

Tribute to David William Goodall DSc, AM: advocate and ecologist *par excellence* (4 April 1914 to 10 May 2018)

At the age of 104, Australia's oldest scientist, David William Goodall BSc, PhD, DSc, AM, ended his life in Switzerland where assisted death is legal. David would have preferred to die in Western Australia, at home in Perth with his family, but assisted death is illegal in Australia. Even the 'enabling of assisted death' legislation due to come into effect in Victoria in 2019 would not have helped David die at the time or place of his choosing. The Victorian legislation will only be available to residents of Victoria suffering from an incurable illness, and with less than six months to live (<http://www.abc.net.au/news/2017-11-22/euthanasia-in-victoria-how-assisted-dying-laws-will-work/9115210>; accessed 28 May 2018). David, despite his age, did not have an incurable illness, and was of sound mind. In his view, he had lived too long. According to press reports, he chose to die because life was 'no longer enjoyable'

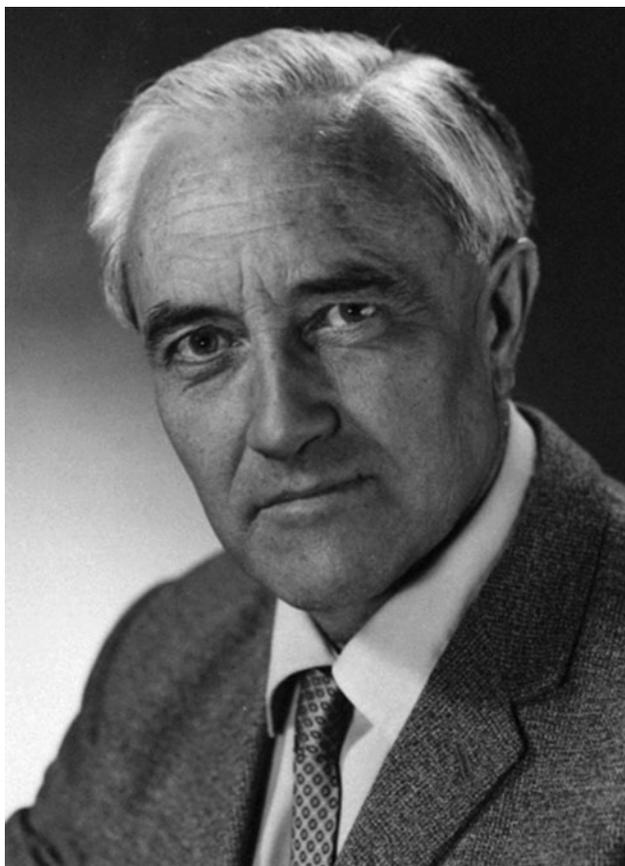


Fig. 1. David Goodall in his 50s as Professor of Systems Ecology at Utah State University, Logan (1968–74) before returning to Australia and re-joining CSIRO. (Courtesy of Utah State University Special Collections, Merrill-Cazier Library.)

(<http://www.abc.net.au/news/2018-05-10/david-goodall-ends-life-in-a-powerful-statement-on-euthanasia/9742528>; accessed 11 May 2018) and had ceased to be enjoyable 'five or ten years ago' (<https://edition.cnn.com/2018/05/10/health/david-goodall-australian-scientist-dies-intl/index.html>; accessed 28 May 2018). Perhaps to him, life had lost its purpose, and he his dignity. Failing eyesight, deteriorating hearing, and reduced mobility deprived David of his freedom, his ability to be an active scientist, a member of the academic community, and a thespian. In his interview with CNN, David said he would have preferred to die when he lost his driver's licence in 1998, and with that, his independence (<https://edition.cnn.com/2018/05/10/health/david-goodall-australian-scientist-dies-intl/index.html>; accessed 28 May 2018). It was not that there was nothing left that he would enjoy doing, including going bush and listening to birds singing, but his physical condition meant he could no longer do these things.

David's decision to end his life was not capricious or without reason. Nor does it set a dangerous precedent. We all die; some sooner, some later, and only a few of us will have the privilege of being able to decide when, where, and how. There is no humanity in the argument that society has a responsibility to prolong life regardless of an individual's desires, and only assist with palliative care to ease pain as many in society and the medical profession argue (see the interview with Dr Michael Gannon, President of the Australian Medical Association; <https://startsat60.com/discover/news/ama-michael-gannon-legal-assisted-suicides-david-goodall-death>; accessed 25 February 2018). It is an



Fig. 2. David Goodall in his office at Edith Cowan University at the age of 104. (Photo courtesy of Community News and the Joondalup Times; photographer Martin Kennealey.)

individual's life, and choosing when to die is an inalienable human right regardless of age or health. Deciding how you live or when you choose to end your life is not the responsibility of government or any other individual. It is your life and how you choose to live or when to die are decisions each of us needs to decide for ourselves. No individual or institution should decide when another person's life should end, nor should they interfere with a person's right to die whenever they choose. David decided he had lived long enough and chose to die with dignity.

David was a long-standing supporter of the right to die with dignity. That he was not able to die at the time and place of his choosing in Australia is a condemnation of the Australian political system and of Australian society. By choosing to leave Australia and die in Switzerland, David kindled the debate on euthanasia on a global scale. His story touched hearts, and was carried by the media throughout the Western World. It is not a surprise that when choosing to die that David contributed one last time to the growth of a compassionate and rational society. He was an outstanding scientist; a botanist and ecologist, who contributed, and needed to contribute to the growth of human knowledge and the evolution of a humane society to the end. His commitment to society is epitomised by the publication of his last scientific paper in 2014 at the age of 100 (Goodall 2014a).

David was born in London on 4 April 1914. He completed his BSc in 1935 and his PhD in 1941, both at London's Imperial College of Science and Technology. His research during the war years was conducted at the East Malling Research Station in Kent from where he was refused permission to join the Royal Navy on the grounds that 'agricultural researchers were more important to the world of agriculture than the war' ([https://en.wikipedia.org/wiki/David_Goodall_\(botanist\)](https://en.wikipedia.org/wiki/David_Goodall_(botanist)); accessed 28 May 2018). After the war David took up a position as plant physiologist at the West African Cacao Research Institute in Tafo, Ghana. He came to Australia in 1948 as a Senior Lecturer in Botany at the University of Melbourne. In 1953, the university awarded him a Doctor of Science (DSc). A second DSc was awarded in 1990 by the University of Trieste, Italy. Between those events, David held positions as: Professor of Agricultural Botany at the University of Reading in the United Kingdom (1954–56); Professor of Biological Sciences at the University of California, Irvine (1967–68); Professor of Systems Ecology at Utah State University, Logan (1968–74) (Fig. 1); and in Australia with the Commonwealth Scientific and Industrial Research Organization (CSIRO) (1956–67). He returned to CSIRO in 1975 as a Senior Principal Research Scientist in the Division of Land Resources Management in Canberra, Australian Capital Territory and Deniliquin, New South Wales, and finally Perth. David retired in 1979, but remained as a Research Fellow in the Division of Land Resources Management at Floreat Park, Perth. When space limitations meant he had to relinquish his office at Floreat Park, he was offered an office and Honorary Fellowship with the CSIRO Division of Wildlife and Ecology at Helena Valley on Perth's outskirts. He was a great scientific asset to the laboratory; conducting his own research and editorial roles, encouraging research staff, adding his extensive library collection to the site, and acting as a wonderful Santa Claus at the laboratory's Christmas parties.

David had a long and productive career as a research scientist, with particular strengths in plant physiology and ecological statistical analysis ([https://en.wikipedia.org/wiki/David_Goodall_\(botanist\)](https://en.wikipedia.org/wiki/David_Goodall_(botanist)); accessed 28 May 2018). His papers on objective methods for the classification of vegetation (1953–1961) helped transform plant ecology from a descriptive science to one that is quantitative (Feoli 2014; Minchin and Oksanen 2015). He was one of the first ecologists to use factor analysis (ordination) at a time when calculations were done by hand, and took months to complete. His 100th birthday in 2014 was celebrated with a guest editorial in the *Journal of Vegetation Science* (Goodall 2014b), with the journal editors paying their respects to a man seen as 'an important mentor for a great many vegetation scientists', crediting him with creating the term 'ordination' and shaping modern vegetation science through his seminal work on randomised sampling protocols and statistical ecology.

David's contributions were widely recognised. Besides his two DSc degrees, David received the Distinguished Statistical Ecologist Award from the International Association for Ecology in 1994, was made an Honorary Member of the International Association for Vegetation Science in 1997, was awarded the Gold Medal of the Australian Ecological Society in 2008 and was made a Member of the Order of Australia (AM) in 2016 'for significant service to science as an academic, researcher and author in the area of plant ecology and natural resources management' ([https://en.wikipedia.org/wiki/David_Goodall_\(botanist\)](https://en.wikipedia.org/wiki/David_Goodall_(botanist)); accessed 28 May 2018). In 2014, the International Association for Vegetation Science dedicated its annual symposium volume to 'the life of an ecologist *extraordinaire*, David W. Goodall' (Mucina, Price, and Kalwij 2014). In 2015, a special issue of *Plant Ecology* was also dedicated to him.

With the closing of the CSIRO laboratory at Helena Valley in 1998, David needed an office and space for his extensive library. At the time, David was an active research scientist and Editor-in-Chief of the comprehensive 'Ecosystems of the World', a 30 volume series begun in 1977 and completed in 2005 (https://www.ecu.edu.au/__data/assets/pdf_file/0016/704302/2005_CEM-Annual-Report.pdf; accessed 28 May 2018). He therefore needed a research environment in which he could continue his work and editorial responsibilities. An office was arranged for him in the Centre for Ecosystem Management on the Joondalup Campus of Edith Cowan University, in the northern suburbs of Perth (Fig. 2). In return, David offered to donate his library to the university, a substantial contribution considering the limited extent of the Joondalup campus library. Obtaining approval to provide David with an office at Joondalup was not difficult, especially given the efforts of the university to enhance its research profile. David brought not only his library to Edith Cowan, but also his stature as an internationally recognised scientist, author, and editor. On arriving at Joondalup, he immediately participated in university activities continuing his research, publishing and editing, attending seminars, and encouraging students and staff to publish.

In 2016, Edith Cowan University terminated that arrangement on the grounds that at the age of 102 David was not fit to travel to his office at Joondalup and proposed he work from home, coming to campus only for pre-arranged meetings. That

such a highly respected and senior scientist could be banished to working in virtual isolation when he needed the academic and social contact of a university caused such an international furore that the university relented providing David with an office on the Mt Lawley campus closer to his home (<http://www.abc.net.au/news/2016-12-20/wa-university-reverses-decision-to-eject-102yo-scientist/8136836>; accessed 28 May 2018). He continued to enjoy and participate in university life to the best of his abilities until his death in 2018 (for a glimpse of David at the age of 103 and to understand his commitment to life and science see <https://www.dailytelegraph.com.au/entertainment/television/sbsoldguy/video/05fc4444b7dabdc2c4c85e57a665820>; accessed 28 May 2018).

As is obvious in the interview with David on SBS's Insight program (<https://www.sbs.com.au/news/insight/tvepisode/late-shift>; accessed 6 June 2018), he was a scholar and gentleman in every meaning of those words. His contribution to Australia and the world can be quantified by his more than 100 publications, participation in seminars and conferences, the papers he refereed, the books he edited, and the many scientists he encouraged and mentored. He was a good colleague who worked hard to promote science and publication among all those he worked with. His time at Edith Cowan University and before that at CSIRO, long after he had retired is testimony to the contribution we can make as we age. David made his final contribution the day he chose to die with grace, humility, humour, and dignity while listening to Beethoven's 'Ode to Joy' from the 9th Symphony.

It falls on all of us to honour David's legacy as a scientist, and as an advocate for all persons to have the right to end our time on Earth with pride and dignity, when we choose to do so.

No individual, government, or medical professional has the right to deny any individual, regardless of age or health, the right to live nor the right to die. Everyone, however, has a responsibility to ensure that life can be ended without suffering, and in dignity and joy. Moreover, research institutions, whether they are universities, museums, or government and industrial instruments have a responsibility to ensure productive researchers can pursue their studies and, if required, guarantee

access to an office and any research facilities they need to continue their work after their official retirement as CSIRO and Edith Cowan University did for David. We hear too much about an aging population and the monetary costs to society of older people, without sufficient mention of the contribution senior scientists and citizens make to the community. David Goodall showed all of us the positive contribution seniors can make even as they age well past retirement. The world appears willing to allow the elderly and psychologically handicapped to lead nations; it needs to do the same for those, who like David William Goodall, grow human knowledge and lead science to the future.

Harry F. Recher and Denis A. Saunders

Acknowledgements

We thank Paul Recher for his helpful comments on an early draft of this tribute to David Goodall and Myella Sharman for a final proofreading. David Baylis, Justin Bianchini, Daniel Davis, and Kevin Opsahl made the task of finding photographs of David that we could use much easier and we are grateful for the help.

References

- Feoli, E. (2014). Some thoughts about David Goodall's work. In 'Biodiversity and Vegetation: Patterns, Processes, Conservation' (Eds L. Mucina, J. N. Price, and J. M. Kalwij) pp. 23–24. (Kwongan Foundation: Perth, Au.) Available at: <https://iavs.org/uploads/meetings/Perth%202014%20-%20Abstract%20Book%20-%20Final.pdf> [verified 22 February 2019]
- Goodall, D. W. (2014a). Identification of unknowns within a probabilistic system: The diagnostic value of attributes. *Plant Biosystems* **148**, 1346–1354. doi:10.1080/11263504.2014.913731
- Goodall, D. W. (2014b). A century of vegetation science. *Journal of Vegetation Science* **25**, 913–916. doi:10.1111/JVS.12182
- Minchin, P., and Oksanen, J. (2015). Statistical analysis of ecological communities: progress, status, and future directions. *Plant Ecology* **216**, 641–644. doi:10.1007/S11258-015-0475-7
- Mucina, L., Price, J. N., and Kalwij, J. M. (Eds) (2014). 'Biodiversity and Vegetation: Patterns, Processes, Conservation'. (Kwongan Foundation: Perth, Australia.)