RICHARD COWLING

AWARDS, HONOURS AND ACHIEVEMENTS

- Gold Medal of the South African Association of Botanists (2014)
- Elected Foreign Associate of the National Academy of Sciences, United States (2008)
- Distinguished Service Award from the Society for Conservation Biology, United States (2004)

DEFINING MOMENT

There are so many things, both inside and outside of his work, that have piqued his curiosity that it is not possible for him to identify any single one, let alone moment, which had a defining effect on him as a scientist.

WHAT PEOPLE MIGHT NOT KNOW

He is a published poet.

WON OVER BY A PASSING LANDSCAPE

Richard Cowling's itinerant childhood provided a strong foundation for his fascination with vegetation change in space and time. Born in 1955 in the cane fields of Zululand, he spent his primary school years in Polokwane, graduated from high school in Klerksdorp, and after enrolling at the University of Cape Town (UCT) in 1973, his parents moved to the Eastern Cape where he now lives. His parents were enthusiastic travellers and each year would '*trek*' with children and dogs, often towing a caravan, to the Eastern Cape coast. The trip to the coast could last up to three days. "I got to looking out of car windows and marvelling at how vegetation in the landscape changed. Why the sudden shift to forest, and why the gradual disappearance of grass? These questions fascinated me from an early age. They still do."

Cowling showed no flair for science and mathematics at high school but did excel in geography. Despite his father's disapproval – he wanted his son to study medicine – Cowling was set on a BA at UCT, aiming to become a teacher. "There was no way I was going to punish myself with university level science, but on registration day, I changed my mind. I walked onto north campus where I enrolled for a BSc with majors in botany and zoology. I had no idea what I was in for. Our high school did not offer biology at any level. I had to work very hard just to keep afloat."

Cowling found aspects of both subjects compelling, particularly intertidal and plant ecology under the mentorship of George Branch and Eugene Moll respectively. In the end, plants won and Cowling completed a PhD in 1983 on the vegetation ecology and history in the south-eastern part of the Cape region, where several biomes mix and interlock. "This project fed my curiosity about what controls the distribution of plant species and vegetation. There is no better place to study this than where biomes meet." Cowling has retained his interest in his postgraduate study domain: he has lived there for the past 20 years and continues to refine and research questions he posed there 40 years ago.

Intrigued by the ecological convergence hypothesis, which predicts that plant communities under similar environmental conditions exhibit similar structure, Cowling spent a postdoctoral year in Perth with Byron Lamont, the start of a long and fruitful collaboration. The striking similarities and differences in plant form and function between Cape fynbos and its analogue in Western Australia stimulated a flurry of papers. Cowling recalls: "There are places on the south-west coast of Australia which, were it not for banksias instead of proteas, could be mistaken for somewhere near Cape Agulhas." The comparative evolution of the world's five regions with Mediterranean climates has endured as one of Cowling's major research topics.

Cowling returned to South Africa in 1984, worked for the Council for Scientific and Industrial Research (CSIR) as a scientific coordinator for the Fynbos and Karoo Biome projects, and in 1987 was appointed to the academic staff at UCT's Botany Department. He established a team of associates and postgraduates focusing on plant ecology and conservation of the Fynbos and Succulent Karoo biomes and threw himself into academic and civic life.

Faced with escalating pressures, diminishing budgets and policy paralysis of the late 1980s, the conservation status of Cape ecosystems was in a state of rapid decline. Consequently, Cowling's team increasingly shifted its focus to conservation research and engagement, stressing the utilitarian value of the

Cape plant life as a justification for its preservation. This produced some of the earliest research globally on the economic valuation of ecosystem services in a real-world context.

In 1992, Cowling was appointed to the Leslie Hill Chair in Plant Conservation and established the Institute for Plant Conservation, which had a big impact on conservation research as well as implementation. His group provided the rationale and means to conserve 150 000 hectares of priority habitat in the fynbos and succulent Karoo regions. Cowling remained at UCT until 2000, when he joined the Nelson Mandela University (NMU) in the Eastern Cape, where he is now a Distinguished Professor.

CONSERVATION IS ABOUT HUMAN CHOICE

In the first decade of this century, Cowling and his team achieved world leadership in conservation science, notably in systematic conservation planning. Their research was underpinned by excellent data, rigorous analysis and – in contrast to almost all research elsewhere – was deeply engaged in the social processes that determine implementation success.

"In reality" says Cowling, "conservation is about human choice: it is a social science with input by natural scientists. The science input must be top-notch, capturing both biodiversity patterns as well as the processes that underpin it." The team's work had a big impact, particularly their research into conservation planning and implementation in the Cape.

At NMU, Cowling continued his engagement in conservation projects by directing the science behind the Subtropical Thicket Ecosystem Project, a conservation action initiative funded by the Global Environment Facility. His group also made the case for the biome-scale restoration of degraded subtropical thicket, and thus began a long and complex process of mainstreaming restoration by conducting relevant research, engaging with implementers and building awareness. The *spekboom* (*Portulacaria afra* or Elephant's Food) restoration programme is now a flagship project of the Department of Environmental Affairs.

Throughout this time, however, Cowling continued with his curiosity research, focusing on the evolution of biodiversity in the Cape and other Mediterranean-climate systems of the world. Over the past ten years Cowling has rekindled his long-standing interest in the Pleistocene vegetation history of the Cape by joining a team researching the emergence of cognitively modern humans on the region's south coast. This research, largely funded by the National Science Foundation, has provided a wealth of environmental proxies for generating predictive models of vegetation change. Recently NMU and Department of Science and Technology (now referred to as the Department of Science and Innovation (DSI)) have started investing in a local institution – the African Centre for Coastal Palaeoscience, which is directed by Cowling – to build South African capacity for researching this fascinating story of human and plant evolution.

Cowling has published some 400 peer-reviewed items and, according to Google Scholar, attracted 35 000 citations producing an *h*-index of 103. He is recognised by ISIHighlyCited.com as among 250 most-cited researchers in Ecology and Environment between1981 and 2005. His papers have been published in leading journals including *Nature, Science* and *Proceedings of the National Academy of Sciences.* Cowling has also made an impact as a mentor, having trained 84 postgraduate and postdoctoral students.

He has also served as a scientific advisor on 66 external, conservation-related committees and participated in the activities of 22 civic organisations. "I like working with non-specialists in conservation organisations. I learn a lot from them," he says. "One of my favourite tasks is managing the network of nature reserves in our area. It gives me great pleasure to see nature unspoilt but valued. So much of conservation is like swimming upstream. It's great to have in your back yard a resting place from the relentless torrent."

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