



OPEN ACCESS

EDITED BY

Dianne Margaret Tracey,
National Institute of Water and Atmospheric
Research (NIWA), New Zealand

REVIEWED BY

Mary Livingston,
Fisheries New Zealand, New Zealand

*CORRESPONDENCE

Alejandra V. Volpedo
✉ avolpedo@fvet.uba.ar

RECEIVED 20 February 2025

ACCEPTED 20 March 2025

PUBLISHED 09 April 2025

CITATION

Volpedo AV (2025) A life shaped by the sea:
the path of a South American woman
scientist. *Front. Ocean Sustain.* 3:1580015.
doi: 10.3389/focsu.2025.1580015

COPYRIGHT

© 2025 Volpedo. This is an open-access
article distributed under the terms of the
[Creative Commons Attribution License \(CC
BY\)](https://creativecommons.org/licenses/by/4.0/). The use, distribution or reproduction in
other forums is permitted, provided the
original author(s) and the copyright owner(s)
are credited and that the original publication
in this journal is cited, in accordance with
accepted academic practice. No use,
distribution or reproduction is permitted
which does not comply with these terms.

A life shaped by the sea: the path of a South American woman scientist

Alejandra V. Volpedo^{1,2*}

¹CONICET—Universidad de Buenos Aires, Instituto de Investigaciones en Producción Animal (INPA), Buenos Aires, Argentina, ²Facultad de Ciencias Veterinarias, Universidad de Buenos Aires, Buenos Aires, Argentina

KEYWORDS

otolith, fisheries, South America, Argentina, woman scientists

The sea has always played a central role in my family and my life. My maternal grandparents were Spanish immigrant fishermen (Galicians) who arrived in Argentina in the early 20th century, fleeing poverty and war. I grew up in a household where eating fish was common—a rarity at the time in Argentina, where beef was the dietary staple. Every summer of my childhood, my parents and I would travel to Aguas Verdes, a small coastal town with fewer than 100 inhabitants. There, I collected seashells on the beach with my mother and went fishing with my father. In the 1980s, during primary school, my fascination with the sea grew, fueled by Jacques Cousteau's documentaries, books about marine mammals, and my grandparents' stories about cod fishing in the North Sea.

At the end of the 1980s, I enrolled in the Biology Sciences program at the Faculty of Exact and Natural Sciences of the University of Buenos Aires (UBA). Argentina had recently regained its democracy (1982), and universities were undergoing a profound democratic reorganization. After a long period of isolation, we once again had access to academic appointment process of professors, international literature, and global scientific collaboration. However, students still faced challenges in balancing work and studies, particularly those of us who worked outside the university. I was a biology teacher at a high school in the morning and attended classes at UBA in the afternoon and evening.

The Vertebrate course completely captivated me, opening the door to the fascinating world of fish. Although marine mammals were my initial passion, I soon learned that a major challenge in Argentina was estimating the diets of ichthyophagous animals due to the difficulty of identifying their prey. At the Vertebrate Laboratory, Dr. Diana Echeverría and Dr. Enrique Crespo invited me to identify otoliths in the stomach contents of marine mammals. For this project, I became the first to describe the morphology and morphometry of otoliths from 90 species in the Argentine Sea, including pleuronectiforms, which exhibited asymmetry in their otoliths. I was able to relate the otolith morphometry to fish life habits and their use of the water column, proposing morphometric indices that enabled precise estimations of marine mammal diets. This research laid the groundwork for my undergraduate thesis in Biological Sciences.

After graduating, I applied for a doctoral scholarship from UBA and obtained funding from the National Scientific and Technical Research Council (CONICET). My doctoral thesis focused on the morphometry and microchemistry of sciaenid otoliths from the Southwestern Atlantic and Pacific Ocean (Figure 1). This research provided me with the opportunity to travel to Peru, with funding from UBA, to study the effects of the El Niño–Southern Oscillation (ENSO) on otoliths. I participated in my first oceanographic campaigns—an uncommon experience for female students in South America at the time. During this period, I established contact with leading specialists such as S. Campana, B. Morales Nin, B. Gillanders, R. Radtke and D. Secor, through traditional correspondence, as email was not yet available. These researchers shared their research with me by postal mail, which motivated me to deepen my understanding of how water chemistry is reflected in otoliths and to study the great migrations of South American marine and freshwater fish.



FIGURE 1

Alejandra Volpedo with a whitemouth croaker otolith (*Micropogonias furnieri*). Source: Image taken from the "Otolitos: La Caja Negra" episode of the SCIENTIFIC miniseries produced by CONICET Documental, winner of the 2024 TAL Awards.

Upon completing my doctoral thesis, I wanted to further explore the microchemistry of otoliths, so I approached the Center for Transdisciplinary Water Studies (CETA), a newly established research center at the Faculty of Veterinary Sciences of UBA. There, I applied for a postdoctoral position with Dr. Alicia Fernández Cirelli, a distinguished chemist from CONICET. Under her guidance, I investigated the chemical aspects of otoliths, developing new techniques to determine barium, strontium, and other metals in otoliths, and I successfully obtained CONICET funding.

The results of this research gave rise to new questions and opportunities. I established my own research group as new doctoral fellows joined, and I successfully secured both national and international funding. Over time, the group strengthened and gained recognition across South America.

The path was not without its challenges. One of the earliest obstacles I faced as a woman in science was balancing part-time work my undergraduate studies. However, after obtaining doctoral and postdoctoral scholarships and funding, I was able to dedicate myself fully to research. Another notable challenge was the initial resistance to allowing female students to participate in oceanographic and fisheries exploration campaigns. It was implicitly understood that female students should work in laboratories and focus on biological groups like plankton, algae, and invertebrates, rather than fish. At that time, fish and fisheries research were considered the domain of male students. In Argentina, while women made up more than 50% of CONICET researchers in the 2000s, leadership positions and the highest ranks in the research career were predominantly held by men.

Despite working in science for more than 30 years, I still feel excitement when answering questions such as where a fish was born, what route a migratory fish takes through the Southwestern Atlantic or La Plata Basin, or when tracking the journey of invasive species like salmonids in South America and understanding their distribution in Patagonian rivers and lakes.

Throughout my career, I have played an active role in training young scientists and building an interdisciplinary research team. I

have encouraged my students to engage in scientific networks that provide a broader geographical and temporal understanding of fish movements across a continent as biodiverse as South America.

My advice to students is to never settle for what they learn in their laboratories. They should take advantage of opportunities to connect with researchers from around the world, apply for scholarships and funding, and never lose their curiosity to learn. Those who dare to develop new methodologies to solve emerging problems, think creatively, work collaboratively, and step out of their comfort zones.

Marine sciences in South America still face many challenges, and the future is in the hands of those who dare to seek new solutions.

Author contributions

AV: Writing – original draft, Writing – review & editing.

Funding

The author(s) declare that no financial support was received for the research and/or publication of this article.

Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declare that no Gen AI was used in the creation of this manuscript.

Publisher's note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated

organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.