Preface

Wildlife population dynamics is a prominent and dynamic field of science in Australia and around the world. It was the focus of the research of the late Dr Graeme Caughley, a former fellow of the Australian Academy of Science. In 2007 it was 30 years since publication of his best-known book, *Analysis of Vertebrate Populations*. The book has been used as a university textbook around the world. Dr Caughley's research has provided a basis for kangaroo management in Australia, ungulate management in New Zealand and aspects of elephant management in parts of southern Africa. In honour of Dr Caughley's contribution to the field of wildlife research and management, a Fenner Conference on the Environment, on Wildlife Population Dynamics and Management, was held at the Shine Dome of the Australian Academy of Science in Canberra in December 2007.

The aims of the conference were to review general and specific topics in Dr Caughley's research, to describe recent developments in the many fields of wildlife population dynamics and management since 1977, and then, using the outcomes, to postulate on future research needs and directions in environmental and conservation problems in Australia and elsewhere.

The Australasian Wildlife Management Society (AWMS: www.awms.org.nz) is a forum for discussion on the scientific aspects of wildlife management in Australia and New Zealand. Dr Caughley was a President of AWMS and his Presidential address was later published as a landmark paper 'Directions in conservation biology'. In honour of his research, the Academy of Science administers the Graeme Caughley Travelling Fellowship, and in memory of his contribution to AWMS, the Society periodically awards the Caughley Medal for outstanding contributions to wildlife science and management. The Fenner Conference incorporated the annual scientific meeting of AWMS.

Some keynote presentations at the Fenner Conference are published here as a special issue of *Wildlife Research*. Dr Caughley was chair of the Editorial Advisory Committee of the journal for several years and published frequently in the journal. The papers herein represent a range of general and specific topics. First, the general papers. The hypothesis that the population dynamics of large and small mammals are fundamentally different is reviewed and updated by Krebs. Caughley emphasised the need to understand the basic science of a topic for better management and encouraged assumptions to be explicit and evaluated, as described by Sinclair and Metzger. Finally, the single-species approach to wildlife dynamics used by Caughley is reviewed and extended by Sibly. These three papers are linked as Caughley's research changed over the decades from single-species demography to plant–herbivore interactions.

Specific papers on the population dynamics and management of various wildlife then follow. Biological invasions and evolution of cane toads are described by Alford and co-authors: the invasion of habitats by many deer species in New Zealand was a topic of Caughley's early research. Monitoring of waterbirds in Australia and elsewhere and the links to management are then reviewed by Kingsford and Porter: Caughley helped establish the annual aerial surveys that form the basis of the paper. The dynamics and management of Himalayan thar in New Zealand are reviewed by Parkes: the demography and eruption of Himalayan thar were the topics of Caughley's Ph.D. thesis. Wildlife management involves people and their wants and needs. A review of the human dimensions of wildlife management, including some of Caughley's perspectives on the topic, is provided by Miller. Kangaroo ecology was the topic of Caughley's Master of Science thesis and several scientific papers in the 1960s. The behavioural ecology of kangaroos is reviewed and updated by Coulson, with explicit linking of Caughley's results to current ecological theory. The role of genetics in wildlife management was questioned by Caughley in his 'Directions in conservation biology' paper. The topic is updated by Sarre and Georges, who suggest that genetic analyses and their application have advanced considerably since Caughley's paper.

Graeme Caughley made a significant contribution to wildlife research and management in Australia and New Zealand. We trust you enjoy reading these papers on his research and the updating to contemporary perspectives on the topics.

Jim Hone
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