

ability. This sheep population was caught in a classic extinction vortex. Like many similar cases, we can see the vortex taking hold, we know it is bad, but we cannot quantify exactly why it is bad. When numbers dwindle, sample sizes become too small to test hypotheses, and we are left with speculations. That unsatisfactory reality is often faced by those attempting to conserve small populations.

The book ends with a cautionary tale about the ongoing attempt to reintroduce bighorn sheep to the Pusch Ridge: reintroductions are hard, even when there seems to be sufficient available habitat. Possibly because of lack of local knowledge, many transplanted sheep were killed by cougars, even though predation did not appear to play an important role in the extinction of the original population. Worryingly, some introduced sheep died of pneumonia, the scourge of bighorn conservation, which had not been reported in the native population. This is a mostly nontechnical volume with almost no statistics and a lot of narrative. It will be accessible to all readers interested in how a valued peri-urban wildlife population disappeared despite the best efforts of many individuals and organizations.

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ZOO ETHICS: THE CHALLENGES OF COMPASSIONATE CONSERVATION.

By Jenny Gray; Foreword by Joel Sartore. Clayton South (Australia): CSIRO; Ithaca (New York): Cornell University Press (Comstock Publishing Associates). \$45.00. xix + 236 p.; index. ISBN: 9781486306985 (CSIRO); 9781501714429 (Cornell). 2017.

In the past few years there has been an upsurge in public scrutiny of zoos and aquariums as evidenced, for example, in the controversy around the movie *Blackfish* (2013) and the discussion surrounding the euthanasia of Marius the giraffe at Copenhagen Zoo in 2014. There is more pressure than ever for zoos to justify their continuing existence, but it seems that the two sides on this debate are talking past one another. Zoo opponents often have a good grasp on ethical theory, but lack knowledge of the operations of modern zoos; although those in the industry have the facts, they frequently lack the skills to build formal arguments in their defense. Enter Jenny Gray with her book, *Zoo Ethics*, which assists in bringing the two sides together. With a background in both academia and the zoo industry, she is ideally placed to provide an informed look at the reality of the way zoos operate as well as provide the ethical foundation on which to build arguments. The volume addresses the central question of the zoo debate—“[a]re even the best zoos ethically and morally defensible?” (p. 3).

This book is an exercise in applied ethics, bringing together ethical frameworks with real information about the ways zoos are run, and their positive and negative impacts. The author provides a detailed and careful look at five different ethical frameworks—animal welfare, animal rights, consequentialism, virtue ethics, and environmental ethics. She works through each of the frameworks, explaining their features and how they might apply to the operations of a modern zoo. Although she provides her own conclusions as to how zoos might fit within the ethical frameworks discussed, the primary purpose of the volume is really to give readers the tools to critically assess the problems. The book ends with a set of case studies titled Wicked Problems for which no answers are provided, and readers are encouraged to come up with their own positions on these problems. Although this seems primarily intended for those within the zoo industry, the tools provided here would allow anyone to critically assess the problems raised. The use of simple language and clear explanations of concepts make this an excellent entry point for anyone interested in the zoo debate, but there is also enough material here to think on for anyone already familiar with zoos or moral philosophy.

There is some concern, acknowledged by the author, of a potential conflict of interest in a major zoo stakeholder running an analysis on the ethical status of zoos, and she does conclude that under any of these frameworks, we have reason to consider the presence of zoos as justified. However, her arguments to this end are clearly presented, and readers are able to accept or reject what they please. Additionally, she is far from providing an unqualified approval; rather she uses the different ethical frameworks as a way of bringing out the ways in which zoos should strive to adapt and improve. Although the answer to her central question—whether even the best zoos are ethically and morally defensible—is yes, it is most certainly followed by an “if,” and a list of criteria modern zoos must strive to meet in order to justify their continued existence. These include attention to the welfare and interests of the animals held, commitment to compassionate conservation outcomes, and carefully prepared valuable visitor experiences. This book succeeds in giving a sense of the depth of the problem of defining and operating an ethical zoo, and as the author concludes: “It is possible for zoos to be operated ethically. Yet it is not easy” (p. 208).

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