



Journal of Applied Animal Welfare Science



ISSN: 1088-8705 (Print) 1532-7604 (Online) Journal homepage: <http://www.tandfonline.com/loi/haaw20>

Challenges of Compassionate Conservation

Jenny Gray

To cite this article: Jenny Gray (2018) Challenges of Compassionate Conservation, Journal of Applied Animal Welfare Science, 21:sup1, 34-42, DOI: [10.1080/10888705.2018.1513840](https://doi.org/10.1080/10888705.2018.1513840)

To link to this article: <https://doi.org/10.1080/10888705.2018.1513840>



© 2018 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.



Published online: 16 Oct 2018.



Submit your article to this journal [↗](#)



View Crossmark data [↗](#)

Challenges of Compassionate Conservation

Jenny Gray

Zoos Victoria, Melbourne, Australia

ABSTRACT

The substantial and urgent threats to the prosperity of individual nonhuman animals and the survival of species necessitate a changed approach to conservation. The current practice of seeing conservation and animal welfare as contradictory goals is not helpful. It is proposed that the approach should bring together parties to address the common root causes and to find innovative ways to accommodate multiple interests by translating beautifully written and ethically complex theories into pragmatic tools. Compassionate conservation provides a contemporary framework for animal welfare professionals and ecologists to develop new approaches. Simple tools can help in identifying areas of agreement and areas of dispute. While engaging with both ethics and animal welfare science will move animal welfare discussions forward, working together will identify shared values and goals and perhaps reveal ways to save species, one animal at a time, before it is too late.

KEYWORDS

Compassionate conservation; zoos; animal welfare

Introduction

A thing is right when it tends to preserve the integrity, stability and beauty of the biotic community. It is wrong when it tends otherwise. (Leopold, 1949, p. 224)

Every day, we make decisions. For the most part, we do not even pause; we have our routines and shortcuts that allow us to navigate complex social situations and daily life without spending time wondering if our actions are right. We rely on our attitudes, values, and beliefs developed during the course of our lives to guide us, and we call this our instinct or gut feeling (Foot, 2002). However, from time to time, we come across a situation or decision for which our trusted routines and values no longer provide guidance and our decisions require more ethical consideration.

The challenges of saving or preserving species in our overpopulated world present one of these complex situations. Everything we do is bound to have an outcome that may be unacceptable to some audience. Although we argue about what to do, trees are felled, nonhuman animals are shot, and habitats are transformed into wildlife deserts. While we argue over the best course of action, animals and species simply vanish.

Compassionate conservation (Bekoff, 2013) suggests we consider a different approach to saving species. Compassionate conservation calls on us to think about the good of individuals and the good of the environment to slow down our decision making and to look for better ways to address the problems that threaten our planet and the diversity of life that shares the earth. To get it right, we need to create and reinforce new values and beliefs. Together, we can become a supportive network of academics, zoos, aquariums, and animal welfare organizations that can encourage wildlife-friendly attitudes and beliefs in the public to ultimately benefit both humans and animals and secure a future rich in biodiversity.

I am an engineer and an ethicist who works with animals in a zoo-based conservation organization. My passion is to translate beautifully written and ethically complex theories into pragmatic

tools that help animal professionals to make better, more ethically robust decisions. This article will provide a summary of compassionate conservation with simple tools to help in making complex decisions. I do not propose that all the complexity of working with animals or attempting to improve the environment can be distilled into simple models, but I hope you will start to use the tools and test your ethical argument skills. I hope you will pause a moment longer and take the time to find a stronger, more inclusive way forward. I hope you will try to understand the logic and intent behind what may look like a simple decision but really is fraught with complexity.

Thinking about ethics and animals is difficult and challenging, and crisp, clean answers are seldom provided. Yet we should strive to provide a logical argument supported by rigorous science.

Rat in the kitchen

Before we start talking about ethics, let us bring an animal into the room.

Imagine that as you read this article, you hear a scratching noise in the wall beside you. On closer investigation, you discover a rat has made a home in the wall. You now have a choice on what to do with the rat. You could simply leave the rat alone. However, the rat may be pregnant, and in no time, you could find yourself overrun with rats. The rats could be carrying diseases, which could put your family at risk.

So, you should catch the rat, and once he or she is caught, you have to make a decision on what to do with the rat. You could take the rat to the neighboring park and let him or her go. Rats are an important part of the food chain, and it is highly unlikely that a rat released in a strange environment will survive the night. Releasing this animal back into the wild is putting him or her at a high risk for death, possibly in an unpleasant way.

If we do not let the rat go, what should we do with him or her?

We could take the rat to the neighboring university where smart young people will run experiments and discover new things about rats or even new things about humans. Alternatively, we could take the rat to the neighboring zoo, where they would build an enclosure and give talks about the important role of rats in our ecosystem. At the zoo, the rat would be protected by numerous laws and would live out his or her life in relative comfort. Or we could keep the rat as a companion animal (pet), build a cage and spend time with this smart and engaging creature, and encourage our friends and family to change their attitudes toward rats.

But we could also simply kill the rat. We could kill him or her in a humane way; few people would worry about the ethics of killing this unwanted home invader.

All of these options are permissible. Our reactions to these options may be informed by ethical principles or simply our own perception and affection or lack thereof for rats. Most of us would have made a decision in a few seconds with an emotional, value-based response. The life of a sentient, emotional, and intelligent being is decided in seconds.

It is also relevant to pause for a moment and think about what our reaction would be if the invader was a kitten instead of the rat. And what if the invader was a tiger cub, too large to keep at home and critically endangered in the wild?

Professionals who work with animals face this complexity each and every day. Many of the decisions that must be faced have no simple right or wrong answer; instead, a complex range of choices are available, all with different ethical outcomes for the animal, the community, and the person who must decide.

Compassionate conservation

We have been thinking and debating human ethics for a very long time, but we have only been thinking about environmental ethics for the last 50 years (Elliot, 2006). One of the more interesting and useful environmental ethical issues that has emerged is the concept of compassionate conservation.

At the Compassionate Conservation Symposium held in Oxford, England, in 2010, speakers proposed the thinking that conservation and animal welfare should be considered as having equal consideration. The symposium brought together scientists and practitioners from a range of disciplines to examine topics such as animal welfare in field conservation, the welfare and conservation of animals in captivity, international trade in live animals, and the conservation impacts of wildlife rescue rehabilitation and release. The papers provide interesting reading and flag areas of concern or potential risk for all conservation organizations (<http://compassionateconservation.net/about/flagship-symposium>).

Many of the core concepts and ideas of compassionate conservation are articulated in *Ignoring Nature No More* (Bekoff, 2013). The collection of essays unpacks real-world examples of the principles of “first, do no harm” and better consideration of sentient beings and the harms inflicted on them in delivering conservation outcomes.

In an interview in *Forbes Magazine*, Mark Bekoff explained, “Compassionate conservation is concerned with the humane treatment and welfare of individual animals within the framework of traditional conservation biology in which the focus is on species, populations, or ecosystems, as you pointed out. Often there is polarization between those interested in animal protection and those interested in conservation. It is all too easy to trump individual animal welfare for the widely shared goal of preserving biodiversity. Compassion for animals should be fundamental for conservation because poor conservation outcomes are often consistent with the mistreatment of animals” (Tobias, 2013, p. 224 <https://www.forbes.com/sites/michaeltobias/2013/05/09/compassionate-conservation-a-discussion-from-the-frontlines-with-dr-marc-bekoff>).

At first glance, the concept seems obvious; of course, actions that are good for individual animals would be good for their species survival, yet little is simple in the web of life. Most actions trigger expanding impacts on the environment and other individual animals or species. The good for one species may come at a cost to others. The most obvious concept is that benefits for humans often come at the cost of the environment and other animals.

There is no doubt compassionate conservation will grow as a field of study and the theory will be expanded. Case studies and controlled experimentation will help to test the rigor of the concept and enrich debates. Although compassionate conservation may be harder and more expensive to enact, there are indications that the concept is robust in delivering better outcomes. The work done with predator awareness training of helmeted honey eaters at Healesville Sanctuary is a good example of this approach; protecting individuals is allowing the population to grow. Future studies will evaluate the impact of compassionate conservation; however, early work has identified the potential of compassionate conservation. Head Start programs, pest management, and release of captive-bred species can be enhanced by providing equal weight to the welfare of the individuals involved and the impact on the environment.

A cautionary note from ecologists and scientists is that individuals and ecosystems live in different time and space. Trying to bring them together is like trying to mix water and oil; for a short while, with a lot of energy, it may look like it works, but ultimately, it fails. Edward Wilson (1984) said, “[A]cross a thousand years, the approximate threshold interval of evolutionary time, individuals lose most of their relevance as biological units (p. 43).” Our challenge is to find solutions that are humane in this moment and effective across time.

Tools to help with decision making

While complex arguments and stylish writing are good for academics, the people on the ground in jungles, savannahs, or zoos and aquariums need simpler tools to guide us toward ethically robust decisions and actions. To ask that we do no harm may be impossible when considering the complex interplay of cause and effect in a connected ecosystem. For wicked problems, there may be no option that does no harm; there are only a group of choices that range in negative impacts. How are we to choose and make rational trade-offs? The most common currency of

monetary return fails us. How do you trade off the value of the extinct Eastern barred bandicoot against killing hundreds of foxes?

Simple two-by-two interpretation of compassionate conservation

Based on the principle of compassionate conservation, we constructed a simple decision tool that plots the benefit or harm to a species on one axis and the benefit or harm to an individual on another axis. Using a simple graphic, we can consider the actions that we are proposing to see within which block they fall.

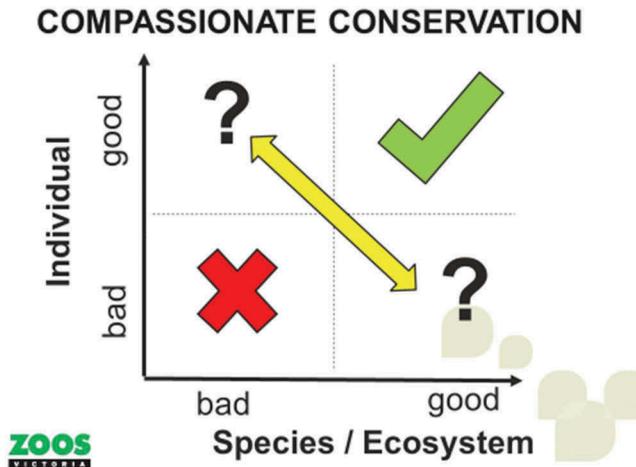


Figure 1. Compassionate Conservation.

Actions that are good for the individual and good for a species are the actions we should be striving to take. Actions that are bad for individuals and bad for species should be stopped. It is the actions that fall in the other two blocks—either good for species and bad for individuals or bad for species and good for individuals—that should give us pause to think and to consider if there are better ways of acting.

Good for species, good for individuals

In the good/good category are examples such as the Eastern barred bandicoot (bandicoot) in Victoria, Australia. The bandicoot is currently listed as extinct in the wild due to the introduction of foxes into the landscape. Bandicoots evolved to avoid aerial predation and have no defense against ground-based predation. The bandicoot simply cannot live in a habitat that is occupied by foxes. The bandicoots, which were once wide-ranging across Victoria, have been driven to the brink of extinction. Twenty-five years ago, a small population of bandicoots was found surviving on a rubbish tip in Hamilton, Victoria. Founders were brought into captivity where they have been held, bred, and kept safe from foxes. Over time, fenced areas have been added to the captive facilities.

To recover the species requires a sufficient fox-free habitat for a large, genetically diverse, free-ranging wild population. One option could be to kill all the foxes in Victoria. An alternative, which does not require the deaths of millions of foxes, is an island release. Another is the introduction of guardian dogs to protect the bandicoots from foxes. Guardian dogs have been successful in protecting little penguins from foxes by replacing the foxes as an apex predator and ensuring the foxes do not get free reign to kill the small animals.

Zoos Victoria is active with both of these strategies, and already, the island strategy is paying dividends, with releases on Churchill Island and Philip Island. Anecdotal evidence has shown that

the introduction of bandicoots on Churchill Island has improved the environment in unexpected ways. These little insectivores are skilled at scratching and digging to find insects, which has created a side effect of loosening the soil, which provides for better penetration of water into the soil with a benefit to vegetation. The guardian dogs are about to be deployed in a first trial to evaluate the success and effectiveness of a benevolent apex predator. Not only will the bandicoots benefit, but sheep farmers will also benefit from the work of the dogs in keeping foxes away from lambs. It is anticipated that within three years, there will be more than 2000 free-living Eastern barred bandicoots in Victoria, and the species will be recovered.

Bad for species, bad for individuals

The bad/bad category unfortunately has numerous examples and woeful tales.

The large-scale illegal trafficking of individual animals removes animals from the wild, often in stressful and unpleasant ways. Animals are shipped globally to new markets, often resulting in high mortality. The new caregiver (owner) is often unable to care for the animal, and the animal dies. For slow-breeding species, the removal of individuals from the population results in a decline in sustainability of the species. Uncontrolled removal of animals from the wild leads to the destruction of a species in only a few years.

In 2016, the Convention on International Trade in Endangered Species unanimously agreed to a total ban in the trade of pangolins (as reported in *The Guardian*, 2016). The rampant illegal trade of pangolins has been witnessed in recent seizures of tons of pangolins in China, Indonesia, and South Africa. The impact of the removal of thousands of pangolins on the species has been devastating.

But what of the diagonal? Good for one, bad for the other

It is on this good/bad diagonal that we find wicked problems.

The issue of feral cats provides a good example of a case in which the solutions are challenging and warrant further consideration. It has been estimated that feral cats eat millions of native mammals, birds, and reptiles every year. The Australian Government (2017) stated, “Feral cats threaten the survival of over 100 native species in Australia. They have caused the extinction of some ground-dwelling birds and small to medium-sized mammals.” The solution that is good for the environment and for native animals is to trap and kill feral cats, a bad outcome for the individual cats. To do nothing and leave feral cats to roam may be good for the cat but terrible for the environment.

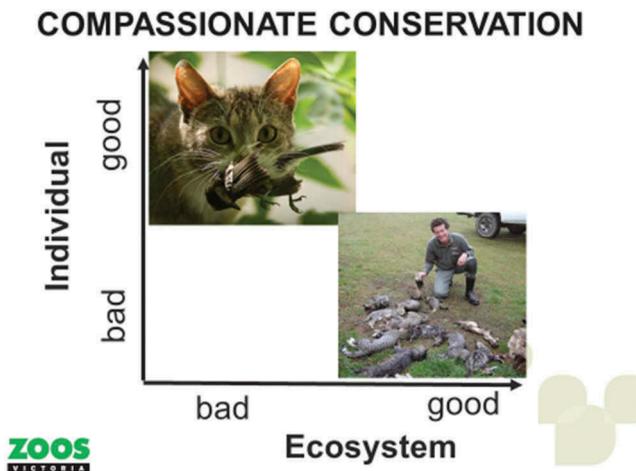


Figure 2 Managing Cats.

Pet cats are considered to bolster the feral population, particularly on the urban fringe. In trying to reduce the impact of pet cats supplementing feral populations, a contributing compassionate strategy is for pet cats to remain inside. Research has shown that stay-at-home cats live longer, suffer from less disease, and are not injured from fighting and road trauma. However, many hold that denying cats the opportunity to roam and hunt limits their experience of life. Over time, both of these claims can be tested by conducting welfare assessments. Although it will not solve the whole issue of feral cats, the approach may reduce the scale of the feral cat problem.

The debate on the control of feral cats is emotional and challenging exactly because it is contested in the compassionate conservation framework. Each decision or action attracts a contrary view. Each argument is more hostile, death threats flow, and politicians freeze. All the while, species edge closer to extinction. Compassionate conservation will need to deal with the challenges of pest species if we are to secure vulnerable native species from introduced predators.

Bringing critically endangered species into human care attracts similar complex arguments. Certainly, saving animals in the wild is the best option, but these days, it is often no longer possible for many species in the timeframe needed. Decades of habitat protection and the creation of national parks have secured some species, but every year, the plight of wild animals is worse. The International Union for the Conservation of Nature (IUCN) has stated, “In those taxonomic groups about which we know most, species are sliding ever faster toward extinction. IUCN Red List Indices show that trends in extinction risk are negative for birds, mammals, amphibians and reef-building corals. Although successful conservation interventions have improved the status of some species, many more are moving closer toward extinction, as measured by their categories of extinction risk on The IUCN Red List” (Vie, Craig, & Simon, 2008, p. 35).

For many species, captive care is increasingly important. Captive care has improved significantly, and increasingly, captive facilities are able to provide animals with good quality of life. But to get permits takes months and years, while breeding seasons are missed. The efforts in the wild are massive but often fraught with problems and go on too long. By the time there are 6 or 20 or 100 individuals left in the wild, we have a greater challenge to recover the species and have less access to genetic variation. Captive breeding should start when there is still a healthy wild population if we are to secure genetically diverse founders and create programs with a reasonable chance of success. Creative and collaborative approaches are needed to ensure that captive care is included in the tools of compassionate conservation.

Wicked problems

Harvard Business Review (2017) offered the following advice for wicked problems, problems for which you have gathered all the facts and done the analysis, but still the solutions all seem limited and no answer is obvious. The authors proposed that one asks five questions that will improve the “odds of making sound judgements”:

- (1) What are the net, net consequences of all my options?
- (2) What are my core obligations?
- (3) What will work in the world as it is?
- (4) Who are we?
- (5) What can I live with?

Answering the questions both based on your own perspective of the world and while giving due consideration of the perspectives of others provides a platform to create new solutions or at least to come to a considered, thoughtful outcome.

But what is good and what is bad?

This question has plagued philosophers and ethicists for thousands of years. In the context of compassionate conservation, it is important that we find a way to quantify and defend an evaluation of outcomes as good or bad. While some outcomes seem self-evidently bad or good, others are more nuanced, and this is where science can assist in the determination of a course of right action.

The Royal Society for the Prevention of Cruelty Australia (2010) provides a framework for the management of animals in the wild asking if actions are justified, humane, and effective. I contend that this framework should have wider application to all who care for animals in the wild, in our homes, or in agricultural practices. Most relevant to this article, these three aspects are the foundations for compassionate conservation and should be considered by those working to preserve the biodiversity of our planet.

Justified, humane, and effective

Justified – to show that action is right, reasonable or just.(Oxford Advanced Learner’s Dictionary, 1995)

For conservation projects, it is important that the justification for actions or decisions is well articulated, so that these actions or decisions can be tested and debated. For the RSPCA, the justification for the management of wild animals allows for actions that protect the welfare of individual animals; help conserve a threatened, endangered, or vulnerable native species; and reduce adverse impacts on human activities or the environment.

Humane – having or showing sympathy, kindness or understanding; causing as little pain as possible.(Oxford Advanced Learner’s Dictionary, 1995, 645)

The obligation of humane treatment draws from our current knowledge and understanding of animal welfare. Animal welfare is an individual experience. It is subjective, intrinsic, and dynamic as it fluctuates in time. Scientists worldwide are rapidly trying to advance our understanding of animal experiences and in what ways human actions impact the welfare of animals in the wild or in human care. Traditionally, welfare science has informed industry standards that have been designed to reduce suffering. But progressive thinkers are now highlighting that this approach to animal welfare is simply not good enough. Those who care for animals need to be striving for thriving, which means housing animals who are living well (Maple & Perdue, 2013).

Effective – having the desired effect, producing the intended result.(Oxford Advanced Learner’s Dictionary, 1995, p. 370)

Answering questions of effectiveness requires a commitment to an empirical operating philosophy and evidence-based management. While challenging for pure science, the assumptions and hypotheses provided for both effectiveness and humane outcomes can be subject to the rigors of measures of effectiveness. Decision should draw from previous experience and construct options for rigorous evaluation, thus helping to inform future decision making.

When we can competently answer, “Yes” to the three factors to indicate that the action is plausibly justified, humane, and effective, then we can call the outcome good and progress with the decision with confidence. When one of the factors is negative, we have to seriously consider whether the action is worth taking. Consider a pest management strategy that is justified to prevent the spread of disease, effective in removing the pest animals from the environment, but inhumane in that the individuals suffer greatly. At this time, we should pause and consider if more humane alternatives can be sourced. If not, we may proceed, while well informed of the consequences of our action and the possible criticism that the action will attract.

If two of the factors are answered in the negative, we should seriously reconsider the course of action that we are proposing. Although an action may be justified if it is not humane and we have no confidence or proof of effectiveness, it is preferable to avoid the action.

Rational and logical argument requires that the arguments we put forward for *justified, humane, and effective* should be complete and relevant. The course of action proposed should be relevant to the threat or the problem at hand. To simply argue that an action is not humane is insufficient if the justification or effectiveness is ignored.

Zoos and aquariums as compassionate conservation organizations

If zoos did not exist, then any sensible conservation policy would lead inevitably to their creation. (Tudge, 1992, p. 243)

In this short article, it was not possible to provide a full assessment or thorough explanation of the many ways in which zoos and aquariums support conservation outcomes. For further reading, please see *Committing to Conservation: The World Zoo and Aquarium Conservation Strategy* (Barongi, Fisker, Parker, & Gusset, 2015), which provides an overview of the roles and resources that zoos and aquariums bring to conservation. My book *Zoo Ethics* provides an exploration of zoo-based conservation with examples of the conservation work undertaken by zoos and aquariums (Gray, 2017), while Conde, Flesness, Colchero, Jones, and Scheuerlein (2011) used data and modeling to show the potential role that zoos and aquariums can play.

In my experience both as president of the World Association of Zoos and Aquariums and as a zoo director for 15 years, I have seen that zoos and aquariums are uniquely placed in the conservation world and have both the skills and resources to preserve individual animals and species. In situations in which there is a catastrophic failure of the environment through habitat destruction, pest species, disease, or disaster, zoos are able to collect the remaining population and hold it in human care. The immediate threats to survival can be reduced, predators can be excluded, disease can be treated, and the needs of the individuals can be provided by humans. Over time, once the threats have passed, animals can and have been returned to their native habitat. But preserving animals in human care is of limited value if there is no wild space to hold them into the future; thus, zoos and aquariums provide skills, resources, and funding to support in-situ conservation (Gusset & Dick, 2011). The Head Start program and captive breeding can supplement wild populations under pressure to enable a species to retain its hold in a challenging environment (Goodall, 2009).

Zoos and aquariums connect people with animals and nature, often in urban settings in which people are increasingly alienated from nature. Through talks and education programs, peoples' appreciation and understanding of the beauty of nature, animals, and the environment are enhanced. By connecting people and animals, aquariums and zoos increase the likelihood of humans taking action to protect and preserve animals and their environments (Smith, 2008). Connections with animals and nature serve to develop and reinforce wildlife-friendly attitudes and beliefs (Kahn & Kellert, 2002).

Compassionate conservation and the tools I have presented ask zoos and aquariums to review their operations against the challenges of being justified, humane, and effective. Zoos and aquariums need to expand their approach to animal welfare, while increasing their investment in research and science and constantly improving the conditions under which animals are cared for. The goal of delivering solid contributions to conservation can be met and should be expanded (Barongi et al., 2015).

Conclusion

Unfortunately, reality is significantly more complex than the simple cases shown in this article. Simple tools may help guide our actions, but they will need argument and refining if we are to make a serious impact on the challenges of conserving delicate ecosystems and cryptic, vulnerable animals.

The thinking and arguments that have brought us to this point are increasingly less useful, and we need to quickly create a new way of deciding on the best actions. For too long, we have seen good people line up as those for animals, against those for species, and against those who wish to improve

human conditions. Yet we are all on the same side. It is strange that we fight more viciously with each other than with those who fail to protect the environment, the polluters, and the destroyers. In zoos, we talk of displaced aggression: When you cannot attack the source of your problems, you turn on each other. Perhaps this is also the reality for all of us who choose to work to save people, animals, and species. As passionate people on the losing side, we revert to blaming each other instead of strengthening our fight against the root cause of the problem.

Our greatest achievements will come from working together. We need to fully understand the wicked problems with which we are presented, use science to best understand the impact on animals and others, and jointly devise creative and compassionate solutions.

The 2017 Fourth Global Animal Welfare Congress, hosted by the Detroit Zoological Society Center for Zoo Animal Welfare and the World Association of Zoos and Aquariums, brought together a group of people who are passionate about animals, species, and the future. For three days, we shared and explored our different worldviews and differing values and beliefs. Perhaps we caught a glimpse of new ways to think; perhaps we entrenched our positions.

I am an optimist and a firm believer in the ability of humans to adapt and change. Our love for the vast complexity of life that must share the small planet on which we live is a deep shared value. Although we may not agree on the tactics, our engagement should allow us to grow in respect and willingness to journey together in the common pursuit of a future rich in biodiversity.

References

- Australian Government. (2017). *Position on feral cats*. Retrieved from <http://www.environment.gov.au/biodiversity/invasive-species/feral-animals-australia/feral-cats>
- Barongi, R., Finken, F. A., Parker, M., & Gusset, M. (Eds.). (2015). *Committing to conservation: The world zoo and aquarium conservation. Strategy*. Gland: WAZA.
- Bekoff, M. (2013). *Ignoring nature no more*. Chicago: The University of Chicago Press.
- Conde, D. A., Flesness, N., Colchero, F., Jones, O. R., & Scheuerlein, A. (2011). An emerging role of Zoos to conserve biodiversity. *Science*, 33. Retrieved March 18, 2011, from www.sciencemag.org;
- Elliot, R. (2006). *Environmental ethics in A companion to ethics by Peter Singer*. Malden, MA: Blackwell publishing.
- Foot, P. (2002). *Virtues and vices and other essays in moral philosophy*. Oxford, UK: Clarendon Press.
- Goodall, J. (2009). *Hope for animals and their world, how endangered species are being rescued from the brink*. London, UK: Icon Books.
- Gray, J. (2017). *Zoo ethics*. Australia: CSIRO Publishing.
- The Guardian. (2016). Retrieved from <https://www.theguardian.com/environment/2016/sep/28/pangolins-thrown-a-lifeline-at-global-wildlife-summit-with-total-trade-ban>
- Gusset, M., & Dick, G. (2011). *The global reach of zoos and aquariums in visitor numbers and conservation expenditures*. *Zoo Biology*, 30, 566-569.
- Harvard Business Review OnPoint. (2017, Fall). Retrieved from HBR.org
- Kahn, P., & Kellert, S. (2002). *Children and nature – psychological, sociocultural and evolutionary investigations*. Cambridge, MA: MIT Press.
- Leopold A. (1949), *A Sand County Almanac*. Oxford: Oxford University Press.
- Maple, T. L., & Perdue, B. M. (2013). *Zoo animal welfare*. Berlin: Springer.
- Michael Charles Tobias. (2013). *Compassionate Conservation: A Discussion from the Frontlines With Dr. Marc Bekoff*. Forbes. Retrieved from <https://www.forbes.com/sites/michaeltobias/2013/05/09/compassionate-conservation-a-discussion-from-the-frontlines-with-dr-marc-bekoff>
- Oxford Advanced Learner's Dictionary*. (1995). Editor Crowther Jonathon. Oxford, UK: Oxford University Press.
- Royal Society for the Prevention of Cruelty Australia. (2010). *Policy on management of wild animals*. Retrieved from http://www.kb.rspca.org.au/RSPCA-Policy-E02-Management-of-wild-animals_422.pdf
- Smith, L. (2008). *The zoo proposition: Examining the role of emotional arousal in influencing behaviour*. Melbourne: Monash University Doctoral Book.
- Tudge, C. (1992). *Last animals at the zoo, how mass extinction can be stopped*. Washington, DC: Island Press.
- Vie, J.-C., Craig, H.-T., & Simon, S. (2008). *Wildlife in a changing world: An analysis of the 2008 IUCN red list of threatened species*. Gland: IUCN.
- Wilson, E. (1984). *Biophilia*. Cambridge, MA: Harvard University Press.