At 87 Dr Rayner still contributing actively to aquatic science

At a time when the debate is raging about when academics should retire, Dr Nancy A Rayner is proving all the critics wrong. Article by Deidre West.

Liesl van As

In April 2012, following years of retirement, the active and enthusiastic Dr Rayner was appointed Research Associate at the Department of Zoology and Entomology at the University of the Free State (UFS).

Dr Rayner is an aquatic scientist (with many publications behind her name) and one of only a handful of specialists in the identification of zooplankton in South Africa. In 2011 she became co-supervisor of a PhD project focusing on the zooplankton of the Okavango Delta and other water bodies of northern Botswana. She has proved to be irreplaceable in helping with identifications and in giving advice. Dr Rayner has also attended the last three conferences of the Southern African Society of Aquatic Scientists (SASAqS) as well as the Orange River Basin Symposium in 2012.

Ever since she reappeared on the aquatic sciences scene she has been swamped with requests to help with identifications of zooplankton collected at various sites in South Africa, and has received many scientific articles to review, despite having turned 87 in January this year. She is a true example of what institutions, and students, are 'losing' when academics are not supported after reaching retirement age.

We asked her a few questions about her experiences as an aquatic scientist in South Africa…

Tell us about your academic career. How did you get involved in aquatic science?

I graduated with a BSc in Zoology under Prof Laurie Richardson in 1947 at Victoria College of the University of New Zealand (now the University of Wellington). After that I worked for three years in the Animal Ecology Section of the Department of Scientific and Industrial Research in Wellington.

A colleague and I collected all the information and did all the maps and diagrams for the now sought-after book *Introduced Mammals of New Zealand* produced by Dr KA Wodzicki. Even today, I am deeply upset at the introduction of mammals to a country which, because of its long geological isolation, had no mammal species. The devastation caused to the native bush and especially the flightless birds has never been overcome.

I came to South Africa in 1949, and for the next 20 years was devoted to my husband and family. My husband, Arthur Rayner, was the first professor of Biometry at the then University of Natal. In 1972, while with my husband on sabbatical leave in the United States, I took a course in Animal Ecology at the University of Colorado in Fort Collins.

On return to South Africa, Prof Waldo Meester accepted me for an Honours degree. I thought I would return to what my then teenage son called my 'boring life', but Prof Jan Heeg tempted me with an Masters project on Lake Midmar. I knew absolutely nothing about freshwater systems, but by the beginning of 1977 I agreed to take it on. For two years, Andy Scholtz and I undertook monthly sampling at Midmar.

We had four stations, one in the main basin, in two inlets and one in the Umgeni River. We collected all the physical and chemical data and with a Clarke Bumpus sampler we collected zooplankon which we could translate into numbers per litre. Our first collections were in March when numbers and diversity were at a maximum. Back in the lab, I had absolutely no idea of what I was looking at!

This was a low point and then Mother Nature took pity on me, the lake temperature dropped to 10°C and with low diversity and numbers I began searching for manuals and references. I could recognize *Copepoda, Cladocera, Rotifera* and insect larvae. I was intrigued by this magical world that had caught the imagination of scientists from the time the microscope was perfected.

In 1889, Hudson and Gosse wrote their book on the *Rotifera* "if we could shrink into living atoms and plunge under the waters of what a world of wonders we should then form part!" The examiners for my thesis were Profs Brian Allanson and Charles Breen. I was awarded a distinction. I completed my PhD on *Calanoid Copepoda* in 1991. My examiners were Dr Geoff Boxshall of the British Museum of Natural History and Dr Tom Bowman of the Smithsonian Institute. When I saw Dr Boxshall in Thailand at the WAC conference, he said he was still using my thesis.

Tell us about your work experience after you completed your PhD up until your retirement.

After my PhD, my husband passed away and I came to live in Kloof. I was asked to lecture

invert zoology at the University of Durban Westville (UDW) to second years. Thinking back, I am amazed that I agreed. It was a good decision and I continued doing courses whenever there was a need. After that I concentrated on my calanoid research. It was all cut short when UDW and Natal merged as non-permanent staff lost their accommodation.

What was the sector like when you started?

In respect of people involved in zooplankton research, there were very few people. Profs Allanson, Rob Hart and Evelyn Hutchinson (from Harvard) had tried to keep up interest in zooplankton studies. However, the political isolation of South Africa was reflected in reluctance of overseas scientists to become involved in research in South Africa. I was not welcomed for requests for material from overseas institutions. However, visits to the British Museum of Natural History and the Smithsonian helped immensely as they generously allowed me to look at their copepod material for a week in each case.

What did you enjoy doing most during your years as an aquatic researcher and what did you miss most about your work after initial retirement?

I loved looking at zooplankton and finding new species to South Africa. There were always questions to ask. I enjoyed studying zooplankton, especially helping colleagues with requests for identifications. It worked both ways as I also obtained material and we sometimes produced joint papers. Except for Midmar, I had an army of collectors! I have other interests and just accepted retirement, but was sad when looking at all the material I had stored in my spare room.

How many new species did you describe and did you give any of them unique names?

I described six new species, three *Paradiaptomus* and three *Tropodiaptomus*. *Paradiaptomus hameri* is named for Michelle Hamer who collected material over the Cape Province and Namibia looking for her fairy shrimps. She always had some calanoids for me, one a new species. *Paradiaptomus warreni* is named for Dr Warren, the first Director of the Natal Museum. He collected this species in 1960 from the Drakensberg and misidentified it. It was in fact a new species.

Which group of zooplankton is your favourite and why?

I like all of them, but I suppose the calanoids have taken most of my time. Very special was the freshwater meducae in the Midmar isolation columns. Although not zooplankton, who could not like Triops?

What do you consider the highlight of your career, and the greatest challenge?

My book *Copepoda. Calanoida. Paradiaptominae* published by Backhuys in 1999 was definitely a highlight. The greatest challenge was probably to go back to studying again after a 25 year break.

Liesl van As

Dr Nancy Rayner providing some advice to PhD student, Deidre West, and supervisor Prof Jo G van As, Head of the Department of Zoology and Entomology at the University of the Free State.

Did anything funny happened at conferences?

I remember that when in Windhoek, Dr Jackie King did some funny sketches of delegates after lunch trying to pretend they were not falling asleep. They were shown to us at some stage. In Swakopmund in the early days we were literally accommodated in informal 'shacks' on the beach.

What do the other ladies in your complex think you do in your home with ethanol, tiny bottles and a mini-lab?

My complex is not a retirement one, I am friendly but never discuss my scientific background. They know me as a gardener and an embroiderer!

What made you decide to return to academics?

I was tempted by a brilliant student, Deidré West, who was working on the Okavango Delta. How could I refuse that! The University of KwaZulu-Natal lent me a microscope and lab materials. Deidré managed to find my email address somehow when she needed assistance with her zooplankton identifications. After sending mails back and forth myself, Deidré and her two supervisors, Prof Jo van As and Prof Liesl van As, met up at the SASAqS conference at Ithala Game Reserve in Natal to discuss her PhD project. It was here that I agreed to get on board with the project and a few months later I was appointed at UFS.

What advice would you give young people wanting to enter this sector?

This is a difficult question. Everything has changed. Today students wish to put everything on computers or do DNA analysis and I am not sure that they would recognise a new species if they saw it. At the Copepoda conference in Thailand in 2008, we were dazzled with all the students could produce digitally, but as the chairman said, you still have to identify the copepod.

What is your life motto?

I was blessed with wonderful parents, and a father who showed my brother and I the wonders of the natural world. Maybe a good motto is: Just do your best! ❑