over the following years, she balanced her responsibilities as coordinator and manager of the Spanish Antarctic Programme with active participation in scientific expeditions and directorship of the Spanish Antarctic Base, a position she held from 1989 to 1993–1994. She was one of the first women to take charge of an Antarctic base, a role in which she showed exceptional leadership, successfully bringing together a diverse group of personalities into a cohesive and supportive team. The job was not easy. As she explained in her book *Yo he vivido en la Antártida* (Castellví, 1996), at that time her duties required overseeing everything—from purchasing equipment and food each year for the 12 people (technicians and scientists) living at the base during the austral summer to representing the programme at international meetings.

From 1990 to 1993, Castellví served as the Spanish national representative on the Council of Managers of National Antarctic Programmes (COMNAP), one of the permanent observer organizations at the annual Antarctic Treaty Consultative Meetings. She was also a member of the European Committee on Ocean and Polar Sciences (ECOPS), established in 1989 by the European Science Foundation and the European Commission, and chair of the Review Committee of the European Marine and Polar Science Board (EmaPS), founded in 1995, following the dissolution of ECOPS.

From these austere beginnings, the Spanish Antarctic Programme has gradually grown and diversified, securing a prominent role in international polar research—a success largely built on the early efforts and enthusiasm of Antoni Ballester and Josefina Castellví. Following its renovation in 2019, the Spanish Antarctic Base can now accommodate 50 people. The old laboratory module was decommissioned in 2013; Castellví successfully arranged for its return to Spain, where it is now on display at the Cosmocaixa Museum in Barcelona.

## 2. DIRECTORSHIP (1994–1995) AND THE CMIMA PROJECT

By the late 1980s, the ICM was outgrowing its headquarters in the old Barcelona harbour despite the dismantling of the aquarium and some renovations. The Barcelona City Council intended to demolish the building to free space for a new urban development plan in the area. This situation led to a proposal to build a new multidisciplinary institution, the Mediterranean Marine and Environmental Research Centre (CMIMA), which would accommodate the ICM staff along with additional CSIC research groups. In 1994, an agreement was signed between the Barcelona City Council, the Port Authority and the CSIC to construct a new building near the Olympic Harbour. In the following months, the structure, composition and scientific mission of the CMIMA were discussed in a series of meetings of the stakeholders. It was in this complex context that Castellví was appointed director of the ICM. She did not remain in this position for long (1994–1995), as in 1995 she was appointed by the CICYT to serve as deputy director of R&D Programmes. Nevertheless, during her brief spell as ICM director, Castellví demonstrated outstanding management skills, successfully generating enthusiasm for the integration of the ICM into the new CMIMA and resolving disagreements among the scientific staff. Later, in 1997, the CSIC authorities appointed her as coordinator for the development of the CMIMA Project, and she chaired a Commission to oversee its implementation. Construction began in March 1997, and the new building—which would house the ICM and the Oceanographic Vessels Management Unit (later renamed the Marine Technology Unit)—was inaugurated in November 2001, one year after Castellví's retirement. Since then, the ICM has more than doubled its staff, becoming the largest marine research centre in Spain and one of the most important in the Mediterranean region. It has twice been awarded the Severo Ochoa Centre of Excellence accreditation (2000–2023 and 2025-2028), making it the first Spanish marine research centre to receive this distinction.

After 2000, Castellví continued to participate in numerous scientific committees and panels. For example, she served as vice-president of the Advisory Committee for Sustainable Development of the Generalitat (Government of Catalonia) from 2004 to 2007, and again from 2012 to 2016. She was also actively involved in outreach activities, particularly in relation to research, environmental protection and Antarctica. Despite her many pursuits, she made time to "bring out of the garage" (as she told to Macpherson, 2013, in an interview) hobbies such as gardening, travel and embroidery—an activity in which she excelled. Through her talks and writings, she demonstrated a remarkable ability to engage a general audience and became an inspiration for many young people. In 2007, her public influence was formally recognized when she was invited to deliver the opening address for the Mercè festivities in the city of Barcelona.

On 27 December 2012, Castellví returned to Antarctica to film the documentary *Records glaçats* (Frozen Memories). Directed by Albert Solé and released in 2013, the film retraces her Antarctic experiences from their beginnings 26 years earlier with the establishment of the first Spanish Antarctic camp on Livingston Island, and also pays tribute to the vision and determination of Antoni Ballester.

Among many well-deserved distinctions and awards, Castellví received the Gold Medal for Scientific Merit from the Barcelona City Council (1996), the Narcís Monturiol Medal for Scientific and Technological Merit from the Government of Catalonia (1996), the Sant Jordi Cross from the Government of Catalonia (2003), the Esteve Bassols Lady of Barcelona Award (2005), the Environment Award from the Institute of Catalan Studies (2006), the National Culture Award from the Government of Catalonia (2013), and the Catalan of the Year Prize from the newspaper *El Periódico de Catalunya* (2013).

Coinciding with her 84th birthday in 2019, the ICM organized a session in her honour and named one of its meeting rooms Aula Pepita Castellví. In 2022, the vessel *Josefina Castellví* belonging to the Catalan police force was commissioned, and in 2024 the public library in the Bon Pastor neighbourhood was renamed Biblioteca Bon Pastor – Josefina Castellví.

Castellví's tireless dedication, along with her exceptional organizational and interpersonal skills, was instrumental in the implementation of the CMIMA project and in the advancement of Spain's scientific endeavours in the polar regions. She devoted most of her career to "opening the doors of Antarctica" (Vendrell and Homs, 2006, my translation) for younger generations of researchers. For this, we owe her a profound debt of gratitude.

This brief biography was written shortly before the passing of Josefina Castellví on 2 February 2026; may it also serve as an extended obituary. She is no longer with us, but her memory will continue to be an inspiration for scientists and the broader public.

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