Nauras Daraghmeh curriculum vitae

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Education

2024 – Now **Ph.D. studies in Evolutionary Biology**, Department of Biological and Environmental Sciences, University of Gothenburg, Sweden.
Project: *Chromosomal inversions in seaweed flies (Coelopa spp.)*. Supervisors: Assoc. Prof. Pierre de Wit, Assoc. Prof. Luc Bussière, Dr. Emma Berdan (Harvard University).

2021 – 23 **M.Sc. Marine Science**, Red Sea Research Center, King Abdullah University of Science and Technology, (KAUST), Thuwal, Kingdom of Saudi Arabia.
Thesis: *The role of the cryptobiome and its associated microbial community in coral reef biogeochemical cycling*. A study combining Autonomous Reef Monitoring Structures, DNA metabarcoding, shotgun metagenomics and biogechemical analysis. Supervisors: Prof. Daniele Daffonchio & Prof. Susana Carvalho.

2018 – 20 **B.Sc. Biology** (Major: Marine Biology), University of Bremen, Germany.
Thesis: *Combining DNA metabarcoding and network analysis to unravel inter-kingdom co-occurrence patterns in eastern Red Sea coral reefs*. A study combining Autonomous Reef Monitoring Structures, DNA metabarcoding and network analysis. Supervisor: Prof. Christian Wild.

2010 – 17 **Diploma** (equiv. B.Sc. + M.Sc.) **Industrial Engineering & Management**, University of Technology Dresden, Germany.
Thesis: *Maritime traffic and coral reefs - The environmental impacts of shipping on coral reef ecosystems.* A study compiling a comprehensive assessment of global and local environmental effects of maritime traffic on coral reefs. Supervisors: Prof. Philipp Richter & Prof. Udo Becker.

Professional, research and field work experience

2023 – 24 Project assistant in biodiversity informatics, EU MARCO BOLO project, Department of Marine Sciences, University of Gothenburg, Sweden. Assessing large-scale biodiversity and metaphylogeography patterns along European coastlines using DNA metabarcoding of the ARMS-MBON initiative.

2021 – 23 MSc studies Marine Science, Red Sea Research Center, King Abdullah University of Science and Technology, Thuwal, Kingdom of Saudi Arabia. Involvement in several research projects applying Autonomous Reef Monitoring Structures (ARMS) and molecular techniques. Bioinformatics of amplicon and shotgun metagenomic sequencing data derived from ARMS. Participation in multiple coral reef field work events. Participation in the *Red Sea Decade Expedition*, surveying coral reefs and seagrass habitats.

2020 – 21 Internship, Swedish eDNA Lab, Department of Marine Sciences, University of Gothenburg, Sweden.
2020 Visiting Student Research Program, Red Sea Research Center, King Abdullah University of Science and Technology, Thuwal, Kingdom of Saudi Arabia.
2019 – 20 Student assistant, work group Deliberation, Valuation and Sustainability, Leibniz Centre for Tropical Marine Research (ZMT), Bremen, Germany.
2019 Student assistant, renewable energy developer wpd onshore GmbH & Co. KG, Bremen, Germany.
2018 – 20 Student assistant, Marine Ecology / Coral Reef Ecology Lab, University of Bremen, Germany.
2018 Coral Reef Monitoring scholar, Red Sea Environmental Centre, Dahab, Egypt.
2012 - 13 Guest student, University of Dar es Salaam, Tanzania.

Publications

First-author and shared-first-author peer-reviewed journal publications

Daraghmeh, N., Exter, K., Pagnier, J., […] Pavloudi, C., Obst., M. (2025): A long-term ecological research data set from the marine genetic monitoring programme ARMS-MBON 2018-2020. *Molecular Ecology Resources*, e14073. https://doi.org/10.1101/2024.09.26.614897

Pagnier, J.*, **Daraghmeh, N.***, Obst, M. (2025): Assessing the effectiveness of genetic observatory networks in detecting and monitoring marine non-indigenous species. *Biological Invasions* 27, 77. https://doi.org/10.21203/rs.3.rs-4804152/v1, *shared first-authorship

Co-author peer-reviewed journal publications

Sundberg, P., Axberg, A., **Daragmeh, N.**, Wengström, N., Panova, M. (2024). Monitoring of Endangered Freshwater Mussels in Sweden Using Digital PCR. *Environmental DNA*, 6: e70046. https://doi.org/10.1002/edn3.70046

Gonzalez, K., **Daraghmeh, N.**, Lozano-Cortés, D., Benzoni, F., Berumen, M., Carvalho., S. (2024): Differential spatio-temporal responses of Red Sea coral reef benthic communities to a mass bleaching event. *Scientific Reports*, 14, 24229. https://doi.org/10.1038/s41598-024-74956-7

El-Khaled, Y.C., **Daraghmeh, N.**, Tilstra, A., Roth, F., Huettel, M., Rossbach, F.I., Casoli, E., Koester, A., Beck, M., Meyer, R., Plewka, J., Schmidt, N., Winkelgrund, L., Merk, B., Wild, C. (2022): Fleshy red algae mats act as temporary reservoirs for sessile invertebrate biodiversity. *Communications Biology* 5, 579. https://doi.org/10.1038/s42003-022-03523-5

Reverter, M., Jackson, M., **Daraghmeh, N.**, Milton, N., von Mach, C. (2020): 11-yr of coral community dynamics in reefs around Dahab (Gulf of Aqaba, Red Sea): the collapse of urchins and rise of macroalgae and cyanobacterial mats. *Coral Reefs* 39, 1605–1618. https://doi.org/10.1007/s00338-020-01988-6

Published reports and methods

Daraghmeh, N. (2024): ARMS-MBON 18S rRNA and COI gene metabarcoding: scanning for non-indigenous species v1. *Protocols.io.* https://doi.org/10.17504/protocols.io.n92ldmmmnl5b/v1

Sundberg, P., Breidenbach, M., **Daraghmeh, N.**, Dorup, T., Panova, M., Obst, M (2024): DNA-baserad övervakning av invasiva främmande arter – Resultat från undersökningar vid tre marinor i Stockholms län. *Länsstyrelsen Stockholms rapportserie* 2024:12. ISBN: 978-91-7937-295-8 (electronic) (DNA-based monitoring of invasive species in Swedish marinas)

Sundberg, P., Axberg, A., **Daraghmeh, N.**, Panova, M., Obst, M (2022): Genetic methods in environmental monitoring: Early detection and monitoring of non-indigenous species based on DNA. *Swedish Agency for Marine and Water Management report*; 2022:4. ISBN: 978-91-89329-32-4 (electronic).

Daraghmeh, N. and El-Khaled, Y.C. (2022): iNEXT4steps workflow for biodiversity assessment and comparison. *Protocols.io.* https://doi.org/10.17504/protocols.io.bu6fnzbn

Scholarships, research grants and fellowships

2024 *Research grant*, Herbert & Karin Jacobssons Stiftelse, Sweden. **39,000 SEK**

2024 *Stiftelsen Birgit och Birger Wåhlströms Minnesfond för den bohuslänska havs- och insjömiljön* (fund for research linked to the marine and freshwater environment in and around the province of Bohuslän, Sweden), Wåhlström Stiftelse, Sweden. **35,000 SEK**

2024 *Adlerbertska Foundation Travel Grant*, Adlerbertska Stiftelserna, Sweden. **20,000 SEK**

2022 *Dean's Travel Award Fall 2022,* Biological and Environmental Sciences and Engineering Division, King Abdullah University of Science and Technology, Thuwal, Kingdom of Saudi Arabia. **1,820 USD**

2021 – 23 *KAUST Fellowship* for graduate studies, King Abdullah University of Science and Technology, Saudi Arabia. **70,000 USD**

2020 – 21 *Erasmus+* scholarship of the European Union. **5,291 Euro**

2020 *MLP Student Scholarship, Category: Science* by MLP financify. **3,000 Euro**

2018 *International Year of the Reef 2018 Scholarship* by Mare Mundi and the Red Sea Environmental Centre, Dahab, Egypt. **1,440 Euro**

Awards and prizes

2022 Student Poster Prize. Using Autonomous Reef Monitoring Structures (ARMS) for metagenomics-based studies of aquatic hard-bottom benthic communities. *British Ecological Society Annual Meeting 2022, Edinburg, Scotland, UK.*

Conference and Symposium presentations

2024 **Daraghmeh, N.:** Chromosomal inversions in the seaweed fly Coelopa frigida. *CeMEB (Centre for Marine Evolutionary Biology) Autumn Assembly 2024: Seascape Genomics, Tjärnö Marine Laboratory, Strömstad, Sweden (in-person).* Oral presentation.

2024 **Daraghmeh, N.**, Pavloudi, C., Santi, I., Exter, K., Obst, M.: Long-term ecological research on marine hard-bottom communities using a network of genetic observatories. *Ocean Sciences Meeting 2024, New Orleans, Louisiana, US (in-person).* Oral presentation.

2023 **Daraghmeh, N.**, Obst, M.: Can large-scale metabarcoding data sets reveal connectivity pathways across the European regional seas? *CeMEB (Centre for Marine Evolutionary Biology) Assembly 2023: Seascape Genomics, Tjärnö Marine Laboratory, Strömstad, Sweden (in-person).* Poster presentation.

2023 **Daraghmeh, N.**, Pavloudi, C., Zafeiropoulos, H., Santi, I., Pagnier, J., Exter, K., Obst, M.: Long-term ecological research on marine hard-bottom communities using a network of genetic observatories. *Association for the Sciences of Limnology and Oceanography Aquatic Sciences Meeting 2023, Mallorca, Spain (in-person).* Oral presentation.

2022 **Daraghmeh, N.**, Marasco, R., Daffonchio, D., Obst, M., Carvalho, S.: Using Autonomous Reef Monitoring Structures (ARMS) for metagenomics-based studies of aquatic hard-bottom benthic communities. *British Ecological Society Annual Meeting 2022, Edinburg, Scotland, UK (in-person).* Poster presentation.

2022 **Daraghmeh, N.**, Marasco, R., Aylagas, E., Pearman, J., Villalobos, R., Sola, J., Wild, C., Daffonchio, D., Carvalho, S.: Combining DNA metabarcoding and co-occurrence network analysis to unravel bacterial-metazoan diversity and interactions in Red Sea coral reefs. *Youmares 13 - Conference for Young Marine Researchers "Future Oceans. Science for Resilient Marine Ecosystems", Berlin, Germany (in-person).* Oral presentation.

2022 **Daraghmeh, N.**, Obst, M.: Testing genetic connectivity across the European regional seas with a metaphylogeographic approach. *CeMEB (Centre for Marine Evolutionary Biology) Assembly 2022: Incorporating an evolutionary approach in conservation management, Tjärnö Marine Laboratory, Strömstad, Sweden (in-person).* Oral presentation.

2022 **Daraghmeh, N.**, Marasco, R., Aylagas, E., Pearman, J., Villalobos, R., Sola, J., Wild, C., Daffonchio, D., Carvalho, S.: Combining DNA metabarcoding and co-occurrence network analysis to unravel bacterial-metazoan diversity and interactions in Red Sea coral reefs. *15th International Coral Reef Symposium (ICRS), Bremen, Germany (in-person).* Oral presentation.

2020 Reverter, M., Jackson, M., **Daraghmeh, N.**, Milton, N., von Mach, C.: Reliving the Caribbean catastrophe? The collapse of urchins and rise of macroalgae and cyanobacterial mats in reefs of the Gulf of Aqaba, Red Sea. *Reef Conservation UK 23rd Annual Conference*, *Edinburgh, Scotland, UK (online)*. Lightning talk.

2020 Reverter, M., Jackson, M., **Daraghmeh, N.**, Milton, N., von Mach, C.: Eleven years of coral community dynamics in reefs around Dahab (Gulf of Aqaba, Red Sea): how citizen science helped detect the collapse of sea urchins and rise of macroalgae and cyanobacterial mats. *6th International Marine Conservation Congress, Kiel, Germany (online).* Oral presentation.

Selected experiences traveling, living and working abroad

2021 – 23	Graduate studies in Saudi Arabia.
2021	Crossing Jordan on foot from the Syrian border to the Red Sea (656 km).
2020	Research stays in Saudi Arabia and Sweden.
2018	Travels in the Western Indian Ocean (La Rèunion) and marine monitoring field work in Egypt.
2015 – 16	Extensive travels throughout South East Asia and Oceania. Kayaking Palau's and Raja Ampat's (Indonesia) remote islands. Crossing from Papua New Guinea to the Solomon Islands via the sea route.
2014	Traveling overland by train from Germany to North Korea.
2012 – 13	Semester abroad at the University of Dar es Salaam, Tanzania. Extensive travels throughout East, Central and West Africa, from Somaliland to Senegal. Crossing Central Africa overland from the Indian to the Atlantic Ocean via the Democratic Republic of Congo (including traveling down the Congo River for several weeks on a cargo barge). Traveling overland from Dakar, Senegal to Abidjan, Ivory Coast.
2011	Travels in the Caribbean and South America. Traveling overland from Paramaribo, Suriname to Caracas, Venezuela via Guyana.
2009 – 10	Working holiday stay in Australia. Agricultural work. Travels throughout the country as well as Fiji and South East Asia.

Bioinformatic skills

R/RStudio	Proficient. Use of amplicon sequencing pipelines (cutadapt, DADA2) and data management and visualization packages (tidyverse, ggplot2 etc.) on a daily basis.
Command line	Intermediate. Experience in general data formatting and particularly amplicon sequencing tools such as Swarm, MACSE, etc and metagenomics programs such as SingleM, Prokka, MetaBat, MegaHit etc.
HPC clusters	Intermediate, experience running various computationally intensive jobs on HPC infrastructures.
GitHub	Intermediate, experience documenting code and setting up repositories.
Protocols.io	Proficient, experience publishing computational protocols.

Language proficiencies

German	Native speaker
English	Excellent verbal, writing and reading skills
Swedish	CEFR-level B1
Arabic	Basic level
French	Basic level
Russian	Basic level

Certifications

PADI Rescue Diver (224 dives as of February 2025)
PADI Enriched Air Diver
PADI Drysuit Diver
Reef Check EcoDiver (trained in the Red Sea)
AIDA2 Freediver
International Lifesaver
German / EU drivers license