
OBITUARY

Nancy Alison Rayner (1927–2017)

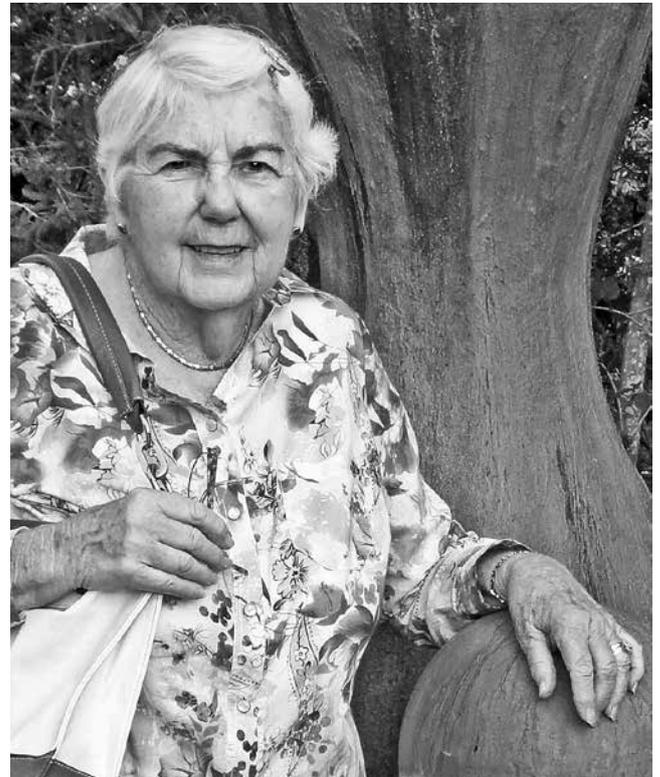
Nancy Rayner passed away unexpectedly in Kloof on 12 December 2017, barely two months short of her 91st birthday, following complications after a fall. Her demise marks the sad loss, not only of a devoted mother of 5, grandmother to 13, and great-grandmother to 3, but also of South Africa's premier freshwater micro-crustacean taxonomist.

I was privileged to have experienced her gracious, profoundly amiable humility and determined ability for nearly a decade of professional collegiality, beginning in 1987 when I took up a position in the Department of Zoology, University of Natal (UN), Pietermaritzburg. Nancy and I had previously met at various congresses, but it was in 1983, during a plankton ecology workshop that I ran on Lake le Roux now Vanderkloof Dam, that I gained real insights into her sincerity and calm determination. Some 30 or more years older than other participants, she showed her genuine mettle and enthusiasm, especially during field workshop activities that ran both day and night.

Nancy (*née* Cooper) was a New Zealander by birth. A primary school dux, she enrolled at the University of New Zealand now the University of Wellington, graduating with a BSc in Zoology in 1947. Thereafter she started work as a Research Assistant in the Animal Ecology Section, Dept. of Scientific and Industrial Research in Wellington, New Zealand., collecting information and producing the maps and diagrams for the now much sought-after book "Introduced Mammals of New Zealand" by Dr KA Wodzicki. She met or was met by Arthur Asquith Rayner, to whom she was married in 1949, after what her family describe as a 'whirlwind romance'. Soon thereafter they sailed for South Africa for Arthur to take up the first Professorship of Biometry at UN, Pietermaritzburg, a position he held until retirement, thereafter becoming Professor Emeritus until his death in 1994.

After marrying Arthur, Nancy forsook her academic interests for 25 years, devoting her life as wife to 'the colonel', as he was affectionately known by their five children, Alison, Colin, Brian, Marion and John, born between 1950 and 1961, who remember Nancy's unifying parental role in the family.

Nancy's academic interests were fortuitously revived in 1972, during Arthur's sabbatical at the University of Colorado, USA, when she 'unexpectedly' enrolled for a postgraduate course in 'Animal Ecology'. Once back in Pietermaritzburg, Professor Waldo Meester accepted her for an Honours degree in Zoology, which included a Biometry module under Arthur, which she completed in



Nancy Rayner at Mabula Game Lodge near Bela Bela in January 2013. Her lively-eyed enthusiasm and grace are captured in this photo by her son-in-law Dave Aitken.

1977. In that year she also took up a life-long membership of what was then known as the Limnological Society of South Africa (LSSA), subsequently the Southern African Society of Aquatic Scientists (SASAqS).

The selection of the nearby Midmar Dam as one of four man-made lakes for intensive holistic study within the Council for Scientific and Industrial Research's highly successful Inland Water Ecosystems (IWE) Programme led by Dr Graham Noble, marked the start of her real scientific career in 1977. The ever enthusiastic Professor Jan Heeg encouraged her to embark on a MSc. study on this system. Despite what she later recounted in an interview with Deidré West, whose PhD she was then co-supervising, as her 'ignorance of freshwater systems' (West 2014), she began her adventure into the world of freshwater zooplankton.

For two years, she collected and analysed monthly samples of zooplankton and measured relevant environmental variables. In that interview Nancy recalls: 'Back in the lab,

I had absolutely no idea of what I was looking at!' Needless to say, her customary determination and resolve prevailed: 'I began searching for manuals and references. I could recognize Copepoda, Cladocera, Rotifera and insect larvae and was intrigued by this magical world that had caught the imagination of scientists from the time the microscope was perfected'. In 1982, Nancy received her MSc with distinction for the resulting thesis 'Studies on the zooplankton of Lake Midmar'. Although delaying its completion, Arthur's 1980 sabbatical at the University of Delaware, USA, enabled Nancy to enrol for postgraduate courses on 'Advanced Invertebrates' and 'Communities and Ecosystems'.

However, the diversity of minuscule animals encountered in plankton samples clearly spawned her interest in the field of taxonomy. She was particularly passionate about freshwater calanoid copepods (see Figure 1), which she pursued in her doctoral study on 'The freshwater Diaptomidae (Calanoida: Copepoda) of southern Africa', for which she received her PhD in 1991. This doctoral study extended to become her *magnum opus*—a monograph on 'Copepoda: Calanoida. Diaptomidae, Paradiptominae'—published in 'Guides to the Identification of the Microinvertebrates of the Continental Waters of the World 15,' in 1999, which gained her international recognition and acclaim.

Although specialising on calanoid copepods, Nancy's interests and knowledge extended across a wider array of small and microscopic aquatic organisms, as attested to in her authorship of identification keys to the Copepoda, Notostraca (fairy shrimps) and Tardigrada (water bears), and her co-authorship of keys to the Cnidaria (hydras and jelly-fish) and Nematomorpha (horse hair worms) in the WRC series of 'Guides to the Freshwater Invertebrates of Southern Africa'.

Given this expertise Nancy, perhaps inevitably, faced regular requests to identify specimens from collections made across southern Africa and beyond. Because of her characteristically enthusiastic helpfulness, I suspect that these requests were seldom, if ever, declined. John Akhurst, one of Nancy's few extant contemporary workers on the Midmar study, and subsequent Head of the School of Botany and Zoology, remembers her as 'one of those special people that I was privileged to work with during my time at UKZN. She was also one of the humblest and most generous academics that I have known; always willing to give of her time and to share her knowledge and expertise'. Academic associates, of both aquatic and terrestrial persuasion, and co-workers, including Professors Chris Appleton, Mike Perrin, Denis Brothers, Colleen Downs and Dr Ferdie de Moor, among others, offered similar tributes after her death, affirming her description by Professor Gordon Maclean, decades earlier, as 'salt of the earth'. This much hackneyed phrase was genuinely apt for her.

Nancy remained a traditional morphological taxonomist, not venturing into the emerging approach of molecular DNA systematics. She described six new species of calanoid copepods, skilfully illustrating their diagnostic features in microscopic detail see Figure 1, and providing a perceptive

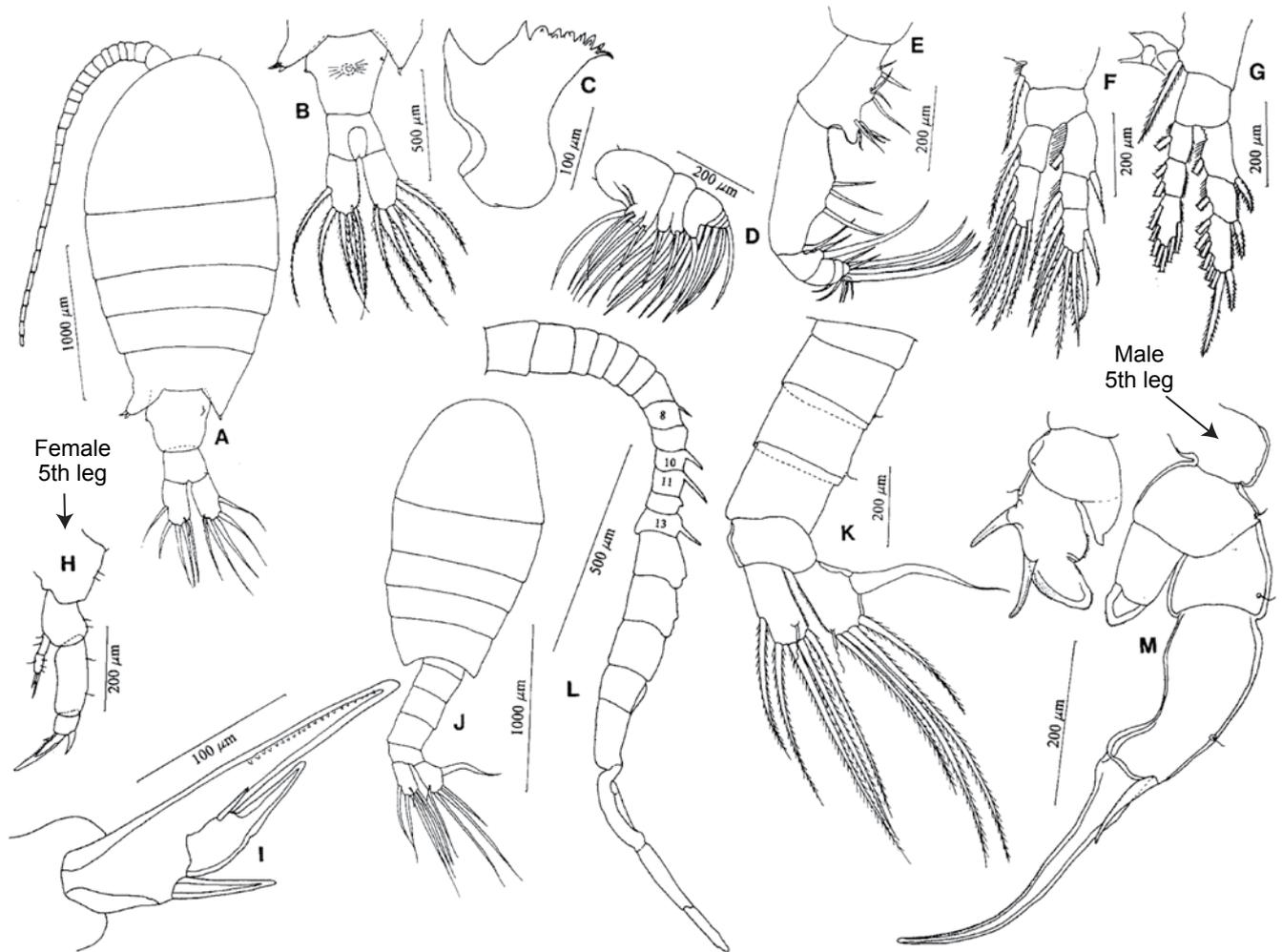
systematic revision of the group. From the collections sent to her for identification, she extended and updated the distribution records of many species. She produced 30-odd publications; a commendable number given her 'late' start in scientific life, and the lack of mainstream academic positions open to a 67-year-old after Arthur died in 1994.

Before then, Nancy had held various non-permanent positions as lecturer, tutor and demonstrator in UN's Department of Zoology and Entomology, Pietermaritzburg from 1974, eventually being appointed as honorary lecturer in 1990. After I joined UN in 1987, I experienced her patient, firm, fair and resolute mentorship during practical sessions in various undergraduate courses in which we collaborated. Her kindly advice during intricate practical dissections and examinations of specimens, chosen to capture some of the immense diversity of aquatic invertebrates, helped greatly to demystify the wonders and marvels of this usually 'unseen' world. Always graciously enthusiastic, she stimulated and encouraged interest in this animal realm, particularly among students pre-disposed to the more familiar array of vertebrate animals.

After Arthur's death she moved to Kloof. This great loss to zoology at UN's Pietermaritzburg campus was a decided bonus to the Zoology Department, University of Durban-Westville (UDW). Here she held *ad hoc* Lectureship and Senior Lectureship positions on invertebrates between 1995 and 2000, with collateral appointments as Honorary Senior Research Associate at UDW and Honorary Research Fellow at UN from 1996. But these posts lapsed in 2004 when UN and UDW amalgamated, and honorary staff lost campus accommodations, stranding Nancy's research activities.

Although 'stranded', she continued to attend various conferences, remaining a regular participant at SASAQS congresses, and also identifying specimens and refereeing papers for South African and overseas journals. However, her appointment as Honorary Research Associate in the University of the Free State in 2012 enabled her to resume academia at 85!, co-supervising Deidré West's PhD study of zooplankton in the Okavango Delta. This clearly evidenced Nancy's hallmark as a role-model for other 'late starters'.

Saddened by the passing of this great lady, Helen James, invertebrate curator at the Albany Museum, noted: 'She was an inspiration to me, and I often thought of her when I was completing my own thesis at an older-than-average age. I remember her as a warm-hearted person with a good sense of humour. She interacted well with people and has left a great legacy. My younger colleague, Musa Mlambo, was lamenting her passing despite not having ever met her himself, as he is very familiar with her work. Her research on Copepoda will be of value for many generations to come'. In similar vein, from UCT's Jenny Day: 'She was an inspiration to many older women who were reluctant to re-start their academic careers after bringing up families, and she was also a wonderful teacher and mentor to so many students'. And Deidré West lamented on 'losing not only a mentor, but also a dear friend'.



Tropodiptomus
(Diaptominae)

Metadiptomus
(Paradiaptominae)

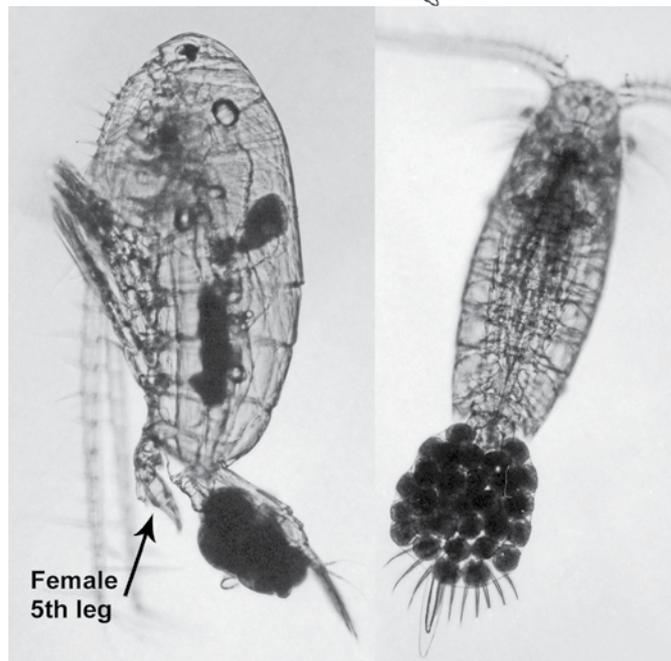


Figure 1: Nancy's detailed illustrations of *Paradiptomus hameri* (Rayner 1999), named after Dr Michelle Hamer then at UKZN, above photos (by Rob Hart) of two smaller diaptomids \pm 1 mm body length that alternate capriciously in Midmar Dam, as first observed by Nancy. The 5th legs of adult males are generally species-diagnostic, 'lock-and-key', genital structures. Nancy specialised on the subfamily Paradiaptominae represented here by *Metadiptomus*.

Never idle of hand, Nancy was an accomplished embroiderer, gardener and baker. She regularly entered embroidery exhibits in the annual Royal Agricultural Show crafts hall, winning many prizes. In the residential complex in Kloof where she lived, she was known both for her gardening and embroidery but, modestly, never disclosed her scientific background. Her family recall her invariable generosity and kindness, with her willing assistance extending to unknown strangers. And her Christmas cakes were legendary!

Life is inevitably a journey, success in which essentially rests on perseverance, empathy and flexibility. By these criteria, Nancy's life was clearly not only successful, but also significant *sensu* John Maxwell—author and leadership expert—in that she had a positive impact on others, both personally and academically. She was a devoted mother,

grandmother and great-grandmother, and encouraged and inspired students at various levels and across a spectrum of academic interests. Nancy was an inspirational colleague and friend; she made an indelible impact on me and undoubtedly many others in the aquatic science community and elsewhere. Clearly surpassing her own life motto—'Just do your best'—she will be sorely missed by many. But her life's work will endure indefinitely, despite DNA!

References

- Rayner NA. 1999. *Paradiaptomus peninsularis*, *P. hameri* and *P. warreni*, three new species of *Paradiaptomus* Calanoida: Diaptomidae from South Africa. *Hydrobiologia* 391: 87–98.
- West D. 2014. At 87, Dr Rayner still contributing actively to aquatic science. *The Water Wheel* 133: 42–43.

Rob Hart, Professor Emeritus, School of Life Sciences, Pietermaritzburg.

Written on behalf of SASAqS, using detailed biographic compilations and information kindly supplied by members of her family and comments received from many academic associates, with extracts from West (2014).