

## Faculty of Science and Engineering

### Profile report: Marine Ecological Genomics

- Discipline: Marine Ecology and Genomics
- Level: Tenure-track assistant professor
- Focus: Research
- Fte: 0.8 – 1.0 fte

#### 1. Scientific discipline

Ecology aims at understanding the abundance, distribution and functioning of organisms in interaction with their abiotic as well as their biotic environment and ecological genomics, the hereditary underpinnings of ecology. Ecological genomics is a broad discipline that can be studied at different levels, from adaptive changes at the gene, individual or population level, as well as among interacting species of the same ecosystem. There is an increasing need to integrate the novel opportunities in genomic approaches with ecology as natural ecosystems are under pressure around the globe, threatening biodiversity and ecosystem services. Ecological processes are ideally studied *in situ*, connecting fundamental research with sustainability and nature conservation.

#### 2. Vacancy

This position is opened by the Board of the Faculty of Science and Engineering in the context of the sector plan Biology and will be embedded in the Groningen Institute for Evolutionary Life Sciences ([GELIFES](#)). The position falls within the attractive framework of '[Career Paths in Science and Engineering](#)', which outlines the criteria and timeline for promotion, up to full professor (see link below). As the focus domain of the position is research, the criteria of the career path with a focus on research apply. Please see the link for the criteria and conditions.

#### 3. Selection committee (BAC)

- Prof. dr. Rampal Etienne (Scientific director GELIFES, Professor of Theoretical and Evolutionary Community Ecology)
- Prof. dr. Eddy van der Zee (Education director GELIFES, Professor of Neurobiology of Learning and Memory)

- Dr. Laura Govers (Assistant Professor of Marine Conservation Ecology, GELIFES)
- Prof. dr. Per Palsbøll (Professor of Marine Evolution and Conservation, GELIFES)
- Prof. dr. Hannah Dugdale (Associate Professor of Evolutionary Medicine, GELIFES)
- Prof. dr. Einar E. Nielsen (National Institute of Aquatic Resources, Denmark) or Senior Researcher Dr. Dorte Bekkevold (National Institute of Aquatic Resources, Denmark).
- student member

#### **4. Area of expertise**

Under the current, severe threats to global biodiversity, there is an urgent need for insights into the genomic underpinnings of ecosystem function, species adaptation and persistence and how hereditary traits impact ecosystem restoration.

The University of Groningen has a long history of ecological research in the Wadden Sea, including long-term studies of individuals and populations, resource utilization and competition in food-webs, as well as molecular and big-data-analysis approaches. There is an ongoing close collaboration with the NIOZ Royal Netherlands Institute for Sea Research.

We aim to appoint an ecological genomicist to strengthen the specific priority area in the Dutch Sector Plan in Biology at the University of Groningen entitled “Adaptive and Sustainable Coastal Ecosystems; from ecosystem processes to biodiversity”. To this end, the successful applicant will develop a research line that combines fundamental research with an applied angle in an interdisciplinary context. Specifically, the successful applicant will conduct empirical research in ecological genomics of eukaryote systems in the Wadden Sea, and bordering marine areas; ideally employing an integrated seascape approach.

#### **5. Embedding: institute (and expertise group)**

GELIFES aims to enhance the understanding of processes enabling adaptation to changing environments across all levels of biological organization (from molecules and genes to individuals and ecosystems), to inform society and contribute solutions to societal problems. It coordinates master programs in evolution and ecology, biology, marine biology and in medical and behavioural neuroscience.

GELIFES is organized in a non-hierarchical manner, and staff associate with one (or more) informal expertise groups, of which there are seven, each comprising several principal investigators:

1. Behavioural and Physiological Ecology (BPE)
2. Conservation Ecology (CONSECO)
3. Evolutionary Genetics, Development and Behaviour (EGDB)
4. Genomics Research in Ecology & Evolution in Nature (GREEN)
5. Marine Biology (MB)
6. Neurobiology
7. Theoretical Research in Evolutionary Life Sciences (TRES)

The successful applicant will have access to GELIFES' excellent facilities, including unique animal and molecular lab facilities, an updated high-performance computing cluster and a field station "De Herdershut" on Schiermonnikoog.

## **6. Local and (inter)national position**

### Local:

Ongoing projects in the Wadden Sea include Waddenmozaiek (aimed at biodiversity in the subtidal areas), Swimway (fish ecology), seagrass ecology and restoration, natural coastal protection, and long-term population studies in birds, often in relation to food abundance. The research is not restricted to the Netherlands, but conducted in other parts of the world as well, such as Mauritania and Guinea-Bissau. Collaborations with (empirical) research groups affiliated with the institute, such as the BirdEyes Center of Excellence in Leeuwarden or external entities, such as the Bernoulli Institute (e.g. Artificial Intelligence, Data Science) exist and are encouraged. Within the University of Groningen there are also connections with the Agricola School for Sustainable Society.

### National:

GELIFES has a strong reputation in research and education in ecology, evolution, marine biology, behaviour and neurobiology. GELIFES specifically aims at integrating the study of "how and why" questions, i.e. understanding both causes and consequences of biological diversity at different levels. Nationally, we are recognized as a center of gravity for research and education in (evolutionary) ecology, with important contributions towards research several societal challenges (anthropogenic change, sustainability, and health). Strong collaborations exist with other Dutch universities (e.g., Nijmegen, Amsterdam, Wageningen, and Utrecht) and research institutes in The Netherlands in the field of ecology and conservation, especially with the NIOZ Royal Netherlands Institute for Sea Research, the Netherlands Institute of Ecology, Naturalis Biodiversity Center. Connections to major National nature conservancies are important, such as the Society

for the Preservation of Nature Areas in the Netherlands (Vereniging tot Behoud van Natuurmonumenten), Wadden Sea Council (Waddenvereniging), BirdLife Netherlands (Vogelbescherming Nederland).

#### International:

The University of Groningen ranks among the top 100 of universities in several global rankings and is widely recognized as a leading institution in marine biology, evident in a wide array of international collaborations. GELIFES is the Dutch representative in Euromarine and the Life Sciences Group of the Scientific Committee on Antarctic Research. GELIFES has a long tradition of collaborating in international high-profile networks, such as the EU Network of Excellence Marine Biodiversity and Ecosystem Functioning, the international networks for Biogeochemical Exchange Processes at Sea-Ice Interfaces and the Zostera Experimental Network. GELIFES is also represented in the European Reference Genome Atlas consortium, which focuses on genomics in biodiversity research.

### **7. Teaching**

The successful applicant will contribute to the Bachelor's programme in Biology, and the Master programmes in Marine Biology as well as Ecology and Evolution, including supervision of individual research projects at bachelor and master level. We aim to increase education in ecological genomics as this kind of knowledge and skillset is in high demand for the next generation of ecologists.

Potential courses to which the successful applicant could contribute include for example Genes and Evolution, Ecological Interactions, Biodiversity and Conservation, Research Skills in Ecology & Evolution, Bachelor and Master Research Projects, and in particular the Master course; Principles of Population Genetics in Natural Populations.

Time allocation to teaching is expected to be at 30% during the first five years, and at 40% thereafter. The successful applicant is expected to acquire the "[University Teaching Qualification](#)".

### **8. Research**

The successful applicant is expected to develop an independent, internationally recognized line of high quality research that strengthens GELIFES profile in ecology. The specific expertise areas and skills of the successful applicant should be complementary to the current GELIFES staff. Core research tasks also entails supervision of PhD students and acquiring external funding.

Time allocation to research is expected to be at 60% during the first five years, and at 40% thereafter.

## **9. Contributions to the organization**

All staff members are expected to contribute to management and organization, for example as members of working groups and committees at the institute, faculty or university level. The new staff member is also expected to join relevant national and international organizations, as well as disseminating scientific knowledge and research findings through outreach activities and collaboration with non-academic, societal partners (e.g., in the private sector, governmental and non-governmental organizations).

Staff are expected to allocate 10% of their time to organizational tasks during the first five years and at 20% thereafter.