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Struggle For Survival: The History and Ethics of Living Collections

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Struggle For Survival:
The History and Ethics of Living Collections

Abstract of a Thesis in
Museum Studies

by

Emily E. Simms

Submitted in Partial Fulfillment
of the Requirements for the Degree of

Master of Arts
May 2016

SUNY Buffalo State
Department of History and Social Studies Education

Thesis Abstract

This thesis explores the ethics involved with institutions caring for living collections worldwide such as zoos, national parks, and aquariums. There are several main concerns that these institutions are currently facing: poaching, keeper negligence, euthanasia within zoos themselves, and public opinion. The moral issues engrained can help guide keepers of these collections to take better care of the animals for which they are responsible. It also explores specific cases in the past in which living collections have managed serious issues and how they resolved these issues.

SUNY Buffalo State
Department of History and Social Studies Education

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The History and Ethics of Living Collections

A Thesis in
Museum Studies

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I. Introduction

Facilities that care for living collections have been the subject of intense public opinion from the time these institutions were first established. It often stems from visitor outrage at the treatment of the animals within these organizations. Public opinion has undoubtedly influenced the way these institutions function and has been an agent for change, often calling for the closure of zoos and other living collections altogether, in some cases successfully shutting down those institutions. Despite this tense relationship between the facilities and the public, some of the biggest challenges to maintaining the existence of living collections in the future occur within the boundaries of the collections themselves. Many of the solutions to these issues can also be found within the facilities and their governing bodies, rather than outside them.

There are several main issues that have arisen throughout the history of living collections and many of these continue to be problems that modern zoos struggle with today. This is also one of the crucial differences between living collections and more traditional museums, since poaching and wildlife regulations would not generally be issues faced by art galleries. Although some of these barriers to success are internal, that often means solutions and possibilities for a strong future are also found inside the organizations themselves.

Ethics regarding living collections themselves as well as their relationship with the public also have a history of change throughout their existence. Much of the reason that the care of living collections has evolved over the years is because of an increased understanding of animal biology and behavior. Different ideas have emerged about the way animals in captivity should be treated and presented. The public has also come to expect a certain level of respect and humane treatment for the animals they see in zoos, aquariums, and nature preserves and because of this expectation, these collections have continued to be a popular source for public entertainment.

The research presented in this thesis will focus on several different types of living collections: zoos, aquariums, and nature preserves, including the Copenhagen Zoo and Virunga National Park. The study also shows why the ethics they deal with are important to the futures of those institutions. The survival of these institutions is crucial not only for the preservation of the animals they protect but also for the public education they provide to their visitors.

II. Literature Review

There are a wide variety of sources on both the history of living collections as well as specific events that have shaped the evolution of institutions that care for living collections in recent years. Many textbooks such as *Museums Origins* and *Ethics on the Ark* study the ethics of animal captivity and are valuable resources to understand the biggest issues these institutions currently face. Film documentaries such as *Virunga* that include firsthand accounts from individuals who work with animals in these environments are also crucial to putting together a complete picture. Though some of these sources are museum based, they still contain valuable information pertaining to how institutions caring for living collections function.

One of the unique challenges in finding sources on the subject of living collections is determining the motivations of the writers behind those sources. There are many animal welfare groups that are considered advocates for the care of creatures living in captivity, among which are individuals with extremist agendas. While being advocates for the wellbeing of living collections is not necessarily a negative, it is important to concentrate on the factual information given by these sources, rather than any emotional bias. While bias versus objectivity is certainly an issue with literature on any subject, animal rights and

the welfare of those in zoos and other living collections seems to be especially permeated with a radical population.

There are also many published sources on specific recent incidents involving living collections and how institutions have learned from these occurrences. There are few pieces, however, on the more internal struggles facing these collections, or the future possibilities for living collections as a whole. Several chapters in *Museums Origins*, edited by Hugh H. Genoways and Mary Anne Andrei were also focused on the specific history of living collections, both zoological and botanical gardens as well as aquariums including two sections called *Zoological Gardens, a Critical Essay* and *Administration of the Public Aquarium*. These were valuable resources to have, not only to get a better understanding of living collections, but to compare their history to more traditional museums and see how they have evolved differently. Theodore Link published *Zoological Gardens, a Critical Essay* in 1883¹, and discussed some of the issues that early living collections had with breeding and studying the animals that were in captivity, as well as simply caring for them. *Administration of the Public Aquarium*, published in 1917, deals with the struggle to incorporate living collections into the institutions that acted as governing bodies for museums.

The book *New Worlds, New Animals: From Menagerie to Zoological Park in the Nineteenth Century*, published in 1996 and edited by R.J. Hoage and William A. Deiss is another crucial resource for understanding how living collections have developed over time. It also discusses the purposes they have

¹ Genoways, Hugh H., and Mary Anne. Andrei. *Museum Origins: Readings in Early Museum History and Philosophy*. Walnut Creek, CA: Left Coast, 2008. Print.

been used for throughout history and is comprised of a collection of essays by various authors who are experts in the field. The volume is also ordered chronologically to cover the biggest themes surrounding living collections during various time periods. The Smithsonian Institution has employed both editors of the text. Deiss worked as an archivist, and Hoage, who has also written further texts on the subject of animal behavior, worked within the National Zoological Park.

Ethics on the Ark: Zoos, Animal Welfare, and Wildlife Conservation, published by the Smithsonian Institution and edited by Bryan G. Norton, Michael Hutchins, Elizabeth F. Stevens, and Terry L. Maple was another valuable source of information on the struggle within living collections and the various arguments used both in their defense and against their existence. It also contains a variety of essays on issues facing the care of living collections, including the question of captive breeding and the ethics of keeping animals in captivity. The public can often come down strongly on one side of the issue or the other and it is important to look at both options and be as informed as possible before making a judgment.

One of the most important sources of information on the evolution and current state of living collections around the world is a documentary called *Virunga*, produced and directed by Orlando von Einsiedel. This film follows the story of Virunga National Park in the Democratic Republic of Congo, a nature preserve established in 1925, and the hardships both the animals and their caretakers have faced during the history of the park. The issues dealt with have

been complex and though not unique to Virunga, are worth exploring. The film was released in 2014 on Netflix streaming service, and generated a huge buzz among the public when it came out. The movie chronicles the recent events taking place within Virunga National Park including poaching of mountain gorillas, response from surrounding community, and the military unrest that the wildlife refuge continues to face even now. The film is especially important as a firsthand account of events since it includes interviews with park rangers, soldiers, and journalists who are covering the story. Being able to see these people talk about their own experiences shows viewers how real the situation is, despite how far away from home it might be. The subject matter can be difficult to absorb at times, but the filmmakers do not shy away from presenting the story in the most accurate and objective way possible.

One of the reasons *Virunga* was able to be seen by such a wide audience and get funding at all was because Leonardo DiCaprio was one of the producers on the project.² The film was powerful enough to receive numerous awards and nominations, including an Academy Award nomination for Best Documentary in 2015.³

There was also a companion short film produced called *Virunga: Gorillas in Peril* about the making of the documentary. It describes the inspiration behind the film and the struggle the filmmakers went through to get it made. The crewmembers behind the documentary were also putting themselves at risk just

² "Virunga | Home." *Virunga*. Web. 14 Oct. 2015. <<http://virungamovie.com>>.

³ "Oscar Winners 2015: The Complete List - 86th Academy Awards." *Oscar.com*. Web. 14 Nov. 2015.

as much as the employees at Virunga itself to be able to tell the story. Behind the scenes footage shows just how dangerous this undertaking was. Filmmakers were at risk of violence from the military unrest, as well as threats from oil companies attempting to stop the production of the movie altogether.

On the subject of Virunga National Park, *Gorilla: Struggle for Survival in the Virungas* by George B. Schaller was another crucial resource. Schaller has a long history of both studying animals and working with living collections throughout his career. He completed a doctorate in Zoology and has worked as the Director for the Wildlife Conservation Society in New York, as well as spending a great deal of his time in the field studying animal behavior. This gives him a unique perspective from which to write, having experienced not only animals in their natural habitat but seeing firsthand the challenges that come with managing a living collection.

For information on the events surrounding the euthanasia of several animals at the Copenhagen Zoo, firsthand sources were often the most valuable, including press releases from the institution and interviews with zoo officials such as Lesley Dickie, the executive director of EAZA. These gave insight into the reasoning behind decisions the zoo made in order to control their population, including giraffes and lions.

Articles such as *Anger Erupts After Danish Zoo Kills a 'Surplus' Giraffe*, written by Nelson D. Schwartz for the *New York Times* in February 2014 also cover a different side of those events and focus on the public reaction to the animals being killed. This helps to explore the relationship between visitors and

the institutions that care for living collections, as well as how the decisions they make in caring for those animals influences public opinion.

III. A Brief History of Living Collections

Defining Living Collections

Before delving into the history of living collections it is important to first understand what the term means. While traditional museums might have collections of art or historical artifacts, living collections include those institutions that have living pieces in their collections such as zoos, aquariums, botanical gardens, and nature preserves as well as national parks. These organizations also each have educational and cultural missions they work towards to best serve their visitors.

The history of living collections is certainly one born out of both evolution and necessity. Stories of animals being kept for public viewing and amusement date back millenniums, to the “menageries in ancient Greece and Rome.”⁴ From this time period through roughly the beginning of the nineteenth century, living collections mostly consisted of exotic animals collected to either be tamed or attract the public and make money for their collectors. As travel became easier and more common throughout the centuries, this developed further, with people eager to see animals from other parts of the world. During the Middle Ages

⁴ Hoage, R. J. *New Worlds, New Animals: From Menagerie to Zoological Park in the Nineteenth Century*. Baltimore: Johns Hopkins UP, 1996. 8. Print.

especially these menageries were often “associated with royalty and the rising class of wealthy merchants.”⁵ Menageries were primarily private and geared toward the upper classes, a way for the wealthy to show off exotic specimens, rather than educating the public. This exclusivity only increased their appeal to the masses.

By the time the nineteenth century had begun, however, society was changing to reflect a new fascination with science and the natural world in general, and menageries were forced to adapt. Many of the institutions that would later evolve into some of the most important living collections in the world were established during this era. *New Worlds, New Animals* includes a timeline of some of the most crucial events in zoological history during the century itself such as which organizations were founded and how they began. For example, the London Zoological Gardens was founded in 1828, and quickly began to expand, while the Berlin Zoological Gardens was built in 1844 and started off with “fewer than a hundred species in the collection”, while it has become one of the largest living collections in the world today.⁶ Throughout the nineteenth century, these institutions continued to grow and expand all over the world, attracting a variety of visitors. These institutions mostly consisted of displays that often grouped animals together based on taxonomic classification of animals, a reaction to increased understanding of science and the natural world.

⁵ Hoage, R. J. *New Worlds, New Animals: From Menagerie to Zoological Park in the Nineteenth Century*. Baltimore: Johns Hopkins UP, 1996. 13. Print.

⁶ Hoage, R. J. *New Worlds, New Animals: From Menagerie to Zoological Park in the Nineteenth Century*. Baltimore: Johns Hopkins UP, 1996. 17. Print.

At the beginning of the twentieth century, zookeepers in Europe and the United States were not trying to create accurate natural settings, but rather build an environment for visitors which “approximated an aesthetic ideal, and that evoked a set of emotional responses that middle-class Americans – through tourism, and popular painting and nature writing – could associate with encounters with nature.”⁷ This ideal was based in large part off of images and descriptions from popular culture and the colonialism that was going on throughout the world. This certainly played to visitor expectations of the natural world, but wasn’t necessarily geared toward educating them about animal behavior or biology. This began to change, however, as scientific journals such as *Zoologica*, published by the New York Zoological Society from 1907-1973 began to professionalize the field of animal behavior. Research as well as veterinary clinics became a more common part of living collections. One of the more unique stories of living collections interacting with each other during the century occurred after World War II. Many of the zoos in Europe were severely damaged during the war and found themselves in the process of recovering, both their archives as well as their collections. At the Berlin Zoo, “just 91 animals were alive (out of 3,715 mammals and birds in 1939).”⁸ The New York Zoological Park also sent 329 animals to the Antwerp Zoo in order to help rebuild their institution. The new advances in research and technology during this time also led to better care and attention for the animals within the collections.

⁷ Hanson, Elizabeth. *Animal Attractions: Nature on Display in American Zoos*. Princeton, N.J.: Princeton UP, 2002. 131. Print.

⁸ Kisling, Vernon N. *Zoo and Aquarium History: Ancient Animal Collections to Zoological Gardens*. Boca Raton, Fla.: CRC, 2001. 108. Print.

The Smithsonian Institute notes how zoos have played a variety of roles over the years including “recreation areas and amusement parks in addition to being a showplace for what many once viewed as "nature's oddballs." ⁹ Zoos also developed differently in different parts of the world as a response to unique visitor or audience feedback as well as the surrounding culture at the time. Although living collections began as menageries and shows, they evolved over time into something that more closely resembled modern zoos. Their original incarnations were geared more toward entertainment than education. They have evolved to take on the additional responsibility, never quite shedding their entertainment aspects.

There has also historically been a close relationship and association between living collections and natural history museums. One of the main goals of natural history museums is to research the natural world, and this often involves working with animal specimens that were once living. In many cases the animals are still alive when researchers collect them and a recent report in the journal *Science* warns this could potentially be harmful to endangered populations. Robert Puschendorf, one of the coauthors of the study, explains their findings saying, “If we're dealing with very small populations, where individuals really matter in these populations, it doesn't take many researchers filling their specimen bags to have an impact.” ¹⁰ Even when researchers are studying

⁹ "Zoos: A Historical Perspective | Introduction." *Zoos: A Historical Perspective | Introduction*. Web. 14 Nov. 2015. <<http://www.sil.si.edu/ondisplay/zoos/intro.htm>>.

¹⁰ Greenfielboyce, Nell. "Is Collecting Animals For Science A Noble Mission Or A Threat?" *NPR*. NPR, 18 June 2014. Web. 28 Mar. 2016. <<http://www.npr.org/2014/06/18/318307574/is-collecting-animals-for-science-a-noble-mission-or-a-threat>>.

species in order to protect them, they must take into account whether the samples they collect might adversely affect the population.

History of Living Collections in Africa

The continent of Africa also has its own complex past involving living collections such as national parks and nature preserves which is tied to the geographic and political history of Africa itself. The changes in government because of colonialism and other factors certainly influenced not only the natural world but also the way in which nature preserves and national parks have evolved. Even natural history museums in the United States depended significantly on specimens and information brought back from the African continent.

It is important to explore how colonialism specifically has played a role in shaping zoological parks and national parks throughout the continent because it is such an integral part of African history. When safari tourism began to show promise as a major source of income, the issue of race and colonialism was brought to the forefront. Much of the promotional material that was used to entice Europeans to visit South Africa in the early twentieth century featured images of wildlife. In these advertisements, “humans of the white variety, when visible in

this apparently virgin land, were represented as genteel customers profiting from the meticulously conserved natural environment provided by the new drive to turn game reserves into national parks.”¹¹ This image suggests that it was the Europeans who were responsible for the shift from hunting to preservation of animals, not because of ethical aspirations but because there was a profit to be made.

The book *History After Apartheid: Visual Culture and Public Memory in a Democratic South Africa* discusses how areas that were once used for hunting purposes now became destinations for tourism. They describe this change as “a shift of emphasis from specialized big-game-hunting safari tourism to big-game-viewing safari tourism – from shooting with a rifle to “shooting” with a camera.”¹² The industry of safari tourism is certainly one still present throughout Africa and has even become something of a status symbol.

Zoos Today

Zoos in the 21st century have become a unique experience for visitors in their own right, and one very different from their earliest versions. The definition of what living collections means has also changed in that time to become broader, including zoological parks, botanical gardens, and aquariums. As these

¹¹ Coombes, Annie E. *History after Apartheid: Visual Culture and Public Memory in a Democratic South Africa*. Durham: Duke UP, 2003. 134. Print.

¹² Coombes, Annie E. *History after Apartheid: Visual Culture and Public Memory in a Democratic South Africa*. Durham: Duke UP, 2003. 154. Print.

institutions have evolved it has become necessary to regulate them and create best practices so that the animals within them are treated well. One of the challenges that the Association of Zoos and Aquaria, which is based in the United States, has dealt with is defining exactly those characteristics that make up a successful, competent institution.

VI. Governing Living Collections

In many areas of the world, there are specific organizations that act as governing bodies for living collections in their region and needed to create a standard of operations for the living collections they govern and ensure that their accredited members are meeting those standards.

Worldwide, the Association of Zoos and Aquariums offers accreditation for these collections and makes sure they are operating up to the standards the AZA has set. In order to become accredited by the AZA, an institution must fill out an application with detailed questions, before being visited in person by experts from the AZA. These officials “spend several long days at the zoo or aquarium visiting every area, interviewing staff, checking records, and examining the physical facilities and the animal collection.”¹³ This is not an easy process for a zoo or aquarium to complete. To put this in perspective, “Fewer than 10% of the approximately 2,800 animal exhibitors licensed by the United States Department of Agriculture are AZA accredited.”¹⁴ Whether this means these institutions have simply not applied for accreditation or applied and did not meet the AZA’s standards is unknown, but it is important to note how many living collections in the United States are seemingly unregulated. There are currently 230 institutions

¹³ "How Does Accreditation Work?" *How Does Accreditation Work*. Web. 16 Oct. 2015. <<https://www.aza.org/becoming-accredited/>>.

¹⁴ "What Is Accreditation?" *What Is Accreditation*. Web. 16 Oct. 2015. <<https://www.aza.org/what-is-accreditation/>>.

worldwide accredited by the AZA.

European zoos have established the European Association of Zoos and Aquaria, which regulates living collections for the continent. The Association is fairly new, created in 1992, and evolved from the former European Community Association of Zoos and Aquaria. It was originally founded in the late 1980's by zoo directors from several living collections around Europe urged by the European Parliament "to work on a directive on minimum standards for the care of animals in zoos in the community" after animal welfare protesters tried to have zoos shut down.¹⁵ In recent years EAZA have also teamed up with the European Endangered Species Programmes to continue their work together. Unlike the AZA, the EAZA offers different levels of membership for institutions wishing to become accredited. Though full membership is considered the same as it is for AZA accredited institutions, associate membership can also be "granted to individuals, professional organisations or groups deemed fit by the EAZA Council."¹⁶ According to their official website, "as of May 2015 EAZA has 296 Full Members, 10 Temporary Members, 15 Candidates for Membership, 21 Corporate Members and 35 Associate Members."¹⁷ Corporations can become sponsors of the AZA and partner with some of the living collections, marketing themselves within the institutions.

¹⁵ Nogge, Gunther. "From the EAZA Office." *EAZA*. Web.

<[http://eaza.portal.isis.org/about/About EAZA Documents/FifteenYearsEAZA.pdf](http://eaza.portal.isis.org/about/About%20EAZA%20Documents/FifteenYearsEAZA.pdf)>

¹⁶ "JOINING EAZA » EAZA." *JOINING EAZA » EAZA*. Web. 16 Sept. 2015.

<<http://www.eaza.net/members/become-a-member/>>.

¹⁷ "MEMBERS » EAZA." *MEMBERS » EAZA*. Web. 16 Oct. 2015.

<<http://www.eaza.net/members/>>.

On a larger scale, there is the World Association of Zoos and Aquariums, based in Switzerland. This organization could be an important step forward in terms of unifying standards for living collections around the world and establishing cooperation between them. WAZA has over 280 members throughout the world, and has made strides to help collections “achieve the potential of zoos and aquariums globally to make a real difference for animals, species, habitat conservation and sustainability.”¹⁸ However, while 280 institutions is a great starting point, there are far more that are not members and it would be difficult to truly unify standards of best practices for living collections without a much larger number of members. Although there are a limited amount of accredited institutions, in 2002, the AZA for example, “carried out 2,230 research and conservation projects, half of which were field projects in over 80 countries”, giving them a much wider reach.¹⁹ They have set forth standards that must be met by institutions in order to become accredited by their organization. For example, “Animals must be well cared for and housed in appropriate settings that provide an educational experience for visitors, and meet the animals’ physical, psychological, and social needs.”²⁰ In *Ethics on the Ark*, Bryan G. Norton defines a good zoo as one that “exceeds the highest standards of the profession and, furthermore, engage in the consistent pursuit of excellence in

¹⁸ "Vision and Mission." : *WAZA : World Association of Zoos and Aquariums*. Web. 16 Nov. 2015. <<http://www.waza.org/en/site/about-waza/vision-and-mission>>.

¹⁹ Fravel, Laura. "Critics Question Zoos' Commitment to Conservation." *National Geographic*. National Geographic Society, 13 Nov. 2003. Web. 26 Feb. 2016. <http://news.nationalgeographic.com/news/2003/11/1113_031113_zoorole.html>.

²⁰ Association of Zoos and Aquariums. "The Accreditation Standards and Related Policies." *Association of Zoos and Aquariums*. Web. <<https://www.aza.org/uploadedFiles/Accreditation/AZA-Accreditation-Standards.pdf>>.

conservation, education, science, and recreation.”²¹ Though even these ideals can be complex to implement as each institution that cares for living collections has its unique mission statement and set of goals. One aspect that makes realizing these goals difficult is the fact that zoos are governed by different organizations throughout the world depending on where they are geographically. There is no one overarching body that sets regulations for the standards of living collections.

²¹ Norton, Bryan G. *Ethics on the Ark: Zoos, Animal Welfare, and Wildlife Conservation*. Washington: Smithsonian Institution, 1995. 219. Print.

V. Case Studies

Virunga

Virunga National Park in the Democratic Republic of Congo was established in 1925 as the first national park on the continent of Africa. It serves as an example of a living collection plagued by multiple seemingly impossible obstacles that has survived and now has become a model, inspiring other success stories. The park has had a difficult history at best since its inception and has been especially influenced by the shifting political conditions in the country. In the early 1990s the genocide in the neighboring country of Rwanda led to the influx of over a million refugees into the Democratic Republic of Congo, which placed greater demands on the natural resources found within the park.²² The park also came under threat due to military unrest in the Democratic Republic of Congo itself.

Virunga is a UNESCO world heritage site and is bound both by the regulations that come with that as well as the laws of the Democratic Republic of Congo. On the park's website it explains, "laws enshrined in the Congolese constitution govern Virunga National Park. Additionally, as a UNESCO World Heritage Site, Virunga is subject to all international conventions and treaties to

²² "The Official Website of Virunga National Park - History." *Virunga National Park*. Web. 14 Oct. 2015. <<https://virunga.org/history/>>.

which the DRC is a signatory."²³ Being under the regulations of both authorities makes governance even more complex.

One key element to understand about Virunga National Park is how fragile many of the populations of animals they protect truly are. The park contains around one quarter of the population of mountain gorillas in the entire world as well as groups of okapis and eastern lowland gorillas, species that are both endangered.^{24,25} Park officials are certainly committed to protecting the species with more stable populations, but there is an added awareness of how close many of these animals could be to extinction.

Poaching is one of the biggest battles that Virunga has faced in its long history and one that continues to be an issue. Though this problem is present throughout the world, Virunga is an example of how complex the issue is and also one way that an organization has chosen to deal with it. An instance of poaching in 2007 that caused the death of nine endangered mountain gorillas was "the park's darkest hour in over a decade".²⁶ Though there is no way to be certain what the poacher's motivations were, many park officials have theorized the criminals believe that once the gorillas are gone, there will be no reason for staff to protect the park any longer. Efforts by oil companies to get to natural resources within the park could also be linked to this incident. They would

²³ "The Official Website of Virunga National Park - Governance." *Virunga National Park*. Web. 14 Oct. 2015. <<https://virunga.org/governance/>>.

²⁴ "The Official Website of Virunga National Park - About." *Virunga National Park*. Web. 14 Oct. 2015. <<https://virunga.org/the-park/>>.

²⁵ "Support the." *Gorilla Beringei Ssp. Graueri (Eastern Lowland Gorilla, Grauer's Gorilla)*. Web. 14 Oct. 2015. <<http://www.iucnredlist.org/details/39995/0>>.

²⁶ "The Official Website of Virunga National Park - History." *Virunga National Park*. Web. 14 Oct. 2015. <<https://virunga.org/history/>>.

certainly benefit as much as poachers from gaining access to the park and having less protection surrounding both the animals and environment within Virunga.

Gorillas are not the only species to be affected by the crimes of poachers inside Virunga. The Hippopotamus population within the park, at one time the biggest in the world, has also been under attack. Park director Emanuel de Merode speaks in *Virunga: Gorillas in Peril* about how he remembers seeing Lake Edward “red with blood of the hippos... they would just go in and just wipe out whole populations.”²⁷ He also notes that the population went from 27,000 hippos to only 350 because of poaching.²⁸ In 2006, an aerial population check was done in order to monitor the number of hippos, and the information the research team gathered was more than troubling. At the time they calculated the number of hippos inside the park to be 629, which “represents a 98 percent crash in numbers since the 1970s, when there were some 30,000 animals.”²⁹ According to the African Wildlife Foundation, 95 percent of the total population in the whole of the Democratic Republic of Congo has been lost, and both that organization and the International Union for Conservation of Nature and Natural Resources list the species overall status as “Vulnerable.”³⁰³¹

²⁷ *Virunga: Gorillas in Peril*. Dir. Lisa Kors. Netflix, 2015. Film.

²⁸ *Virunga: Gorillas in Peril*. Dir. Lisa Kors. Netflix, 2015. Film.

²⁹ "Hippos Butchered by the Hundreds in Congo Wildlife Park." *National Geographic*. National Geographic Society. Web. 14 Oct. 2015. <<http://news.nationalgeographic.com/news/2006/10/061024-hippo-congo.html>>.

³⁰ "Support the." *Hippopotamus Amphibius (Common Hippopotamus, Hippopotamus, Large Hippo)*. Web. 14 Nov. 2015. <<http://www.iucnredlist.org/details/10103/0>>.

³¹ "AWF – Check out the Hippopotamus!" *African Wildlife Foundation*. Web. 14 Oct. 2015. <<http://www.awf.org/wildlife-conservation/hippopotamus>>.

It was reported the Congolese military forces working within Virunga were suspected to be behind these attacks, and it is believed they have additionally been selling both meat and ivory taken from the hippos. This firsthand information comes again from the survey team who “reported flying over rebels as they killed and cut up several hippos, as well as carcasses.”³² While these actions taken by militia against the hippos are certainly extreme, it is also important to acknowledge the fact these soldiers are neither fed nor paid for their work. Certainly it is hard to justify what they have done, but these troops are likely resorting to these measures to ensure their own survival as much as they are an effort to intentionally destroy a population of animals.

One of the unique challenges involving Lake Edward is the fact that though it is contained within the Democratic Republic of Congo, the lake is not set completely within the park’s borders, making jurisdiction more complicated. This means that though drilling for oil is illegal on National Park land, the entirety of the lake is not necessarily protected under that regulation and companies such as British based SOCO have often used that detail to get around the laws.

Attempts at poaching also have a history of severely injuring the animals that aren’t killed, or leaving them orphaned since poachers often choose to kill adult gorillas but leave the babies. The story of a gorilla called Ndakasi is one example of a baby who lost her mother at a very young age. When she was only two months old park officials found her next to the body of her mother who had

³² "Hippos Butchered by the Hundreds in Congo Wildlife Park." *National Geographic*. National Geographic Society. Web. 14 Oct. 2015. <<http://news.nationalgeographic.com/news/2006/10/061024-hippo-congo.html>>.

been shot to death by poachers. Rangers were able to rescue Ndakasi and take her to a facility where she could recover, though she was “dehydrated, in shock, and very frightened.”³³

Virunga has established the Senkwekwe Center specifically to care for and rehabilitate these orphans, and is an institution that is truly unique in the world. The center also plays a critical role in rehoming gorillas that have been taken by poachers. There are currently four gorillas being cared for at Senkwekwe, while they also take in many animals that have been found on the meat trade market before they are sold to companies that will use them.

The elephant population contained in Virunga has also seen its share of violence and conflict. It is also an example of two National Parks working together to preserve a species. According to Virunga, the number of elephants within the park was around 3000 during the 1980’s but has recently estimated to be at less than 400. Queen Elizabeth National Park in Uganda shares both a park and national border with Virunga, and for years elephants have moved freely between the two protected areas. In Queen Elizabeth Park, numbers of elephants have flourished in recent years, because “authorities have managed to control the poaching for almost two decades.”³⁴ Poachers often target elephants for both ivory from their tusks as well as meat.

³³ "The Official Website of Virunga National Park - Support Gorilla Orphans." *Virunga National Park*. Web. 14 Oct. 2015. <<https://virunga.org/projects/gorilla-orphans/>>.

³⁴ "Elephant Herds Return to Virunga from Uganda | Virunga National Park." *Virunga National Park*. 26 May 2010. Web. 14 Nov. 2015. <<https://virunga.org/archives/elephant-herds-return-to-virunga-from-uganda/>>.

Due to the violence in the Democratic Republic of Congo, many elephants avoided coming back to Virunga as part of their movements while this violence was happening. This would lead researchers to believe the elephants specifically did not enter the area while they sensed potential danger. Much of the conflict has been resolved recently and many elephants have returned to Virunga from Queen Elizabeth National Park, as part of their natural migration. Due to military and violent conflicts in both countries, this pattern was disturbed. Rangers at Virunga describe how during times of war in their neighboring country, “Ugandan elephants used to cross into Congo to escape the killing.”³⁵ Though this might at first seem tragic and extreme, it is also an instance where these two institutions coming together has created a safer environment for these animals than either

³⁵ "Elephant Herds Return to Virunga from Uganda | Virunga National Park." *Virunga National Park*. 26 May 2010. Web. 14 Nov. 2015. <<https://virunga.org/archives/elephant-herds-return-to-virunga-from-uganda/>>.

place could accomplish alone.

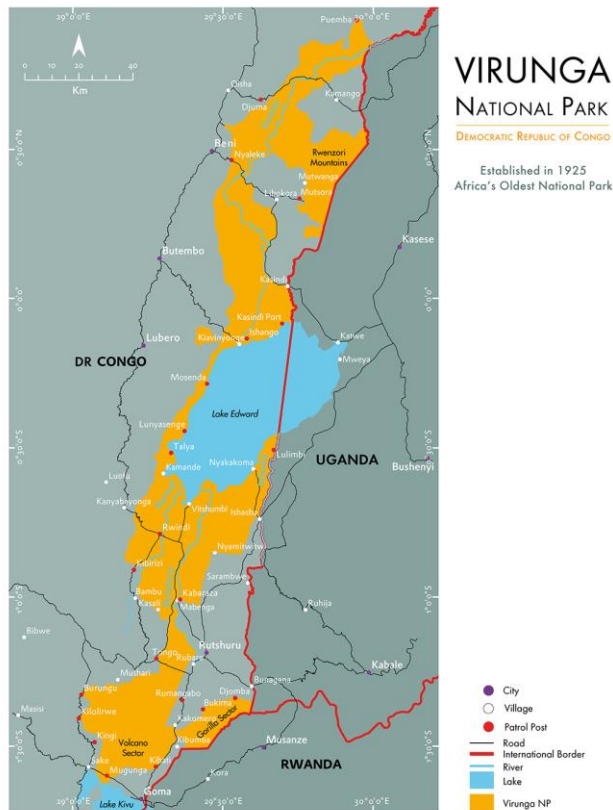


Figure 1 - <http://visitvirunga.org/about-virunga/>

Further cooperation between multiple organizations in recent months is continuing to ensure more elephants are not lost to poaching. In July 2015, Virunga coordinated with both *Save the Elephants* and *Gorilla Doctors* to fit fifteen elephants living in the park with tracking collars. This is a huge step toward reducing the number of elephants lost to poaching for several reasons. Once the collars are placed, they will “provide rangers with real-time information about the movement of collared elephants, and often by extension, their entire

herd.”³⁶ This method also requires many fewer staff members to supervise and is therefore a much more productive use of equipment. Using *Google Earth*, rangers are able to tell if an individual elephant or entire herd could be moving into an area where there are known poaching dangers.

Efforts by poachers have not only affected the animals living within Virunga National Park, but have also been felt by the rangers that protect them. In August 2014, 37 year-old Park Ranger Muhindo Kipasula was severely wounded “during a confrontation with poachers.”³⁷ Though it is unclear how the incident began, during these events a rocket-propelled grenade went off close to where the ranger was patrolling and the shrapnel from the explosive caused injury to his eye as well as damage to his hearing. Sadly, this is not the most extreme violence against human life that has occurred during rangers attempt to guard Virunga. The Park’s website reported in August 2013 that another ranger, Kasereka Kipako, had been killed while at his post. There was understandably little information about what had occurred but it was reported “the evidence points to Mai-Mai militia being the perpetrators of the attack.”³⁸

One element especially telling of how commonplace occurrences like this are has been the establishment of the Fallen Rangers Fund, which was founded

³⁶ "Virunga Elephants Get Sophisticated Tracking Collars | Virunga National Park." *Virunga National Park*. 29 July 2015. Web. 14 Oct. 2015. <<https://virunga.org/news/virunga-elephants-get-sophisticated-tracking-collars/>>.

³⁷ "Ranger Muhindo Kipasula Severely Injured | Virunga National Park." *Virunga National Park*. 28 Aug. 2014. Web. 14 Nov. 2015. <<https://virunga.org/news/ranger-muhindo-kipasula-severely-injured/>>.

³⁸ "Ranger Killed in Ambush of the Museya Patrol Post | Virunga National Park." *Virunga National Park*. 5 Aug. 2013. Web. 14 Nov. 2015. <<https://virunga.org/news/ranger-killed-in-ambush-of-the-museya-patrol-post/>>.

to “provide a financial safety net for widows and children of *Virunga* rangers killed in the line of duty.”³⁹ One of the struggles that this issue illustrates is how the Rangers at the park are essentially asked to do two completely different tasks within the same job. They are entrusted with protecting the environment and wildlife within the park and being advocates for conservation, while at the same time acting as security against the armed poachers that work within the park. In an interview about these attacks, the director said he believed the refuge loses roughly, “one staff member a month to the poachers or to the militia that are trained to attack the park for its resources.”⁴⁰ It is also reported that since 1990, around 140 rangers total have lost their lives protecting the park.

Even the director of *Virunga*, Emanuel de Merode, has not been immune to the violence from armed poachers. Merode himself was the target in an instance when he was driving by himself and was shot at by multiple gunmen. The shooters managed to hit Merode both in his chest and stomach, though he had a gun with him and was able to escape into the nearby forest and shoot back. When asked about the shooters’ motivations, Merode said, “I would guess they wanted to kill me.”⁴¹ The director survived the incident and was able to return to work in only a few weeks. A video captured on hidden camera by a park ranger working undercover gives more insight into why Merode specifically was a target. Officials from oil companies were recorded as saying, “Emanuel de Merode, we wonder what’s wrong with him. He’s the one hindering the process,

³⁹ "The Official Website of Virunga National Park - Fallen Rangers Fund." *Virunga National Park*. Web. 14 Oct. 2015. <<https://virunga.org/projects/fallen-rangers-fund/>>.

⁴⁰ *Virunga: Gorillas in Peril*. Dir. Lisa Kors. Netflix, 2015. Film.

⁴¹ *Virunga: Gorillas in Peril*. Dir. Lisa Kors. Netflix, 2015. Film.

and he's the only one."⁴² This belief that the elimination of Merode could mean free access to the natural resources could be a powerful motivator for oil companies to attack, especially given the money at stake is potentially billions of dollars. Though SOCO and other oil companies have not confirmed any sources of oil within the park, the potential for profit is great enough to take the risk.

Virunga National Park also has a unique relationship with the local communities living in and around the park. Since it is not a traditional zoo and was established as a protected area in the wild, there is a much more transparent and close bond between the animals and staff of the park and the people who live in the surrounding areas. After the death of the mountain gorillas in 2007, the community banded together to mourn the loss.



Figure 2 - <https://virunga.org/projects/gorilla-protection/>

⁴² *Virunga: Gorillas in Peril*. Dir. Lisa Kors. Netflix, 2015. Film.

There has been an attempt by companies such as SOCO to search within the limits of Virunga for sources of oil, despite the fact that it is illegal to explore for oil in a UNESCO World Heritage Site. Certain sectors of the park have been targeted by oil companies more heavily than others as potential sources, and have therefore seen more disputes. This has caused numerous complications for both park staff and the communities in the surrounding areas. While this might not immediately seem to be connected to the internal workings of the park, the corporations have made it an issue for the park staff. There have been multiple instances of companies attempting to bribe rangers to work against the efforts of the park. Though this may seem like an exercise in futility at first, in a developing country such as the Democratic Republic of Congo, any amount of money can mean a huge difference in someone's life and the offer can certainly be tempting for many.

In June 2014, more progress was made toward protecting the park from drilling, though how effective it will be remains to be seen. SOCO, a British company that has been at the heart of the oil controversy surrounding Virunga, and the World Wildlife Fund said in a statement SOCO had agreed, "not to undertake or commission any exploratory or other drilling within Virunga National Park unless UNESCO and the DRC Government agree that such activities are not incompatible with its World Heritage Status".⁴³ This resolution still left many

⁴³ "UNESCO Commends the Decision by SOCO to Halt Oil Exploration Activities in Virunga National Park as a Step in the Right Direction." *UNESCO World Heritage Centre* -. Web. 14 Oct. 2015. <<http://whc.unesco.org/en/news/1142/>>.

details open ended and did not specify exactly what might constitute an action being either compatible or incompatible and could potentially be manipulated by SOCO in their favor.

The struggle did not end there, however. Even more extreme news came in March 2015 from SOCO itself when it announced it would no longer explore for oil in Block V, an area of land in the Democratic Republic of Congo which greatly overlaps Virunga National Park. The company released a statement saying, “after providing the DRC government with interpretation of the seismic results, SOCO will have no further involvement in the Block. This is a firm commitment from the Company.” It is unclear whether this decision was made because of pressure from either UNESCO or the Democratic Republic of Congo itself, or simply because SOCO did not feel they would make enough money to justify the destruction to natural surroundings needed to drill. There were statements from UNESCO commending SOCO on their decision to retreat from Virunga, but no official reprimands or sanctions before that point.

One ranger, Rodrigue Katembo, used this situation to the advantage of the park by wearing a wire while he met with an oil company in order to find out exactly what forces specifically were working against the park. Katembo is not just a ranger but is also chief of one of the sectors in the park and is director Merode’s “right hand man.”⁴⁴ It was reported he had been contacted by oil companies and presented with an offer of thousands of dollars if he would agree to turn against Virunga and work for them instead. Given the frequency and

⁴⁴ *Virunga: Gorillas in Peril*. Dir. Lisa Kors. Netflix, 2015. Film.

severity of attacks on the rangers by poachers and militia, it is clear how dangerous this undertaking was for Katembo. Although aware of the risk he was taking, he agreed to wear a hidden camera while he met with oil company officials in order to determine what forces were working contrary to the park's best interests. On September 19 2013, Katembo was arrested after he "attempted to stop the construction of a telephone antenna in the park because, he said, the SOCO officials who financed the construction did not have the authorization required."⁴⁵ He was eventually released after being held for seventeen days in prison without first being formally charged with a crime.

Ranger Katembo's story of being targeted because of his work against the oil company is not an uncommon one. Other activists and park staff working to keep oil companies out of the park have also received anonymous threats to stop their efforts. One message read, "You are playing with fire [name of activist], you are going to burn your second leg, it's useless to change your car because we know all the cars and we're everywhere you go with your team. Don't believe that just because we failed to get your director that we are going to fail to get you."⁴⁶ These actions and threats are being reported to various human rights agencies around the world in an effort to not only bring them to light but to prevent them

⁴⁵ "4 June HRW: DR-Congo Investigate Attacks On Virunga Oil Project Critics - They Need Protection." *SAVE VIRUNGA*. 4 June 2014. Web. 14 Oct. 2015.
<<http://savevirunga.com/2014/06/04/4-june-hrw-dr-congo-investigate-attacks-on-virunga-oil-project-critics-they-need-protection/>>.

⁴⁶ "4 June HRW: DR-Congo Investigate Attacks On Virunga Oil Project Critics - They Need Protection." *SAVE VIRUNGA*. 4 June 2014. Web. 14 Oct. 2015.
<<http://savevirunga.com/2014/06/04/4-june-hrw-dr-congo-investigate-attacks-on-virunga-oil-project-critics-they-need-protection/>>.

from continuing. The money that stands to be made from the oil found in the park is no small factor.

The communities around the park have also been drawn into this argument, as many oil companies have made promises of bringing money and jobs into the area, something that is desperately needed. Many people in the surrounding villages are conflicted about whether SOCO should be allowed to drill or not, while the reality of whether the organizations can deliver on these promises remains to be seen. Many experts believe that even if the companies were allowed to drill for oil, the profits made would only end up in the hands of executives halfway around the world instead of going to benefit the local communities who would be affected. Virunga shares a significant border with Lake Edward, which is a huge source of jobs and income for the people living in the nearby areas.

A letter from a fisherman living in these communities points out how fishing from the lake “which alone occupies more than 7.000 fishermen besides those involved in the fishing industry and generates more than 30 million US dollars for the survival of over 65,000 people living in and around Lake Edward.”⁴⁷ If oil companies were to drill for oil in the lake and endanger the wildlife population within it, it could not only adversely damage the environment and animals, but also be an equally huge loss of revenue for humans. There is another important aspect to consider when it comes to why the humans are so

⁴⁷ "Oil Exploration in Virunga: A Fisherman's Tale, in Which Team Are You?" *SAVE VIRUNGA*. 1 Sept. 2015. Web. 14 Oct. 2015. <<http://savevirunga.com/2015/09/01/oil-exploration-in-virunga-a-fishermans-tale-in-which-team-are-you/>>.

attached to this park and the animals within it. Virunga was established over ninety years ago, and it has become part of the communities' cultural and collective heritage over that time. If it were to be destroyed, the loss of not only wildlife would be felt, but the traditions and history associated as well.

Conservation efforts made by Virunga are more important than ever now. Not solely for the animals that reside within the park, but also for the natural habitats the park holds as well. The land is home to a "wide diversity of habitats produces exceptional biodiversity, notably endemic species and rare and globally threatened species."⁴⁸ Though zoos and aquariums also play a important role in preserving and studying animal behavior and the natural world, reserves like Virunga are some of the last places on earth that species are still protected in their natural habitat rather than being in captivity.

Despite continuing struggles, it is equally important to acknowledge the successes park officials and staff have achieved in the face of such extreme adversity. The employees at Virunga have accomplished so much in turning the park into a sanctuary for many endangered species after years of the land being plagued by war and political battles. Virunga is not the only National Park in the world, or even in Africa, that has felt the threat of poaching, it is simply one example of the larger epidemic that has been present for many decades.

Copenhagen Zoo

⁴⁸ "Virunga National Park." - *UNESCO World Heritage Centre*. Web. 14 Oct. 2015. <<http://whc.unesco.org/en/list/63>>.

The Copenhagen Zoo has also been in the spotlight recently for their controversial actions. In February 2014 zoo officials killed a two-year-old giraffe named Marius due to the animal no longer fitting into their breeding program. A statement from Copenhagen Zoo explained their motivation, saying “this giraffe’s genes are well represented in the breeding programme and as there is no place for the giraffe in the zoo’s giraffe herd the European Breeding Programme for Giraffes has agreed that Copenhagen Zoo euthanize the giraffe.”⁴⁹ The giraffe was killed by shotgun in front of zoo visitors. An autopsy was later performed on it. The situation became even more complicated when officials made the decision to feed the giraffe meat to the lions at the zoo. They reportedly had chosen to euthanize the giraffe by shotgun rather than injection so that the meat could be used to feed other animals. The zoo explained that, “when animals are euthanized with an overdose of aesthetic it is not possible to use the remains for food.”⁵⁰

One logical question raised by the actions of Copenhagen Zoo is how the decisions they have made fit into the mission of the institution. The zoo’s mission and vision states that they work to “Be actively involved in the international efforts to preserve animal species and habitats and thereby contribute to the

⁴⁹“Zoologisk Have.” *Zoologisk Have*. Web. 16 Oct. 2015.
<http://zoo.dk/BesogZoo/Nyhedsarkiv/2014/Februar/Why_Copenhagen_Zoo_euthanized_a_giraffe.aspx>.

⁵⁰“Zoologisk Have.” *Zoologisk Have*. Web. 16 Oct. 2015.
<http://zoo.dk/BesogZoo/Nyhedsarkiv/2014/Februar/Why_Copenhagen_Zoo_euthanized_a_giraffe.aspx>.

conservation of the biodiversity.”⁵¹ Euthanizing giraffes would seem to go against the preserving species, even if it might keep the population more genetically diverse. This is certainly a difficult balance for institutions with living collections to weigh between keeping the numbers of a species and potentially having a less genetically viable group.

Another question raised by many of the zoo’s peer organizations as well as the public was the possibility of transferring the giraffe to another zoo since the Copenhagen Zoo did not believe it fit into their collection. There were certainly offers made from other institutions prior to the event, though all were refused. On the zoo’s official website they have a page with answers to commonly asked questions about why they killed Marius, and said, “Only zoos that follow certain rules can be part of international breeding programmes. In Europe this is only the zoos that are members of the European Association of Zoos and Aquaria (EAZA).”⁵² This would infer that Copenhagen Zoo would only consider transferring the giraffes to another facility if it was a member of this association. However, at least two of those other institutions that offered, Yorkshire Wildlife Park in England and the Krakow Zoo in Poland, are both fellow members of the EAZA and still had their offers of a home for Marius refused. Their reasoning becomes even more complicated in that same page of answers

⁵¹ "Mountain Gorillas Enter the Genomic Age." *EurekaAlert!* 9 Apr. 2015. Web. 20 Nov. 2015. <http://www.eurekaalert.org/pub_releases/2015-04/wtsi-mge040715.php>.

⁵²"Zoologisk Have." *Zoologisk Have*. Web. 16 Nov. 2015. <http://zoo.dk/BesogZoo/Nyhedsarkiv/2014/Februar/Why_Copenhagen_Zoo_euthanized_a_giraffe.aspx>.

when they claim “It is not possible to transfer the giraffe to another zoo as it will cause inbreeding.”⁵³

Public outcry also played a pivotal role in shaping both the time leading up to and the aftermath of this situation. The zoo had announced prior to the event that it would be taking place, and there was a huge protest against the decision to euthanize Marius. The death of Marius received a great deal of press attention around the world. It even incited the creation of a petition to save the giraffe’s life, which gained over 30,000 signatures. Various zoo staff members also reportedly received death threats when it became clear that they would not be transferring Marius and he would be put to death. An article published in the *New York Times* describes how “animal rights activists”⁵⁴ had petitioned for Marius to be saved, but with 30,000 signatures, it seems likely that at least some of those who signed were members of the general public rather than part of extremist animals rights groups. The phrasing in the article could imply that only people with radical beliefs about animal welfare would be upset by this, rather than seeing it as an awareness spreading to the general population.

The controversy for the Copenhagen Zoo did not end there, however, as just a few months later, they euthanized four lions. In March 2014, four lions were killed in order to clear space for another lion that was about to arrive at the zoo.

⁵³“Zoologisk Have.” *Zoologisk Have*. Web. 16 Oct. 2015.
<http://zoo.dk/BesogZoo/Nyhedsarkiv/2014/Februar/Why_Copenhagen_Zoo_euthanized_a_giraffe.aspx>.

⁵⁴ Schwartz, Nelson. “Anger Erupts After Danish Zoo Kills a ‘Surplus’ Giraffe.” *The New York Times*. The New York Times, 9 Feb. 2014. Web. 16 Nov. 2015.
<http://www.nytimes.com/2014/02/10/world/europe/anger-erupts-over-danish-zoos-decision-to-put-down-a-giraffe.html?smid=pl-share&_r=0>.

Of the animals that were euthanized, two were adult lions and two were their offspring that were around eighteen months old. Zoo authorities again stressed the reasons for this decision as being driven by the need to keep the population genetically viable. They stated that “If the Zoo had not made the change in the pride now then we would have risked that the old male would mate with these two females - his own offspring - and thereby give rise to inbreeding.”⁵⁵

The new male lion being added to the Copenhagen Zoo’s collection was coming from Givskud Zoo in Denmark, another member of EAZA.^{56 57} This element adds confusion to what that institution’s policies really are. When refusing to transfer Marius the giraffe, they used the same reasoning to explain why they felt that Marius could not be moved to another institution within the EAZA organization. Copenhagen Zoo is still a member of EAZA, and the organization made a statement saying, “While EAZA regrets the death of the animals in question, we recognize the right of Copenhagen Zoo to humanely cull them in line with their policies.”⁵⁸

Even if this is truly the rationale the zoo used, it raises the question of why all four lions had to die rather than simply euthanizing the one male they were

⁵⁵"Tag I Zoologisk Have Og Oplev Københavns 4234 Vilde Dyr | Zoo." *Tag I Zoologisk Have Og Oplev Københavns 4234 Vilde Dyr | Zoo*. Web. 16 Nov. 2015.

<[http://zoo.dk/BesogZoo/Nyhedsarkiv/2014/Marts/Why Copenhagen Zoo made a change in the lion pride.aspx](http://zoo.dk/BesogZoo/Nyhedsarkiv/2014/Marts/Why%20Copenhagen%20Zoo%20made%20a%20change%20in%20the%20lion%20pride.aspx)>.

⁵⁶"Tag I Zoologisk Have Og Oplev Københavns 4234 Vilde Dyr | Zoo." *Tag I Zoologisk Have Og Oplev Københavns 4234 Vilde Dyr | Zoo*. Web. 16 Nov. 2015.

<[http://zoo.dk/BesogZoo/Nyhedsarkiv/2014/Marts/Why Copenhagen Zoo made a change in the lion pride.aspx](http://zoo.dk/BesogZoo/Nyhedsarkiv/2014/Marts/Why%20Copenhagen%20Zoo%20made%20a%20change%20in%20the%20lion%20pride.aspx)>.

⁵⁷"HOME » EAZA." *HOME » EAZA*. Web. 16 Nov. 2015. <<http://www.eaza.net>>.

⁵⁸Smith-Spark, Laura. "Copenhagen Zoo Kills 4 Lions, Weeks after Shooting Giraffe." *CNN*. Cable News Network, 26 Mar. 2014. Web. 26 Feb. 2016.

<<http://www.cnn.com/2014/03/26/world/europe/copenhagen-zoo-lions/>>.

concerned about. The pattern of euthanizing animals that no longer fit their breeding needs that has been exhibited by the Copenhagen Zoo suggests that a change might be needed either in the regulations of the institution itself or the larger governing body of EAZA. Part of EAZA's best practice guidelines state that one of their goals is "to provide a future for some of the world's most vulnerable species." The Copenhagen Zoo's actions against Marius, who belonged to a subspecies called reticulated giraffes that has been the focus of intense conservation efforts in recent years, would seem to go strongly against accomplishing the goals that EAZA has set forward.⁵⁹ After the events surrounding Marius the Giraffe, EAZA director Lesley Dickie spoke to CNN about Copenhagen Zoo's decision and the Association's official stance. He stated that though the organization is committed to the survival of endangered species, "in rare cases (five in the case of giraffes in EAZA zoos since records began in 1828), animals must be removed from the population by management euthanasia."⁶⁰ This statistic is certainly specific for the giraffe population but it does call into question what the numbers for animals culled are overall since only a month after Marius' death, the Copenhagen Zoo again chose to employ euthanasia.

The World Association of Zoos and Aquariums also released a statement on the death of Marius acknowledging euthanasia as an extreme solution but

⁵⁹Virginia Morell, National Geographic PUBLISHED Thu Jun 25 07:00:08 EDT 2015. "Inside the Fight to Stop Giraffes' 'Silent Extinction'" *National Geographic*. National Geographic Society. Web. 16 Nov. 2015. <<http://news.nationalgeographic.com/2015/06/150625-giraffes-animals-science-conservation-africa-endangered/>>.

⁶⁰"Why Copenhagen Zoo Was Right to Cull Giraffe - CNN.com." *CNN*. Cable News Network. Web. 16 Nov. 2015. <<http://www.cnn.com/2014/02/10/opinion/giraffe-cull-argument-for/>>.

saying it “regrets the loss of the young giraffe in Copenhagen, but we affirm the important role zoos and aquariums play in assuring species survival and individual animal well-being.”⁶¹ The Copenhagen Zoo is accredited by both EAZA and WAZA, though it is unclear whether either organization would have the power to bring sanctions against the zoo if they felt it was necessary. They have very different policies on euthanasia and had very different reactions to the events surrounding Marius. This is yet another challenge; to somehow combine the values of two separate institutions that have the same end goals, though very different ways of accomplishing them.

SeaWorld

Aquariums are another type of living collection filled with their own unique challenges and complexities. SeaWorld theme parks have been the center of controversy in recent years, specifically for their treatment of several orca whales

⁶¹ "WAZA Statement – Euthanasia of a Giraffe at Copenhagen Zoo." *News : WAZA : World Association of Zoos and Aquariums*. Web. 16 Nov. 2015.
<<http://www.waza.org/en/site/pressnews-events/news/waza-statement-euthanasia-of-a-giraffe-at-copenhagen-zoo>>.

in their care as well as the injuries experienced by trainers. SeaWorld theme parks are accredited by the AZA, though they were only granted this status in March 2015. This leads to further questions since the original SeaWorld park was established in 1964.⁶² Whether SeaWorld chose not to seek accreditation until recently or if they had been denied on previous applications is unknown, but it is worth noting that they have since met AZA standards for animal care.

The documentary *Blackfish* is one of the biggest sources of information the public has been exposed to on the subject of SeaWorld. The film garnered a significant amount of attention when it was released in 2013 on several different platforms. The story is primarily focused on Tilikum, one of the many Orcas in captivity at the SeaWorld Park, but also discusses the history of the company as well as significant animal rights incidents. *Blackfish* is an important resource for understanding the complexities of this situation because it features interviews with former SeaWorld trainers and employees. Though the company declined to be interviewed for the documentary, it still gives crucial insight into the challenges of keeping Orca whales in captivity and the problems that have already occurred. It brings to light how dangerous having Orcas in captivity truly is and the damage and even fatalities that have resulted to animal trainers because of the unpredictability of the animals.

Blackfish also delves into one of the most controversial and scarcely discussed topics surrounding living collections in general; the capture of wild animals brought into captivity. While there are certainly breeding programs

⁶² "Milton She'd, 79, Co-Founder of SeaWorld." *The New York Times*. 28 May 2002. Web. <<http://www.nytimes.com/2002/05/28/business/milton-shedd-79-co-founder-of-seaworld.html>>.

around the world and many animals that are born in zoos and other living collections, many animals are taken from their natural habitats. An interview with a former SeaWorld employee who had the task of capturing Orcas is especially enlightening. John Crowe, a diver, recounted his experience in the Pacific Northwest region of the United States capturing Orcas. He said the divers “were only after the little ones...” and then when they had the younger whales in the net, the adults tried to communicate to them and it was at that moment “you understand then what you’re doing, you know... just like kidnapping a little kid away from their mother.”⁶³ Eventually SeaWorld was banned from the state of Washington because of their practices, though that didn’t stop them for long, moving to find Orcas in Iceland instead.

Tilikum was first in captivity at Sealand of the Pacific in British Columbia Canada, where he was involved in an incident In February 1991, which resulted in the death of Keltie Byrne, an employee at the facility. Though the official cause of death of the trainer was drowning, several visitors to Sealand dispute the claim. They saw Tilikum attack the woman aggressively, saying Byrne had fallen in the pool with the whale before being dragged underwater and “starting to get panicked and then as it progressed... she started to scream and he eyes were bigger and bigger... they would pull her under.”⁶⁴

Sealand of the Pacific shut down as a result of this occurrence, making the decision to sell the remaining whales, including Tilikum, to SeaWorld in Orlando, Florida. The advantage for SeaWorld was that they could use Tilikum, a

⁶³ *Blackfish*. Dir. Abriela Abriela Cowperthwaite. Mag Pictures, 2013. Film.

⁶⁴ *Blackfish*. Dir. Abriela Abriela Cowperthwaite. Mag Pictures, 2013. Film.

male Orca, to breed with the females already at their parks. When the Orca arrived at SeaWorld, the trainers who were going to be working with him were not informed of his violent history, nor how likely it was that he might repeat the behavior. Not only that, but Tilikum has been an essential part of their breeding program, so much so that over half of the whales at SeaWorld share his DNA. Officials chose to use Tilikum to breed even though he had shown a history of violent behavior.

Keltie Byrne was not the last human to be harmed by Tilikum, however. In February 2010, trainer Dawn Brancheau was killed while working with the animal. There are several interviews in *Blackfish* with former SeaWorld employees who worked with Brancheau, describing her as extremely well trained and safety conscious, saying she “had more experience with the 30-year-old whale than most.”⁶⁵ During a live show in front of an audience, Tilikum grabbed the trainer’s left arm while she was in the water with him, and “did a barrel roll and pulled her in. It may have started as play or frustration, and clearly escalated to be very violent behavior.”⁶⁶ The whale never let go of her arm, swallowing it once it had been separated. Though Brancheau’s body was severely mutilated, it is unclear whether the trauma caused by the whale or drowning was the actual cause of death.

The documentary also shows that one of the biggest challenges in keeping Killer Whales in captivity is preventing them from harming each other,

⁶⁵ "Whale Kills a Trainer at SeaWorld." *The New York Times*. The New York Times, 24 Feb. 2010. Web. 28 Mar. 2016. <<http://www.nytimes.com/2010/02/25/us/25whale.html>>.

⁶⁶ *Blackfish*. Dir. Abriela Abriela Cowperthwaite. Mag Pictures, 2013. Film.

which has led to extreme injuries in the past. Tilikum in particular has been the target of violence from other whales he was paired with in captivity. When Tilikum arrived at SeaWorld, he was “attacked viciously, repeatedly by Katina (female Orca) and others. In the wild, it’s a very matriarchal society. Male whales are kept at the perimeter. In captivity, animals are squeezed into very close proximity.”⁶⁷ Tilikum weighs roughly 12,000 pounds and therefore had a difficult time maneuvering away from the whales trying to attack him. This resulted in Tilikum spending a great deal of time in isolation in order to protect him from the female whales.

When discussing the nature of Orcas in captivity, life spans are an important issue to consider. In the documentary *Blackfish* there is footage of SeaWorld employees addressing the question of how long Killer Whales live in the wild. All of their responses were that captive Orcas live somewhere between 25 to 35 years, though one tour guide mentioned “they’re documented living in the wild living to be about 35, mid-30’s. They tend to live a lot longer in this environment because they have all the veterinary care.”⁶⁸ Studying in Orcas in their natural environment has revealed that their lifespans are closer to 50-100 years, much closer a human.⁶⁹

There has been a very real impact on the business structure of SeaWorld along with their profits in recent years because of the negative opinion that so

⁶⁷ *Blackfish*. Dir. Abriela Abriela Cowperthwaite. Mag Pictures, 2013. Film.

⁶⁸ *Blackfish*. Dir. Abriela Abriela Cowperthwaite. Mag Pictures, 2013. Film.

⁶⁹ "Killer Whales (Orcas), Killer Whale Pictures, Killer Whale Facts - National Geographic." *National Geographic*. Web. 28 Mar. 2016.
<<http://animals.nationalgeographic.com/animals/mammals/killer-whale/>>.

much of the public has now developed about the park. The attention that has been brought to SeaWorld because of their mistreatment of Orcas has affected their stock as well as the number of customers visiting every year. Decreased attendance has been a reality for SeaWorld in recent times. During the second quarter of 2015, a year after the release of *Blackfish*, SeaWorld saw 100,000 less visitors than it had during the same quarter in 2014.⁷⁰

In August 2014, CNN and the *Los Angeles Times* both reported SeaWorld stock had dropped 33% the previous quarter due to “negative publicity concerning accusations by animal-rights activists that SeaWorld mistreats killer whales.”⁷¹ The company had attributed previous stock drops to “a rise in ticket prices and a shift in the timing of the Easter holiday this year,” not taking public opinion into account.⁷² An article in the *Washington Post* documented in December 2014 that SeaWorld’s Stock had fallen a total of 60% since the release of the film *Blackfish* the previous July.⁷³ Though there have been many petitions and outrage from animal rights groups, cutting into SeaWorld’s profits has been the most effective method of sending the message of customer disapproval. It wasn’t until after these very clear statements from visitors that

⁷⁰ Rhodan, Maya. "Seaworld's Profits Drop 84% After 'Blackfish' Documentary." *Time*. Time, 6 Aug. 2015. Web. 28 Mar. 2016.

⁷¹ Hugo Martin. "SeaWorld Stock Falls 33% as Orca Controversy Hurts Attendance." *Los Angeles Times*. Los Angeles Times, 13 Aug. 2014. Web. 28 Mar. 2016. <<http://www.latimes.com/business/la-fi-seaworld-entertainment-low-earnings-20140813-story.html>>.

⁷² Hugo Martin. "SeaWorld Stock Falls 33% as Orca Controversy Hurts Attendance." *Los Angeles Times*. Los Angeles Times, 13 Aug. 2014. Web. 28 Mar. 2016. <<http://www.latimes.com/business/la-fi-seaworld-entertainment-low-earnings-20140813-story.html>>.

⁷³ Ferdman, Roberto A. "Chart: What the Documentary ‘Blackfish’ Has Done to SeaWorld." *Washington Post*. The Washington Post, 12 Dec. 2014. Web. 28 Mar. 2016.

SeaWorld announced they were going to make quantifiable changes to the care Orcas receive at their facilities.

Developments in recent weeks and months have given hope that the organization will soon be going in a new direction, however. On March 17, 2016 SeaWorld announced that not only will it stop its Orca breeding program, but will be partnering with the Humane Society of the United States to ensure the animals in captivity receive the best care possible. This announcement is nothing short of historic, and in an official press release from the park, CEO Joel Manby explained the reasoning behind the decision. He stated that it was in large part driven by visitor feedback explaining, "Customers visit our marine parks, in part, to watch orcas. But a growing number of people don't think orcas belong in human care".⁷⁴ Continuing their attempts to listen and communicate more effectively with their patrons, the news was announced via both the *Los Angeles Times* as well as SeaWorld's twitter account, making use of a platform that is accessed daily by millions of people.⁷⁵

Partnering with the Humane Society of the United States will certainly ensure that best practices are used in the care of animals living at SeaWorld, and works toward their goal of applying "basic physiological research efforts and state-of-the-art reproductive technologies toward wildlife species management

⁷⁴ Manby, Joel. "Op-Ed SeaWorld CEO: We're Ending Our Orca Breeding Program. Here's Why." *Los Angeles Times*. Los Angeles Times, 17 Mar. 2016. Web. 28 Mar. 2016.

⁷⁵ SeaWorld. "Breaking News: The #orcas Currently in Our Care Will Be the Last Generation of Orcas at SeaWorld. Learn More: <https://t.co/DxxAE7p6Ci>." *Twitter*. Twitter, 17 Mar. 2016. Web. 28 Mar. 2016.

and conservation.”⁷⁶ Joel Manby addressed the wish that many animal visitors have had to simply let the Orcas currently in captivity go free in the wild. He stated, “If we release them into the ocean, they will likely die. In fact, no orca or dolphin born under human care has ever survived release into the wild.”⁷⁷ Ending the breeding programs currently in existence is the only safe way to reduce the number of whales in captivity.

Despite the very real benefits to animal welfare, this is also a very savvy move for SeaWorld’s public relations. The backlash from customers as well as animal rights groups has been extreme and unrelenting in recent years, and has affected their profits. Teaming up with an organization that symbolizes high quality animal welfare is a way to save face. Although this decision may have ultimately been made to benefit SeaWorld’s bottom line, many animal rights advocates and visitors will agree that it was the right one as long as it also increases the quality of care at the parks.

⁷⁶ "Mission Statement Reproductive Research Center | SeaWorld Parks & Entertainment." *Mission Statement Reproductive Research Center | SeaWorld Parks & Entertainment*. Web. 28 Mar. 2016. <<http://seaworld.org/en/conservation-and-research/reproductive-research-center/mission-statement/>>.

⁷⁷ Manby, Joel. "Op-Ed SeaWorld CEO: We're Ending Our Orca Breeding Program. Here's Why." *Los Angeles Times*. Los Angeles Times, 17 Mar. 2016. Web. 28 Mar. 2016.

VI. Euthanasia In Living Collections

Living collections around the world have limited physical space within their institutions as well as staff to care for the animals they house. This means that zoo officials have to be very aware of how they maintain breeding programs and populations of animals, which can often lead to difficult choices. One of the ways in which institutions sometimes choose to control their population is by euthanizing animals they believe no longer fit into their breeding program, whether by injection or other methods. Approaches to population control vary greatly around the world and is more prevalent in certain areas than in others. These cases also tend to spark public anger, whether rightly or not, and bring attention to the fact that population control is an issue zoos have to manage.

The topic of population control in zoos is one that has now moved beyond just being an issue just dealt with by the decision-makers of the institutions that care for living collections. It has become a controversy with the public who visit living collections around the world every year. One proposed solution is to have retirement homes off-site for animals that are past the years that they would be able to breed. This alternative could be costly, however, and would not be conducive to educating visitors. The ethical dilemma that surrounds euthanasia is the much bigger issue, however. The responsibility that institutions take when they care for living collections would seem to be at odds with euthanizing any

animal in their care except in extreme cases to end suffering. It is this struggle that has caused the most controversy and the one which the public has taken issue with the most. There have been several situations in which institutions that care for living collections have chosen to euthanize an animal and the response from visitors and in the media has been dramatic. Animal welfare groups have always played the role of advocates for the individuals in captivity, but the outrage sparked in these cases went well beyond these organizations.

Differences Around the World

There is also a stark contrast between the European and American philosophies about animal breeding in zoos. Breeding programs and population management are often one of the main areas that personnel and funding is used toward in living collections. Institutions around the world can have policies on this that are potentially very different from one another. Jesper Mohring-Jensen, who works as a biologist in Jyllands Park Zoo in Denmark explained what happens when these two very different ideologies clash saying, “the discussion can sometimes become unscientific and based more on feelings than understanding of animals. Nature doesn’t have the same concept of justice as humans.”⁷⁸

⁷⁸ Bilefsky, Dan. "Danish Zoo, Reviled in the Death of a Giraffe, Kills 4 Lions." *The New York Times*. The New York Times, 26 Mar. 2014. Web. 16 Nov. 2015. <http://www.nytimes.com/2014/03/27/world/europe/lion-killing-at-danish-zoo-provokes-fresh-outrage.html?_r=1>.

An article published in the *New York Times* in August 2012 dealt with this very issue and specifically how zoos in the United States choose to deal with this sensitive subject. The director for the AZA's Wildlife Contraception Center in St. Louis, Cheryl Asa, was asked about euthanizing animals in living collections that no longer fit their needs and said, "On an emotional level, I can't imagine doing it and I can't imagine our culture accepting it."⁷⁹ Many institutions in this country choose instead to use contraception on the animals in their case as a means to prevent overpopulation. While there are certainly complexities with this method as well, the difference in philosophies between European and American Zoos is obvious. The AZA said in an arguably aggressive statement shortly after the death of Marius the giraffe in Copenhagen the organization "regrets the unfortunate incident at the Copenhagen Zoo involving the death of a giraffe. Incidents of that sort do not happen at AZA-accredited zoos and aquariums."⁸⁰

The Copenhagen Zoo belongs to the European Association of Zoos and Aquaria and is therefore bound by different regulations than American zoos.⁸¹ In an official statement on their Euthanasia policy, officials at EAZA said, "We are ethically obliged to strike an informed balance between the life of an individual

⁷⁹ Kaufman, Leslie. "When Babies Don't Fit Plan, Question for Zoos Is, Now What?" *The New York Times*. The New York Times, 2 Aug. 2012. Web. 16 Nov. 2015.
<http://www.nytimes.com/2012/08/03/science/zoos-divide-over-contraception-and-euthanasia-for-animals.html?pagewanted=all&_r=0>.

⁸⁰ Statement by Association of Zoos and Aquariums Regarding the Euthanasia of Giraffe at the Copenhagen Zoo." *Association of Zoos and Aquariums*. Web. 16 Nov. 2015.
<<https://www.aza.org/PressRoom/detail.aspx?id=32726>>.

⁸¹ "MEMBERS » EAZA." *MEMBERS » EAZA*. Web. 16 Oct. 2015.
<<http://www.eaza.net/members/>>.

and maintaining the long term viability of a managed population."⁸² This is certainly an accurate description of the struggle that all institutions with living collections face, though each must find their own solution that best fits their policies and situation. The danger that comes with these facilities having extreme policies is that in many cases, it could discourage visitors or sponsors from supporting these institutions and cause a drop in revenue needed to maintain the living collections.

⁸² "How Many Healthy Animals Do Zoos Put Down? - BBC News." *BBC News*. Web. 16 Nov. 2015. <<http://www.bbc.com/news/magazine-26356099>>.

VII. Media Coverage

Press coverage is the main way the public is made aware of stories involving animals being poached in parks or being euthanized in zoos. It is valuable to discuss how these events effect public opinion of institutions with living collections. The media is not always impartial and certainly news reports about dead animals can trigger strong emotions in viewers. It is important to be critical of what is reported about these incidents and delve deeper to discover what is really true. There are also multiple perspectives to each story and considering all of them is necessary, even when understanding the motivations behind poaching and violence toward animals. It is the only way to move forward and begin to find solutions to many of the serious problems that still occur within living collections.

The negative attention surrounding the death of Marius has turned the public against not only the Copenhagen Zoo but also similar institutions around the world. According to the Associated Press, the group Animal Rights Sweden had “urged people to stop visiting zoos as a protest.”⁸³ However much attention was given to the story in the press, public awareness of these issues does seem

⁸³ Schwartz, Nelson. "Anger Erupts After Danish Zoo Kills a 'Surplus' Giraffe." *The New York Times*. The New York Times, 9 Feb. 2014. Web. 16 Nov. 2015. <http://www.nytimes.com/2014/02/10/world/europe/anger-erupts-over-danish-zoos-decision-to-put-down-a-giraffe.html?smid=pl-share&_r=0>.

to be short-lived after the initial protests and petitioning. Coverage in the news only lasts a brief time before it disappears altogether, perhaps because these stories are so difficult to take in. As much as a large part of the population does want to be aware and informed, achieving that is equally emotional and painful.

The story of Cecil the lion is another example of an animal being killed that sparked public outrage, especially in the United States. The lion was living within Hwange National Park in Zimbabwe. A research team from Oxford University had been studying Cecil, as well as many other lions in the park since 2008 in order to track their movements. In July 2015 Walter Palmer, an American hunter, shot and killed the lion. According to reports, though the lion lived in a preserve a group of paid big game hunters enticed Cecil “out of a protected game preserve one night in early July by a hunting party that tied a dead animal to a car.”⁸⁴ Though this is an extreme measure in order to be successful at a hunt, it is not illegal. In fact hunting big game is allowed by permit in 11 countries on the continent of Africa, including Zimbabwe, where Cecil resided.

This incident was the subject of multiple trending topics on the internet as well as targeted harassment towards Palmer in person at both his workplace and home. The attention did seem to die down soon after it started. An article in the *New York Times* addressed this point and reported the hunter “joined an ever-

⁸⁴ Rogers, Katie. "American Hunter Killed Cecil, Beloved Lion Who Was Lured Out of His Sanctuary." *The New York Times*. The New York Times, 28 July 2015. Web. 16 Nov. 2015.

expanding group of people who have become targets of Internet vigilantism, facing a seemingly endless shaming until the next issue comes along.”⁸⁵

There is another important point to consider when looking at this story from all angles. A Zimbabwean now living in the United States wrote an OP-ED article in the *New York Times* about how the culture in that country might truly feel about the situation. Goodwell Nzou recalls his reaction when he first saw the news story was confusion at how the situation as a whole was being portrayed in the news. In Zimbabwe he says said “no lion has ever been beloved, or granted an affectionate nickname. They are objects of terror.”⁸⁶ This raises the question of whether or not the media was simply pandering to an extreme situation. It is also worth noting that after Cecil’s death the Oxford University group that had been studying him received over \$780,000 in donations from the public, which they will put towards the future to “study lions not only in Zimbabwe’s Hwange National Park, where Cecil lived, but also in adjoining countries.”⁸⁷

⁸⁵ Capecchi, Christina, and Katie Rogers. "Killer of Cecil the Lion Finds Out That He Is a Target Now, of Internet Vigilantism." *The New York Times*. The New York Times, 29 July 2015. Web. 16 Nov. 2015.

⁸⁶ Nzou, Goodwell. "In Zimbabwe, We Don't Cry for Lions." *The New York Times*. The New York Times, 4 Aug. 2015. Web. 16 Nov. 2015. <http://www.nytimes.com/2015/08/05/opinion/in-zimbabwe-we-dont-cry-for-lions.html?_r=0>.

⁸⁷ Calamur, Krishnadev. "Lion Item: Cecil's Death Is Great for Rage, and Turns Out He's Also Great for Raising Cash." *The Atlantic*. Atlantic Media Company, 4 Aug. 2015. Web. 16 Nov. 2015. <<http://www.theatlantic.com/international/archive/2015/08/cecil-supporters-donations/400436/>>.

The Nature of the Beast

There are certain unique challenges involved with maintaining a living collection and working with wild animals, one of which is ensuring the animals in the collection itself do not harm each other. Considerations must be made in terms of physical space as well as which animals would interact safely together and which must be kept apart. This issue is especially worth exploring because it is one that museums without living collections do not face with objects when planning exhibits. Unfortunate incidents have occurred when this problem has not been dealt with, either because of keeper negligence or simply unpredictable behavior from animals.

Yorkshire Wildlife Park in England saw firsthand how this issue could lead to the death of animals within an institution's care. In February 2010, the wildlife park took in thirteen lions from the Oreado Zoo in Romania where they had been living in "appalling conditions."⁸⁸ One lion called Johnny arrived at the Wildlife Park "with ulcers on his feet and tail, and emaciated by a poor diet."⁸⁹ When they arrived in Yorkshire they were divided into prides and he was put into a group called Pride 2 that included four lionesses. In March 2014 Johnny, who was thirty years old, was part of a fight among the other members of his pride. The injuries

⁸⁸ Turvill, William. "Poor Johnny Junior: Lion Saved from Squalid Conditions in Romanian Zoo Is Mauled to Death by Pack of Lionesses at His New British Home." *Mail Online*. Associated Newspapers, 6 Mar. 2014. Web. 16 Nov. 2015.

⁸⁹ "Oldest Rescued Lion Dies in Yorkshire Wildlife Park - BBC News." *BBC News*. Web. 16 Nov. 2015. <<http://www.bbc.com/news/uk-england-south-yorkshire-18543514>>.

he sustained were so severe that park officials made the decision to put the lion to sleep that same day. This story illustrates the delicate balancing act that institutions with living collections have to manage. Though it is their responsibility to keep the animals safe, behavior that is typical of these wild animals can often be dangerous and difficult to predict or prevent. It is worth remembering that the pride Johnny was part of was artificially created and therefore would work together as a group much differently than one naturally formed in the wild.

There have also been instances of animals attacking human visitors, and though rare, they are also worth examining. Though keepers do have contact with the animals more often than visitors and might have a bigger risk of finding themselves under attack, the problem is not limited to staff at these institutions. One such case was at the Dublin Zoo in August 2013 when a child was bitten. A Brazilian tapir attacked a two-year-old girl when she was “part of a supervised visit to the animal’s enclosure at the zoo.”⁹⁰ She sustained injuries to her arms and stomach, which were severe enough that she was forced to undergo surgery.

The Dublin Zoo was brought to court over this incident and forced to pay 5000 euros to charity as well as pleading guilty to “failing to implement a risk assessment”⁹¹ and breaching the Safety, Health and Welfare at Work Act. The experience was presumably designed to be educational for zoo visitors and

⁹⁰ "Toddler Attacked by Tapir in Dublin Zoo 'lucky Not to Be Infected'." *The Journal*. Web. 16 Nov. 2015. <<http://www.thejournal.ie/tapir-attacked-in-dublin-zoo-imj-1804674-Nov2014/>>.

⁹¹ "Dublin Zoo Pleads Guilty to Safety Breach in Tapir Attack on Child." *The Irish Times*. Web. 16 Nov. 2015. <<http://www.irishtimes.com/news/crime-and-law/courts/dublin-zoo-pleads-guilty-to-safety-breach-in-tapir-attack-on-child-1.1963221>>.

certainly geared toward children if a two-year old was permitted to be involved. It is troubling that a program thought to be safe could be the source of such problems, but it also gives the Dublin Zoo a chance to rethink their policies on hands-on experiences to make sure that their visitors are the safest they can be at all times. The Zoo reported after the events, "it had introduced additional updated safety protocols and procedures."⁹²

Keeper Negligence

Another of the problems that often exist within the living collections themselves is the issue of keeper negligence and improper care of the animals inside the institutions. One of the difficulties in trying to eliminate this issue is that there is no agreed upon definition of negligence set by the AZA or any similar governing body. While some instances are certainly more obvious, there are basic needs that all species have, including nutrition and adequate space, as well as monitoring by officials to prevent public interference. Occurrences of keeper neglect are not confined to remote parts of the world, and can be found even in American and European Zoos.

⁹² "Dublin Zoo Pleads Guilty to Safety Breach in Tapir Attack on Child." *The Irish Times*. Web. 16 Nov. 2015. <<http://www.irishtimes.com/news/crime-and-law/courts/dublin-zoo-pleads-guilty-to-safety-breach-in-tapir-attack-on-child-1.1963221>>.

The Surabaya Zoo in Surabaya, Indonesia has also been the focus of recent attention after a string of malpractice against its animals, resulting in several animal deaths. It has even been nicknamed the “Zoo of Death”⁹³ in the press so notorious has it become. One example occurred in March 2012 when a giraffe named Kliwon died while in captivity at the Zoo. Kliwon was thirty years old, a long life by giraffe standards since the average lifespan for one in the wild is around twenty-five years.⁹⁴ While the cause of death is unknown, the animal was found to have around forty pounds of plastic material within its stomach, reportedly because the giraffe had “been eating whatever it could find, which was mostly trash thrown in its enclosure by zoo visitors.”⁹⁵

In this extreme case of the Surabaya Zoo, officials from the Indonesian Zoo association stepped in and took over management of the institution in 2010 after such an excessive number of animals died that the director at the time was forced to step down. Actions by the institution have sparked outrage not only from the public but from other animal welfare and zoological organizations. There are numerous petitions online to shut the institution down altogether. A petition on the website change.org that was started in attempt to shut down the zoo has garnered more than 725,000 signatures, and documents the outrageous conditions in which the animals live.⁹⁶

⁹³ Budisatrijo, Alice. "Can Indonesia's 'zoo of Death' Turn Things Around? - BBC News." *BBC News*. Web. 16 Nov. 2015. <<http://www.bbc.com/news/world-asia-25908531>>.

⁹⁴ "Giraffes, Giraffe Pictures, Giraffe Facts - National Geographic." *National Geographic*. Web. 16 Nov. 2015. <<http://animals.nationalgeographic.com/animals/mammals/giraffe/>>.

⁹⁵ Skarda, Erin. "The Disturbing State of Indonesia's 'Zoo of Death'" *NewsFeed The Disturbing State of Indonesias Zoo of Death Comments*. Web. 16 Nov. 2015. <<http://newsfeed.time.com/2012/03/15/the-disturbing-state-of-indonesias-zoo-of-death/>>.

⁹⁶ <https://www.change.org/p/president-jokowi-close-surabaya-zoo>

In July 2013 a tiger named Melani was transferred from the Surabaya Zoo to another wildlife facility in Indonesia after images of her condition emerged and were made public. At that time Melani was “suffering from a serious digestive disorder after being fed tainted meat at the zoo.”⁹⁷ However, a year later after living in her new home, the tiger passed away at the age of 16 despite having specialist veterinary attention. The loss was deeply felt not only at that zoo, but also all over the world. According to the World Wildlife Fund the total population of Sumatran Tigers on earth is only around 400 and they are currently listed as critically endangered. Dangerous nutrition seemed to be a pattern for the tigers housed in Surabaya. PETA reported that another 13 year-old Sumatran tiger, Rozek, “starved to death after his digestive tract rotted away from being fed meat laced with formaldehyde.”

January 2014 also saw the preventable death of an animal that was within the care of the institution. The eighteen-month old lion called Michael was found hung in his cage on a wire used by zookeepers to control his cage door after reportedly getting his head caught in it. By the time that law enforcement officials had arrived, however, the lion’s body was already gone. Officers said that the zoo “did not think that it was potentially a crime scene that needed to be sealed off.”⁹⁸ This does raise the question of whether incidents of negligence like this one are so commonplace at Surabaya Zoo that officials at the institution simply

⁹⁷ "Tiger Rescued from Indonesian 'death Zoo' Dies." *ABC News*. 2 Sept. 2014. Web. 17 Nov. 2015. <<http://www.abc.net.au/news/2014-09-02/tiger-melani-rescued-from-indonesian-death-zoo-in-surabaya-dies/5714522>>.

⁹⁸ "Can Indonesia's 'zoo of Death' Turn Things Around? - BBC News." *BBC News*. Web. 17 Oct. 2015. <<http://www.bbc.com/news/world-asia-25908531>>.

no longer see them as problematic. In an interview, a spokesman for the Zoo, Agus Supangka admitted that environment could be a factor in the deaths of some of these animals. He said "This zoo is very old and its cages outdated, they are like prison cells, putting stress especially on the big mammals."⁹⁹ Supangkat also estimated that around 25 animals die annually at the facility whether through natural causes or unnecessary stressors to which they are exposed.

Toledo Zoo

The animals in institutions with living collections are not the only ones that can suffer or be injured as a result of keeper negligence. June 2010 saw a keeper at the Toledo Zoo in Toledo, Ohio seriously hurt after an encounter with an elephant. The keeper, Don RedFox, entered the Zoo's elephant house by himself and was injured by Louie, one of several elephants in the zoo's care. The animal was reportedly spooked by RedFox's appearance in the enclosure and began charging towards him, causing both his lungs to be punctured and several ribs fractured, leading to an extended hospital stay. Though the keeper "has no memory of the incident, which is consistent with trauma victims, and could not

⁹⁹ "Zoo Official Issues Dire Warning about the Treatment of Animals at Indonesia's Surabaya Zoo." *Zoo Official Issues Dire Warning about the Treatment of Animals at Indonesia's Surabaya Zoo*. Web. 17 Nov. 2015. <<http://latimesblogs.latimes.com/unleashed/2010/08/zoo-official-issues-dire-warning-about-the-treatment-of-animals-at-indonesias-surabaya-zoo.html>>.

answer why he went into the elephant house alone”¹⁰⁰, there is security footage of the incident. Investigation found that RedFox had broken two rules with his actions; going into the elephant house alone and not carrying the steel rod that the keepers use to manage the elephants’ behavior.

The Toledo Zoo’s decisions and response in the aftermath of this event have also been intriguing. As a safety precaution, the institution “no longer allows its keepers to be in the same space with Louie or another one of its female elephants.”¹⁰¹ An article in the *Los Angeles Times* also describes the importance that Louie specifically has to the Zoo. The elephant was born in the Zoo in April 2003, and was only the 38th African Elephant to ever be born in captivity in America, and Louie had become something of a public symbol and mascot for the entire zoo. In terms of the RedFox’s future as a zoo employee, director Anne Baker would only say that he had been disciplined but would be back at work once he had healed. There have been no details released about whether or not the keeper in questions may have been under the influence of drugs or alcohol.

¹⁰⁰ "Review of Toledo Zoo Incident in Which Elephant Attacked Keeper Finds That Keeper Broke Rules." *Review of Toledo Zoo Incident in Which Elephant Attacked Keeper Finds That Keeper Broke Rules*. 10 Aug. 2010. Web. 17 Nov. 2015.
<<http://latimesblogs.latimes.com/unleashed/2010/08/review-of-toledo-zoo-incident-in-which-elephant-attacked-keeper-finds-that-keeper-broke-rules.html>>.

¹⁰¹ "Review of Toledo Zoo Incident in Which Elephant Attacked Keeper Finds That Keeper Broke Rules." *Review of Toledo Zoo Incident in Which Elephant Attacked Keeper Finds That Keeper Broke Rules*. 10 Aug. 2010. Web. 17 Nov. 2015.
<<http://latimesblogs.latimes.com/unleashed/2010/08/review-of-toledo-zoo-incident-in-which-elephant-attacked-keeper-finds-that-keeper-broke-rules.html>>.

VIII. Conclusions

Despite the examples of threats to living collections coming from inside those very same institutions, it seems that many of the solutions to these problems can also be found from within. The bodies that govern these institutions, along with the zoos themselves, are constantly evolving in response to both public influence and new studies about animal behavior. There are certainly examples of living collections such as Virunga that have faced adversity and found ways to evolve and adjust their policies to ensure a safer environment for both their animals and visitors.

One potential solution to these issues could lie in the hands of the organizations such as EAZA and the AZA that govern institutions with living collections. There are many facilities with living collections that are still not accredited, and creating programs to educate these places could lead to better care for the captive animals and help these facilities eventually become accredited by organizations. There is very little incentive currently for institutions to become accredited. Adult education is also an important factor that has been largely neglected in the past. Zoos and other institutions with living collections are often geared toward children and have a connotation of only being valuable for people under a certain age. Working to eradicate this stigma by offering

classes or tours designed specifically for adults would be a way to educate many decision-makers in communities around the world and could attract a demographic of visitors that has been ignored in the past.

What do Living Collections Contribute?

Many animal rights groups as well as other people have called for zoos and Aquariums to be shut down altogether for years, on the basis that they do more harm to the animals than they do benefit to the public. While it is useful for visitors to be aware and critical of the institutions they visit, there are several factors that should be taken into account when discussing the worth of the existence of institutions with living collections. These collections are often in more urban areas where visitors are not exposed to exotic animals as often. Educating visitors, especially children, can help instill a lifelong appreciation for the natural world and show them how important it is for humans to take care of animals, both in the wild and in captivity.

One of the important points to weigh when considering the contribution of zoos to society is the protection that is offered to endangered animals that would not be present in the wild currently. The Northern White Rhinoceros is an extreme example of this principle. According to the World Wildlife Fund poaching for their horns used in traditional medicine has led to their extinction in the wild. Now there are only 4 White Rhinoceri left on earth - all of them in captivity. The

future for this subspecies is very bleak.”¹⁰² Though hope for the survival of the White Rhino is small, if it were not for the four existing in living collections, the species would be completely extinct without any chance of recovery at all. Of the four remaining rhinos, only one is male and “at 42 years old he can no longer breed.”¹⁰³ In vitro fertilization at a wildlife center or other institution is the only remaining chance to keep the species pure, since natural breeding is no longer an option. After a female white rhino died in captivity in July 2015, scientists preserved her genetic material so that they could possibly breed Northern white rhinos with Southern male rhinos to retain at least partial genetic representation for the species in the future. Situations like this reaffirm that though living collections are certainly not perfect, they do have an important function to play in the conservation of animals aside from their services to the public.

It is important for conservation groups to actively involve institutions with living collections in the process of conservation. Though these facilities are often thought of as purely for entertainment, they also have the potential to play a crucial role in the preservation of endangered species. Wildlife preserves, in particular those located near where endangered species reside in the wild, could be a haven to protect these creatures. Though it is often difficult or even impossible to release captive-born animals into the wild, there are examples of

¹⁰² "White Rhinoceros." *WWF*. Web. 17 Nov. 2015.

<http://wwf.panda.org/what_we_do/endangered_species/rhinoceros/african_rhinos/white_rhinoceros/>.

¹⁰³ Wei-Haas, Maya. "Rare White Rhino Dies, Leaving Only Four Left on the Planet." *National Geographic*. National Geographic Society, 29 July 2015. Web. 17 Nov. 2015.

<<http://news.nationalgeographic.com/2015/07/150729-rhinos-death-animals-science-endangered-species/>>.

successful breeding programs within institutions with living collections such as the Bronx Zoo. These facilities can be used as models for similar breeding programs around the world, and be a source of education.



Figure 3 - <http://news.nationalgeographic.com/2015/07/150729-rhinos-death-animals-science-endangered-species/>

Education offered to the public at these institutions with living collections is another crucial benefit. Both children and adults are able to take classes or participate in programs that allow them to interact with animals or see them up close in a way they might never get to experience otherwise. In 2007, the AZA published a study entitled *Why Zoos & Aquariums Matter: Assessing the Impact of a Visit to a Zoo or Aquarium* on how they believed the impact of a zoo on its visitors could be quantified. One of the aspects studied was the long term affects that a visit to an AZA accredited zoo or aquarium had on visitors. Researchers

found that “nearly a year after their zoo or aquarium visit, virtually all participants could talk about their visit and remember a number of details about the experience.”¹⁰⁴ Though the fact this investigation was done by the AZA could potentially show bias since their organization would certainly benefit from positive results, it is research well worth considering. Continuing studies in this area could help zoo officials to understand exactly how they can best educate their visitors and what types of tools provide the most impact. While education is important, these institutions with living collections could take efforts a step further and get their visitors involved with fundraising or other projects that would support wildlife conservation.

The Future of Living Collections

This research has raised some serious and complicated questions about what the future might hold for institutions with living collections. It is important for them to reflect on their own policies and practices to ensure they are operating to the best of their abilities, whether or not an institution is accredited. Public opinion has become more extreme in recent years and it will take time and effort for zoos and other institutions to assure their existence is a benefit to society and that those concerns voiced by the public are valid and being taken into account. Many animal welfare organizations have called for the dissolution of zoos and

¹⁰⁴ Falk, John H. "Why Zoos & Aquariums Matter: Assessing the Impact of a Visit to a Zoo or Aquarium." *Association of Zoos & Aquariums* (2007). AZA. Web.

other living collections altogether, but the issue is certainly more complex than that and deserves to be examined as such.

There are several important questions that need to be dealt with in order to secure the future of institutions with living collections. Having a consensus of the ethical best practices for living collections that comes from the governing bodies such as the AZA or EAZA would ensure more uniform quality care of captive animals. This could also be an opportunity to both educate the public that visits as well as generate feedback from patrons as to what they expect when they visit an institution with a living collection.

The early history of living collections is rooted in extremism and showmanship, and above all entertainment. It is unlikely that they will survive into the future if they do not embrace their potential to serve as protectors of endangered species and become even more dedicated than they already are to the preservation of these animals. This could be accomplished by creating more exchange programs between living collections that already have breeding programs and educating those institutions that have not yet established any. Sending staff or officials off-site for hands-on research would also be a more active way to study the breeding process for especially sensitive populations.

Accreditation with governing institutions is another issue that needs to be resolved in the future of institutions with living collections. There are many institutions which house living collections that are not accredited by any governing body and therefore are not held to the same standards. Helping these facilities to become accredited would not only likely increase the quality of care

for the animals in captivity, but also possibly create a source of revenue for these collections and increase their stability.

XII. References

"4 June HRW: DR-Congo Investigate Attacks On Virunga Oil Project Critics - They Need Protection." *SAVE VIRUNGA*. 4 June 2014. Web. 14 Oct. 2015. <<http://savevirunga.com/2014/06/04/4-june-hrw-dr-congo-investigate-attacks-on-virunga-oil-project-critics-they-need-protection/>>.

Association of Zoos and Aquariums. "The Accreditation Standards and Related Policies." *Association of Zoos and Aquariums*. Web. <<https://www.aza.org/uploadedFiles/Accreditation/AZA-Accreditation-Standards.pdf>>.

"AWF – Check out the Hippopotamus!" *African Wildlife Foundation*. Web. 14 Oct. 2015. <<http://www.awf.org/wildlife-conservation/hippopotamus>>.

Blackfish. Dir. Abriela Abriela Cowperthwaite. Mag Pictures, 2013. Film.

Bilefsky, Dan. "Danish Zoo, Reviled in the Death of a Giraffe, Kills 4 Lions." *The New York Times*. The New York Times, 26 Mar. 2014. Web. 16 Nov. 2015.

Budisatrijo, Alice. "Can Indonesia's 'zoo of Death' Turn Things Around? - BBC News." *BBC News*. Web. 16 Nov. 2015. <<http://www.bbc.com/news/world-asia-25908531>>.

Calamur, Krishnadev. "Lion Item: Cecil's Death Is Great for Rage, and Turns Out He's Also Great for Raising Cash." *The Atlantic*. Atlantic Media Company, 4 Aug. 2015. Web. 16 Nov. 2015. <<http://www.theatlantic.com/international/archive/2015/08/cecil-supporters-donations/400436/>>.

"Can Indonesia's 'zoo of Death' Turn Things Around? - BBC News." *BBC News*. Web. 17 Oct. 2015. <<http://www.bbc.com/news/world-asia-25908531>>.

Capecchi, Christina, and Katie Rogers. "Killer of Cecil the Lion Finds Out That He Is a Target Now, of Internet Vigilantism." *The New York Times*. The New York Times, 29 July 2015. Web. 16 Nov. 2015.

Coombes, Annie E. *History after Apartheid: Visual Culture and Public Memory in a Democratic South Africa*. Durham: Duke UP, 2003. 134. Print.

Coombes, Annie E. *History after Apartheid: Visual Culture and Public Memory in a Democratic South Africa*. Durham: Duke UP, 2003. 154. Print.

"Dublin Zoo Pleads Guilty to Safety Breach in Tapir Attack on Child." *The Irish Times*. Web. 16 Nov. 2015. <<http://www.irishtimes.com/news/crime-and->

law/courts/dublin-zoo-pleads-guilty-to-safety-breach-in-tapir-attack-on-child-1.1963221>.

"Elephant Herds Return to Virunga from Uganda | Virunga National Park." *Virunga National Park*. 26 May 2010. Web. 14 Nov. 2015.
<<https://virunga.org/archives/elephant-herds-return-to-virunga-from-uganda/>>.

Falk, John H. "Why Zoos & Aquariums Matter: Assessing the Impact of a Visit to a Zoo or Aquarium." *Association of Zoos & Aquariums* (2007). AZA. Web.

Ferdman, Roberto A. "Chart: What the Documentary 'Blackfish' Has Done to SeaWorld." *Washington Post*. The Washington Post, 12 Dec. 2014. Web. 28 Mar. 2016.

Fravel, Laura. "Critics Question Zoos' Commitment to Conservation." *National Geographic*. National Geographic Society, 13 Nov. 2003. Web.
http://news.nationalgeographic.com/news/2003/11/1113_031113_zoorole.html.

Genoways, Hugh H., and Mary Anne. Andrei. *Museum Origins: Readings in Early Museum History and Philosophy*. Walnut Creek, CA: Left Coast, 2008. Print.

"Giraffes, Giraffe Pictures, Giraffe Facts - National Geographic." *National Geographic*. Web. 16 Nov. 2015.
<<http://animals.nationalgeographic.com/animals/mammals/giraffe/>>.

Greenfielboyce, Nell. "Is Collecting Animals For Science A Noble Mission Or A Threat?" *NPR*. NPR, 18 June 2014. Web. 28 Mar. 2016.
<<http://www.npr.org/2014/06/18/318307574/is-collecting-animals-for-science-a-noble-mission-or-a-threat>>.

Hanson, Elizabeth. *Animal Attractions: Nature on Display in American Zoos*. Princeton, N.J.: Princeton UP, 2002. 131. Print.

"Hippos Butchered by the Hundreds in Congo Wildlife Park." *National Geographic*. National Geographic Society. Web. 14 Oct. 2015.
<<http://news.nationalgeographic.com/news/2006/10/061024-hippo-congo.html>>.

Hoage, R. J. *New Worlds, New Animals: From Menagerie to Zoological Park in the Nineteenth Century*. Baltimore: Johns Hopkins UP, 1996. 8. Print.

Hoage, R. J. *New Worlds, New Animals: From Menagerie to Zoological Park in the Nineteenth Century*. Baltimore: Johns Hopkins UP, 1996. 13. Print.

Hoage, R. J. *New Worlds, New Animals: From Menagerie to Zoological Park in the Nineteenth Century*. Baltimore: Johns Hopkins UP, 1996. 17. Print.

"HOME » EAZA." *HOME » EAZA*. Web. 16 Nov. 2015. <<http://www.eaza.net>>.

"How Does Accreditation Work?" *How Does Accreditation Work*. Web. 16 Oct. 2015. <<https://www.aza.org/becoming-accredited/>>.

"How Many Healthy Animals Do Zoos Put Down? - BBC News." *BBC News*. Web. 16 Nov. 2015. <<http://www.bbc.com/news/magazine-26356099>>.

Hugo Martin. "SeaWorld Stock Falls 33% as Orca Controversy Hurts Attendance." *Los Angeles Times*. Los Angeles Times, 13 Aug. 2014. Web. 28 Mar. 2016. <<http://www.latimes.com/business/la-fi-seaworld-entertainment-low-earnings-20140813-story.html>>.

"JOINING EAZA » EAZA." *JOINING EAZA » EAZA*. Web. 16 Sept. 2015. <<http://www.eaza.net/members/become-a-member/>>.

Kaufman, Leslie. "When Babies Don't Fit Plan, Question for Zoos Is, Now What?" *The New York Times*. The New York Times, 2 Aug. 2012. Web. 16 Nov. 2015. <http://www.nytimes.com/2012/08/03/science/zoos-divide-over-contraception-and-euthanasia-for-animals.html?pagewanted=all&_r=0>.

"Killer Whales (Orcas), Killer Whale Pictures, Killer Whale Facts - National Geographic." *National Geographic*. Web. 28 Mar. 2016. <<http://animals.nationalgeographic.com/animals/mammals/killer-whale/>>.

Kisling, Vernon N. *Zoo and Aquarium History: Ancient Animal Collections to Zoological Gardens*. Boca Raton, Fla.: CRC, 2001. 108. Print.

Manby, Joel. "Op-Ed SeaWorld CEO: We're Ending Our Orca Breeding Program. Here's Why." *Los Angeles Times*. Los Angeles Times, 17 Mar. 2016. Web. 28 Mar. 2016.

"MEMBERS » EAZA." *MEMBERS » EAZA*. Web. 16 Oct. 2015. <<http://www.eaza.net/members/>>.

Norton, Bryan G. *Ethics on the Ark: Zoos, Animal Welfare, and Wildlife Conservation*. Washington: Smithsonian Institution, 1995. 219. Print.

"Mountain Gorillas Enter the Genomic Age." *EurekaAlert!* 9 Apr. 2015. Web. 20 Nov. 2015. <http://www.eurekaalert.org/pub_releases/2015-04/wtsi-mge040715.php>.

"Milton Shedd, 79, Co-Founder of SeaWorld." *The New York Times*. 28 May 2002. Web. <<http://www.nytimes.com/2002/05/28/business/milton-shedd-79-co-founder-of-seaworld.html>>.

"Mission Statement Reproductive Research Center | SeaWorld Parks & Entertainment." *Mission Statement Reproductive Research Center | SeaWorld*

Parks & Entertainment. Web. 28 Mar. 2016.
<<http://seaworld.org/en/conservation-and-research/reproductive-research-center/mission-statement/>>.

Nogge, Gunther. "From the EAZA Office." *EAZA*. Web.
<[http://eaza.portal.isis.org/about/About EAZA Documents/FifteenYearsEAZA.pdf](http://eaza.portal.isis.org/about/About%20EAZA%20Documents/FifteenYearsEAZA.pdf)>.

Nzou, Goodwell. "In Zimbabwe, We Don't Cry for Lions." *The New York Times*. The New York Times, 4 Aug. 2015. Web. 16 Nov. 2015.
<http://www.nytimes.com/2015/08/05/opinion/in-zimbabwe-we-dont-cry-for-lions.html?_r=0>.

"Oil Exploration in Virunga: A Fisherman's Tale, in Which Team Are You?" *SAVE VIRUNGA*. 1 Sept. 2015. Web. 14 Oct. 2015.
<<http://savevirunga.com/2015/09/01/oil-exploration-in-virunga-a-fishermans-tale-in-which-team-are-you/>>.

"Oldest Rescued Lion Dies in Yorkshire Wildlife Park - BBC News." *BBC News*. Web. 16 Nov. 2015. <<http://www.bbc.com/news/uk-england-south-yorkshire-18543514>>.

"Oscar Winners 2015: The Complete List - 86th Academy Awards." *Oscar.com*. Web. 14 Nov. 2015.

"Ranger Killed in Ambush of the Museya Patrol Post | Virunga National Park." *Virunga National Park*. 5 Aug. 2013. Web. 14 Nov. 2015.
<<https://virunga.org/news/ranger-killed-in-ambush-of-the-museya-patrol-post/>>.

"Ranger Muhindo Kipasula Severely Injured | Virunga National Park." *Virunga National Park*. 28 Aug. 2014. Web. 14 Nov. 2015.
<<https://virunga.org/news/ranger-muhindo-kipasula-severely-injured/>>.

Rhodan, Maya. "Seaworld's Profits Drop 84% After 'Blackfish' Documentary." *Time*. Time, 6 Aug. 2015. Web. 28 Mar. 2016.

"Review of Toledo Zoo Incident in Which Elephant Attacked Keeper Finds That Keeper Broke Rules." *Review of Toledo Zoo Incident in Which Elephant Attacked Keeper Finds That Keeper Broke Rules*. 10 Aug. 2010. Web. 17 Nov. 2015.
<<http://latimesblogs.latimes.com/unleashed/2010/08/review-of-toledo-zoo-incident-in-which-elephant-attacked-keeper-finds-that-keeper-broke-rules.html>>.

Rogers, Katie. "American Hunter Killed Cecil, Beloved Lion Who Was Lured Out of His Sanctuary." *The New York Times*. The New York Times, 28 July 2015. Web. 16 Nov. 2015.

Schwartz, Nelson. "Anger Erupts After Danish Zoo Kills a 'Surplus' Giraffe." *The New York Times*. The New York Times, 9 Feb. 2014. Web. 16 Nov. 2015. <http://www.nytimes.com/2014/02/10/world/europe/anger-erupts-over-danish-zoos-decision-to-put-down-a-giraffe.html?smid=pl-share&_r=0>.

SeaWorld. "Breaking News: The #orcas Currently in Our Care Will Be the Last Generation of Orcas at SeaWorld. Learn More: [Https://t.co/DxxAE7p6Ci](https://t.co/DxxAE7p6Ci)." *Twitter*. Twitter, 17 Mar. 2016. Web. 28 Mar. 2016.

Skarda, Erin. "The Disturbing State of Indonesia's 'Zoo of Death'" *NewsFeed The Disturbing State of Indonesias Zoo of Death Comments*. Web. 16 Nov. 2015. <<http://newsfeed.time.com/2012/03/15/the-disturbing-state-of-indonesias-zoo-of-death/>>.

Smith-Spark, Laura. "Copenhagen Zoo Kills 4 Lions, Weeks after Shooting Giraffe." *CNN*. Cable News Network, 26 Mar. 2014. Web. 26 Feb. 2016. <<http://www.cnn.com/2014/03/26/world/europe/copenhagen-zoo-lions/>>.

Statement by Association of Zoos and Aquariums Regarding the Euthanasia of Giraffe at the Copenhagen Zoo." *Association of Zoos and Aquariums*. Web. 16 Nov. 2015. <<https://www.aza.org/PressRoom/detail.aspx?id=32726>>.

"Support the." *Gorilla Beringei Ssp. Graueri (Eastern Lowland Gorilla, Grauer's Gorilla)*. Web. 14 Oct. 2015. <<http://www.iucnredlist.org/details/39995/0>>.

"Support the." *Hippopotamus Amphibius (Common Hippopotamus, Hippopotamus, Large Hippo)*. Web. 14 Nov. 2015. <<http://www.iucnredlist.org/details/10103/0>>.

"Tag I Zoologisk Have Og Oplev Københavns 4234 Vilde Dyr | Zoo." *Tag I Zoologisk Have Og Oplev Københavns 4234 Vilde Dyr | Zoo*. Web. 16 Nov. 2015. <http://zoo.dk/BesogZoo/Nyhedsarkiv/2014/Marts/Why_Copenhagen_Zoo_made_a_change_in_the_lion_pride.aspx>.

"The Official Website of Virunga National Park - About." *Virunga National Park*. Web. 14 Oct. 2015. <<https://virunga.org/the-park/>>.

"The Official Website of Virunga National Park - Fallen Rangers Fund." *Virunga National Park*. Web. 14 Oct. 2015. <<https://virunga.org/projects/fallen-rangers-fund/>>.

"The Official Website of Virunga National Park - Governance." *Virunga National Park*. Web. 14 Oct. 2015. <<https://virunga.org/governance/>>.

"The Official Website of Virunga National Park - History." *Virunga National Park*. Web. 14 Oct. 2015. <<https://virunga.org/history/>>.

"The Official Website of Virunga National Park - Support Gorilla Orphans." *Virunga National Park*. Web. 14 Oct. 2015. <<https://virunga.org/projects/gorilla-orphans/>>.

"Tiger Rescued from Indonesian 'death Zoo' Dies." *ABC News*. 2 Sept. 2014. Web. 17 Nov. 2015. <<http://www.abc.net.au/news/2014-09-02/tiger-melani-rescued-from-indonesian-death-zoo-in-surabaya-dies/5714522>>.

"Toddler Attacked by Tapir in Dublin Zoo 'lucky Not to Be Infected'." *The Journal*. Web. 16 Nov. 2015. <<http://www.thejournal.ie/tapir-attacked-in-dublin-zoo-imj-1804674-Nov2014/>>.

Turvill, William. "Poor Johnny Junior: Lion Saved from Squalid Conditions in Romanian Zoo Is Mauled to Death by Pack of Lionesses at His New British Home." *Mail Online*. Associated Newspapers, 6 Mar. 2014. Web. 16 Nov. 2015.

"UNESCO Commends the Decision by SOCO to Halt Oil Exploration Activities in Virunga National Park as a Step in the Right Direction." *UNESCO World Heritage Centre*. Web. 14 Oct. 2015. <<http://whc.unesco.org/en/news/1142/>>.

Virginia Morell, National Geographic. "Inside the Fight to Stop Giraffes' 'Silent Extinction'" *National Geographic*. National Geographic Society. Web. 16 Nov. 2015. <<http://news.nationalgeographic.com/2015/06/150625-giraffes-animals-science-conservation-africa-endangered/>>.

"Virunga Elephants Get Sophisticated Tracking Collars | Virunga National Park." *Virunga National Park*. 29 July 2015. Web. 14 Oct. 2015. <<https://virunga.org/news/virunga-elephants-get-sophisticated-tracking-collars/>>.

Virunga: Gorillas in Peril. Dir. Lisa Kors. Netflix, 2015. Film.

"Virunga | Home." *Virunga*. Web. 14 Oct. 2015. <<http://virungamovie.com>>.

"Virunga National Park." - *UNESCO World Heritage Centre*. Web. 14 Oct. 2015. <<http://whc.unesco.org/en/list/63>>.

"Vision and Mission." : *WAZA : World Association of Zoos and Aquariums*. Web. 16 Nov. 2015. <<http://www.waza.org/en/site/about-waza/vision-and-mission>>.

"WAZA Statement – Euthanasia of a Giraffe at Copenhagen Zoo." *News : WAZA : World Association of Zoos and Aquariums*. Web. 16 Nov. 2015. <<http://www.waza.org/en/site/pressnews-events/news/waza-statement-euthanasia-of-a-giraffe-at-copenhagen-zoo>>.

"Whale Kills a Trainer at SeaWorld." *The New York Times*. The New York Times, 24 Feb. 2010. Web. 28 Mar. 2016.
<<http://www.nytimes.com/2010/02/25/us/25whale.html>>.

Wei-Haas, Maya. "Rare White Rhino Dies, Leaving Only Four Left on the Planet." *National Geographic*. National Geographic Society, 29 July 2015. Web. 17 Nov. 2015. <<http://news.nationalgeographic.com/2015/07/150729-rhinos-death-animals-science-endangered-species/>>.

"What Is Accreditation?" *What Is Accreditation*. Web. 16 Oct. 2015.
<<https://www.aza.org/what-is-accreditation/>>.

"White Rhinoceros." *WWF*. Web. 17 Nov. 2015.
<http://wwf.panda.org/what_we_do/endangered_species/rhinoceros/african_rhinos/white_rhinoceros/>.

"Why Copenhagen Zoo Was Right to Cull Giraffe - CNN.com." *CNN*. Cable News Network. Web. 16 Nov. 2015. <<http://www.cnn.com/2014/02/10/opinion/giraffe-cull-argument-for/>>.

"Zoologisk Have." *Zoologisk Have*. Web. 16 Oct. 2015.
<<http://zoo.dk/BesogZoo/Nyhedsarkiv/2014/Februar/Why Copenhagen Zoo euthanized a giraffe.aspx>>.

"Zoo Official Issues Dire Warning about the Treatment of Animals at Indonesia's Surabaya Zoo." *Zoo Official Issues Dire Warning about the Treatment of Animals at Indonesia's Surabaya Zoo*. Web. 17 Nov. 2015.
<<http://latimesblogs.latimes.com/unleashed/2010/08/zoo-official-issues-dire-warning-about-the-treatment-of-animals-at-indonesias-surabaya-zoo.html>>.

"Zoos: A Historical Perspective | Introduction." *Zoos: A Historical Perspective | Introduction*. Web. 14 Nov. 2015.
<<http://www.sil.si.edu/ondisplay/zoos/intro.htm>>.