

# Dr. Farzaneh Momtazi

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## Research Profile

Marine biodiversity scientist with expertise in large-scale biodiversity datasets, ecological modelling, and statistical analysis of marine ecosystems. My research focuses on understanding biodiversity patterns, ecosystem resilience, and the responses of marine communities to environmental change. I integrate biological observations, species distribution modelling, and environmental datasets to investigate biodiversity–environment relationships and support ecosystem-based management.

## Research Interests

- Marine biodiversity and ecosystem resilience
- Biodiversity indicators and ecosystem health
- Climate change impacts on marine ecosystems
- Species distribution modelling and ecological niche modelling
- Deep-sea ecosystem ecology and habitat mapping
- Amphipod taxonomy

## Personal Information:

|                                 |                                                                                                                                                                                                                        |                                                          |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| First name, Surname             | Farzaneh Momtazi                                                                                                                                                                                                       |                                                          |
| Sex                             | Female                                                                                                                                                                                                                 |                                                          |
| Researcher unique identifier(s) | <a href="https://www.researchgate.net/profile/Farzaneh-Momtazi">https://www.researchgate.net/profile/Farzaneh-Momtazi</a><br><a href="https://orcid.org/0000-0002-3074-0865">https://orcid.org/0000-0002-3074-0865</a> |                                                          |
| Address                         | Eckenheimer Landstr.370<br>60345 Frankfurt                                                                                                                                                                             | momtazi.f@gmail.com  <br>farzaneh.momtazi@senckenberg.de |

## Education

| Date        | Faculty/department - University/institution - Country                                                                                                                                                                                   |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sep.21.2013 | Ph.D. in <i>Animal biosystematics</i> , University of Tehran, Iran. <i>Thesis</i> : Taxonomy and morphological variation of intertidal marine Amphipoda in the Persian Gulf and the Gulf of Oman. <i>Achievement</i> : 1st rank student |
| 2008        | MSc. in <i>Biology</i> , Ferdowsi University of Mashhad, Iran. <i>Thesis</i> : Anatomical study of tympanic bullae in genus <i>Meriones</i> for taxonomic and phylogenetic studies (A Score)                                            |
| 2006        | BSc. in <i>Biology</i> . Ferdowsi University of Mashhad, Iran. <i>Thesis</i> : Study the effect of herbal plants on the growth rate of <i>Escherichia coli</i> (A Score)                                                                |

## Position

| Date           | Job title, Employer, Country                                                     |
|----------------|----------------------------------------------------------------------------------|
| 6.2026-present | Postdoc Researcher at the Potsdam Institute for Climate Impact Research, Germany |
| 2024-6.2026    | Postdoc researcher at the Senckenberg Research Institute, Germany                |
| 2022-2024      | Humboldt fellowship at the Senckenberg Research Institute, Germany               |

|           |                                                                                                                |
|-----------|----------------------------------------------------------------------------------------------------------------|
| 2013-2022 | Assistant professor at the Iranian National Institute for Atmospheric Sciences and Oceanography (INIOAS), Iran |
|-----------|----------------------------------------------------------------------------------------------------------------|

## Project Management Experiments

| Date         | Project - <b>Role</b> – <i>Funder</i>                                                                                                                                                                                    |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2025-present | Exploring Mangrove Talitrid (Crustacea: Amphipoda: Talitridira) Biodiversity in the Persian Gulf, <b>Senior researcher</b> , <i>Senckenberg Research Institute (SGN) and Iranian National Institute for Oceanography</i> |
| 2024-present | Long-term amphipod biodiversity variation in Dogger Bank, <b>Junior researcher</b> , <i>SGN</i> .                                                                                                                        |
| 2024-present | Underestimated driver for Benthic Biodiversity Living in the Abyss and its Evolution, <b>Postdoc researcher</b> , <i>Senckenberg Research Institute</i> .                                                                |
| 2022- 2024   | Response of amphipod community to climate change in the Persian Gulf, <b>Senior researcher</b> , <i>Humboldt Foundation Institute</i> .                                                                                  |
| 2021-2023    | Community structure and diversity of zooplankton in mangrove forests of the Persian Gulf and the Gulf of Oman, <b>Junior researcher</b> , <i>Iran National Science Foundation (INSF)</i>                                 |
| 2021-2022    | Modeling distribution patterns of amphipods in the Persian Gulf and the Gulf of Oman using a random forest model, <b>Senior researcher</b> , <i>INSF</i>                                                                 |
| 2018-2022    | Macrobenthic studies of oceanographic expeditions in the Persian Gulf and the Gulf of Oman, <b>Senior researcher</b> , <i>INIOAS</i>                                                                                     |
| 2019-2020    | DELTA database for marine amphipods of the Persian Gulf, <b>Senior researcher</b> , <i>Leibniz, and INSF</i>                                                                                                             |
| 2013-2015    | Gathering/digitization /cleaning and interpretation of Iran's marine biodiversity data based on the Ocean Biodiversity Information System (OBIS) platform. <b>Junior researcher</b> , <i>INIOAS</i>                      |
| 2013-2015    | Taxonomy of subtidal benthic amphipods from the Gulf of Oman PGGOOS Collection, <b>Senior researcher</b> , <i>INIOAS</i>                                                                                                 |
| 2013-2015    | Taxonomy of ghost shrimps in Hormozgan province, <b>Senior researcher</b> , <i>INIOAS</i>                                                                                                                                |

## Achievements and Awards

| Date | Award                                                                                                                                                                  |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2025 | Deep-Ocean Stewardship Initiative (DOSI) to attend the international workshop “Assessing Cumulative Impacts on Deep-sea Communities” in Glasgow, UK, in February 2026. |
| 2025 | International Center for Deep-Life Investigation fellowship to attend the Workshop on Deep-sea Ecology & Sustainability 2025, Hangzhou, China, October 14 to 28, 2025  |
| 2025 | Paul Ungerer Stiftung to study mangrove talitrid taxonomy and ecology                                                                                                  |
| 2022 | Humboldt fellowship for research on the response of the amphipod community to climate change in the Persian Gulf                                                       |
| 2019 | Research grant from the Leibniz Association for the DELTA database project                                                                                             |
| 2018 | Best researcher at the Iranian National Institute for Oceanography and Atmospheric Science                                                                             |
| 2016 | UNESCO/IOC fellowship for Crustacean Taxonomy Training in Indonesia                                                                                                    |
| 2008 | First rank award in PhD exam at the University of Tehran in the biosystematics field                                                                                   |

## Referees

|                           |                                                                                                                                 |                                                                                                                                                                                  |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dr. Hanieh Saeedi         | Biodiversity Information Coordinator at Senckenberg Research Institute, Department of Marine Zoology, Biodiversity Information. | Senckenberg Research Institute and Natural History Museum<br>Senckenberganlage 25<br>60325 Frankfurt<br>+49 (0) 69 7542 1344<br>hanieh.Saeedi@senckenberg.de                     |
| Prof. Dr. Angelika Brandt | Department of Marine Zoology - Section Crustacea<br>Professor at the Goethe University in Frankfurt                             | Senckenberg Research Institute and Natural History Museum<br>Senckenberganlage 25<br>60325 Frankfurt<br>+49(0) 69 7542-1240<br>angelika.brandt@senckenberg.de                    |
| Dr. Torben Riehl.         | Research Associate and Deputy Head of Marine Zoology.                                                                           | Senckenberg Research Institute and Natural History Museum<br>Senckenberganlage 25<br>60325 Frankfurt<br>+49 (0)69 7542 1251 (office)   +49 (0)152<br>torben.riehl@senckenberg.de |

## Skills

|          | Skill                                                                                                                                                                             | Level        |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Method   | Image processing, Species distribution modeling, Amphipod taxonomy, Benthic analysis, Data analysis, Geometric morphometrics, Digital taxonomy, Digital drawing, Benthic sampling | Professional |
| Method   | Molecular taxonomy, Electron Microscope preparation, Decapod taxonomy                                                                                                             | Familiar     |
| Software | BIIGLE, ArcGIS, R, Primer, QGIS, SPSS, DELTA, Adobe Illustrator, Photoshop, Linux                                                                                                 | Professional |

## Language

| Language | Level               |
|----------|---------------------|
| English  | Fluent              |
| Deutsch  | B1 (under progress) |
| Arabic   | B1                  |
| Persian  | Native              |

## Teaching Experience

|           | Course                                                                         | Institute                         |
|-----------|--------------------------------------------------------------------------------|-----------------------------------|
| 2012-2020 | Zoology, Mammalogy, Insects                                                    | Kharazmi University, Tehran, Iran |
| 2009-2020 | Biosystematics, Vertebrate and Invertebrate Zoology, Lab of Vertebrate Zoology | Azad University, Tehran, Iran     |

## Mentoring Experience

| Grade    | Number of Student | Institute                                         |
|----------|-------------------|---------------------------------------------------|
| PhD      | 2 students        | Iranian National Institute for Oceanography, Iran |
| MSC      | 2 students        | Iranian National Institute for Oceanography, Iran |
| Bachelor | 1 student         | Senckenberg research Institute, Germany           |
| MSC      | 1 student         | Senckenberg research Institute, Germany           |

## Previous Research Experience

- Gathering/digitization /cleaning and interpretation of Iran's marine biodiversity data based on the Ocean Biodiversity Information System (OBIS) platform. *INIOAS, 2013-2015, Junior researcher*

All available sources were used to extract and standardize data on the Persian Gulf's biodiversity, creating the first reliable dataset for further analysis. I received training in this project on data extraction and submission based on the OBIS manual.

- Taxonomy of subtidal benthic amphipods from the Gulf of Oman PGGOOS Collection (*INIOAS*), 2018-2022, *Senior researcher*

The collected material from the INIOAS expedition in the subtidal area (2008-2013) was studied in the project, and the new species and new records were published in five articles. The digital drawing was used in this project.

- DELTA database for marine amphipods of the Persian Gulf, Senior researcher, *Leibniz Institute and Iran National Science Foundation (INSF)*, 2019-2020, *Senior researcher*

The results of the previous project that was conducted related to amphipods were used in the project to create a DELTA database of amphipods in the region. This database facilitates amphipod identification in the region and improves the accuracy of benthic studies. The database was appreciated by INSF.

- Macrobenthic studies of oceanographic expeditions in the Persian Gulf and the Gulf of Oman, *Iran National Science Foundation (INSF)*, 2018-2022, *Senior researcher*

This study aimed to map the benthic diversity in the PG and reveal its main environmental drivers. I managed three offshore expeditions and analyzed the collected material from 56 stations in each expedition. The laboratory analysis, identification, and data analysis were done, and ArcGIS was used to visualize the results. We survived the relationship between biotic and abiotic factors (sediment and water variables) in the project. Seven articles and two research reports were extracted from the results

- Community structure and diversity of zooplankton in mangrove forests of the Persian Gulf and the Gulf of Oman, *INSF*, 2021-2023, *Junior researcher*

In this project, I trained in zooplankton sampling and analysis with R and Primer software. I used BIOENV and Draftsman plot analysis to find the relation between environmental variables and zooplankton diversity.

- Response of amphipod community to climate change in the Persian Gulf, Senckenberg Research Institute, 2022-2024, *Senior researcher*

This project aimed to evaluate amphipod biodiversity on both global and local scales, considering their ecological variations and determining the impact of climate change on their distributions. We extracted

over 1 million biodiversity occurrence data from open datasets and conducted literature mining using several R packages. Biodiversity analysis was performed using General Linear Models (GLM), General Additive Models (GAM), correlation and PCA analysis, and Ecological Niche Modeling, all within R. We visualized the biodiversity data using QGIS. As a result, we created global and regional (Persian Gulf) distribution maps of amphipod biodiversity, considering their ecological contexts and depths. We identified the environmental drivers affecting amphipods and their responses to climate change, highlighting new biodiversity hotspots. These findings were published in three peer-reviewed articles. The data enhances macro biodiversity analysis and provides a framework for sustainable use.

- Trait-mediated responses of amphipod feeding guilds to climate change, Senckenberg Research Institute, 2025-present, *Senior researcher*

In this research, a climate-driven species distribution modeling framework was developed for 17 globally distributed benthic amphipod species. This project integrated species traits, habitat suitability under future RCP scenarios, and statistical inference using permutation ANOVA to quantify range shifts, centroid displacement, and niche overlap among ecological groups. The analyses were conducted entirely in R, leveraging reproducible workflows and advanced statistical modeling, and the manuscript is currently in preparation for submission to a high-impact journal. The results show that climate severity strongly affects spatial redistribution, highlighting the importance of incorporating dynamic species ranges into marine spatial planning. Static Marine Protected Areas (MPAs) may fail to capture future distributions if centroid shifts exceed protected boundaries. Trophic identity influences the magnitude of habitat change; conservation strategies should also consider functional composition. Protecting areas that maintain trophic diversity and ecological redundancy may enhance resilience under climate change.

- Rocky seafloor — Underestimated driver for Benthic Biodiversity Living in the Abyss and its Evolution, Senckenberg Research Institute, 2024-2026, *Postdoc researcher*

This study investigates habitat heterogeneity in the Vema Fracture Zone (Atlantic Ocean) using multibeam data. OFOS images are being analyzed through image processing to explore the relationship between habitat heterogeneity and biodiversity. Habitat mapping will be conducted by integrating biodiversity and geospatial data, with random forest analysis applied to examine habitat configuration. In parallel, benthic species collected with a box corer and epibenthic sleds are being sorted and identified in the laboratory. In the next phase, statistical analyses will be used to determine the environmental drivers of benthic diversity and to refine habitat mapping.

- Dogger Bank long-term monitoring amphipod biodiversity, 2025-2026, *Junior researcher*

The project aims to investigate the distribution patterns of amphipods in the North Sea, with a focus on identifying the environmental drivers of species distribution and diversity, and evaluating how amphipod communities have responded to ecosystem changes over the past 20 years. For this purpose, samples collected through the long-term Senckenberg Dogger Bank Monitoring Program will be analyzed. The first portion of curated data from these expeditions has already been published and submitted to OBIS, representing the first curated database of this monitoring program.

- Exploring Mangrove Talitrid (Crustacea: Amphipoda: Talitridira) Biodiversity in the Persian Gulf, 2025-2026, *Senior researcher*

This study aims to fill knowledge gaps in mangrove forest talitrid biodiversity and examine the environmental drivers shaping their distribution in this sensitive ecosystem. The results could inform conservation strategies, provide baseline data for designing marine protected areas (MPAs), and contribute to ecosystem health assessments. The project will be conducted in collaboration with Iranian scientists at the Iranian National Institute for Oceanography and Atmospheric Science (INIOAS). Last summer, samples were collected from three mangrove forests along the Iranian coasts of the Persian Gulf. Environmental variables, including water temperature, salinity, and pH, were recorded using

probes, and sediment samples were collected to determine grain size. The statistical analysis will exhibit the environmental drivers of amphipod diversity in the mangrove forest.

- The Role of the Ocean in Earth System Stability, 2026-present, *Postdoc researcher*  
This project aims to assess how changes in marine biodiversity can be linked to changes in ecosystem and biosphere functioning and to identify suitable biodiversity metrics for assessing marine biosphere integrity. A particular focus is on understanding the extent to which taxonomic measures, such as species richness and community composition, can represent changes in functional diversity and ecological functioning. Existing biodiversity indicators and metrics are being evaluated in relation to their ecological meaning, data requirements, spatial and temporal coverage, and suitability for integration into Earth-system assessments. The work involves reviewing available biodiversity data and model simulations and identifying approaches that can better capture the effects of multiple environmental stressors on marine communities. The project contributes to the development of indicators that can help assess how changes in marine biodiversity may affect ecosystem functioning and, ultimately, Earth-system stability.

## Curriculum Vitae

| from      | to        | position                                                   | Institution, city                                | country                                     | degrees/remarks                                                                                                 |
|-----------|-----------|------------------------------------------------------------|--------------------------------------------------|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| 15.6.2026 | present   | Postdoc researcher                                         | Potsdam Institute for Climate Impact Research    | Germany                                     | Planetary Boundary Science                                                                                      |
| 11.2024   | 14.6.2026 | Postdoc researcher                                         | Senckenberg Research Institute, Frankfurt        | Germany                                     | “Underestimated driver for Benthic Biodiversity Living in the Abyss and its Evolution”                          |
| 11.2022   | 11.2024   | Humboldt fellowship                                        | Senckenberg Research Institute, Frankfurt        | Germany                                     | Humboldt fellowship on “Predicting the effect of climate change on the amphipod community in the Persian Gulf.” |
| 07.2021   | 11.2022   | Assistant professor                                        | INIOAS*, Tehran                                  | Iran                                        | Full time                                                                                                       |
| 03.2022   | 07.2022   | Medical leave                                              |                                                  | Iran                                        | Due to COVID-19                                                                                                 |
| 11.2020   | 01.2022   | Caring parents leave                                       | mother                                           | Iran                                        | GIS cancer, kidney failure                                                                                      |
| 02.2020   | 11.2020   | Executor of Iran-Leibniz International Cooperation Project | INIOAS, Tehran and Museum für Naturkunde, Berlin | Research grant from the Leibniz Association | project: making DELTA database for marine amphipods of the Persian Gulf                                         |
| 08.2018   | 02.2020   | Parental leave                                             | Illiya                                           | Iran                                        | Date of birth 23.08.2018                                                                                        |
| 05.2018   | 07.2018   | Assistant professor                                        | INIOAS, Tehran                                   | Iran                                        | The best researcher in INIOAS                                                                                   |
| 04.2018   | 05.2018   | Guest researcher                                           | Museum für Naturkunde, Berlin                    | Germany                                     | Under the supervision of Dr. Coleman                                                                            |

|         |         |                        |                                      |      |                                                                     |
|---------|---------|------------------------|--------------------------------------|------|---------------------------------------------------------------------|
| 08.2015 | 04.2018 | Parental<br>leave      | Nirvana                              | Iran | Date of birth: 21.08.2015                                           |
| 11.2013 | 07.2015 | Assistant<br>professor | INIOAS, Tehran                       | Iran | Full time                                                           |
| 09.2013 | 11.2013 | Teacher                | Kharazmi<br>University,<br>Tehran    | Iran | teaching zoology, evolution,<br>and insect courses                  |
| 09.2008 | 09.2013 | Doctoral<br>Student    | University of<br>Tehran, Tehran      | Iran | Doctorate in Animal<br>Biosystematics as a top<br>student (A score) |
| 09.2004 | 02.2007 | student                | Ferdowsi<br>University of<br>Mashhad | Iran | Master of Science in<br>Zoology (A score)                           |
| 09.2000 | 07.2004 | student                | Ferdowsi<br>University of<br>Mashhad | Iran | Bachelor of Science in<br>Biology                                   |

\* Iranian National Institute for Oceanographic and Atmospheric Science (INIOAS)