

# | BRIAN VAN WILGEN |

## TOP THREE AWARDS

- National Science and Technology Forum's annual award for an outstanding individual contribution to science, engineering and technology, 2010
- South African National Parks' annual award for corporate contributions to conservation by an individual, 2010
- Science-for-Society Gold Medal Award from the Academy of Science of South Africa, 2016

## DEFINING MOMENT

Learning in late 1970 that there was a degree course in forestry, with a major in applied ecology (called "nature conservation" at the time). It was right up my street and gave me the opportunity I needed to pursue a career in that direction.

## WHAT PEOPLE DO NOT KNOW

I am a keen collector of natural history books, postage stamps, and art works; I am an avid birder, and my life list is approaching 1500 species. I am a qualified pilot, and a qualified scuba diver. I dislike eating liver, swimming in cold water, and crowded and noisy spaces. And I never met Nelson Mandela – a great disappointment.



## THE FIRE MAN

Brian van Wilgen had a dream as a child: To become a game ranger and spend his life amid the awesome wildlife that inhabits South Africa's national parks. The rhinoceros, the buffalo, the lion, and the elephant: None of them prowled the marshlands of Milnerton, the suburb of Cape Town where he grew up. But their images would grace the back of his breakfast cereal packets, and from a young age Van Wilgen was hooked.

Van Wilgen never became a game ranger. Yet, his illustrious career as an environmental scientist studying the effects of fire on ecosystems has brought him close to his childhood dream. At one point he and his family spent several months in the Kruger National Park – a time he describes as one of the most satisfying of his academic life.

But the bulk of his life's work – as well as his time – has focused around the Cape fynbos ecosystem. The shrublands surrounding Cape Town make up the smallest of the world's six floral kingdoms. It is one of the world's most biodiverse regions, and also among the most vulnerable. Its small size makes it especially sensitive to alien species invasion. The iconic slopes of Table Mountain is ground zero for a long-running war between the Australian wattles and European pines and the indigenous slow-growing proteas, ericas and silver trees.

Van Wilgen is a decorated general of this war. In 1995, he helped to start Working for Water, a government-funded programme mobilising poor communities in alien vegetation clearing activities. The programme has enjoyed sustained support. It creates jobs while improving water security by getting rid of thirsty invasive plants. Since its inception, the programme has cleared more than one million hectares of invasive plants, providing jobs for 20 000 people from marginalised communities.

His job is far from done, however. "Alien vegetation remains a threat in this country. We have to become more effective at managing the problem." South Africa is running out of water, and alien species management is vital to protect the resources that remain. "If we allow the fynbos water catchment areas to be covered by pine forest then the city will run out of water completely," he says.

## KINDLING A PASSION

Young Van Wilgen may have dreamt of being a game ranger. Instead, he became a scientist. It happened by accident, he says. "By the time I finished high school there were no courses to study to become a game ranger like there are today. There was a chance you could work in game reserves if you studied to be a vet. But my matric results weren't good enough for that, and also I would have had to spend five years in Pretoria."

Instead, he enrolled on a new course being offered by the nearby Stellenbosch University: A Bachelor of Science in Forestry and Nature Conservation. He was one of the first students to take the course, and after graduating he took up a post at the nearby Jonkershoek Forestry Research Centre, which was expanding its ecology research programme. Here he met Fred Kruger from the South African Forestry Research Institute. Kruger, not much older than Van Wilgen, nevertheless became mentor to the latter. Together, they began working on models to predict wildfires – a necessary regular occurrence for the natural environment around them, but also potentially ruinous for landowners.

At that time – the late 1970s and early 1980s – the Department of Forestry was the second-largest owner of conservation land in South Africa, after South African National Parks. These included fynbos and grassland mountain catchments in the Cape and the Drakensberg, almost all of South Africa's indigenous forests, and large coastal areas set aside to protect local flora and fauna. Research on the ecology and management of these areas, therefore, was a priority, and the department funded Van Wilgen to complete both his Masters and his PhD while stationed at Jonkershoek.

As part of his training, Van Wilgen spent six months in the United States to learn about models for predicting fire behaviour. This gave him a breadth of knowledge that he could use on his return to apply to a more varied range of vegetation types. "Until then all my work had been on fynbos, but after my US visit I could branch out." Soon after his return he travelled to the Drakensberg region north-west of Durban to train people working there in conservation techniques.

By this time he had met and married his wife, Jane. The two would have two children: Nicola born in 1984 and Lawrence, born in 1988. A keen waterman, Van Wilgen participated in varsity aquatic sports. He was on the college team for spear fishing, scuba diving and underwater hockey – a game played in pools with goggles, sticks and a heavy puck.

## MOVING ON

Van Wilgen worked 15 years in the South African Department of Forestry in a number of management and research roles. However, as South Africa's democratic era dawned in 1990, the forestry department was broken up. Its plantations were privatised and its research unit – of which Van Wilgen was a key part – was moved to the Council for Scientific and Industrial Research (CSIR).

Life at the CSIR brought fresh challenges with pressure to secure contracts to fund research.

With Working for Water, Van Wilgen struck gold. He started as Programme Manager for the initiative, and was later its scientific adviser. The job creation aspect of the alien vegetation clearing initiative let it ultimately grow to a billion-Rand budget. Without the job-creation and poverty-relief aspects, such an environmental management programme would realistically only have attracted a minute fraction of its current funding. A small proportion of the Working for Water funding was dedicated to research, and remains so to this day.

For all its successes, however, Van Wilgen believes there are shortcomings with the Working for Water programme that have to be rectified if it is to achieve its alien vegetation eradication purpose. The imperative to maximise employment among the rural poor diverts funding from more expensive, but indispensable aspects such as planning and monitoring. "The programme is between a rock and a hard place" says Van Wilgen. "The lack of capacity to cover all aspects of professional management has resulted in widespread inefficiencies which are difficult to avoid."

"Although it is difficult for conservationists to swallow, we may have to sacrifice some areas to save others" Van Wilgen says. "You can't clear

alien vegetation well by just removing them in an uncoordinated way. The plants spread faster than you can pull them out. We must identify the areas that we can save, and focus there. If we are to succeed, we must employ fewer people, but train them properly, equip them better, and pay them more."

## LIVING THE DREAM

Van Wilgen did get an opportunity to live his childhood dream when the Kruger National Park advertised for the head of scientific services in the park. It was shortly after his move to the CSIR, and he applied despite the deadline for applications having already passed. To his surprise, he was offered the job. But in the end he didn't take it.

"There were many reasons for that decision," he says. "My daughter was about to go to high school. She would have had to be sent to boarding school." There was also the fact that the Lowveld area where they would live was in the middle of an endemic malaria area. Full-time life in the bush would, the family agreed, not suit them at that time.

Van Wilgen managed to secure a slice of the job offered to him, however. He asked if he could join the Kruger National Park's science team and help them study the effects of fire on the bush and wildlife. The park acquiesced, and Van Wilgen managed to persuade the CSIR to give him a three-month sabbatical. During this time the whole family relocated to the Kruger, and Van Wilgen remembers it as a particularly productive time of his academic life.

There were heaps of interesting data collected in the Kruger Park over the years, much of which could be used to determine the best way of managing the bushveld when it comes to fires. The park had collected maps of burnt areas ranging as far back as the 1940s. Over the years, the park's approach to fire management changed several times, and policies included fire prevention and suppression, deliberate burning, or simply allowing nature to take its course by allowing fires ignited by lightning strikes to continue burning.

When Van Wilgen and his colleagues looked at the actual outcomes of these policies, they were surprised at what they found. The proportion of





the park that burnt every year did not change when management policies changed. Rather, they found, fire activity could be easily predicted simply by looking at the rainfall amounts in the previous two years.

In other words, there was little humans could do in terms of managed burns to change overall wildfire patterns in the Kruger National Park, which receives over 1.5 million visitors each year. Van Wilgen kept the collaboration going with the park after his sabbatical, returning at least once a year – a nod to his childhood dream.

### LATER LIFE AND ACCOLADES

Van Wilgen also travelled farther afield. His wildfire research activities took him, for example, to areas as varied as the island of Reunion and Perth in Australia, or Argentina and Spain. In 2004, he was appointed as a Fellow of the CSIR in recognition of his contributions and leadership in science and technology. In 2010, he received the National Science and Technology Foundation's annual award for outstanding contributions to science, technology and innovation. That year he also was given the South African National Parks' annual 'Kudu' award for his contributions to conservation.

In 2011, he was elected a Member of the Academy of Science of South Africa. Three years later, in 2014, he became – for the first time of his life – a full-time university employee. The CSIR encourages its staff to retire at 60. But Van Wilgen was not ready to put up his binoculars quite yet and accepted a professorship at Stellenbosch University's Centre for Invasion Biology.

University life suits him, he says. There are no sales targets and deadlines in the same way as at the CSIR. He enjoys the teaching aspect of the job. Of course, he'd taught courses in the past, and done research. But the epithet of full-time 'academic' had always seemed to him incongruous with his positions. And it still does, to some extent.

"I'm not sure I'm a true academic. What I liked at the start of my career was to take the results of a study and use them to solve a problem in the real world." He still prefers to see his work make a practical difference rather than earn academic accolades – although to be fair, his work has done both.