

Faculty of Mathematics and Natural Sciences

Profile report: Evolutionary ecology of marine animals (Evolutionaire ecologie van zeedieren)

- Discipline: Marine Biology
- Level: tenure-track assistant or associate professor
- Fte: full time (1,0)

1. Scientific discipline

Marine Biology is a broad field covering all biological aspects of organisms (microbes, plants, animals) that are dependent on the marine habitat. It includes both systematics, population dynamics, ecological and evolutionary studies, the study of the functioning and vulnerability of marine ecosystems, as well as the study of physiological mechanisms that are often specifically adapted to the marine habitat.

2. Vacancy

This position is opened by the Board of the Faculty (letter JK/gl/16/00664 of August 9 2016) and will be embedded in the Groningen Institute for Evolutionary Life Sciences. The position falls within the framework of 'Career Paths in Science 3' ('Bèta's in Banen 3'). Please see link for [criteria and conditions](#).

3. Selection committee (BAC)

Prof.dr Ton Groothuis (director GELIFES)
Prof.dr Klemens Eriksson (Coordinator Marine Master Programme, GELIFES)
Prof.dr Han Olf (Conservation Ecology, GELIFES)
Dr. Katja Philippart (Coastal ecology, NIOZ)
Dr. Martine Maan (Behavioural Biology of fish, GELIFES)
Prof.dr Eize Stamhuis (Experimental Marine Zoology, ESRIG)
Christine Lycklama a Nijeholt (Student member GELIFES)

Advisors:

Lourens Boomsma (HR)
Prof.dr Per Palsbøll (Marine Evolution and Conservation, GELIFES)
Dr. Louis van de Zande (Deputy director teaching programme)

4. Research area

As the marine environment, being one of the most important habitats on earth, requires specific adaptations for life, marine organisms provide excellent models to study both the ecology and evolution of these special adaptations as well as the underlying general principles. The study of organisms that are dependent on the marine environment for only part of their life history, allows the study of plasticity

in these adaptations. The evolutionary ecology approach aims to integrate ecological and evolutionary approaches that are often studied in isolation from each other whereas understanding their mutual interactions has now become essential. The field provides indispensable insight in many important societal topics such as food production, ecosystem services, biodiversity preservation, and causes and consequences of global change.

5. Embedding: institute

In Groningen, the integration of physiological and ecological mechanisms with evolutionary approaches is the core of the new strategic theme Adaptive Life of our Faculty of Mathematics and Natural Sciences. The institute in which the position will be embedded, The Groningen Institute for Evolutionary Life Sciences (GELIFES), is the main home basis of this theme. GELIFES houses six expertise groups, having a non-hierarchical internal organization. The institute has several PI's performing research in the marine environment, both in the expertise group GREEN (*Genomics Research in Ecology and Evolution in Nature*, with research on benthic ecology and genomics and population dynamics of marine organisms) and the expertise group *Conservation Ecology* (studying the ecology of migrant waders in relation to benthos and the ecology of marine ecosystem engineers). Based on the profile of the position, the research and teaching of the new staff member will provide opportunities for establishing fruitful connections with these groups as well as with the following expertise groups: the *Behavioural and Physiological Ecology* group (working on behaviour and life history evolution mainly in birds), the group on *Evolutionary Genetics, Development and Behaviour* (focusing among others on behavioural and molecular genetics and behavioural development from an evolutionary perspective), The *Neurobiology* group (focusing on behavioural neuroscience, chronobiology and molecular neurobiology) and the expertise group *Theoretical Research in Evolutionary Life Sciences* (modelling among others eco-evolutionary processes).

Apart from these six groups the institute has set up so called "integrative topic groups" in which researchers of several expertise groups collaborate.

The institute is located relatively close to the Wadden Sea and has a field station at the nearby island of Schiermonnikoog. It also has an extensive salt water aquarium facility.

6. Local and (inter)national position

Local: The field of Marine Biology has an unique position and a long tradition at the University of Groningen. Within the university, but outside the institute connections are present with the Arctic Centre for Polar research and a shared interest in genomics with the Groningen Biomolecular Sciences and Biotechnology Institute (GBB). Research from Groningen can be conducted anywhere on the planet but local/regional research is currently conducted in Arctic Norway, the Baltic Sea, the North Sea, the Wadden Sea, West Africa and China.

GELIFS participates in the interfaculty research school Behavioural and Cognitive Neurosciences, coordinating its selective master program, and has its own Research School in Ecology and Evolution.

Nationally: the University of Groningen has the oldest (1986) fully accredited MSc in Marine Biology in the country. Its hallmark focus in research is on adaptation of marine organisms through the lens of ecology and evolution. This includes a fully integrated research and teaching program (restructured in 2014) that unites experimental marine community ecology, behavioural ecology and ecological and evolutionary genomics, following the institute's overarching theme of Adaptive Life. This sets it apart from other marine research programs that are more restricted: Amsterdam: tropical aquatic ecology with focus on coral reef systems, in collaboration with NIOZ and Naturalis in Leiden; Utrecht: Marine Sciences with a focus on marine geosciences and physical and chemical oceanography; Wageningen with a focus on aqua culture and marine natural resource management. The Institute for Marine resources and ecosystem resources (IMARES) is affiliated with the university of Wageningen and focuses on strategic and applied marine ecology research.

The University of Groningen Marine Biology program has a strong connection with the Netherlands Institute for Sea Research (NIOZ) through partial appointments of NIOZ staff who participate in the teaching program, through shared staff, and collaborative research projects.

Internationally: researchers in the field of marine biology in Groningen have actively led and participated in the former FP7 Networks of Excellence, recently forming and representing the Netherlands in the now self-sustaining, European-wide Research Network Euromarine (<http://www.euromarinenetwork.eu/>). Many active international collaborations exist, such as with universities and marine research centres in Britain (Sanger Institute; University of Oxford), Germany (Humbolt Institute in Kiel; University of Oldenburg, Terramare), Scandinavia (Stockholm University; Nordland University; Norwegian Polar Institute; the Greenland Nature Research Institute) and USA (University of Davies CA; University of Notre Dame; Broad Institute of MIT; UC Santa Cruz; University of Arizona; Harvard). Researchers from Groningen also lead a number of international high-profile collaborative projects, for example: "*Population and evolutionary genomics of host-microbiome interactions in Zostera marina*" together with the Joint Genome Institute US-DOE, UC Davies and Gent University; and "*the Porpoise genome project*" together with among others the NOAA, USA. In the field of the ecology and evolution of migrant waders in relation to their benthic food, Groningen in collaboration with NIOZ is considered the prime leading institute.

7. Expected contributions to research

The new staff member is expected to set up an independent research line with a focus on ecological and evolutionary processes with marine animal models that are attractive to students, complementing ongoing research lines in the institute and

resulting in publications in high ranking journals, substantial external funding and successful supervision of PhD students. This research program should strengthen the institute's and faculty research theme Adaptive Life (understanding adaptive capacity of individuals and ecosystems by integrating mechanistic with eco-evolutionary approaches)

8. Expected contributions to teaching

The candidate is expected to contribute to the teaching in especially the new Marine Biology master (courses and research projects), and attract sufficient number of master and PhD students. She/he is also expected to contribute to teaching at the bachelor level for especially the tracks that prepare for the Marine Biology master and for the track in ecology and evolution (bachelor and master).

9. Expected contributions to the organization

The candidate is expected to have an active interest in the management and organizational tasks of the institute. The candidate will participate in relevant national and international organisations.