

## Tribute to Kenneth (Ken) James Wallace: exceptional conservation reserve manager who integrated theory into practical conservation management (9 August 1950–13 October 2021)

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Ken Wallace (Fig. 1) was a farm boy, raised in the Wagin district in the wheatbelt of Western Australia (WA). While he understood and respected wheatbelt agriculture, he developed a passion for protecting the remaining native biota isolated in hundreds of patches of varying sizes, shapes and ownership scattered throughout the wheatbelt. He regarded it his duty to work with others to integrate nature conservation within agricultural production landscapes. In his approach to combining the practical and theoretical approaches to management of landscapes fragmented by development for intensive agriculture, Ken has left a unique and extraordinary legacy.

Ken spent his high school years as a boarder at Scotch College in Perth, where he achieved high academic results and was a drum major in the school band. He studied Zoology for his BSc at The University of Western Australia (UWA), graduating with Honours in 1972.

After graduating, Ken became a professional musician, playing piano in the Perth rock band Sid Rumpo. In 1972, the band won the Western Australian state final of Hoadley's Battle of the Sounds. They subsequently moved to Melbourne to join the burgeoning music scene there. They appeared at the Sunbury Rock Festival in Victoria in 1973 and 1974, were included on the live album that resulted, and recorded an album of original songs, several of which were written by Ken.

After the band broke up, Ken went back to study, undertaking a Diploma of Education in tertiary studies at the University of Melbourne. While studying, Ken was a science tutor at the State College of Victoria, in suburban Melbourne. During this formative period, he taught botany and earth sciences, concentrating on marine and freshwater biota, and commenced developing his ideas on management of natural resources.



Fig. 1. Ken Wallace in 2009 (Wallace family photograph).

On graduating from the University of Melbourne in 1979, Ken returned to WA to join the Department of Fisheries and Wildlife, where in July 1979 he was appointed as a Reserve Management Officer. This appointment was unique in the department as he was the first tertiary-educated officer based outside the Perth metropolitan area. He started his practical reserve management career in the small wheatbelt town of Pingelly. He established the Fisheries and Wildlife Pingelly Management District at a time when the importance of remnants of native vegetation in the extensively cleared wheatbelt was starting to become realised and acquisition efforts being made to secure as many remnants as possible for the State's conservation estate. Ken remained in Pingelly until September 1983, when he was transferred to Katanning in the southern wheatbelt. This was a much larger district than Pingelly and covered the area to the south coast and some of the forested area of the southwest.

He remained as District Manager/Reserve Management Officer at Katanning until February 1985. Initially he had one assistant and the two of them were responsible for reserve management as well as biological surveys of the large number of nature reserves within the District's conservation estate. In this role, Ken started developing his understanding of the need for vertical integration of management operations for successful conservation outcomes.

In March 1985, Ken was appointed Manager of the Wheatbelt Region of the newly formed Department of Conservation and Land Management (CALM) and moved to Narrogin. In this role, which he occupied until November 2002, he was responsible for the management of 10 000 km<sup>2</sup> of Crown land dedicated for nature conservation, recreation and timber production, as well as the Department's Narrogin Plant Nursery. He managed 36–42 staff and an annual budget of over \$4 million.

During this period, Ken was active in developing nature conservation policies for the Department. He set up a formal system of inspecting many of the Region's reserves and evaluating the management necessary, including improved fire management. He established and maintained firebreaks, no mean feat with the large number of small reserves with high boundary to area ratios. Many of the reserves had been controlled by other government departments, but were never managed, or were never-developed town sites. They had no nature conservation objectives and extensive rehabilitation had to be undertaken to revegetate former gravel quarries, school sites and other disturbed areas. As part of the developing Western Shield program, he oversaw feral animal control within the Region, where Dryandra Woodland, then State Forest, was a particularly important component, the results of which saw two native species removed from the State's list of threatened fauna.

Ken also set up adaptive management for nature conservation in the Region and was a key player for CALM in the establishment of two 'focal catchments' aimed at addressing the problems with dryland soil salinity that emerged in the 1970s. Salinity was the result of the conversion of deep-rooted native vegetation to shallow-rooted annual crops and pastures, the consequences of which were rising watertables, mobilisation of salts stored in the subsoil and saline water discharge in the shallow valleys of the wheatbelt. Ken made a major contribution to the debate on objectives and options for the control of salinity. He was a prominent advocate for retention and management of

remnant vegetation on farms and the planting of mallee *Eucalyptus* spp. as a potential commercial tree crop that would assist with control of salinity. He had a major role in the preparation of *Salinity in Western Australia: A Situation Statement* and in the development and implementation of the State's policy response in *State Salinity Action Plan 1996*. He was the leader in planning and instituting the conservation program for Toolibin Lake, a Ramsar-listed Wetland of International Importance (Wallace 2003a), now the last substantial freshwater lake in the wheatbelt. The team involved in this program won the inaugural Institution of Engineers Australia National Salinity Prize.

In March 2003, Ken was appointed Manager of the Natural Resources Branch of the Department of Parks and Wildlife, which had evolved from CALM, via the Department of Environment and Conservation. He held this position until January 2014. In this role he was responsible for administration of the Department's programs for control of salinity, development of new woody plant industries for conservation, and working with regional natural resource management groups. He established this new branch, and coordinated the planning and implementation of the Natural Diversity Recovery Catchment Program, the Department's major program to tackle the impacts of salinity on nature conservation values. This included setting priorities for targeted investments as well as developing research priorities to guide the program.

From July 2007 to June 2014, Ken was Program Leader of the Biodiversity and Water Program in the Future Farm Industries Cooperative Research Centre (CRC), in which his government department was a partner. A key part of this role was to build networks to develop scientific excellence in the CRC. In his other roles, Ken was extremely effective in building networks of contacts across government agencies, non-government agencies (such as Greening Australia WA and Landcare), regional community groups (Land Conservation District Committees) and academic organisations, including CSIRO.

Ken resigned from Parks and Wildlife in January 2015, taking up an adjunct position in the School of Agricultural and Resource Economics at UWA, concentrating on academic publications based on his expertise gained over 40 years of practical natural resource management. In May 2016, Ken enrolled for a PhD part-time in the School of Agricultural and Resource Economics, producing a thesis titled 'Wellbeing, Values, and Category Mistakes in Environmental Planning'. He had almost completed revisions to his thesis after it had been examined when he died while swimming for exercise.

What set Ken apart from most managers of conservation estates was his realisation that it was essential to understand the theoretical as well as the practical framework for conservation of biodiversity. To do that it was necessary to communicate with a wide range of audiences through all available outlets.

Not only did he deal with the 'bread and butter issues' of conservation management, such as infrastructure, roads, weeds, pests and firebreaks, but he also developed the theoretical frameworks for conservation, contributing to the scientific underpinning of nature conservation planning and management. As examples of the practical: he oversaw production and installation of appropriate signs for much of the CALM estate in the Wheatbelt Region; initiated projects to raise community awareness of nature conservation, including *Voices of the Bush*,

an innovative self-drive trail for the Central Wheatbelt, which included a set of full colour booklets; produced a series of publications titled *Exploring Wheatbelt Woodlands*; and was interviewed numerous times for radio and TV. He was active in organising workshops and conferences on nature conservation issues. He was forthright in making sure these important events were not just ‘talk-fests’ but had practical outcomes that could be used by others. Important examples of this approach are *Managing your Bushland* (Hussey and Wallace 1993) and *Remnant Native Vegetation Ten Years On: A Decade of Research and Management* (Wallace 1995).

Commencing in 1985 until his death, Ken published 45 papers, including departmental technical reports, conference proceedings, and papers in international peer-reviewed journals. He was sole or senior author on 32 publications. Fourteen of these were in international journals, including five in the *Journal of Environmental Management* and three in *Biological Conservation*, two of the leading journals in their fields.

It is worth reflecting on Ken’s publication record to show how his thinking evolved. His first publication was in 1985 (Wallace and Moore 1985). It was first of the many important reserve management plans for wheatbelt nature reserves. In 1987, he published a chapter in a book based on an international conference on the role of remnants of native vegetation in nature conservation, on planning and operational perspectives for managing remnant native bush in agricultural landscapes (Wallace and Moore 1987). This was early in the period when the SLOSS debate (single large or several small reserves) was raging in landscape ecology and his chapter was an important contribution focusing on the plight and needs of the many scattered patches of bush in agricultural landscapes. Ken recognised the critical contribution to nature conservation of uncleared native vegetation on private land and set out a scheme for engaging private land-owners, described in Wallace (1992). In 1994, he commenced publishing his thoughts on the need to integrate nature conservation and agriculture to develop landscapes sustaining both (Wallace 1994) and some of the barriers to achieving this goal (Wallace 2003b). During this period, he was developing a conceptual framework for managing biodiversity in agricultural landscapes, setting out such a framework for the WA wheatbelt (Wallace et al. 2003).

In Wallace (2007), he broadened the framework using the emerging concept of ecosystem services as part of the framework for integrating conservation of biodiversity into agricultural production landscapes. He identified important conceptual problems with the way that ecosystem services research was developing and proposed practical solutions. This paper, in *Biological Conservation*, has been cited 649 times (Scopus Database accessed 9 November 2021). This is an extraordinary citation score that places the paper in the top 2% of published papers. The paper had a major impact and is still being cited. It is remarkable that Ken, a practical manager of nature conservation, published research that had a greater academic impact than achieved by many of his colleagues in the Department’s research branch.

His PhD produced three more papers (Wallace and Jago 2017; Wallace et al. 2020, 2021) that built on his 2007 paper and focus on the links between natural resource management and human wellbeing. Ken’s conviction was that only by understanding the outcomes of conservation projects in terms of their

contributions to different aspects of wellbeing could the best management decisions be made.

Ken’s personal contribution to the management of biodiversity has been important and he has left a substantial practical and theoretical legacy.

Ken is survived by his wife Jenny, son James, daughters Anna and Kate, and four grandchildren.

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