



DR ALETTA BESTER-VAN DER MERWE

Biography

I am a Principle Investigator in the Molecular Breeding and Biodiversity group in the Genetics Department, Stellenbosch University. My teaching and research focus is Molecular Population and Evolutionary Genetics of Marine and Aquatic species with aim to incorporate data on population and demographic estimates into management and conservation of commercially important species. My experience in genetic data analysis ranges from the basic tools for population data analysis to more advanced methods in which genetic data are simulated to infer biological and evolutionary historical processes over a broad range of organisms including marine species, plant pathogens and livestock animals. More recently, I established the first elasmobranch genetics research group in South Africa through a network of partnerships with other governmental organizations, NGOs and academics. I am currently supervising a total of 12 postgraduate projects (6 PhDs, 4 MSc and 2 HonsBSc) of which five are relating to population genetic structure, evolutionary history and reproductive biology of elasmobranchs. Other projects include population structure assessment of aquaculture species, molecular characterization of the black soldier fly and genetic mapping and transcriptomic profiling of fruit cultivars.

Graduates

Postdocs

Dr Simo Maduna

Dr Luca Mirimin

Dr Juan Ruiz Guajardo

PhD Students

Simo Maduna

Daphne Bitalo

Lise Sandenbergh

Clint Rhode

Belinda Swart

MSc Students

Michaela van Staden

Kelvin Hull

Gibbs Kuguru

Rozanne Badenhorst

Charne Rossouw

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Simo Maduna
Sonja Blaauw
Jana du Plessis

Hons Students

Tamaryn Asbury
Katherine Hughes
Michaela van Staden
Kelvin Hull
Jody Bell
Danielle Robbertze
Juanita Schoeman
Charne Rossouw
Malira Masoabi
Shaun Lesch
Marione Niemandt
Simo Maduna
Jana du Plessis
Juli-Ann Hepple
Lize Sandenbergh

Recent Publications

2018

- Simo N. Maduna, Charné Rossouw, Ruhan Slabbert, Sabine P. Wintner, Charlene da Silva, and **Aletta E. Bester-van der Merwe**. New polymorphic microsatellite loci revealed for the dusky shark *Carcharhinus obscurus* through Ion Proton double-digest RAD sequencing. *Molecular Biology Reports* 14:1-5 <https://doi.org/10.1007/s11033-018-4338-x>
- Hull, K.L., Maduna, S.N. and **Bester-van der Merwe, A.E.**, 2018. Characterization of the complete mitochondrial genome of the common smoothhound shark, *Mustelus mustelus* (Carcharhiniformes: Triakidae). *Mitochondrial DNA Part B*, 3(2), pp.964-965.
- Van Staden, M., Gledhill, K.S., Rhode, C., **Bester-van der Merwe, A.E.** 2018. The complete mitochondrial genome and phylogenetic position of the leopard catshark, *Poroderma pantherinum*. *Mitochondrial DNA Part B*, 3(2), pp.750-752.
- Kuguru, G., Maduna, S., da Silva, C., Gennari, E., Rhode, C. and **Bester-van der Merwe, A.**, 2018. DNA barcoding of chondrichthyans in South African fisheries. *Fisheries Research*, 206, pp.292-295.
- Maduna, S.N., Van Wyk, J.H., Da Silva, C., Gennari, E., **Bester-van der Merwe, A.E.** 2018. Evidence for sperm storage in common smoothhound shark (*Mustelus mustelus*) and paternity assessment in a single litter from South Africa. *Journal of Fish Biology*. 92(4), pp.1183-1191.



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2017

- Maduna, S.N. and **Bester-van der Merwe, A.E.**, 2017. Molecular research on the systematically challenging smoothhound genus *Mustelus*: a synthesis of the past 30 years *African Journal of Marine Science* 39 (4), 373-387
- **Bester-van der Merwe, Aletta E.**, Daphne Bitalo, Juan M. Cuevas, Jennifer Ovenden, Sebastian Hernandez, Charlene da Silva, Meaghan McCord, and Rouvay Roodt-Wilding. Population genetics of Southern Hemisphere tope shark (*Galeorhinus galeus*): Intercontinental divergence and constrained gene flow at different geographical scales. *PLoS ONE* 12, (9): e0184481.
- Maduna, S.N., Rossouw, C., Silva, C., Soekoe, M. and **Bester-van der Merwe, A.E.**, 2017. Species identification and comparative population genetics of four coastal houndsharks based on novel NGS-mined microsatellites. *Ecology and Evolution*, 7(5), pp.1462-1486.
- Koopman, T.A., Meitz-Hopkins, J.C., **Bester-van der Merwe, A.E.**, Tobutt, K.R., Bester, C. and Lennox, C.L., 2017. Genetic Diversity and Gene Flow of Four South African *Venturia inaequalis* (Apple Scab) Populations. *Phytopathology*, 107(4), pp.455-462.
- Rhode, C., **Bester-van der Merwe, A.E.** and Roodt-Wilding, R., 2017. An assessment of spatio-temporal genetic variation in the South African abalone (*Haliotis midae*), using SNPs: implications for conservation management. *Conservation Genetics*, pp.1-15.

2016

- Swart, B.L., **Bester-van der Merwe, A.E.**, Kerwath, S.E. and Roodt-Wilding, R., 2016. Phylogeography of the pelagic fish *Seriola lalandi* at different scales: confirmation of inter-ocean population structure and evaluation of southern African genetic diversity. *African Journal of Marine Science*, 38(4), pp.513-524.
- Rossouw, C., Wintner, S.P., and **Bester-van der Merwe, A.E.**, 2016. Assessing multiple paternity in three commercially exploited shark species: *Mustelus mustelus*, *Carcharhinus obscurus* and *Sphyraena lewini*. *Journal of Fish Biology*, 89(2), pp.1125-1141.
- Sandenbergh, L., Cloete, S.W.P., Roodt-Wilding, R., Snyman, M.A. and **Bester-van der Merwe, A.E.**, 2016. Evaluation of the OvineSNP50 chip for use in four South African sheep breeds. *South African Journal of Animal Science*, 46(1), pp.89-93.
- Maduna, S.N., da Silva, C., Wintner, S.P., Roodt-Wilding, R. and **Bester-van der Merwe, A.E.**, 2016. When two oceans meet: regional population genetics of an exploited coastal shark, *Mustelus mustelus*. *Marine Ecology Progress Series*, 544, pp.183-196.
- Mirimin, L., Kerwath, S., Macey, B., Lamberth, S. J., Cowley, P. D., **Bester-van der Merwe, A.E.**, Bloomer, P., Roodt-Wilding, R. (2016). Genetic analyses of overfished silver kob *Argyrosomus inodorus* (Scieanidae) stocks along the southern African coast. *Fisheries Research*, 176, 100-106.
- Mirimin, L., Macey, B., Kerwath, S., Lamberth, S., **Bester-van der Merwe, A.**, Cowley, P., Bloomer, P. and Roodt-Wilding, R., 2016. Genetic analyses reveal declining trends and low effective population size in an overfished South African sciaenid species, the dusky kob (*Argyrosomus japonicus*). *Marine and Freshwater Research*, 67(2), pp.266-276.



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2015

- **Bester-van der Merwe, A.E.** and Gledhill, K.S., 2015. Molecular species identification and population genetics of chondrichthyans in South Africa: current challenges, priorities and progress. *African Zoology*.
- Gledhill, K.S., Kessel, S.T., Guttridge, T.L., Hansell, A.C., **Bester-van der Merwe, A.E.**, Feldheim, K.A., Gruber, S.H. and Chapman, D.D., 2015. Genetic structure, population demography and seasonal occurrence of blacktip shark *Carcharhinus limbatus* in Bimini, the Bahamas. *Journal of Fish biology*, 87(6), pp.1371-1388.
- Swart, B.L., von der Heyden, S., **Bester-van der Merwe, A.** and Roodt-Wilding, R., 2015. Molecular systematics and biogeography of the circumglobally distributed genus Seriola (Pisces: Carangidae). *Molecular phylogenetics and evolution*, 93, pp.274-280.
- Bitalo, D.N., Maduna, S.N., da Silva, C., Roodt-Wilding, R. and Bester-van der Merwe, A.E., 2015. Differential gene flow patterns for two commercially exploited shark species, tope (*Galeorhinus galeus*) and common smoothhound (*Mustelus mustelus*) along the south-west coast of South Africa. *Fisheries Research*, 172, pp.190-196.
- Sandenbergh L, Roodt-Wilding R, **Bester-van der Merwe AE**, and Cloete SWP (2015). Genetic diversity and population structure of four South African sheep breeds. *Proc. Assoc. Advmt. Anim. Breed. Genet.* 21, 294-297.

2014

- Maduna SN, Rossouw C, Roodt-Wilding R, **Bester-van der Merwe AE** (2014) Microsatellite cross-species amplification and utility in southern African elasmobranchs: A valuable resource for fisheries management and conservation. *BMC Research Notes* 7(352):1-12.
- Mirimin, L., Kerwath, S.E., Macey, B.M., Bester-van der Merwe, A.E., Lamberth, S.J., Bloomer, P. and Roodt-Wilding, R., 2014. Identification of naturally occurring hybrids between two overexploited sciaenid species along the South African coast. *Molecular phylogenetics and evolution*, 76, pp.30-33.
- Rhode, C., Maduna, S.N., Roodt-Wilding, R. and Bester-van der Merwe, A.E., 2014. Comparison of population genetic estimates amongst wild, F1 and F2 cultured abalone (*Haliotis midae*). *Animal genetics*, 45(3), pp.456-459.

2013

- **Bester-van der Merwe AE**, Blaauw S, du Plessis J, Roodt-Wilding R (2013) Transcriptome-wide Single Nucleotide Polymorphisms (SNPs) for abalone (*Haliotis midae*): validation and application using Goldengate medium-throughput genotyping assays. *International Journal of Molecular Sciences* 14(9), 19341-19360.
- Sandenbergh L, Roodt-Wilding R, **Bester-van der Merwe AE**, and Cloete SWP (2013) Analysis of a South African Merino flock divergently selected for reproductive potential. *Proc. Assoc. Advmt. Anim. Breed. Genet.* 20:98-101
- Mirimin L, Ruiz Guajardo JC, Vervalle J, **Bester-van der Merwe AE**, Kerwath S, Macey B, Bloomer P, Roodt-Wilding R (2013) Isolation and validation of microsatellite markers from a depleted South African sciaenid species, the dusky kob (*Argyrosomus japonicus*), by means of the FIASCO/454 approach. *Conservation Genetic Resources* DOI 10.1007/s12686-013-9922-8



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- Rhode C, Vervalle J, **Bester-van der Merwe AE**, Roodt-Wilding R (2013) Detection of Molecular Signatures of Selection at Microsatellite Loci in the South African Abalone (*Haliotis midae*) using a Population Genomic Approach. *Marine Genomics*. *Marine Genomics* 10: 27-36

2012

- **Bester-van der Merwe AE**, D'Amato ME, Swart BL, Roodt-Wilding R (2012) Molecular phylogeny of South African abalone, its origin and evolution as revealed by two genes *Marine Biology Research* 8(8): 727-736
- Slabbert R, Hepple J, Franchini P, **Bester-van der Merwe AE**, Roodt-Wilding R (2012) Microsatellite marker development in the abalone *Haliotis midae* using pyrosequencing (454) and their application: Characterisation *in silico* analyses and linkage mapping *Genetics and Molecular Research* 11(3): 2769 - 2779
- Rhode C, Hepple J, Jansen S, Davis T, Vervalle J, **Bester-van der Merwe AE**, Roodt-Wilding R (2012) A Population Genetic Analysis of Abalone Domestication Events in South Africa: Implications for the Management of the Abalone Resource *Aquaculture* 356-357: 235-242
- Davids AH, Cloete SWP, **Bester-van der Merwe AE**, Muchadeyi F, Slabbert R, Dzama K (2012) Genetic variation within and between three ostrich breeds estimated using microsatellite markers. *South African Journal of Animal Science* 42:156-163