The Elasmobranch Genetics Group in the Genetics Department of Stellenbosch University in collaboration with the Department of Forestry, Fisheries and the Environment (DFFE), the Wildlife Conservation Society (WCS) and the Norwegian Institute of Bioeconomy Research (NIBIO) is looking for a 2-year postdoctoral fellow to work under the main project

"Genomic adaptation and distribution modelling of elasmobranchs in Southern Africa"

funded by the NRF Marine and Coastal Research call.
Host: Aletta Bester-van der Merwe (Stellenbosch University)
We offer a two-year contract, at a starting value of R250 000/year.

Summary:

On a global scale, climate change and the over-exploitation of marine species are placing severe pressure on marine ecosystems. Elasmobranchs (sharks and rays) are among the most depleted marine animals and the loss of keystone species from ecosystems has profound effects on the entire food-web. To understand the vulnerability of populations to global change, it is crucial to identify unique genetic populations adapted to specific habitats and environments. Genomic studies provide a means not only to assess the degree of connectivity and differentiation between different regions but also to allow the identification of regions involved in genomic adaptation by comparing relative differentiation among genome-wide loci. A better understanding of how environmental changes will impact suitable habitats for these vulnerable elasmobranch populations is therefore of fundamental importance to guide effective, regional, and global management and conservation initiatives. The project will therefore aim to improve knowledge on sharks and rays impacted by fisheries and environmental changes in coastal waters of Southern Africa through the identification of unique genetic populations adapted to vulnerable habitats and/or possible shifts in distribution ranges brought on by climate change. The project will build on previous genetic work conducted on elasmobranchs in Southern Africa. This will allow the development of an integrative framework of comparative genomics, genotype-environment interactions and evaluating species distribution patterns using species distribution modelling crucially needed to develop effective management strategies for vulnerable elasmobranch populations.

Work tasks:

The postdoc will conduct both laboratory and computational work involving genomic assessment and distribution modelling of key shark and ray species including. The more specific aims are to 1) test for signatures of selection through outlier differentiation methods) perform genotype-environment analysis (GEA) (selection driven by environmental variables) and 2) to assess the current and future suitability of habitat for vulnerable shark and ray populations along the Southern African coast and more widely depending on species range.

Aletta E. Bester van der Merwe
Associate Professor
Molecular Breeding & Biodiversity Group
Department of Genetics • Stellenbosch University • Private Bag X1 • Matieland, 7602 • South Africa
• Tel: +27 (0) 832338990 • e-mail: aeb@sun.ac.za

Minimum requirements:

PhD in genetics, molecular biology, bioinformatics or related disciplines obtained in the last 5 years.
First-author or co-author of at least three peer-reviewed manuscripts published in the field.
Ability to work in a multi-disciplinary, international team.
Excellent time and project management skills.
Previous experience with genomics data analyses, in particular low coverage genomes.
Experience with genome assembly and/or species distribution modelling.

Additional requirements:

Knowledge of marine ecosystems and species.
Proficiency in wet lab analyses related to molecular markers and DNA sequencing.
Experience in working with R and other programming software
Excellent ability to communicate and write in English.

The lab and research group:

The Elasmobranch Genetics Research Group, based in the Department of Genetics at Stellenbosch University, South Africa, is currently collaborating with various governmental and wildlife conservation-based organizations on the application of genetic and genomic tools for enhanced fisheries management, monitoring and conservation. The group also contributes to marine conservation and fisheries management in Africa through education, research, community interaction, business development and services. Postgraduate students and early-career researchers are given an equal opportunity to be trained in the basic and more advanced fields of genetics, genomics, bioinformatics, and integrated ecosystem modelling with application to biodiversity conservation and management. All major facilities and laboratory equipment are available in the Department of Genetics, including several DNA sequencing platforms that are accessible from the Central Analytical Facilities situated in the same building.

To apply:

Please send a motivation letter, comprehensive CV and the contact of two references to: aeb@sun.ac.za
Ideally, candidates should start as soon as possible, but latest June 2023.
The position will remain open until a suitable candidate is found.

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