

## BOOK REVIEW

**Livestock Predation and its Management in South Africa: a Scientific Assessment** by G.I.H. Kerley, S.L. Wilson & D. Balfour (Eds). Centre for African Conservation Ecology, Nelson Mandela University, Port Elizabeth. 2018. Pp. 270, incl.: Foreword, Author Biosketches, Preface, Summary for Policymakers, 9 Chapters and Glossary. ISBN 978-0-620-78763-5 (print), 978-0-620-78764-2 (e-book).

South African predators are sexy, but, like sex, not uniformly experienced by stakeholders. Therein lies the rub: predators hold simultaneously various values, ranging from intrinsically valuable and environmentally beneficial to experientially detrimental and costly for humans that co-occur with them. So, how does South African society deal with this conundrum?

In a major and successful undertaking, Kerley *et al.* (2018, hereafter 'the Assessment') have defined livestock predation by South Africa's canid and felid predators, focussing particularly on the main predators, black-backed jackals and caracals. The Assessment provides a framework, progressing through the impetus and need for such a study, and why a scientific assessment is necessary. Their scientific assessment is thorough, logically sequenced and accessible by wildlife scientists and managers, policymakers, other southern African stakeholders and researchers interested in livestock predation in other countries.

Essentially, the Assessment can provide evidence to help assuage the conflict livestock predation causes between people with different world views, values, attitudes, beliefs and ethics. The Assessment unashamedly takes a dispassionate approach to a topic that excites passionate discourse among people with different motivations and experiences. To ensure and demonstrate transparency, a governance oversight process is embraced and outlined: an external committee is surely unique for such a multi-peer reviewed work. Author affiliations and experience are recorded to ensure there are no conflicts of interest or opacity of backgrounds.

Predation of livestock by native and introduced wildlife brings them into conflict with livestock producers. This conflict requires management that accounts for the different values placed on predators. The first step in scientifically addressing

any wildlife management issue in an adaptive management framework is to define the problem. What is the predation problem; which animals cause it; which livestock are affected; why does it happen; when, where and how often does it occur; how much does it cost; who has it; who doesn't have it; what can be done about it; what is the legislative and policy framework; what are the ethical considerations of management action and inaction? Answers to these and like questions provide the evidence upon which rational and emotionally intelligent management decisions can be made. The Assessment does this almost exhaustively, and well.

The Summary for Policymakers is an important component, yielding a descriptive, pragmatic and practical overview for stakeholders who are assumed to be, 'intelligent, but not necessarily technical experts'. Technical experts too will gain much from the Assessment. The Summary defines the intellectual framework, governance and process that were undertaken and introduces the layout. It also describes the adaptive management approach, which allows iterative improvements and facilitates progress in the management of human-wildlife conflict associated with livestock predation. I would have placed Box 6.4, which succinctly describes the weighting that can be placed on different sources of information, in the Summary where it is more likely to be read by time-poor policymakers who have to weigh often-contradicting evidence when making decisions about predator management.

The structure of the Assessment leads the reader logically through the review process (Chapter 1); historical (Ch. 2) and production (Ch. 3) contexts; the socio-economic impacts and their management (Ch.3); the ethical (Ch.4) and legislative (Ch.5) scaffolds supporting management; details of past and current management tools and strategies (Ch.6); biological and ecological case studies of the most contentious mesopredators of livestock (Ch. 7 & 8); and a more general review of the other southern African wildlife species implicated in livestock predation (Ch. 9). Of these, Ch. 6 is very ambitious, but achieves its objectives: the referencing is extensive; Box 6.1 describes a novel use of virtual fencing to exclude baboons, control of which must surely be a daunting prospect; Table 6.1 is a useful and well-structured summary of current usage of control tools in South Africa



and elsewhere; and Box 6.3 outlines and describes the adaptive management approach that is essential for using existing knowledge effectively while gaining knowledge to improve management.

Each chapter concludes with extensive referencing and a box of unresolved issues requiring further investigation. I would have liked a short concluding chapter summarising the state of play and drawing conclusions on what can be done with current knowledge, the general topics of future research and the disciplines that would need to collaborate in that work.

There are a few omissions from this otherwise comprehensive work. Firstly, although the human social and emotional aspects of predation of livestock are acknowledged as critical (Ch. 3), a scientific assessment of the people is lacking. Chapter 4 provides an excellent description of the ethical quandaries posed by human–wildlife conflicts. It also outlines well the moral stance against lethal control, but does not evaluate the moral landscape in which lethal control is acceptable, and indeed is practiced. There is a presumption that non-lethal control is more ethical than lethal control, but both can be valid, depending on one's world view, and such human dimensions to control were not assessed. Quantitative evidence of stakeholder characteristics on which to judge or measure change in behaviours associated with and towards mitigation of livestock is required but is not presented. Understanding of the complexity of the South African ethical environment is here dependent on testimonial evidence and philosophical discussion rather than objective scientific assessment. This is an understandable oversight because environmental psychology is an emerging discipline. Assessment of the behavioural, moral and ethical landscapes is a topic missing from Box 4.2, knowledge gaps. The second omission is discussion of the potential for new technologies to assist in gaining better understanding of the ecology of predators in subsistence and broad-scale agri-ecosystems, to monitor predators and livestock, in the prediction of predation events, and in consequent opportunities to mitigate through lethal and non-lethal techniques. Thirdly, the economics section is comprehensive on the costing side, but a benefit:cost analysis and net present value analyses that show the relative

benefits (or otherwise) of various control strategies, and their combinations, to livestock producers affected by predation would be useful. This might be a topic for future work and could be expanded to include the potentially competitive uses of predators (*i.e.* tourism and ecosystem services) and contrast those with predator management for livestock protection.

I have a small bone to pick in the otherwise excellent and comprehensive mesopredator management effects on ecology section (Ch. 8). It appeared to me from reading the chapter that top-down forces were implicitly assumed to prevail in southern African ecosystems and that removal of apex predators therefore has a disproportionately disruptive influence on biodiversity. However, there is little empirical evidence from South Africa to support the well-described (*e.g.* Fig. 8.2) conceptual process and some of the cited supportive research from elsewhere, *e.g.* Australia and North America, is equivocal and should have been presented in that light. The section on bottom-up forces was presented in the context of apex predator numbers declining rather than the more parsimonious viewpoint that conditions (*e.g.* anthropogenic resources and habitat change) better suited the mesopredators and some prey species over others. However, that is my nit-picking. The general shortage of South African information is identified in Box 8.1, knowledge gaps, but important alternative bottom-up drivers of biodiversity could be added as topics for consideration.

I commend the editors for successfully wrangling a diverse group of authors and broad and complex content into a coherent, logical and readable precis of livestock predation in South Africa. I look forward to a second edition providing answers to many of the questions raised and more recommendations on predation mitigation to livestock managers and policymakers.

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