

# Science of little fish leads to big award for NMMU prof

**P**rof. Nadine Strydom – winner of Nelson Mandela Metropolitan University’s Researcher of the Year Award – is Africa’s leading expert on ‘little fish’, and a regular pioneer of new technologies in her field. Her speciality is identifying fish larvae so tiny they can only be seen under a microscope. She tracks the early life stages of fish – monitoring their movement from the sea (where fish spawn) to the surf zone (where fish larvae are part of the plankton) to estuaries (where they grow into juvenile fish) and even up-river (where marine fish make use of unique nursery areas). She also monitors the age and size at which fish start reproducing.

An understanding of fish larvae can help with predictions about the size of future fish populations. ‘It’s a well-known scientific phenomenon that the success of any fish population is underpinned by the success of the larval phase,’ says Nadine Strydom. Fisheries worldwide use eggs and larvae to predict the number of adult fish they are likely to catch two to three years down the line.

Her research on fish reproduction and early life history stages is necessary to help conservation authorities and policymakers make decisions regarding fish protection and management. In South Africa, this is critical, given that many coastal fish stocks – the kind targeted by shoreline and small boat anglers – are collapsing.

‘We only have 3% of the entire population of Dusky Kob left. This is because of misaligned size restrictions related to the size at which reproduction starts (most are fished out before they have even reproduced once); unregulated fishing in estuary nursery areas; and poor angler education on [both] the biology of the species they are fishing and the poor state of many coastal fish stocks.’

Nadine Strydom has adapted a technique used at GEOMAR, which is typically used for fisheries research in the Northern Hemisphere, for ecological purposes in estuaries in South Africa.

‘This technique uses RNA:DNA ratios to determine whether fish larvae are in good condition or not. The healthier the larvae, the better their survival rates will be. I’m using the technique in new ways to figure out how good the different estuaries are, in terms of serving as feeding and nursery areas for the baby fish, and to test it as a pollution-monitoring tool.’

Much of Strydom’s research is also coupled to marine spatial

planning. Because estuaries in South Africa are typically used as nurseries by many linefish species, caught recreationally and commercially, issues like industrial and sewage pollution are critical.

She is passionate about nature – marine and terrestrial – and its conservation. She recently co-authored a book on the identification of the larval stages of fish in east African coastal waters. With the funds raised as a spin-off from the book, she hosted training courses for academically-deserving students working in fields such as aquaculture and fish ecology in a number of African countries. ‘The more people we can get to work in this research field, the better they can serve ecology, fisheries and aquaculture.’

Despite her groundbreaking work, she says it remains a struggle to attract students into a field working on ichthyoplankton (fish larvae).

‘Most students are drawn to other more popular animal species – the “warm and fuzzy” as opposed to the “cold and fishy” – to the detriment of fish research in South Africa. Many fish species are in as much trouble as other iconic mammal species but don’t receive as much attention. People order seafood in restaurants with no knowledge of the population status of what they are eating or of the effects of the fishing methods, especially trawling, on ecosystems.’

Her work extends over most of the South African coastline, from small boat work in estuaries and rivers, to the nearshore ocean, including the Agulhas Current, the Agulhas Bank and the Transkei Bank, which is all large ship-based research.

‘I have an absolute passion for all nature ... Exploring beyond the known has always been intriguing to me ... I’m also passionate about my students. Their careers and their futures are important to me so I encourage and teach my students to publish their science.’

She is currently supervising four PhD, two MSc, one Honours and one post-doctoral student. **Q**

*Prof. Nadine Strydom is Nelson Mandela Metropolitan University’s top-researcher for 2016. NMMU*

