

Review of “The Kruger Experience: Ecology and management of savanna heterogeneity”. 2003. Johan T. du Toit, Kevin H. Rogers and Harry C. Biggs. Editors. Island Press, Washington D.C. Cloth: \$75, Paper: \$40.

It is appropriate that the edited volume “The Kruger Experience” was published in 2003, the same year that the World Parks Congress was held in Durban, South Africa. The Congress attempted to promote a new paradigm for parks, one which “demands the maintenance and enhancement of our core conservation goals, [while] equitably integrating them with the interests of all affected people”. The Durban Accord went on to say that “we see protected areas as providers of benefits beyond boundaries”, which links parks to the broader landscape and to local people living around protected areas – a view that aptly characterizes today’s management of Kruger National Park.

This view of parks and protected areas contrasts with the earlier view that parks are islands of pristine wilderness where natural communities are in balance and stable, where human impact is minimal, and where active management is largely unnecessary. Indeed through its 100 years of existence (outlined in chapters by Mabunda, Pienaar, & Verhoef, and by Freitag-Ronaldson & Foxcroft), the history of Kruger parallels the evolution of our thinking on parks. First as the Sabi Game Reserve, and then for the first 20 years of its existence as Kruger, the emphasis was simply on the protection of game populations from poachers, farmers, and land speculators. The goal of any management was to buffer the park from variability and outside influences. But even such a large area as Kruger (2 million ha) is not immune from its socioecological and abiotic context, and after 1946, management became increasingly dramatic. Beginning in the late 1950s and completed in 1976, the park was fenced, partly for veterinary reasons, partly to actively separate the park from surrounding human communities. There was a major effort to provide water sources for wildlife: Ungulate densities are affected by rainfall (outlined in a chapter by Owen-Smith and Ogotu) and by 1995, authorities had created some 365 boreholes and 50 earth dams (described by Gaylard, Owen-Smith and Redfern). Fire management was widely practiced (though characterized by prescribed burning at a fixed return period, it was not very sophisticated), a history ably analyzed by van Wilgen and colleagues. The park was physically transformed: About 8,000 km of roads (built largely to support the tourism sector) and a network of firebreaks created some 456 burn management blocks. Wildlife management was interventionist: Rhinos, ungulates, primates and carnivores were reintroduced into the park (described by Freitag-Ronaldson and Foxcroft in an excellent chapter summarizing anthropogenic influences), some quite successfully. Elephants reinvaded the park in about 1905 and flourished. Eventually, to maintain the burgeoning elephant populations at constant levels, over 16,000 elephants were culled or removed between 1966 and 2002 (Whyte, van Aarde & Pimm). Carnivore control began early, with intensive lion and spotted hyaena culling in the 1975-1980 period. By the end of the last

century, Kruger might have been the most intensively managed large park in the world – with the overall goal of maintaining “the balance of nature”!

It is against this history of intervention and all of its unintended consequences, that this volume celebrates a new approach to management at Kruger. Consistent with the political change in South Africa, and the accords of the World Parks Congress, Kruger is turning outwards towards the densely populated and economically impoverished neighboring communities (some 2 million people live within 50 km of the western boundary). As Pollard, Shackleton & Carruthers state: “The new mission of Kruger outlines a commitment to its integration with the broader socioecological landscape”. But they also note the challenges: “Yet without a broader ecosystem view by all stakeholders, the degeneration of a common property management system to one of open access poses a real threat to the biodiversity along Kruger’s border and to local peoples’ livelihoods”. How to accommodate these multiple goals will be the challenge for Kruger in the future.

The other explicit shift in mission is to manage for heterogeneity, the “ultimate source of biodiversity” (p.23). Rather than managing individual species for stability, managers seek to sustain a local diversity of species and the heterogeneity of habitats that support them. Two chapters, one by Pickett, Cadenasso & Benning, and the other by Rogers lay out the heterogeneity paradigm and place it within the context of Kruger. This theme then runs through the book. The five chapters in Part II examine the main determinants (or agents, substrates and controllers) of heterogeneity: soils (Venter, Scholes & Eckhardt), fire (van Wilgen, Trollope, Biggs, Potgeister & Brockett), surface water (Gaylard, Owen-Smith & Redfern), rivers (Rogers & O’Keefe), and the biogeochemistry consequences of these factors (Scholes, Scholes, Otter & Woghiren). Part III examines the biotic responses of this heterogeneity, and includes responders such as vegetation (Scholes, Bond & Eckhardt), insects (Braack and Kryger), birds (Kemp, Dean, Whyte, Milton & Benson), large herbivores (du Toit), and large carnivores (Mills & Funston). Taken as a whole, this set of chapters convincingly promotes the idea that the maintenance of ecological heterogeneity is a valid, appropriate and possible management goal.

“The Kruger Experience” brings together 100 years of scientific research, and the chapters exhibit a detailed knowledge of the abiotic and biotic, and of structural, functional and temporal variability. It is the availability of this knowledge that coupled with explicit management goals that allows managers to aspire to the adaptive management of the ecosystem. Biggs and Rogers outline the new Kruger management system, which specifies detailed objectives and operational goals for spatiotemporal heterogeneity. Scientific monitoring of key elements (biodiversity, human benefits, wilderness, naturalness and custodianship) then allow managers to adjust management interventions in an adaptive way. The approach is sophisticated and compelling, and gives one hope for the future of the Kruger ecosystem.

Like the two edited volumes on the Serengeti ecosystem (published in 1979 and 1995), to which comparisons are inevitable, this volume is tightly organized around ecosystem studies in a specific place. Where “The Kruger Experience” forges forward is in its focus on the dynamic rather than the static, its conscious integration of science with management, its recognition of the anthropogenic influences on the ecosystem, and its emerging vision of parks as integrated into the broader landscape.

“The Kruger Experience” is an edited volume, but unlike many such, has an internal consistency and structure that is satisfying. The theme of heterogeneity, determinants of and management for, recurs throughout the book. As is typical of Island Press, the book is well edited, the production is excellent, and the price is reasonable.

John G. Robinson
Wildlife Conservation Society
Bronx, New York 10460

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